



EAST AFRICA

1914

4 ()

Governor 814

Selfield

1914

7th September

Last previous Paper.

MEDICAL DEPT REPORT 1913-14

Mrs. P.M.O. requests 150 copies. Considers the Report a very carefully compiled and comprehensive production.

Richardson

H. J. R.

1915/14

internal evidence it appears that the report for 1913

The report is for the year ending Dec. 1913, with the exception of Major Skellern's report on Plague which covers period Sept 1912 to Sept 1913

to C. A. for printing. I suggest combining Tables VI + VII of each of which there are four viz Camp Officials, Native Officials, General European + General Native, into two.

*To Lt. Cavo 23/9/14
Self. Report to P. M. O. 20/9/14
Copy imp. under B. M. 20/9/14
C. A. 20/9/14*

*Copy of Report to P. M. O. 20/9/14
Copy of Report to Self. 20/9/14
Copy of Report to B. M. 20/9/14
Copy of Report to C. A. 20/9/14*

Next subsequent Paper:

20/1569

returns, one Table VI in Patents & the other Table VII out-Patents. ~~the~~ This can be managed by adopting a modification of last years printed report, & will in addition to saving expense, make the report less bulky & easier of reference. There are is a large number of maps, ~~plans~~ plans & photographs, which should be reproduced, as they add greatly to the value & interest of the report

M. B. B. B. B.
M. B. B. B.

21/10/14

I delayed this in order to see better the maps, plans, charts & photographs were to any extent, but in all with those which I find under protest reproducing as far as possible Simpson's report - of 1875. There are ~~the~~ maps - one of IAP, showing the division into provinces, 50 m to 1 inch, and the other showing the distribution of plague, the area of coastwise - spinal meningitis. Prof. Simpson's report and contain a map of East & Uganda, showing endemic plague areas, with young districts &c. So one of the best two can be omitted. I think it ought to be possible to make the central - spinal distribution of the ~~the~~ division into provinces on one map - & putting the smaller scale map.

Plans and charts

Plans giving typical cross sections of premises in the Indian Bazaar, Nairobi. Prof. Simpson's report will reproduce this & something on the same lines; or we can omit it.

Map of the Indian Bazaar in relation to temperature, Mombasa (see p. 158) kept? about being useful evidence of plague compared with accidental population Mombasa (1/1/176) This was seen by Prof. Simpson with his report, but omitted. Keep.

Temperature charts in plague cases. 10 mit. (1/1/176)

"Plan showing plots, sanitary lanes, drainage mains, in Indian Bazaar, Nairobi." Better omit in view of plentiful illustrations of this question in Professor Simpson's report.

Photographs. Five photographs of Mombasa houses &c. (1/1/176) No. 1 at least might be omitted. Photographs nos. 6 to 19 (pp. 92 & 93) illustrate the sanitary condition of Nairobi. In Professor Simpson's report we are reproducing 8 photographs illustrating the condition of the commercial part of the town, & 9 showing the state of the drainage works, & 2 others of the water supply. I cannot say how far the two sets of photographs correspond - some of those with the ENT Ann. Med. Report were certainly also sent with Prof. Simpson's, but those which are to be reproduced are with the situation of the, & Uganda is relevant to any

Yes. 1/1/14

out the work that I should not like to borrow them
on the whole, I think the awful example of Nairobi
will be sufficiently illustrated in Prof. Simpson's report, &
Yes. I omit all this lot of photographs. They should
be seen by the Committee in due course.

Finally, there are three photographs (17
to illustrate Sub Post. Surgeon Patel's notes on
interesting cases. the procedure - from enclosure

This report is too big, but if the new
model is collectively adopted in W & E Af., the
size of these annual chambers will be cut down.
The changes suggested by the Burgess should
be made in tables A & VII.

The Year's ~~report~~ ^{Third} far. shows that he has
read the report. it is impossible to believe that
intelligent administrators would not have regard
to the criticism of the sanitary conditions of
Protectorate as something that imperatively
demanded a reply of some sort.

To CA according to - 300 copies, AF 6/11/14
3 proofs to present here - first instance, rest to wait
150 to SAP & 30 here
for the present

I have not read the report but I have looked
through it and will be in the evening with Mr. Giddings
propose with regard to them. I would also omit photographs
3000 backup 120

6/11/14
at once
H. J. R.
6/11/14

Mr. Read

If you agree, I propose to send the dupl. copy of the report to Dr. Bagshaw, warning him that the whole of the maps, plans & photos etc. will not be reproduced in the published report.

At 24/11/14

I agree.

at mee.

H. J. R.

24/11/14

Mr. Fiddian

I annex a memorandum of the Annual Medical & Sanitary Report of the C.A.P.

H.J.R.

22/12/14

Progress

Mr. Bott

Mr. Read - Circulate copies of memo & report. latter is available in final form to TAMSC for a copy at next meeting.

At 24/1/15

at mee
H. J. R.

29/XII/14

Report & memo circulated to TAMSC Committee (Jan 1915)

over

The Fiddian

Extract from minutes of 74th meeting
of the T.A.M.S. Committee 5 Jan 1915

"Sir Patrick Manson asked that evidence
might be procured in regard to the value of
injection of quinine, & whether they were hypodermic
or intramuscular.

Sir James Fowler called attention to the
fact that out of 2125 cases of malaria in the
Desert Zone, no deaths were reported, as affording
additional evidence that deaths from uncomplicated
malaria were comparatively rare; but Sir Patrick
Manson, Sir Rando Ross and Professor Simpson dissented.

In connexion with the statement on page 42
of the vaccination performed, it was recommended that
enquiries should be made into the reason why in some
cases the proportion of results not examined was so
much higher than in others. Appendix of the entire fever
Table on page 43 Sir James Fowler observed that there
had been some two hundred cases of entire fever
among the British troops at the front with twenty deaths,
and that none of those deaths had been among inoculated

persons. He added that extreme fever in inoculated cases was often so mild as to be very difficult to diagnose.

Sir Patrick Manson asked that a more definite diagnosis should be made - the cases of taeniasis referred to on page 47. He also enquired whether the Bilharzia ova recognised - the least Belt and elsewhere were lateral or terminal - spines.

In answer to an enquiry, Professor Simpson said that he had reported very adversely on the condition of the Nairobi Hospital, but that the overcrowding was being remedied. It was agreed that attention should be drawn to the statement in regard to the absence of means for the disposal of excreta stools in the Protectorate hospitals generally.

Professor Simpson commented favourably on the diagrams on pages 53 & 54, illustrating the subcutting of plots in Nairobi. He thought the report as a whole was a good one. The Committee concurred.

copy circulated to
THMS (the 17th April 1915)
Manson (letter)
H.M.

M. Butt only was 11/15
M. Booth
Sir G. Zilliox

D.H. submitted
p. 28.

19/1/15
AF 11/1/15

Genl D. Bagshaw (3 men) another cot
with sawfs

AF 15/4/15 done ✓

MEMORANDUM ON THE EAST AFRICA ANNUAL MEDICAL AND
SANITARY REPORT FOR THE YEAR ENDING THE 31st OF
DECEMBER 1913.

69

This report has been arranged in the same manner as
last year, so as to deal with the four areas which are
~~now of consideration~~ into which the country is best
divided from the Medical and Sanitary point of view.

A map is included with the report, in which the Coast
Zone is coloured blue, the Mountainous Zone pink, the Kenia
and Nyanza Provinces green, and the Desert Zone yellow.

19 Apart from the epidemic diseases which so seriously
affected the Protectorate during the year 1913, the stan-
dard of health has been good, in fact better than any of
the previous years.

The total of those who presented themselves for treat-
ment was 108,820 as against 93,408 in 1912 and 85,956 in
1911. A very ~~substantial~~ ^{satisfactory state of things} ~~which~~ which reflects great
credit on the zeal, energy and enterprise of the Medical
Department.

Malaria and dysentery are amongst the most common of
the preventable diseases, and attention is drawn to the ^{fact}

that in both these diseases an increasing reliance is being placed on the use of hypodermic injections of quin-
ine and smetin in place of less certain, older fashioned
methods of treatment. 70

20 Malaria in the Coast Zone is usually of the tertian variety. At Mombasa it presented two distinct clinical types, with microscopical differences in the form of the red parasites.

21 In the Mountainous Zone, malaria is also chiefly sub-tertian in type. Amongst the Kavirondo, in the Kenia and Nyanza Provinces, malaria was responsible for rather more than a fifth of the admissions.

22 and 23. Plague was present in the Coast Zone and in the Mountainous Zone. The type was largely bubonic though there was a very serious proportion of the pneumonic variety. The disease was also present in the Ke-Kisumu in the Kenia Province.

24 Cerebro-spinal meningitis broke out during the year and in the Kenia Province where the full force of the epidemic was felt, the year has been the most disastrous since the country has been occupied by the white man. The

Coast Zone and the Mountainous Zone were also affected, but in the Kenia Province it was so severe that at one time it threatened to paralyse the internal economy of the whole province, spreading as it did through the length and breadth of the Kikuyu country and advancing simultaneously into the Ukaru Province. District Officers variously estimated the death rate as from 5 to 10 per cent.

geographical
distribution of the
disease is shown
accompanying the
map
Report

28.

The apparent increase in the number of deaths during the year is probably due to a faulty method of registration. It will be noticed that the figures are for the whole Protectorate are equal to those of the four Zones added together. It is highly probable that an official who was in two or three of the Zones during his tour, or rather during the year has been counted in each of them. It is to be hoped that the more exact method of registering officials recommended in connexion with the new model report, will prevent miscalculations of this nature.

Out of a total of 1,088 officials as compared with 567 in 1912, there were 7 deaths as compared with 4 in the previous year, and 13 cases of invaliding as compared with 8 — a percentage of .64 and 1.19 as against .71

and 1.41 during the preceding year. The percentage of sick average number resident being 1.64 as against 2.19 in 1911, which is very satisfactory.

The health of native officials does not appear to have been so satisfactory, their being there being 7 deaths as compared with 1 in 1912 with a percentage sick to average number resident of 4.51 as compared with 1.77. The invalids were however less than in the preceding year, numbering 10 as against 18.

28. 36.

There is a distinct increase in the number of cases of malaria recorded, the figures being 10,714 with 76 deaths in 1911, 11,658 with 52 deaths in 1912 and 15,656 with 81 deaths in 1913. It is probable however that this apparent increase is to a large extent due to a larger number of people availing themselves of medical treatment.

28.

Six cases of trypanosomiasis were treated during the year, with three deaths.

29.

During the year, 272 cases of plague were certified by the Medical Department with 236 deaths, a death rate of 86.76 per cent. These figures are however said by no means to represent the extent of the disease.

41. Localised epidemics of Small-pox occurred at Mombasa, Nairobi, Eldoret and Londiani, and Kenia. There were altogether, 166 cases of this disease during the year as compared with 323 during the preceding year. This decrease is probably due to the vigorous way in which vaccination has been carried out. During the year under review, 131,757 cases were vaccinated as compared with 79,252 in 1912 and 15,167 in 1911.

43. Cases of dysentery treated during the year in Government hospitals and dispensaries, totalled 1,814 cases with 100 deaths. It would appear that the bacillary type is accountable for the majority of cases.

There were 8 cases of enteric fever reported at Mombasa, 15 at Nairobi and 10 in other localities, with one death at Nairobi.

43 to 46. Some idea of the number of deaths that must have occurred during the epidemic of cerebro-spinal meningitis, can be gathered by perusing the reports of District Commissioners and Missionaries.

47 to 57. In view of Professor Simpson's recent visit and the report which he has written, it is superfluous to discuss

the sanitary matters mentioned in this report. It is however obvious that reform in this direction is urgently required, and it is imperative that steps be taken as soon as possible to remedy the scandalous state of affairs at present existing.

65 and 66.

A large amount of work appears to have been carried out at the Bacteriological Laboratory, Nairobi.

67 to 90.

A most instructive and interesting report on the Epidemic of Plague in Mombasa is given by Capt. D.S. Skelton, R.A.M.C. to whom great credit is due.

126 to 129.

Copies of [redacted] in connexion with the epidemic cerebro-spinal meningitis, rat destruction and plague are given.

The Report as a whole is the most carefully prepared record of Medical and Sanitary work that has been received during the year; the "model" has been followed more exactly than in any other Administration, and, though one of the largest and most comprehensive of the annual reports received during the year, the work of seeing it through the press has been comparatively easy on account of the

care with which it has been prepared and the absence of mistakes, mis-spellings and wrong calculations.

HLS

23.12.14.

75

R

EAST AFRICA PROTECTORATE.

No. 814.

40344
GOVERNMENT HOUSE,
NAIROBI.
RECEIVED
BRITISH EAST AFRICA.

September 7th, 1914.

Sir,

76

I have the honour to transmit here-
with the Report of the Medical Department of
this Protectorate for the year ending the 31st
of March 1914.

2. The Principal Medical Officer asks
that 150 copies may be sent to him for distri-
bution within the Protectorate.

3. The original only is complete in pho-
tographs, and I consider it to be a very care-
fully compiled and comprehensive production.

I have the honour to be,

Sir,

Your humble, obedient servant,

H. Conway Bequith

GOVERNOR.

THE RIGHT HONOURABLE

LEWIS HARCOURT, P.O., M.P.,

SECRETARY OF STATE FOR THE COLONIES,

DOWNING STREET, LONDON, S.W.

Gen

40344

SAP

77

14

23 Nov 14

DRAFT

C.A.

MINUTE.

- Mr. Fiddian 2/11 P
- Mr.
- Mr.
- Mr.
- Sir G. Fiddes.
- Sir H. Just.
- Sir J. Anderson.
- Lord Islington.
- Mr. Harcourt.

Genl,

I have to advise you that he approves of your arranging for the printing of three hundred copies of the Annual Report of the Medical Dept of the S.A.P. at the expense of Prot^y funds.

It is understood that the Report has already been transmitted to you some Officially for the purpose, & that it has been finally settled in the same way which maps, Plans, Photo.

proofs are to be reproduced.

3. One hundred and fifty copies of the Report should be sent to the Prof^r, Gen^l, & thirty to the Prof^r the Institute being retained for the journal.
4. Three copies of the letterpress of the Report should be submitted to this Dept^t for correction, & five copies are finally struck off.

READ

13 JAN 14

Go

EAP



60 364

14

Amos 3rd 14th

73

15 Jan 15

DRAFT

EAP No. 14
Gen. Belfield

MINUTE.

- Mr. Fieldian 11/1
- Mr. Bottanby 11/15
- Mr. Road 11
- Mr.
- Sir G. Fiddes 13/15
- Sir H. Just
- Sir J. Anderson
- Lord Islington
- Mr. Harcourt

for copies of
for 15 2 Schools of
the camp
at 18/1/15

For
copy 100 26 Aug 15 at
Spec 8

Sir,
I have the hon. Genl. the sec^y of yr. dept. No. 816 Mr. J. M. of left, forwarding the Annual Medical Report on the E.A.P. for the year 1913. The report has been printed, and copies have no doubt reached you from the C.A. for the Col^y. You will observe that a selection has been made among the maps, plans, charts & photographs which accompanied & illustrated the report, & that none of the photographs have been reproduced. I should explain that it appeared to me unnecessary to cover the same ground as that included in the maps & photographs etc. appended to

Professor Simpson's report on his
visit to the Protectorate, complete
copies of which will reach you very
soon.

2. I scanned the report
to be referred to the Adm. Bd.
& Gen. Ct. for Prof. H.,
who made comparatively few
comments on the details. In
connexion with Dr. Williams's statement
(on page 19 of the printed report)
that both in dysentery & malaria
"there has been an increasing
reliance placed on the use of
hypodermic injections, in place
of less certain, older-fashioned
methods of administration," the
Ct. was asked for definite evidence
of the nature of injections of
quinin & whether, as a rule,
they are given intramuscularly
or hypodermically. There is a
difference of opinion as to the
value of these injections & the results
of which were known to the
total number performed, shown
in the table on page 62, was
noticed & a committee asked for some
explanation of the reason why
in the cases of "Nandi, N.O.H." and
Kiungu the whole number was returned

79

as 'results unknown',
whilst in Nyeri upwards
of ninety percent, & at
Fort Hall some seventy per
cent were returned as 'cured'.

4. A more definite diagnosis
was asked for in the case
of taeniasis referred to on
page 67. This information
would probably be difficult
to give so long afterwards, but
attention might well be paid to
the point when the report for
1915 is being prepared. Inquiry
was also made as to the
value of the Bilharzia and
recogised in the Coast Belt
between the natural &
terminal spines.

DRAFT.

MINUTE.

Mr.

Mr.

Mr.

Mr.

Sir G. Fiddes.

Sir H. Juss.

Sir J. Anderson.

Lord Islington.

Mr. Harcourt.

15. The state of things
facilities in the Protectorate
Hospitals for the disposal of
entire stocks appeared to
the Ct. to be very regrettable.

6. I concur with you
and with the Ct. in thinking
the report as a whole
and interests were of the

which that a very great deal
remains to be done before the
medical & sanitary arrangements
of the I. O. can be deemed as
satisfactory; and this subject
will no doubt engage your attention
so far as it is not engrossed by
even more urgent matters -
in connexion with Professor
Simpson's report on his visit
to A.

SECRET.

RECEIVED
23 JAN. 1915
COL. OFFICE

80

Seamen's Hospital Society.

Station:
COMMUNICATED BY (R. I. R.
From Fenchurch Street
Station).

Telegrams:
"PLASMOVIM, LONDON."

Telephones:
NO. 839 KARY
" 81 " "
" 80 " "

LONDON SCHOOL OF TROPICAL MEDICINE
(UNIVERSITY OF LONDON),
ROYAL ALBERT DOCK, E.

22nd January 1915.

SIR,

I am directed by the Committee of the London School of Tropical Medicine to convey to you their best thanks for your donation of East Africa Protectorate, Annual Medical Report for the year ending 31st December 1913,

which has been received and placed in the Library of the School.

I am, Sir,

Yours faithfully,

The Under Secretary
of State,
Colonial Office, S.W.

P. J. MICHELLI,
Secretary.

Swick

CONTENTS.

PREFACE Page 5

I.- ADMINISTRATION.

Section I - Departmental

- (1) Establishment 81
- (2) Appointments
- (3) Reductions in staff
- (4) Promotions
- (5) Changes
- (6) Leave of absence
- (7) Resumption of duty
- (8) Staff Postings:-
 - (i) of the Coast Zone
 - (ii) of the Mountainous Zone
 - (iii) of the Kenia & Nyanza Provinces
 - (iv) of the Desert Zone

Section II.- Extra Departmental.

- (9) Registration of Medical Practitioners and Dentists.
- (10) Drugs and Poisons Ordinance '09.
- (11) Entomological Research.

Section III. Event of Interest.

- (12) Professor W.J. Simpson's visit.

II.- PUBLIC HEALTH.

(a) General Remarks:-

- (1) General Diseases-
 - (i) of the Coast Zone
 - (ii) of the Mountainous Zone
 - (iii) of the Kenia & Nyanza Provinces
 - (iv) of the Desert Zone
- (ii) Communicable Diseases-
 - Mosquito or Insect-borne-
 - (i) of the Coast Zone
 - (ii) of the Mountainous Zone
 - (iii) of the Kenia & Nyanza Provinces
 - (iv) of the Desert Zone
 - Infectious or Epidemic-
 - (i) of the Coast Zone
 - (ii) of the Mountainous Zone
 - (iii) of the Kenia & Nyanza Provinces
 - (iv) of the Desert Zone
 - Helminthic -
 - (i) of the Coast Zone
 - (ii) of the Mountainous Zone

(b) European Officials:-

- General Remarks-
 - (i) of the Coast Zone 3

(ii)	of the Mountainous Zone ...	
(iii)	of the Kenia & Nyanza Provinces ...	
(iv)	of the Desert Zone ...	

Table -

(i)	of the Coast Zone ...	82
(ii)	of the Mountainous Zone ...	
(iii)	of the Kenia & Nyanza Provinces ...	
(iv)	of the Desert Zone ...	
(v)	of the whole Protectorate..	

(c) Native Cattle:-

General Remarks:-

(i)	of the Coast Zone ...
(ii)	of the Mountainous Zone ...
(iii)	of the Kenia & Nyanza Provinces ...
(iv)	of the Desert Zone ...
(v)	of the whole Protectorate..

Table -

(i)	of the Coast Zone ...
(ii)	of the Mountainous Zone ...
(iii)	of the Kenia & Nyanza Provinces ...
(iv)	of the Desert Zone ...
(v)	of the whole Protectorate..

(d) General European Population -

(i)	of the Coast Zone ...
(ii)	of the Mountainous Zone ...
(iii)	of the Kenia & Nyanza Provinces ...
(iv)	of the Desert Zone ...

(e) General Native Population -

(i)	of the Coast Zone ...
(ii)	of the Mountainous Zone ...
(iii)	of the Kenia & Nyanza Provinces ...
(iv)	of the Desert Zone ...

III. SANITATION.

(a) General Review of Work done, Laws passed and Progress made

(i)	Administrative ...
(ii)	Preventive Measures ...

Mosquito and Insect-borne Diseases-

Malaria ...	...
Trypanosomiasis ...	...
Yellow Fever ...	...
Filariasis ...	...

Epidemic Diseases-

General ...	...
Plague ...	...

	Page
Small Pox - Vaccination	
Dysentery	
Enteric	
Cerebro Spinal Meningitis	
Helminthic Diseases-	
Ankylostomiasis	
Taeniasis	
Bilharzia	
Guinea-worm	
(iii) General Measures	
Sewage Disposal	
Scavenging	
Water Supply	
Drainage	
Bush Clearing	
Housing	
(iv) Conditions of Trades and Factories -	
Public Markets	
Slaughter Houses	
Soda water Factories	
Laundries	
Dairies	
Bakeries	
Shipping	
(b) Measures taken to spread knowledge of Hygiene and Sanitation	
(c) Recommendations for future work	
IV. - METEOROLOGY	
V. - HOSPITALS, DISPENSARIES AND INSTITUTIONS ...	
(1) European Hospitals	
(2) The Civil Hospitals & Dispensaries	
(3) Lunatic Asylum	
(4) Dental Surgery	
(5) Gaols	
(6) Laboratory	
(1) Bacteriological	
(2) Analytical	
VI. - SCIENTIFIC.	
RETURNS.	
Table I.	
Staff-	
Administrative Division	
Medical Division	
Laboratories Division	
Sanitation Division	
Table II.	
Financial-	
Expenditure	
Receipts	

Table III.
Return of Statistics of Population
for the Year

Table IV.
Summary of Routine Sanitary Work
Done during the year in the
Towns -
(i) Nairobi
(ii) Mombasa
(iii) Kisumu

Table V.
Meteorological Returns for the
Year

Table VI.
Return of Diseases and Deaths
(In-patients) for the Year
(i) European Officials
(ii) Native Officials
(iii) General European Popu-
lation
(iv) General Native Popula-
tion

Table VII.
Return of Diseases and Deaths
(Out-patients) for the Year
(i) European Officials
(ii) Native Officials
(iii) General European Popu-
lation
(iv) General Native Popula-
tion

Table VIII.
Return of Infective Diseases
(i) Europeans
(ii) Natives (including
Asiatics)

Table IX.
Return showing Dental Treatment

Table X.
Vital Statistics

APPENDIX I.
Medical Circular on Cerebro-
Spinal Meningitis

APPENDIX II.
Medical Circular on Rat
Destruction

APPENDIX III.
Medical Circular on Causes and
Prevention of Plague

P. O. BOX No. 140.

Telephone No. 20

In reply please quote

No. 16/373

and date

MEDICAL DEPARTMENT. 85

HEADQUARTER OFFICES,

BRITISH EAST AFRICA,

NAIROBI, 1st September 1914

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 condition of the East Africa Protectorate for the year 1913, together with the Returns, &c., appended thereto.

I have the honour to be,

Sir,

Your obedient servant,

A. D. Mahne

PRINCIPAL MEDICAL OFFICER

The Hon'ble,

The Acting Chief Secretary,

NAIROBI.

A.H.

7

EAST AFRICA PROTECTORATE.

ANNUAL MEDICAL REPORT

for the

Year ending 31st December 1913.

86

P R E F A C E.

Order

The arrangement of the report is the same as that presented last year - the division of the country into four areas the conditions in which are more or less identical. This is done for convenience and compression in framing the necessary statistics.

The total square mileage of the Protectorate is, approximately, 245,060 square miles - rather more than twice the size of the United Kingdom. This is divided up for administrative purposes into eight provinces. These eight provinces have, for the purposes of this report, been considered in groups of two making the above mentioned four areas.

The officers of the Survey Department have very kindly prepared a coloured map showing the position and extent of these areas; it does not pretend to any accuracy with regard to the provincial boundaries, it being more of a diagram of the conditions which the report endeavours to contrast. Thus:-

NO. 1. THE COAST AREA, coloured blue on the map, comprises the provinces of Bevidia and Tanaland representing an approximate extent of 41,490 square miles.

NO. 2. THE MOUNTAINOUS AREA, coloured pink on the map, contains:-

The provinces of Ukamba and Nalvasha, the latter including the Uasin Gishu Plateau, and the newly thrown open Trans-Nzoia settlement. It represents fairly

8

accurately that portion of the country most in favour with the white settlers, and contains some 85,960 square miles, 12,250 of which represent the close settlement area of the white population

NO. 3. THE DESERT AREA, coloured yellow on the map, is made up chiefly of the province of Jubaland and the Northern Frontier District, and contains approximately 90,420 square miles.

NO. 4. The two great labour provinces of Nyanza and the greater part of Kenia, coloured green on the map, the square mileage of which amounts to 27,190 miles.

It must not be imagined that the out-standing physical and climatic features of the one area cannot be pointed to in the other three, e.g., there are white colonies in all of them, while the uninhabited expanses of the coast area closely correspond to the deserts demarcated by the river Juba.

Part III.

I. - ADMINISTRATION

SECTION I. - DEPARTMENTAL.

Sec. 100

---000---

I. - ESTABLISHMENT

Sec. 100

The Medical Staff of the Protectorate as sanctioned for the year 1915-4 was as follows:-

ADMINISTRATIVE DIVISION.

- Principal Medical Officer 1
- Deputy Principal Medical Officer 1

MEDICAL DIVISION.

- Senior Medical Officers 2
- Medical Officers - permanent staff 8
- Medical Officers - probationary staff 9

SANITATION DIVISION.

- Chief Sanitation Officer 1
- Medical Officers of Health 3

LABORATORY DIVISION.

- Bacteriologist 1
- Analyst 1

Total 27

EUROPEAN NURSING ESTABLISHMENT.

Matron	1
Nursing Sisters	8
Nursing Sister - Sanitation Division	1

Total	10

JUNIOR EUROPEAN ESTABLISHMENT.

Chief Clerk, P.M.O's Office	1
Assistant Clerk, do	1
Medical Storekeeper	1
Superintendent, Lunatic Asylum	1
Matron, do	1
Dispensers	3
Sanitary Inspectors	4

Total	12

SUBORDINATE ESTABLISHMENT.

Medical:-

Assistant Surgeons	5
Sub-Assistant Surgeons	30
Hospital Compounders	15
Laboratory Assistants	2

Sanitation:-

Assistant Surgeons	1
Sub-Assistant Surgeons	3
Hospital Compounders	-

Clerical:-

II Grade Clerks	5
IV do do	3

Total 70

Asiatic

11

NATIVE	ESTABLISHMENT.	
Asiatics and Africans - Medical	.....	124
	Sanitation	101
	Laboratory	11
	Lunatic Asylum	16
	Headquarters Office	7
	Total	259

90

In addition to the foregoing, to cope with the plague and insanitary conditions of the town of Mombasa, the following extraordinary increase of staff was sanctioned in August under special warrant:-

SANITATION DIVISION:

Medical Officers	.....	6
Junior European Staff	.....	2
Clerical	.....	3
Asiatics and Africans	.....	82
Total	-----	93

Eight Officers were engaged in all, two of them locally pending the arrival of the complement from home, but there was no overlapping in point of time.

The total number of the staff employed in the Medical Department was, therefore, 471 as against 280 last year. The increase has been principally due to the inception of sanitation work, and special precautionary measures against plague.

2.-APPOINTMENTS.

The most marked feature of the year - as will be noticed in comparing the above list with that submitted last year - has been the internal re-organization of the Department consequent on the re-institution (abolished in 1908) of the office of Deputy Principal Medical Officer;

and the creation of a Sanitation ^{DIVISION} ~~Department~~. This has permitted of a systematization and distribution of work which has greatly extended the scope of the Department. For the first time it has been possible to allot executive functions to the Senior Medical Officers, relieving the Head Office of a good deal of unnecessary detail.

The following appointments were made during the

year:-

PROBATIONARY MEDICAL OFFICERS.

Dr. T.H. Massey.

Dr. G. Dunderdale.

Dr. P.J. Nupur.

Dr. J.H. Thomson.

Dr. J.H. Pirie.

NURSING SISTERS.

Miss M.A. Thomlinson.

" R. Paul.

" L. Merryweather.

" I.L. Macjendie.

JUNIOR EUROPEAN STAFF.

Mr. H. Ogden, Dispenser.

Mr. H. Lyon, Sanitary Inspector.

Mr. W.H. Wood, Sanitary Inspector.

Mr. A.F. Dennett -do-

Mr. B.E. Wetkip -do-

Slide

SUBORDINATE ESTABLISHMENT.

- Assistant Surgeon H. Holmes.
- " " " A. N. Nye.
- Sub-Asst. Surgeon Diwan Chand.
- " " " F. J. Andrews.
- " " " Sardara Singh
- " " " Wilayat Shah.
- " " " Sukhran Des.
- " " " Ghuhar Khan.
- " " " Keeser Chand.
- " " " K. R. Diwan.
- " " " Milkhi Ram.
- " " " K. H. Bhatt.
- " " " D. P. Chablani.
- " " " Dula Ram.
- " " " Zorawar Singh.
- " " " Waryam Singh.
- " " " Jaswant Singh.
- " " " Abdul Karim.
- " " " Hagar Khan.

CLERICAL ESTABLISHMENT.

- Mr. F. X. De Gama Rosé, 3rd Grade Clerk.
- Mr. P. J. R. Miranda " " "
- Mr. A. J. Pereira " " "
- Mr. Mohammed Hussain 4th Grade Clerk
- Mr. A. G. D. Carasco " " "

SPECIAL PLAGUE STAFF.

MEDICAL OFFICERS.

14
93

Capt. D. S. Skelton, R.A.M.C., on 7-8-1913.

Dr. W. Harrison, on 27-7-1913.

" A. M. Freitas, on 21-8-1913.

" W. Talhope, on 1-10-1913.

" W. V. Welch, on 27-10-1913.

" F. Collier, on 27-10-1913.

" E. W. Russell, on 27-10-1913.

" R. W. Spence, on 25-12-1913.

" J. Mackinnon, on 26-12-1913.

OTHER STAFF.

Mr. H. Vickerstaff, European Clerk.

" J. Egerton, Conservancy.

" C. F. de Souza, Clerical.

" Hassan Obaid

Miss Chaves,

3.- REDUCTIONS IN STAFF.

INVALIDING.

Dr. H. A. Bodeker permanently, on 4-11-1913, after 13 1/2 years' service.

Dr. P. H. Ross, Bacteriologist, Sick Leave to Europe, on 31st October 1913.

Dr. J. O. Shiroore, Medical Officer, Sick Leave to Europe, on 16th September 1913.

Sub Assistant Surgeon Sukhram Das, permanently, to India, on 17th February.

RESIGNATIONS.

Nursing Sister D. Turner.

TRANSFERS.

Dr. H. M. Ley, to Nyassaland.

15

1915

SURPLUS TO SANCTIONED ESTABLISHMENT.

Compounder Abdul Rahim Khan.

" A. L. S. Mudeliar.

" Mahr Din.

94

RECALLED TO INDIAN ARMY.

Sub Assistant Surgeon Kesar Singh.

DISMISSALS.

Compounder E. P. Theophil.

4.-PROMOTIONS) *Pica Jones*

Dr. J. A. Haran, C.M.C., was promoted to fill the post of Deputy Principal Medical Officer, and acted as Principal Medical Officer from 18th March to 14th June during the absence on leave of Dr. A. D. Milne.

Dr. W. T. Radford was selected for the new post of Chief Sanitation Officer. The vacancy in the ranks of the Senior Medical Officers, occasioned by promotion of the last named, was filled by Dr. W. Owen Prichard.

5.-CHANGES) *Pica Jones*

Dr. R. Small was confirmed in his appointment as Medical Officer of Health, Mombasa, from 1st April.

Dr. J. H. H. Pirie succeeded Dr. P. H. Ross as Acting Bacteriologist from 1st November.

Dr. A. Mouat and Dr. E. W. Cherratt were transferred from the Medical Division to the Sanitation side from 1st April.

16

6.- LEAVE OF ABSENCE.

95 *see Jones*

Name.	Appointment	Period granted	
		From	To
A.D. Milne	Principal Medical Officer	18. 5. 13	14. 6. 13
J.A. Haran, C.M.G.	By. Principal Medical Officer.	18.6.13	25.12. 13
P.H. Ross	Bacteriologist.	31.10. 13	25. 8. 14
F.L. Henderson	Medical Officer.	21. 4. 13	27.10. 13
J.O. Shirecore	-do-	16. 9. 13	16. 6. 14
A. Robertson	-do-	28. 2. 13	1.10. 13
G.R.H. Schnell	-do-	29.12. 13	16. 7. 14
T.F. Lumb	-do-	1.12. 13	12. 6. 14
C.J. Wilson	-do-	30.12. 13	30. 6. 14
R. Hamilton	-do-	3.12. 13	3. 6. 14
G. Gillespie	Dispenser	5. 8. 13	21. 1. 14
F. Knott	-do-	3.12. 13	3. 6. 14
T. Preston	Asst. Clerk to P.M.O.	24. 3. 13	1.10. 13

7.-RESUMPTION OF DUTY.

Name	Appointment	Date
A.D. Milne	Principal Medical Officer	14. 6. 13
J.A. Haran, C.M.G.	By. Principal Medical Officer	25.12.13
W.J. Redford	Senior Medical Officer	23. 1.13
C.L. Chevallier	Medical Officer	23. 2.14
B.W. Cherrett	Medical Officer of Health	26. 5.14
J. Pugh	Medical Officer	18. 3.13
A. Robertson	-do-	1.10.13
F.L. Henderson	-do-	27.10.13
T. Preston	Asst. Clerk to P.M.O.	1.10.13
Mrs E.R. Brown	Nursing Sister	14. 6.13

8.- STAFF POSTINGS THROUGHOUT THE YEAR. *170*
some

THE COAST ZONE.

96

Honley

Senior Medical Officer, Mombasa:- Dr. L. D. Lawsley was appointed to this Province with headquarters at Mombasa from 11th November 1913.

European Hospital, Mombasa:- Dr. W. Owen Prichard in charge from January until relieved by Dr. F. L. Henderson in October.

Civil Hospital, Mombasa:- Dr. F. L. Henderson was in charge from January to April when he proceeded on leave and was relieved by Dr. J. Fugh.

Lamu Hospital and Dispensary:- Dr. R. Hamilton was in charge from January to October when he proceeded on leave and was succeeded by Dr. G. Dunderdale.

Health Office, Mombasa:- Dr. R. Small was Medical Officer of Health, Mombasa, throughout the year.

THE MOUNTAINOUS ZONE.

The Senior Medical Officer, Nairobi:- Dr. W. J. Radford was Senior Medical Officer until appointed Chief Sanitation Officer from 1st April. He was succeeded by Dr. W. Owen Prichard on 10th September 1913.

The European Hospital, Nairobi:- Dr. J. L. Gilks took over the duties of Resident Surgical Officer in February from Dr. A. Mount posted to Kisumu as Medical Officer of Health.

The Civil Hospital, Nairobi:- Dr. T. F. Lush was in charge till February when he was relieved by Dr. J. S. Shircore who was invalided home in September. Dr. G. Dunderdale temporarily

18

followed for one month, and Dr. H.H.V. Welch assumed charge in October.

97

The Lunatic Asylum, Nairobi:- Dr. H.A. Bodeker was in charge from January to May and was succeeded by Dr. V.G.L. van Someren when the former proceeded on leave.

The Hospital and Dispensary, Nakuru:- Dr. V.G.L. van Someren was in charge from January to March and was succeeded by Dr. L.D. Lawsley who was again relieved in November on transfer to Mombasa by Dr. A.D. Williams.

The Dispensary, Eldoret (Uasin Gishu):- Dr. W.H. Heard performed the duties of District Surgeon on the Uasin Gishu Plateau throughout the year.

Health Office, Nairobi:- Dr. H.A. Bodeker Medical Officer of Health till May when Dr. B.W. Charrett assumed the duties.

Dental Surgery:- Dr. V.G.L. van Someren started the Government Dental Surgery in March.

THE KENIA AND NYANZA PROVINCES.

The Civil Hospital, Kisumu:- Dr. A.D.J. Williams was relieved by Dr. W. Morrison temporarily in August when the former was posted to Mombasa for plague duty. Dr. C.L. Chevallier took over charge in September from Dr. W. Morrison.

Health Office, Kisumu:- Dr. A. Mouat was appointed Medical Officer of Health, Kisumu on 1st April.

The Civil Hospital and Dispensary, Fort Hall:- Dr. L.D. Lawsley proceeded on leave in February and was relieved by Dr. T.E. Lamb. Dr. P.J. Nunan succeeded Dr. T.F. Lush in October to enable him to proceed home on leave.

THE DESERT ZONE.

Marsabit Dispensary:- Dr. G.R.H. Chell from January to December when he proceeded on leave and was followed by Dr. A. Robertson.

Kismayu Dispensary:- Dr. C.J. Wilson from January to November when he was relieved by Dr. F. Collar in order to proceed on leave.

The Military Hospital, Serenli:- Dr. T.H. Massey from June till the end of year. Assistant Surgeon W.E. Cody performed the duties during the first half of the year.

SECTION II. - EXTRA DEPARTMENTAL. *1/2000-1000-8*

9. - REGISTRATION OF MEDICAL PRACTITIONERS *peca*
AND DENTISTS. *sonia*

This Ordinance came into force on the 24th September 1910, and between that time and the end of 1913 there have been placed on the Register the following:-

Registered Medical Practitioners.....	50
Licensed Medical Practitioners.....	6
Dentists.....	4
	Total <u>60</u>

34 of the Medical Practitioners were in Government Service, and 26 were private Practitioners.

During the year the following were admitted to the rolls:-

- Shircore, John Owen, L.R.C.P. (Edin.) L.R.C.S. (Edin.) L.F.P.S. (Glasg.) M.B. (Univ. Edin.)
- Massey, Thomas Hunter, Lic., ^{Lit.} Midwif. R.C.P. (Irel.) Lic., Lic., Midwif. R.C.S. (Irel.)
- de Souza, Alexander Francis, L.R.C.S., L.R.C.P., (Edin.) L.F.P.S. (Glasg.)
- Forbes, John, M.B., Bac. Surg. (Univ. Aberd.)
- White, James Hunter, M.B., Mast. Surg. (Univ. Edin.)

Dunderdale, Geoffrey, M.R.C.S. (Eng), L.R.C.P. (Lond), M.B., Bac. Surg. (Univ. Lond).

Huner, Peter de Frenche, M.P., Bac. Surg., L.D. (Univ. Dubl).

Thompson, James Hutcheon, M.B., Bac. Surg. (Univ. Alerd).

Pirie, James Hunter Harvey, M.B., Bac. Surg. M.D. (Univ. Edin), M.R.C.S. (Edin).

Tudhope, William, M.P., Bac. Surg., (Univ. Glasg).

Cellar, Frank, M.R.C.S. (Eng), L.R.C.S. (Lond).

Welch, Harvey Henry Vincent, M.B., B.S. (Lond), M.R.C.S. (Lond).

Russell, Edward Neptune, M.R.C.S. (Eng), L.R.C.P. (Lond), M.B., Bac. Surg. (Univ. Camb).

McIntosh, Tom, M.B., B.S., (R.C.S. Eng).

Porter, Stephen, Under Secy. of Ordnance.

Coock, William, M.B., B.S. (Camb), M.R.C.S. (Eng), L.R.C.S. (Lond).

Spence, John, M.R.C.S. (Eng), L.R.C.S. (Lond).

The Board convened for the purpose of the Ordinance consisted of

Dr. W. B. Kelce, Chairman.

Dr. W. Owen, Pricard, S.M.C.

Dr. L. D. Lowley, S.M.C.

Dr. W. J. Redford, C.S.O.

Dr. J. A. Haran, C.M.G. Deputy P.M.C.

with the Principal Medical Officer as President and Registrar.

The Board held three meetings during the year.

10. - THE DRUGS AND POISONS ORDINANCE 1909. *from Jones*

This Act controls the licensing of chemists and druggists and the sale of poisons throughout the Protectorate. Since its promulgation in 1910 and up to the

end of 1913, eight names have been placed on the Register. Three of these were by examination.

Redington
The Examination Board constituted under the Act consisted of the following:-

- Mr. L. A. Howse, Nairobi.
- " B. A. Bull, Nairobi.
- " H. Kirkham, Cert. Analyst.
- Dr. W. Owen-Pritchard, S. M. O.
- " L. D. Lowsley, S. M. O.
- " W. J. Radford, C. S. O.
- " J. A. Haran, O.M.G., Dy. P.M.O.

with the Principal Medical Officer as President and Registrar.

The Board held two meetings during the year.

11.- ENTOMOLOGICAL RESEARCH. *see volume*

The obligation to support the home Committee in the collecting of material in regard to biting flies, and equally as a matter of supreme interest to the whole country, was readily undertaken by this Protectorate in September 1911, the Principal Medical Officer being the forwarding Secretary to the British Museum. Up to date 50 collecting outfits on the scale suggested by the Committee have been issued free to individuals who expressed their anxiety to aid in the collection of specimens. During this period only 29 persons have sent in returns, some of them being of considerable interest. The response for 1913 has been disappointing in the extreme, collections being only received from the following:-

- Dr. A. D. Milne (2 lots).
- Mr. F. G. Hamilton.
- Mr. S. L. Hinde.
- Capt. St. G. Booth.

Mr. W. Kennedy.

Capt. A. O. Lockman (3 lots).

Dr. G. R. H. Chell.

Mr. C. M. Dobbs.

During the year one Medical Officer - Dr. E. W. Sherrett - attended the course of instructions in Entomology at home.

The list of specimens identified during the year will be found in the various numbers of the Bulletin of the Entomological Research Committee: the papers submitted by the Government Bacteriologist in his Annual Laboratory Reports, in the Annual Reports published by the Agricultural Department.

SECTION III. - EVENT OF INTEREST DURING
THE YEAR.

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12. - PROFESSOR SIMPSON'S VISIT.

The most notable event of the year was the decision of the Secretary of State to send out Professor W. J. Simpson, C.M.G., M.D., F.R.C.P., (Lond.), D.P.H. (Camb.), Professor of Hygiene at King's College, London, to examine into the sanitary conditions of the Dependency, to advise the Local Government and to report on the form which the Sanitary Policy of the Administration should take. His arrival in Mombasa on the 14th June was coincident with my return from leave; but the state of matters in that town with its epidemic of plague, its well-known insanitary conditions, and the peculiar temper of its poly-glot inhabitants, necessitated the first few weeks of his residence in the country being devoted to the organizing of a vigorous anti-plague campaign. This involved the immediate creation of a large special staff of doctors, inoculators, disinfecting and rat-catching

and conservancy gangs. Captain D. S. Skelton, R.A.M.C., Health Officer at Zanzibar - whose services were generously placed at the disposal of this Protectorate by the Zanzibar Government, and to whose efforts and ability the ultimate success of the policy pursued was in no small measure due - was put in charge of operations.

Professor Simpson's sphere of investigations involved an exhaustive enquiry into the towns of Mombasa, Nairobi, Nakuru, and Kisumu; a safari into the Mumias district to investigate sites, and to the Shimba Hills for its water-works; an inspection of the Magadi Railway and Soda Lake, and the interviewing (besides the Medical Officers locally concerned) of a very large number of persons with reference to the purpose in hand, all of which he was accompanied by either the Principal Medical Officer or the Chief Sanitation Officer. In addition, during his six and a half months' stay in the country, time was found to visit, in the trip round the Victoria Nyanza, the towns of Shirati, Mukoma, Muanza, and Bukoba in the neighbouring colony of German East Africa, to make an extended tour through Uganda and to pay a short visit to the Protectorate of Zanzibar. Before his departure on the 29th of December, a commencement was made with the drafting of the much needed Public Health Code. His report on the country has not yet been published.

- (a.) GENERAL REMARKS.) *See foots*
 (1.) General Diseases.) *See below*

THE PROTECTORATE.

Were it possible to eliminate the disastrous effects of the epidemic diseases which so seriously affected the Protectorate during the year 1913, it could be said that a better standard of health was maintained than has yet been recorded. The grand total of those who presented themselves for treatment was 108,520 as against 93,408 in 1912, and 85,958 in 1911. The increase is an index of the expansion of the country. It is attributable to the extension of medical activity to the augmentation of the European population bringing in its train (together with the normal development to be expected in a new country) a yearly increasing number of natives under civilising influences.

The mortality rate has been undoubtedly affected by the severe epidemics which swept certain portions of the country. Both it and the admission rate would have been much higher from one cause alone if science had possessed a remedy as simple and as efficacious as vaccination against small-pox to satisfy the almost immediate demands of the A-kikuyu against the terrible - and to them unknown - scourge of epidemic Cerebro-Spinal Meningitis. It being useless to appeal to European science for help against this disease, in consequence innumerable cases were not reported.

Of the diseases shown in the statistical tables the

predominating ones affecting all the zones in almost equal proportions were diseases of the digestive, respiratory and locomotory organs and affections of the skin. Of the more preventable diseases malaria easily comes first, very few parts of the country escaping this infestation. It is not surprising that dysentery prevails unduly, considering the conditions of the land and the habits of the native. The diagnosis of this trouble is too often unsatisfactory, being chiefly determined by the presence or absence of blood and mucus in an attack of diarrhoea. Very little has been done to determine the extent to which it is bacillary or amoebic in origin. Both in this and malaria there has been an increasing reliance placed on the use of hypodermic injections of emetin and quinine in place of less certain, older-fashioned methods of administration. If the established mald that enteric has on the country, calls for no particular comment this year, at any rate it can be said that a commencement has been made with the inauguration of anti-typhoid inoculation. This should ultimately afford the means to everybody in the Protectorate of obtaining protection. More particular remarks on these and other diseases will be found under the appropriate headings.

THE COAST ZONE.

Anaemia was fairly common, generally ascribed to malaria; ~~and to which~~ which ankylostomiasis may also have contributed. Diabetes, noticed amongst the Indians, has not so far been recorded amongst the Africans. There were two cases of pemphigus as against 12 last year. The curious point about these cases was the extent of the body surface affected, and the invariable history given of a recent

preceding vaccination. One case of exophthalmic goitre presented itself at Lamu.

THE MOUNTAINOUS ZONE.

The throat affection noticed in last year's report was not so prevalent this year. The general tenor of the reports from the various districts was that the general health - both European and Native - has been more satisfactory than last year.

THE KENIA AND NYANZA PROVINCES.

During the wetter and colder months of the year rheumatic affections prevailed very largely in the neighbourhood of Mount Kenia. Scabies was common to both Provinces.

THE DESERT ZONE.

The returns from these Provinces are admittedly imperfect. Safari work involves long absences from the station during which the posting of records are necessarily in abeyance. There is enough material, however, to give a picture of the diseases of the country. Besides those noted in the remarks on general diseases at the head of this chapter, conjunctivitis and cornual ulcers were the commonest noted, understandable from glare, sand and flies.

(21) COMMUNICABLE DISEASES.

Mosquito or insect-borne.

THE COAST ZONE.

Malaria. This was usually of the sub-tertian variety. At Mombasa it presented two distinct clinical types of severity with microscopical differences in the

form of

the ring parasites. For example an up-country native from the Shimba Hills exhibited the symptoms of malarial fever in a very severe form while cases of the ring type from the town suffered slightly as to make it difficult to keep them in bed. A total of 6155 cases was recorded with 22 deaths as against 6344 with 23 deaths in 1912, and 5511 and 25 in 1911. The decrease is due, in some measure, to the spread of knowledge and to an extended use of quinine.

Bilious Fever. In 1913 there were 11 cases with 3 deaths; in 1912, 3 cases and 2 deaths; and in 1911, 3 cases and 1 death. Of these numbers in 1913 three cases and one death were European; in 1912 one case and in 1911 three cases and one death.

Trypanosomiasis. One case was treated in the Civil Hospital, Mombasa - a derelict native brought in by the police of whom no history could be obtained.

Cordylobia anthropophaga. One case in an European came under notice at Voi.

There is a large field for research in the study of elephantiasis on the coast as cases are common, though rarely presenting themselves for treatment.

THE MOUNTAINOUS ZONE.

Malaria. This, as usual, heads the list with a total of 3,712 admissions, distributed amongst the different stations as follows:- Nairobi, 1419; Makindu, 915; Nakuru, 292; N'darugu, 209; Machakos, 156; Naivasha, 136; Merich, 127; Ravine, 122; Baringo, 95; Mandi, 93; Kyambu, 72; Larakwet, 47; Eldoret, 19; Londiani, 10. The combined deaths from all these centres amounted to 54 giving a mortality rate to admissions of 1.45 per

cent. There was an inappreciable decrease in the numbers treated, due to the character of the rains, the majority of the cases occurring in the last two quarters of the year. The type was very largely the sub-tertian. Machakos had the highest death rate, but undoubtedly a number of these cases were due to cerebro-spinal meningitis. The total admissions for malaria for the three years were as follows:-

1913.....	3,536
1912.....	3,647
1911.....	3,001

Blackwater Fever. There were 3 cases - two Europeans and one native - and one death (European). In 1912 there were 2 cases - 1 European and one African - and both proved fatal; in 1911 4 cases were recorded 3 being Europeans and one native askari, the latter proved fatal.

THE KENIA AND NYANZA PROVINCES.

Malaria. A total of 3627 cases were recorded as against 3,134 the previous year. There was a decrease in the numbers presenting themselves at Fort Hall, explicable in part by the upset caused by the outbreak of cerebro-spinal meningitis. Amongst the Kavirondo malaria was responsible for rather more than a fifth of all admissions. In Kisumu the poorer class of Indians suffered most. The conditions at Mumias showed an improvement over last year. The number of deaths attributed to malaria was 5 giving a ratio to total admissions of .13 per cent. The greatest incidence of the disease occurred during the month of May to

October at Kisumu, February and July to November at Mumias, July to September on the Nandi plateau, January February, July and August at Fort Hall, and the same at Meru, and from May to December at Kitui.

Some chiefs in Kenya have taken to sleeping under mosquito nets. The number of admissions recorded for the last three years was as follows:-

1913.....	3,627
1912.....	3,181
1911.....	2,438

Blackwater Fever. There was one (European) admission in 1913 with recovery; in 1912 two cases were recorded amongst Goans with one recovery and one death; and in 1911 there were 3 cases amongst Europeans with recovery in each case.

Trypanosomiasis. One imported case of Sleeping sickness was discovered at Kisii, as this district is distant some thirty or forty miles from the Lake shore. Missionaries have reported the existence of a few sufferers still in the neighbourhood of Karungu (one of the Lake ports), but notification of its occurrence is yearly getting rarer.

THE DESERT ZONE.

Here, as elsewhere, the predominating cause of sickness was ~~Malaria~~ ^{Malaria}, of which 2,125 cases came under treatment with no deaths. The disease was most prevalent in the Northern Frontier District during the months of April to June inclusive; in the heavily infected Goshu district bordering the Juba in June, July and August, of course following the incidence of heavier rains than usual. The town of Kismayu contributed 445, though the prevailing

mosquitoes there were the Culis and Stegomyia. 100

INFECTIOUS OR EPIDEMIC.) *Lg. Pl. part 4*

THE COAST ZONE.

Plague. The 27 cases with a mortality of 59.25 per cent recorded last year swelled into 208 with a death rate per cent of 88.46, the vast majority being confined to the focus in Mombasa with one from the Teita hills at Voi (100 miles away), and some 21 cases from various places situated within a twenty-mile radius of the port. The quarterly incidence of the admissions were as follows:-

	Cases	Deaths
1st Quarter.....	7	7
2nd Quarter.....	76	68
3rd Quarter.....	110	94
4th Quarter.....	15	15

It must be remembered that it was during the third quarter that vigorous measures were instituted by Professor Simpson to cope with the epidemic, with the result that the last case reported took place on December 7th since when, up to the time of writing, (April 1914) no further case has come to light. It was a matter of satisfaction that no outbreak occurred in the Tanaland Province. The cooler months of the year produced the greatest incidence of plague, with the middle quarter as the acme. The type of plague was very largely bubonic, with a serious proportion of pneumonic cases. Captain Skelton's report (Section VI) contains matter of much interest on the general measures pursued, the treatment of cases, and the reliability of inoculation.

Small-pox. Concurrent with an indefinite distribution of cases of Varicella, there were but few cases of this pest all confined to the Seyidie Province. The numbers

for the last three years are as follows:-

110

	1911	1912	1913.
Admissions	Nil	295	33
Deaths	Nil	63	10

Cholera. The epidemic in the island of Zanzibar, 120 miles south of Kilindini port, ended on the 23rd December 1912 and the island was declared free from the epidemic on the 7th January 1913. It is a matter of congratulation that no suspicion of a case occurred on the Protectorate mainland.

Dysentery. On the coast this was of the amoebic type in nearly every case, the chief sufferers being, as noted in previous reports, the imported labourers from Kikuyu and Kavirondo. Predisposing factors in the initial diarrhoea besides the water supplies, were doubtless carelessness in the cooking of new and unfamiliar articles of diet and fruits. This year there were 475 admissions with 38 deaths; in 1912, 239 with 85 deaths; and in 1911, 369 with 60 fatalities.

Beri-beri. Dr. Pugh points out that it is not improbable that this disease is more prevalent in a mild form than is generally imagined. 28 cases were admitted from a planter's shamba at Voi towards the end of the year, 19 of these improved, one died, and the remaining 8 were still under treatment. Here again, the patients were all up-country folk. An interesting fact was that their diet scale did not include rice, being almost wholly mealie-meal.

Enteric. The coast, generally speaking, is freer from this disease than elsewhere. In 1913 there were 4 cases (all Europeans) and no death, in 1912 three cases and three deaths (Europeans); and in 1911 7 cases and 3 deaths of which 4 cases and 1 death occurred in Europeans.

Cerebro-spinal meningitis. The epidemic touched this area sporadically without apparently getting a firm hold.

Of the 13 cases with 10 deaths that came to light, the majority were moribund, some of them being deposited within the hospital precincts during the night without any indication as to origin.

Veneral diseases. The greater bulk of the cases came from Lombasa. Syphilis totalled 306 cases as against 118 in 1912, and 215 in 1911. Gonorrhoea was 419 in 1913, 279 in 1912, and 246 in 1911.

THE MOUNTAINOUS LOBE.

There were outbreaks of Varicella and Rumps in the Kairbi Prison and at various stations necessitating segregation measures.

Plague. Plague made its re-appearance in and about Nairobi. Its quarterly incidence in Nairobi is represented by 16 cases in the first quarter, six the second and 3 in the 3rd quarter, a total 25 cases and 19 deaths. There was the usual mixture of types, the bubonic predominating.

	1911	1912	1913
Admissions	39	17	25
Deaths	22	11	19
Death-rate	56.41	64.71	76.00

Small-pox. Only 63 cases were recorded during the year, of which 12 were fatal. 19 of them occurred at Eldoret during the closing months of the year.

Dysentery. In the month of January, a severe outbreak occurred amongst the labourers employed on the construction of the Eldoret-Londiani road. Investigations pointed to a contaminated camp water supply as the cause. ^{There were} 612 admissions last year with 52 deaths; and in 1913, 777 cases with 52 fatalities, giving a ratio of .56 per cent. for 1913 as against .86 for 1912. Nairobi, Nakuru and Marindu registered the greatest number of admissions;

Of the 13 cases with 10 deaths that came to light, the majority were moribund, some of them being deposited within the Hospital precincts during the night, without any indication as to origin.

Veneral diseases. The great bulk of the cases came from Mombasa. Syphilis totalled 305 cases as against 113 in 1912, and 215 in 1911. Gonorrhoea was 419 in 1913, 379 in 1912, and 246 in 1911.

THE MOUNTAINOUS ZONE.

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these were respectively 338, 180, and 63 with 24, 19 and 3 deaths.

Enteric. Nairobi gave the largest return of sickness, partly on account of its more concentrated opportunities of infection, and partly because of the number of cases sent in for treatment.

	1911.	1912.	1913.
Admissions	17	23	21
Deaths	2	2	1
Death-rate	11.76	8.68	4.76

Of these four were in Africans in 1913, three in 1912 and nil in 1911.

Cerebro-Spinal Meningitis. Further remarks on this disease will be found under its heading in the similar section on the Kenia Province, but the full force of the epidemic was very apparent in Nairobi with its civil hospital crowded pending the erection of special accommodation. Along with the A-Kikuyu, the Wa-Kamba suffered severely. The number of cases reported at the various hospitals and dispensaries was 288 with 152 deaths, a death-rate of 52.77 per cent. The rains were early and prolonged, and it was during these cooler months that the epidemic was more apparent. Of the total admissions 9 were Europeans with 2 deaths.

Leprosy. One case in a K. A. R. soldier belonging to the Nyassaland contingent came under notice.

Veneral Diseases. The same difficulty is experienced in this Protectorate as in other parts of the world with regard to the early reporting and detection of cases, and the maintenance of proper curative measures up to the moment of discharge. Nairobi, as may be imagined, was no mean disseminating centre in the spread of the disease. Syphilis totalled 471 cases, and Gonorrhoea 320. In

34

1912 there were 462 admissions for Syphilis and 315 for Gonorrhoea whilst the numbers for 1911 were 497 and 294 respectively.

THE KENYA AND NYANZA PROVINCES.

Cerebro-spinal meningitis. The visitation which broke out during the year was the most disastrous the Province of Kenia has experienced since its occupation by the white man. So severe was it that at one time it threatened to paralyse the internal economy of the whole Province: in any case it seriously upset the supply of labour. The mortality it occasioned will, undoubtedly, have an adverse effect on the exploitation of this market for many years to come. From May to the end of the last quarter of the year it spread out - regarding Nairobi as the focus - through the length and breadth of the Kisumu country, simultaneously with its advance into the Ukamba Province. The infection did not reach the Nyanza Province till towards the later months in the year, when the anxiety regarding it had diminished in the districts extending out from Nairobi. The total number of cases which came under observation at the various dispensaries - 57 with 36 deaths - convey absolutely no indication of the real state of matters; from the testimony of medical, administrative officers, missionaries and other observers, it is probable that the normal sick rate (whatever that may be) which prevailed amongst this large population was more than doubled. The district officers variously estimated the excess death-rate at from 3% to 10%. The significance of the commencement of the appearance of the disease in the Kavirondo country is that here is the second great source of the Protectorate labour supply - a very large indigenous native population

contiguous to an equally crowded country across the borders in the neighbouring colony of Uganda. Whatever may be taking place across the frontiers, already cases have been picked off the steamers and reported from Entebbe as coming from Kisumu.

The Chief Sanitation Officer in his report reviews the whole course of the epidemic with such additional details as he has been able to collate. For a description of the disease and the treatment adopted, reference should be made to the very interesting monograph contributed by Dr. P.H. Ross, Bacteriologist, and Dr. J.O. Shircore, in charge of the Civil Hospital, Nairobi, published in the Transactions of the Society of Tropical Medicine and Hygiene, 1913, December Volume VII, No. 2 - pp. 83-95*. To this Dr. J.L.C. has added his report of those cases of Europeans who were under his treatment (Section VI).

Plague. No case of plague was reported in the Kenia Province. At Kisumu the incidence was as follows:-

	1911	1912	1913
Number	64	79	31
Case mortality	76.87	89.87	87.09

The following localities were infected:- Indian Bazaar (8), Swahili Location (1), Police Lines (1), Railway (8) Old Kisumu (3), Kavirondo Location (2), British East Africa Corporation (2), Nubian Location (1), Pier Porters' Lines (3) and cattle boma (1).

In October an opportunity was offered me of accompanying Professor Simpson round the lake in his survey of the plague conditions obtaining in German East Africa and English territories. As his report will be conclusive on the subject it is not necessary for this report to record more than a grateful appreciation of the courtesy extended to us

by the German and Uganda authorities.

Small-pox. For the first time on record no case was known to have occurred in the Nyanza Province during the year. Desultory cases were met with in the Kenia Province, more particularly in the Keru district, where 51 cases were treated at the dispensary.

Dysentery. 428 cases were noted during the year, with 9 deaths, representing no unusual state of affairs.

Enteric. Including three Europeans at Nyeri - a new foot and one at Fort Hall, there were 15 admissions with 3 deaths. No cases were recorded in the previous year.

Veneral. The effects of gonorrhoea, not commonly seen, only resulted in some 162 cases presenting themselves for treatment. The total number of syphilitics entered on the register was 413, the great bulk coming from the out-stations in the Nandi and Lumbwa districts. In 1912 syphilis totalled 453, gonorrhoea 180; in 1911 the numbers were 573 and 200 respectively.

DESERT ZONE.

Dysentery. This existed very largely in Jubaland, with its dependance on the muddy waters of the river Juba and polluted wells. Kisumu, dependent on camel-loads of fresh water brought from the river some 15 miles distant, having to fall back upon very shallow brackish wells dug anywhere within a circumscribed area, will never be free until its local conditions are radically changed.

Syphilis. 36 cases were noted, two of which were primary infection. Genorrhoea was scarce on the Abyssinian border, but was fairly common amongst the Bantu population of the river.

No cases of Small-pox or Enteric were recorded during the year. There were two cases of Beri-beri at Yonti

all that remained of the severe epidemic at Serenli the previous year. Cerebro-spinal meningitis visited both Provinces, an isolated case at Moyale in a porter from Meru and one at Kismayu which must have been imported by sea. Precautions were taken in regard to two or three cases of suspected plague, either derived from Mombasa, or coming from the plague infected areas in Italian Somaliland across the Frontier.

I

FRONTIER (I.C.)

Lg 2. 8

THE COAST ZONE.

110

Ankylostomiasis. 18 cases were recorded at Mombasa during the year with 4 deaths. As these numbers do not present anything like the frequency of the disease on the coast, it may not be out of place to republish - as it has never been printed - a Report by Dr. Leys, lately of this service, on the frequency of its occurrence in the town of Mombasa. This appeared in the Annual Report of 1906 as an appendix, and will be found under Section VI of this year's issue.

Bilharziasis. Two cases came under treatment during the year.

THE MOUNTAINOUS ZONE.

Generally speaking intestinal parasites are only brought to light in the post-mortem room. The evidence there tends to show that the native is not an uncommon host. There is no data to show to what extent the up-country African harbours the Ankylostoma.

(b) EUROPEAN OFFICIALS. *see page 8*

GENERAL REMARKS. *see page 20*

THE COAST ZONE.

The improvement noted in last year's report was maintained satisfactorily during 1913. Malaria was the principal cause of sickness, being still regrettably high, but not so high as amongst the unofficial class. One of the invalidings was landed at Mombasa very ill on first appointment and was sent home almost immediately.

The principal diseases from which officials suffered were malaria and digestive affections.

~~Four~~ Four officers were invalided during the year, and three died, the causes being as follows:-

Invaliding:- Abscess of liver (1), Malaria (2),
Neurasthenia (1).

Deaths:- Malaria (2) Abscess of liver (1).

THE MOUNTAINOUS ZONE.

~~Malaria~~ Malaria was, as usual, the commonest disease, though the practice of irregular doses of quinine prevailed, and, in some instances, the use of nets. The general improvement noted elsewhere in the country was apparent. Five officers were invalided during the year and three died, the causes being as follows:-

Invaliding - Enteric Fever (1), Tubercle (1),
Enlargement of liver and spleen
(1), Lesion, Nervous

System (1), Debility and loss of
Memory (1).

Deaths - Enteric (1), Cirrhosis of Liver (1),
Cerebro-spinal meningitis (1).

THE KENIA AND NYANZA PROVINCES.

In both provinces the standard of health tends to improve year by year, attributable to better housing and gradually improving sanitary conditions. It is gratifying to be able to record that the spread of knowledge of the underlying principles of tropical hygiene and sanitation was also a factor to be taken into account. There was still however, a regrettable tendency on the part of officers escaping from the monotony of station work to neglect, on safari, the most elementary precautions against malarial infection. Probably the most serious effects of prolonged residence is seen in the lake basin - as elsewhere in the country - in its ill-defined effects on the nervous system, producing neurasthenia of varying degree of intensity.

Two officials were invalided for Blackwater Fever and Nervous debility respectively. There were no deaths recorded amongst officials.

THE DESERT ZONE.

The general standard of health of officials in this quarter of the Protectorate has always been good, and 1913 was no exception. Out of 46 Europeans there was only one case of malaria recorded. Two unfortunate casualties occurred on the Frontier amongst officers of the King's African Rifles, one in May, being fatally shot, the other in September, sustaining a compound fracture of leg in fights with Abyssinian raiders and subsequently invalided home.

Weyford

TABLE SHOWING THE SICK, INVALIDING AND DEATH RATES
AMONGST EUROPEAN OFFICIALS AT THE COAST ZONE.

	1911	1912	1913
Total number of officials resident during the year	80	108	250
Average number resident	56	91	133
Total number on sick list	56	123	134
Total number of days on sick list	701	211	297
Average daily number on sick list	1.9	2.09	2.18
Percentage of sick to total number resident	3.4	2.30	1.64
Average number of days on sick list for each patient	1.5	6.00	6.96
Average sick time to each resident	12.6	7.09	3.18
Total number invalided	1	2	4
Percentage of invaliding to total residents.	2.4	1.85	1.60
Total deaths	3	-	3
Percentage of deaths to total residents	3.6	-	1.20
Percentage of deaths to average number resident	5.2	-	2.25
Number of cases of sickness contracted away from residence	-	-	1

Weyford

TABLE SHOWING THE SICK, INVALIDING AND DEATH RATES
 AMONGST EUROPEAN OFFICIALS IN THE MOUNTAINOUS
 ZONES.

	1911	1912	1913
Total number of officers resident during the year	286	336	654
Average number resident	260	272	433
Total number on sick list	217	239	295
Total number of days on sick list	1,140	2,052	2,570
Average daily number on sick list	3.12	5.61	7.04
Percentage of sick to average number resident	1.2	2.06	1.63
Average number of days on sick list for each patient	5.26	8.58	6.71
Average sick time to each resident	4.38	6.11	3.93
Total number invalided	-	5	5
Percentage of invaliding to total residents	-	1.49	.76
Total deaths	1	2	3
Percentage of deaths to total resident residents ... ..	.35	.59	.46
Percentage of deaths to average number resident ... ..	.38	.73	.69
Number of cases of sickness contracted away from residence	-	-	-

Alford

121

TABLE SHOWING THE SICK, INVALIDING AND DEATH RATES
AMONGST EUROPEAN OFFICIALS IN THE KENIA AND
NYANZA PROVINCES

121

	1911	1912	1913
Total number resident	93	123	138
Average number resident	68	60	84
Total number on sick list	95	87	71
Total number of days on sick list	859	537	614
Average daily number on sick list	2.35	1.80	1.68
Percentage of sick to average number resident	3.47	2.66	2.00
Average number of days on sick list to each patient	9.23	6.75	8.64
Average sick time to each resident	12.63	4.77	4.45
Total number invalided	3	1	2
Percentage of invaliding to total residents	3.22	.81	1.45
Total deaths	1	2	-
Percentage of deaths to total residents	1.07	1.62	-
Percentage of deaths to average number resident	1.47	3.33	-
Number of cases of sickness contracted away from residence	-	-	-

TABLE SHOWING THE SICK, INVALIDING AND DEATH RATES
 AMONGST EUROPEAN OFFICIALS IN THE DESERT ZONE.

122

	1911	1912	1914.
Total number of officials			
resident	-	-	46
Average number resident	-	-	32
Total number on sick list	-	-	8
Total number of days on sick list ...	-	-	98
Average daily number on sick list ...	-	-	2.7
Percentage of sick to average number resident	-	-	8.4
Average number of days on sick list for each patient	-	-	16.53
Average sick time to each resident	-	-	3.06
Total number invalided	-	-	2
Percentage of invaliding to total residents.	-	-	4.33
Total deaths	-	-	1
Percentage of deaths to total residents	-	-	2.17
Percentage of deaths to average number resident.	-	-	3.12
Number of cases of sickness contracted away from residence	-	-	-

TABLE SHOWING THE SICK, INVALIDING AND DEATH RATES
AMONGST EUROPEAN OFFICIALS IN THE EAST AFRICA PROTECTORATE.

	1911	1912	1913.
Total number of officials resident	470	567	1088
Average number resident	388	425	682
Total number on sick list	413	449	506
Total number of days on sick list	3,410	3,405	4079
Average daily number on sick list	9	9.39	11.17
Percentage of sick to average number resident	2.32	2.19	1.64
Average number of days on sick list for each patient	8	7.88	8.06
Average sick time to each resident	7	8.01	3.74
Total number invalided	4	8	13
Percentage of invaliding to total residents . . . . .	.85	1.41	1.19
Total deaths	4	4	7
Percentage of deaths to total residents . . . . .	.85	.71	.64
Percentage of deaths to average number resident	1.03	.95	1.02
Number of cases of sickness contracted away from residence	-	-	2

THE COAST ZONE.

Beyond ~~malaria~~ there is no special factor influencing the health conditions to record. The figures given in the statistical table are only approximately accurate.

Two deaths occurred amongst the Native Officials at the coast, the causes being malaria and pneumonia.

Two were invalided - one for tubercle and the other for malaria with general debility.

THE MOUNTAINOUS ZONE.

The chief causes of illness were malaria, diseases of the digestive and respiratory systems and local injuries. There were 60 cases of dysentery amongst native officials in Nairobi with no fatal termination of any case. 6 officers were invalided and there were 3 deaths, the causes being as follows:-

Invaliding - Gunshot wound (1), Nervous Debility (2), Tubercle (2) and Rheumatism (1).

472

Deaths - Pneumonia (1), Bronchopneumonia (1), and General Injuries (1).

THE KENIA AND NYANZA PROVINCES.

The general health was good in both Provinces and the remarks regarding European Officials may be equally applied to the Native Officials. There were no officers invalided and but one death occurred from plague.

THE DESERT ZONE.

General health, on the whole, was good.

There were 2 cases of invaliding - malaria and neurasthenia - and no deaths.

THE COAST ZONE.

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THE KENIA AND NYANZA PROVINCES.

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THE DESERT ZONE.

General health, on the whole, was good.

There were 2 cases of invaliding - malaria and neurasthenia, and no deaths.

TABLE SHOWING THE SICK, IS SICKING AND DEATH RATES
ALONGST NATIVE OFFICIALS AT THE COAST BOTE.

	1911	1912	1913
Total number of officials			
resident	800
Average number resident	324
Total number on sick list.	785
Total number of days on sick list.	4,183
Average daily number on sick list.	11.46
Percentage of sick to average number resident	3.70
Average number of days sick list for each patient.	5.33
Average sick time to each resident.	6.97
Total number invalided	2
Percentage of invaliding to total residents33
Total deaths.	2
Percentage of deaths to total residents33
Percentage of deaths to average number resident.47
Number of cases of sickness contracted away from residence.	Nil

47

TABLE SHOWING THE SICK, INVALIDING AND DEATH RATES
 AMONGST NATIVE OFFICIALS AT THE MOUNTAINOUS ZONE.

126

	1911	1912	1913
Total number of officials			
resident	881
Average number resident.	618
Total number on sick list.	1,784
Total number of days on sick list.	14,253
Average daily number on sick list.	39.05
Percentage of sick to average number resident.	6.31
Average number of days on sick list for each patient	7.98
Average sick time to each resident.	16.17
Total number invalided	6
Percentage of invaliding to total residents.68
Total deaths.	4
Percentage of deaths to total residents.45
Percentage of deaths to average number resident.64
Number of cases of sickness contracted away from residence	Nil

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TABLE SHOWING THE SICK, INVALIDING AND DEATH RATES AMONGST
NATIVE OFFICIALS IN THE KENIA AND NYANZA
PROVINCES.

	1911	1912	1913
Total number of ^{native} officials			
resident	-	-	201
Average number resident	-	-	139
Total number on sick list	-	-	335
Total number of days on			
sick list	-	-	1485
Average daily number on sick			
list	-	-	4.06
Percentage of sick to average			
number resident	-	-	2.92
Average number of days on sick			
list for each patient	-	-	4.43
Average sick time to each			
resident	-	-	7.38
Total number invalided.	-	-	Nil
Percentage of invaliding to			
total residents	-	-	Nil
Total deaths.	-	-	1
Percentage of deaths to			
total residents	-	-	.49
Percentage of deaths to			
average number resident.	-	-	.71
Number of cases of sickness			
contracted away from	-	-	Nil
residence.			

TABLE SHOWING THE SICK, INVALIDING AND DEATH RATES AMONGST
NATIVE OFFICIALS IN THE DESERT ZONE.

	1911	1912	1913
Total number of ^{native} Officials			
resident	-	-	45
Average number resident	-	-	34
Total number on sick list	-	-	18
Total number of days on sick list	-	-	112
Average daily number on sick list	-	-	.50
Percentage of sick to average number resident	-	-	.88
Average number of days on sick list for each patient	-	-	6.22
Average sick time to each resident	-	-	2.43
Total number invalided	-	-	2
Percentage of invaliding to total residents	-	-	4.34
Total deaths	-	-	Nil
Percentage of deaths to total residents	-	-	Nil
Percentage of deaths to average number resident	-	-	Nil
Number of cases of sickness contracted away from residence	-	-	Nil

TABLE SHOWING THE SICK, INVALIDING AND DEATH RATES AMONGST
NATIVE OFFICIALS IN THE BRITISH EAST AFRICA.

139

	1911	1912	1913
Total number of Officials			
resident	-	1283	1728
Average number resident	-	1202	1215
Total number on sick list	-	1266	2922
Total number of days on sick list	-	7809	20033
Average daily number on sick list	-	21.34	54.88
Percentage of sick to average number resident	-	1.77	4.51
Average number of days on sick list for each patient	-	6.18	6.85
Average sick time to each resident	-	6.09	11.59
Total number invalided	-	18	10
Percentage of invaliding to total residents	-	1.40	.57
Total deaths	-	1	7
Percentage of deaths to total residents	-	.08	.40
Percentage of deaths to average number resident	-	.08	.57
Number of cases of sickness contracted away from residence	-	Nil	Nil

57

(d) GENERAL EUROPEAN POPULATION. *page 8*

THE COAST ZONE.

The information under this heading is so scanty and mostly confined to Mombasa that no deductions, further than those given in the 1912 Report, can be given. Generally speaking the conditions which governed the health of the officials reacted equally on the general population.

The estimated population in the Coast Zone was:-

1911	.....341
1912	.....352
1913	.....367

137

The number of births registered was 13, compared with 4 in 1912, and 8 in 1911.

The number of deaths registered was 8, as against 7 in 1912 and 9 in 1911.

The causes of death were:- Blackwater Fever (1), Abscess of liver (1), Nephritis (1), Pneumonia (1), Heart disease (1), Asphyxia (1), Dysentery (1), Broncho-pneumonia (1).

THE MOUNTAINOUS ZONE.

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was
In default of any reliable statistics, the information obtained in Nairobi (and district, with its 2,000 odd inhabitants) regarding the health of Europeans, may be taken as affording no mean index of what actually obtained elsewhere in this area. Despite the fact that the number of private practitioners in the township were increased by two, thus absorbing many cases, a proportion of which would otherwise have possibly fallen into the hands of the Government Medical Officers, there was an increase in the amount of sickness recorded in the course of their outside practice. This was, doubtless, normal, and is

explicable by the great influx of immigrants.

Possibly the most noticeable factor during the year was the large number of children's diseases, chiefly cases of intestinal trouble. The standard of bottle feeding laid down in the accepted text-books at home requires considerable modification in this country; as, apart from climatic and other considerations, the quality of the cow's milk from its richness and divergence from the standard in England, is entirely that of a tropical country. In this connection the Analyst's observations on milk (Laboratory Reports: Vol. 3, Part 1, 1912) are full of interest. It is also worthy of remark that of the relatively small number of children in Nairobi, two cases of marked cretinism and one of congenital idiocy, three cases of cardiac disease - two rheumatic in origin, and apparently of simple dilation - came under notice. Neurasthenia and gynaecological troubles were not infrequent amongst the women-folk. The Uasin Gishu plateau may be particularly singled out as having presented nothing of a markedly tropical or sub-tropical nature beyond dysentery, tropical abscess and snake-bite. Dr. Gilks recorded one case of "Pappataci fever" in a child ^{aged} 5 years, with a typical rash and enlargement of the glands. Numerous cases of an acute dermatitis occurred during the middle months of the year caused by a fly belonging to the Staphylinidae. Its causation was proved experimentally.

The estimated European population was:-

1911	4,436
1912	3,475
1913	4,596

The number of births and deaths registered for the past three years were:-

	1911	1912	1913
Births	72	68	84
Deaths	43	33	46

The ratio per 1,000 of population was:-

132

	1911	1912	1913
Births	29.0	19.5	18.3
Deaths	17.6	9.4	10.0

The principal causes of death for the year were:-

- Malaria (4), Injuries (2), Pneumonia (3), Dysentery (2), Circulatory (4), Enteric (1), Cerebro-spinal meningitis (2), Nephritis (1), Blackwater Fever (1), Tubercle (1), Cancer (1), Infantile affections (6).

THE KANIA AND NYANZA PROVINCES.

What has been said regarding the health of the Officials and of the country at large applies pretty generally to the white residents. Their health is very largely in their own hands, and is good or bad according to the conditions they make for themselves. The population is so scattered and ever-changing that any definite information regarding their health is most difficult to obtain, and is valueless for statistical purposes. Generally speaking the standard has been good, as for one thing, they are mostly men in the prime of life.

As regards the total white population the voluntary census of 1911 showed that there was a total of 343 Europeans inhabiting these regions. For 1913 it is calculated that this number had increased to 568.

In 1913 and 1912 no deaths were recorded and only 2 were registered in 1911.

From returns supplied by the Registrar General the number of births registered during 1913 was 8. The number registered for 1912 was 14 and 11 for 1911.

THE DESERT ZONE.

With the exception of a few farms and enterprises

on the lowest reaches of the Juba, this desert area is still one of the closed wastes of Africa. Such population as there was has enjoyed the same measure of health as the officials.

The total number of white people inhabiting these regions was estimated as 64. 3 births and one death were registered in 1913, 1 birth and 1 death in 1912 and 1 birth and no deaths in 1911.

(c) GENERAL NATIVE POPULATION.

THE COAST ZONE.

No census of the Native Population has, as yet, been attempted, but an approximate estimation of the number of inhabitants can be arrived at on the basis of the hut and poll-tax returns.

The estimated population in the Coast Zone was 246,736.

Registration of births and deaths is only compulsory in the case of Europeans.

THE MOUNTAINOUS ZONE.

Estimated Population. In the absence of compulsory registration this is calculated from the hut and poll-tax returns, and may be put down as 454,289 (figures obtained from the Provincial Commissioners of Provinces).

Births and Deaths. Registration is only compulsory for Europeans.

THE KENIA AND NYANZA PROVINCES.

Estimated Population. For the two Provinces it is computed that the number was 1,886,500. It is not possible in the absence of any census records to submit any

vital statistics.

134

THE DESERT ZONE.

The estimated population is given as 12,000, but as no census has ever been taken, it is impossible to submit any vital statistics.

III.- SANITATION.

BY DR. W. J. RADFORD, CHIEF SANITATION OFFICER, E.A.P.

(a) GENERAL REVIEW. *Jan 1908*

(1) ADMINISTRATION. *Jan 1908*

The Sanitation Division was created on the 1st April 1913; provision having been made in the estimates the three Medical Officers of Health of the towns of the Mombasa, Nairobi, and Kisumu, who had hitherto been shown as special appointments in the Administrative Division, were transferred to the Sanitation Division.

The personnel of the Sanitation Staff at the commencement of the year was as follows:-

- H. J. J.*
- | | | |
|---|---------------------------|---------------------------|
| 1 | Medical Officer of Health | £500-£600 & £50 duty pay. |
| 2 | " " " " | £400-£500 & £40 " " |

CLERICAL STAFF.

- H. J. J.*
- | | | | |
|---|--------------------------------|------|-----|
| 1 | Clerk, Health Office, Mombasa, | £34. | 135 |
| 1 | " Labour Camp, Kisumu, | £80. | |

During the year the following appointments were made to the permanent staff:-

- H. J. J.*
- | | |
|--------------------------------|---------------------------|
| Chief Sanitation Officer | £600-£700 & £60 duty pay. |
| 4 European Sanitary Inspectors | £200-£250 each. |
| 1 Nurse | £165 & £50 allowances. |
| 1 Assistant Surgeon | £200. |
| 3 Sub Assistant Surgeons | £108 each. |

Owing to the presence of epidemic diseases, plague, small-pox and cerebro-spinal meningitis, in 5 out of the 6 provinces in the Protectorate, and the serious epidemic of plague at Mombasa, the staff at various times was very materially

57

materially increased by Medical Officers lent by the Zanzibar Government, the appointment of others from England, and the temporary services of some of the permanent staff. Many changes incidental to the exigencies of the case were made, though at no time did any overlapping of responsibility occur.

The following list embraces the entire temporary appointments made during the year:-

From the permanent staff, East Africa Protectorate.

Dr. L. D. Lowaley.

Dr. A. D. J. B. Williams.

Appointed in England.

Dr. W. Tudhope.

Dr. E. N. Russell.

Dr. Mackinnon.

Dr. H. H. V. Welch.

Dr. F. Cellar.

Lent by the Zanzibar Government.

Capt. D. S. Skelton, R.A.M.C.

Locally engaged.

Dr. W. Morrison.

Dr. A. M. Freitas.

SUBORDINATE STAFF.

1 Sanitary Inspector, locally engaged.

10 Asst. and Sub Asst. Surgeons { 2 permanent
staff.
8 from India

4 Clerks, locally engaged.

1 Engineer.

1 Headman, rat gang.

} From Zanzibar
Government.

In

578

In June Professor W.J.Simpson, C.M.G., M.D., F.R.C.P., (Lond.) D.P.H., (Camb.) Professor of Hygiene at King's College, London, arrived to examine the sanitary conditions of the Dependency, and to advise the local Government and report on the form which the sanitary policy of the Administration should take. His advent in the country coinciding with the existence of general epidemic disease of a magnitude and severity that has hitherto been unequalled, the benefit that the Division has received from his experience and advice has been incalculable.

Native Staff.- A temporary increase in the number of natives employed in scavenging, disinfecting, rat extermination, and mesquite prevention, in various parts of the country was found to be necessary, some 500 being so employed, Mombasa claiming nearly 400 of these, and it was considered desirable for the Sanitation Division to temporarily assume complete control of the scavenging and cleansing of that town, thus relieving the Administration of that duty, as dual responsibility at such a time was found inimical to effective and useful work.

During the year the work of the Division has mainly been directed to controlling the spread of epidemic disease, and a sum of £8,000 was voted by Government as a special contribution towards this end; but its organisation on a basis adequate to its effectively undertaking the responsibilities devolving on it, and to place it in a position successfully to cope with the amount of work necessary to be done, will entail a large increase of its personnel and equipment in the future; and it is hoped that provision commensurate with its needs will be made in the forthcoming estimates.

LAWS PASSED.

The following Ordinances affecting the work of the
 Division

54

Division have been passed, and Orders made under previously existing Ordinances during the year, viz:-

(1) "Leprosy Ordinance No.9 of 1913", makes provision for the isolation and detention of persons affected with leprosy. 133

(2) "Public Health Ordinance No.10 of 1913", confers on Sanitary Board powers to prescribe the provisions as to the division, etc., of any lands for building purposes outside a township within 5 miles radius.

(3) "Immigration Restriction Amendment Ordinance, 1913", confers powers to arrest without a warrant.

(4) "Vaccination Ordinance, Amendment No.2 of 1913", defines the term "child" as a person under 15 years of age.

(5) "Infectious Diseases Ordinance, 1903", Rules under July and September 1913. Confers powers to enter, search, remove patients and contacts, disinfect and fumigate premises or persons and the compulsory reporting of sickness and deaths.

(6) "Township Ordinance, 1904".

Building Rules, Nairobi, 1913.

(7) On representation being made, His Excellency, with the sanction of the Secretary of State, authorised the utilization of the proceeds of the auction of Crown Lands for the purposes of constructing roads, communications and other development works.

(8) The inclusion in all subsequent leases from the Crown of clauses compelling an owner to connect his premises, plot, or area with any drainage scheme when completed, and other matters governing the sanitary principles to be observed, that will eventually be embodied in the Public Health Act, were approved.

60

(11) PREVENTIVE MEASURES.) *precaution*
MOSQUITO AND INSECT-BORNE DISEASES. *La Pa 8/6/6*
MALARIA. *139*

There are at present 34 stations within the Protectorate where medical aid can be afforded, and where statistics of observed disease are recorded. That malaria is prevalent in nearly all geographical areas is evident, and the number of the station reporting malaria existing among the European and Native Communities is attached.

Zones.	Number of Medical Stations.	Reported Malarial Infection among Natives.	Reported Malarial Infection among Europeans.
Coast	5	5	5
Mountainous	14	14	11
Kenia and Nyanza	9	9	8
Desert	6	6	4
Total	34	34	27

From the statistical tables available in various medical stations in the Protectorate there appears to be a steady rise in the numbers of observed cases. The attached tables showing the total number of recorded cases and deaths since 1911.

MALARIA, RECORDED CASES AND DEATHS.

Year.	Cases.	Deaths.
1911	10714	76
1912	12668	52
1913	15656	81

Though this table shows an increase in the number of recorded cases, there is a distinct decrease in number of case incidence in localities where a general knowledge of the causes of this disease is being acquired. Anti-mosquito measures are being prosecuted, and where ^{possible} quinine prophylaxis is carried out. This last measure has been actively pursued in Mombasa at the Health Office, Native Civil Hospital and Jail, and in several outstations where detachments of the King's African Rifles and Police are stationed. The issue of quinine is free and all medical stations have been circularized calling attention to the necessity for still further pressing this measure.

Mosquito destruction gangs are maintained at Mombasa, Nairobi and Kisumu where active work is being carried out and the work performed reflects the greatest credit on the executive staff who systematically carried on their duties at the time when more active operations were in progress to combat the various epidemic diseases that occurred concurrently in the Townships.

Dr. R. Small, Medical Officer of Health, Mombasa, directs special attention to roof guttering being one of the main breeding places in that Town, and his action in dealing with this situation has been energetic and sustained; a tabulated statement of the work performed is attached.

Extract sanitary report, Mombasa, malaria. Dr. R. Small,
Medical Officer of Health.

ACTION TAKEN DURING 1913, FOR EAVES GUTTERING. 141

Notices served	131		
" complied with		115	
" left over 1913		16	
" since completed (during 1914)			8
Prosecutions			6
	131	131	14

These figures represent the work of the latter part of the year after the arrival of the two Sanitary Inspectors

The relation between the rainfall and the malaria figure shows as usual a sharp rise following rain.

Dr. B. W. Chererett, Medical Officer of Health, Nairobi, gives the following information in his annual report:-

MALARIA TABLE FOR THE LAST FIVE YEARS.

EUROPEAN HOSPITAL, NAIROBI.

Year	Total admissions.	Mortality.
1909	17	Nil
1910	18	-
1911	29	-
1912	37	-
1913	31	1

CIVIL HOSPITAL, NAIROBI.
(Goans, Asiatics and Africans)

110

Ward

Year.	Total Indoor.	Admissions Outdoor.	Mortality Indoor & Outdoor.
1909	90	502	16
1910	76	825	21
1911	53	586	28
1912	209	590	30
1913	546	398	⁶⁴ 20-41

This disease contributed 11.8% of the total number of deaths. The following table shows the annual number of deaths for the last five years:-

<u>1909.</u>	<u>1910.</u>	<u>1911.</u>	<u>1912.</u>	<u>1913.</u>
16	21	28	30	64

The different cases were affected as follows:-

<u>Europeans.</u>	<u>Eurasians.</u>	<u>Goans.</u>	<u>Asiatics.</u>	<u>Africans.</u>
1	1	4	20	38 - 64

As regards the number of people primarily infected in the Township it is impossible to say, but in the Asiatic portion of the Town, owing to the lack of drainage and dirty habits of the population a most insanitary state of affairs prevails, and Anophelinae and other mosquitoes breed freely, so a large number of people are probably infected in these portions of the Town.

A large number of native labourers are infected on their way to and during their stay in Nairobi.

31 Europeans were admitted to the European Hospital, suffering from this disease; one died.

Dr. A. Mouat, Medical Officer of Health, Kisumu, gives the following information in his annual report:-

"A large number of cases of malaria came under treatment during the year, all of the sub-tertian variety.

When the disease was most prevalent, it was reported that the Uganda Railway had on the sick list 50% of their employees. Fortunately in the latter part of the year there has been little rain, followed by a fall in the Lake level, and partial drying of the large swamp at the head of the Kavirondo Gulf.

Cases were most numerous at the Indian Bazaar, Loco Landies, and in temporary Landies recently put up; later the subordinates and their servants, who live at the more healthily situated areas of the Town, became infected, after which a few cases occurred amongst the Europeans."

Mosquito protection of houses has not yet received the attention it deserves as the attached list shows.

Mombasa	Nil
Nairobi	Nil
Kisumu wholly protected	4
" partially	5
" with mosquito room.	1

No hospital in the Protectorate has yet been rendered mosquito proof.

TRYPANOSOMIASIS.

The actual number of cases treated during the year ^{was} were 6, of whom 3 died. These cases were observed accidentally in general practice at the following places:-

Place.	Cases.	Deaths.
Mombasa	1	1
Nakuru	3	1
Kisumu	1	1
Murias	1	-
Total	6	3

No special measures are actively employed to limit or control the disease in Kavirondo.

YELLOW FEVER.

No cases have been reported.

FILARIASIS.

Both Fort Hall and Kisumu report cases, but it is satisfactory to record that the number of observed cases is small.

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EPIDEMIC DISEASES.

GENERAL.

The year 1913 will long be remembered as one in which the presence of epidemic disease has exerted an important influence in the development of the country. Not only has its presence affected the freest and unhampered intercourse between it and other countries both on the seaboard and on the Victoria Nyanza, where the imposition of necessary measures has necessitated an increased expenditure to maintain trade; but its presence has also affected one of the chief assets of the country - the Native Labour Supply, where an epidemic of unestimated virulence and mortality has occurred.

Never within the history of the Protectorate, and certainly the knowledge of the present generation, has occasion arisen to draw attention to the existence of epidemics of plague, cerebro-spinal meningitis and small-pox running concurrently with the presence of malaria, chicken-pox, measles and dysentery to the extent that has occurred.

To meet the exigencies of the case, with the exception of a few indifferently built and inadequately equipped huts at Nairobi and Kisumu, the Sanitation Division was unprepared in any way to meet the special and sustained efforts that were necessary to combat such a combination of conditions, and I desire to express my unqualified thanks to all officials and private individuals for the zeal and loyalty they have displayed both in towns and in out-districts in successfully carrying out their duties under very trying circumstances.

The statistical returns show the numbers of recorded cases of Infectious Diseases that have come under observation at the various Hospitals and Dispensaries in the Protectorate during 1913.

67

P L A G U E.

143

Plague was found to be epidemic in the districts of Mombasa and Kisumu, and sporadic at Nairobi, Machakos, N'darugu, Kyambu and Dagoretti.

During the year the total number of cases certified by the personnel of the Medical Department was:-

Locality	Cases	Deaths	Percentage of mortality.
Mombasa	208	184	88.46
Nairobi	25	19	76.00
Machakos	4	2	50.00
N'darugu	4	4	100.00
Kisumu	31	27	87.09
	272	236	86.76

* One European (Chief Engineer) died from plague on board a Lake Steamer in August, two days from Kisumu. This case is not included in the above return.

but this disease by no means represents the extent and distribution of the disease.

The epidemic at Mombasa is carefully described in the special reports written by Capt. Skelton and Dr. L. D. Lowsley, Senior Medical Officer, attached as an appendix No.

The types observed were both bubonic, septicaemic, and pneumonic in the proportions here shown.

Type.	Mombasa.	Nairobi.	Kisumu.	Other localities.
Bubonic	154	23	21	8
Septicaemic	9	1	3	
Pneumonic	45	1	7	
Total	208	25	31	8

68

and according to nationalities:-

	Europeans.		Asiatics.		Natives.		Total.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
a			137	119	71	65	208	184
i	1		13	8	11	11	25	19
			18	11	19	16	31	27
Places			2	1	6	5	8	6
Total	1		164	139	107	97	272	236

During the year rat plague was reported to exist at Mombasa, and some of the surrounding villages, Nairobi, Machakos, Kyambu, Dagoretti, Nakuru and Kisumu, and special work to compass their destruction was immediately undertaken, and I desire to acknowledge the help and assistance voluntarily afforded by some of the gentlemen resident in the Kyambu district in this direction.

The labour performed by the rat gangs in the three principal townships is shown in the annexed tables.

Township.	Rats caught.	No. of areas where infected rats were found.
Mombasa	1,656	Generally
Nairobi	2,882	8
Kisumu	10,183	12

Rat plague was found to ~~the~~ exist in some places where happily there is every reason to believe the human escaped.

	Europeans.		Asiaties.		Natives.		Total.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
sa			137	119	71	65	208	184
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Rat plague was found to be existent in some places where happily there is every reason to believe the human escaped.

Shortly after the existence of plague was discovered at Mombasa, the work of the Sanitary Division was threatened with serious interference. Owing to a misunderstanding arising over the segregation of a purdah woman, a general strike was declared which seriously affected the work at the Port. But it is satisfactory to record that differences were soon adjusted, and a thoroughly good feeling established, leading to the voluntary establishment of 5 segregation and plague camps by the various Indian communities, and a whole hearted support generally given by them to assist the Government. But it is questionable if such material assistance can be relied on in the future.

Extreme measures were adopted, house to house visitation, fumigation, segregation of sick and contacts, inspection of all persons leaving and entering the Island, and most important of all a general inoculation of the community with Haffkine's Prophylactic in 48,478 instances. This part of the work at all centres in the Protectorate where it was carried out, has not received the legal safeguard that is essential, and though some 61,974 (in Mombasa 48,478, Nairobi 576, and Kisumu 12,920) persons have been partially or in whole immunized, this work must immediately cease on threatened litigation being instituted by a few conscientious objectors.

The general distribution of this disease (plague) apart from other epidemic invasions in this country, is a matter that calls for immediate recognition; the prosperity of country is shown, inter alia, by the rapid extension of Indian settlements and trading centres in all parts; and here as in other lands plague is certainly following the trade routes, while its gradual extension

is observed, the means provided to combat it in respect of isolation camps and hospitals and general organisation to control the movements of persons from infected to clean areas, and vice versa, is totally inadequate.

One fact is pre-eminently established—that plague is following the trade routes, and that the Uganda Railway with its fleet of Lake steamers is a direct agent of not only introducing the disease by means of infected cargoes brought from places outside the Protectorate, but also of transmitting it from Kisumu to other Lake ports.

Instances have occurred where plague infected rats have been found in cotton and hides brought from the Lake ports into Kisumu, and again after fumigation of the ship at that port, officers and crew have succumbed to the disease a day or so subsequent to the departure of the ship from Kisumu. Cargo brought into Kisumu by steamers is generally immediately placed on trucks and sent down the line to Mombasa for shipment overseas, and the discovery of infected rats in it has at times not been made prior to the despatch of such cargo, and indeed from the nature of things an investigation is not always possible. The history of the incidence of plague at Kisumu shows that the port itself is an endemic centre, and its periodical appearance within the township both before and since European occupation establishes the fact that a potential, if not actual, menace to the health of the whole community in East Africa exists at one of the terminals of the chief arteries of communication in the country - the Uganda Railway, and I regret to report that the practical and efficient means of dealing with such a condition is by no means on the basis and establishment that is requisite.

Ships

71

Ships are not provided with means of fumigation on board, neither can such a process be undertaken at the quarantine anchorage before the vessel has had communication with the shore from lack of equipment.

When the cargo is landed it may be stored in godowns that are not rat proof, and the construction of piers and their basements has not been sufficiently directed to the exclusion of facilities for harbouring and the breeding of rats.

ANNUAL SANITATION REPORT 1913

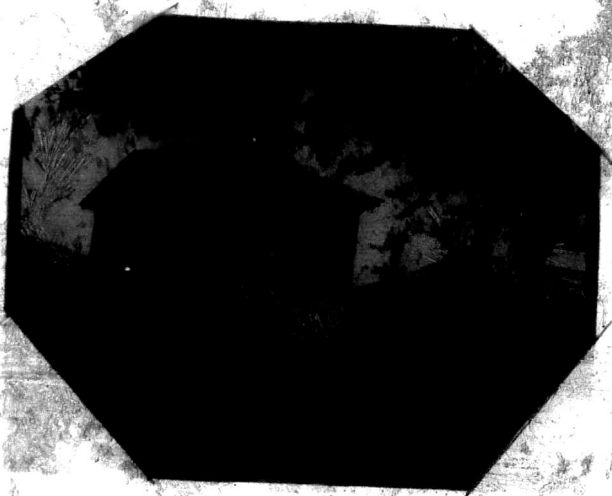
PHOTOGRAPHS

No. 1

Machakos Township

151

House in which Plague occurred in September 1913.



23

ANNUAL SANITATION REPORT 1913

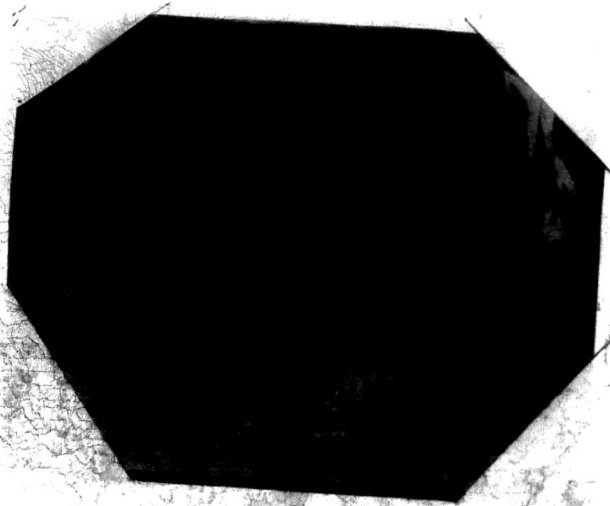
PHOTOGRAPHS

No. _____

Machakos Township

Interior of house where Plague occurred showing Latrine
with hand mill for grinding corn.

Taken November 1913.



PHOTOGRAPHS.

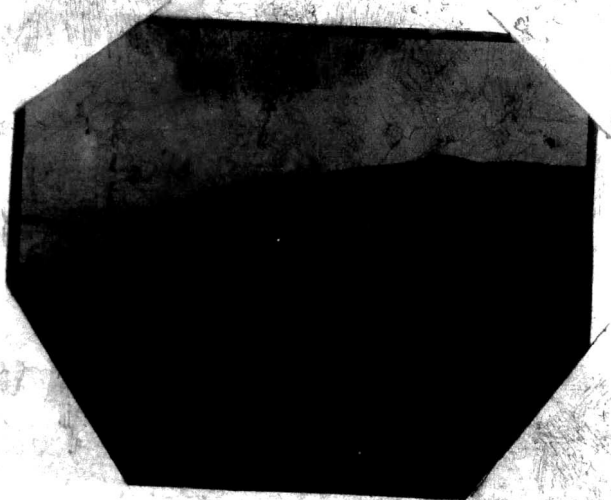
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152

Machakos Township.

Back of Indian Bazaar, showing general type of house.

Taken November 1913.



ANNUAL SANITATION REPORT - 1913

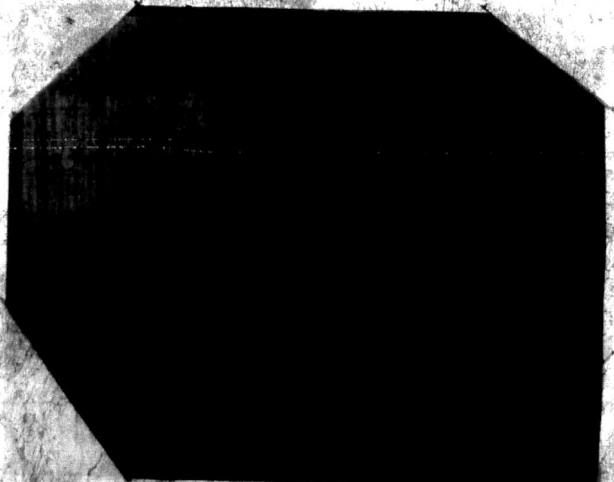
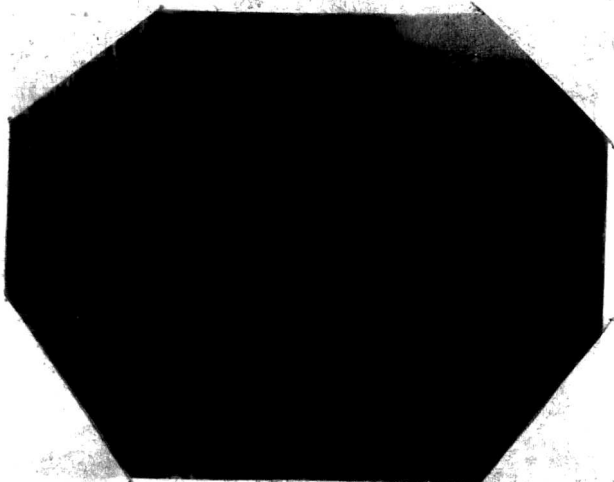
PHOTOGRAPHS.

153

No. 4 and 5

Machakos Township.

Types of Native and Indian Latrines within the courtyards of huts and houses.



PUBLIC RECORD OFFICE.

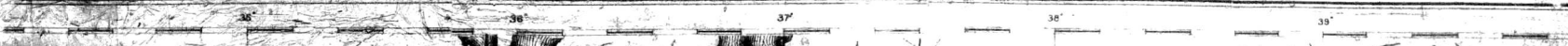
154

One Document, being *general plan of East Africa Notebooks*

has been removed MPSS 59

16:9:68

AAH. Kingbridge



ABYSSINIA

U
G
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D
A

ELGON

Ngabotok

Laikipia

KENYA

MUMU

LONGJIANI STA

MOLD SA

LAKE TANA

Maru

Molongo

Manzola

Mandya

Oyugia

Menchu

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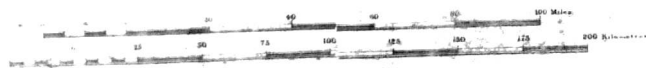
LAKE TANA



EAST AFRICA PROTECTORATE.

GENERAL PLAN (Provisional.)

Scale 1 in 1500,000 or 1 inch to 23 674 Miles

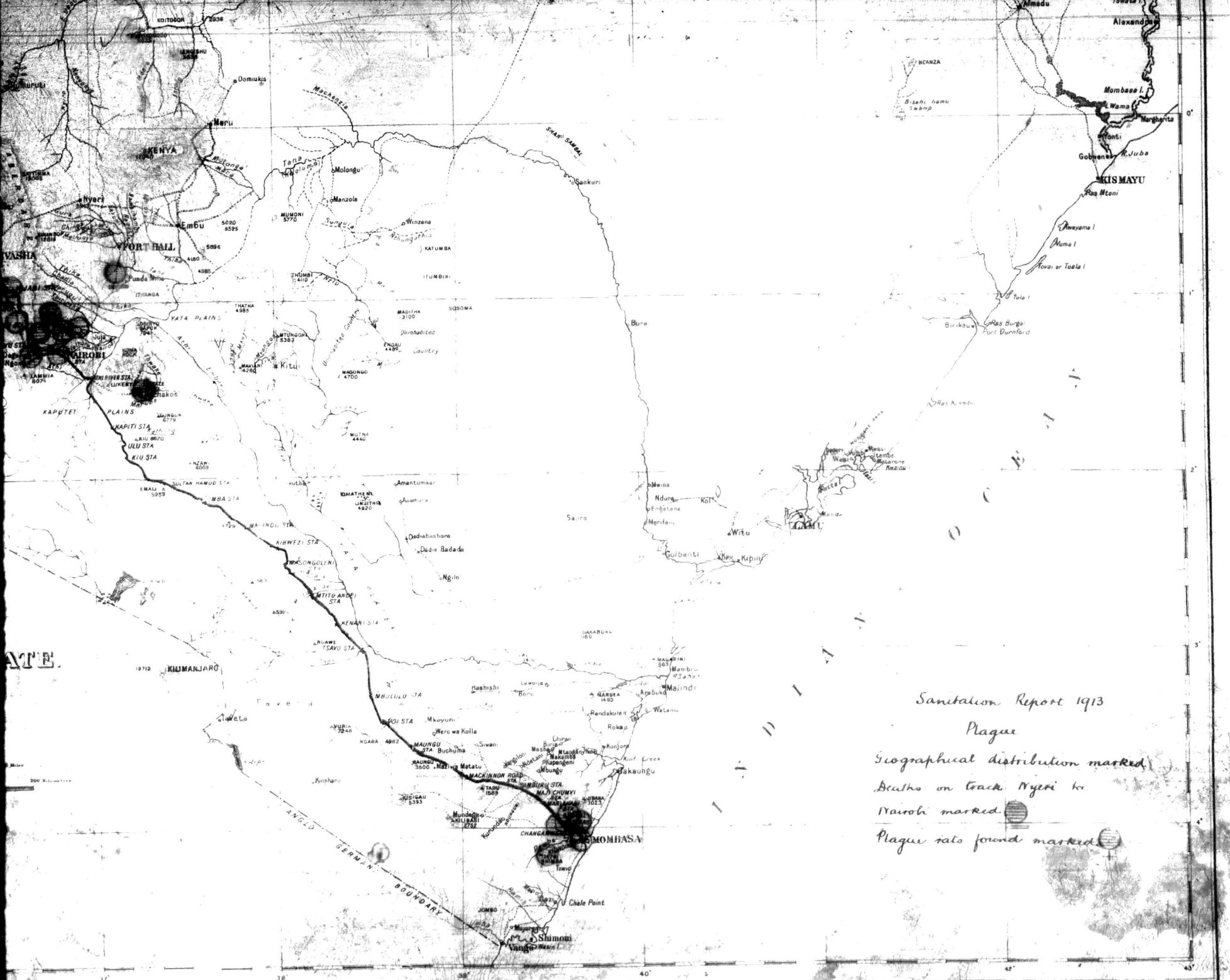


SURVEY DEPARTMENT.
 CADASTRAL BRANCH
 January, 1912.

ANGLO GERMAN BOUNDARY

KILIMANJARO

MOMBASA



Sanitation Report 1913

Plague

Geographical distribution marked

Deaths on track Nyeri to Nairobi marked

Plague rats found marked

ATE

Scale: 500 Miles

Localised epidemics have occurred at the following places:-

District.	Cases.	Deaths.
Mombasa	33	10
Nairobi	43	12
Eldoret & Londiani	20	-
Kenia	70	8
Total	166	30

Great activity has been displayed in carrying out systematic vaccinations in districts where the disease threatened to assume grave proportions; and a table is attached of the work done. It is urged that vaccination should be part of the routine treatment available at every medical station in the country; last year it was performed at 28 out of a total of 34 stations.

The lymph used was prepared at the Government Laboratory:

Glycerinated in tubes of 5 doses = 370802

Dessicated in ampules of 36 doses = 3400

376,202

Table showing the number of cases of small pox for

the last four years, and number of vaccinations performed:-

	1913.	1912.	1911.	1910.
Cases of Small pox.	166	323	159	21
Vaccinations.	131,757	79,282	15,167	14,353

78

157

STATEMENT SHOWING THE PLACES AND NUMBER OF
VACCINATIONS PERFORMED AT EACH DURING THE
YEAR 1913.

Account

Stations.	V a c c i n a t i o n s .			
	Number.	Failed.	Perfect.	Unknown.
Malindi.	1344	10	762	572
Mombasa.	8169	-	6	8163
Voi.	229	23	180	26
Kilindini.	-	-	-	-
Lamu.	52	16	22	14
Shimba Hills.	1	-	-	1
Eldoret.	71	9	62	-
Machakos.	113	59	54	-
Nairobi Police & Prison.	581	168	397	16
Naivasha.	211	36	128	47
Londiani.	308	-	-	308
Kyambu.	3293	-	-	3293
Baringo.	670	-	670	-
Nairobi, M.O.H.	15264	-	-	15264
Mdarugu Prison Camp.	198	-	-	198
Nandi.	302	-	-	302
Kisii.	229	20	127	82
Mabu.	5508	-	4950	558
Fort Hall.	46060	-	32315	13745
Nyeri.	9478	286	9040	152
Mumias.	162	8	34	120
Kisumu.	24439	-	-	24439
Keru.	13843	-	-	13843
Kericho.	140	-	-	140
Marsabit.	37	-	20	17
Yente.	547	12	555	-
Gebwen.	480	110	370	-
Kimayu.	28	5	11	12
Total	131,757	762	49,683	81,312

75

DYSENTERY.

153

The records show that 1,514 cases with 102 deaths were treated in the Government Hospitals and Dispensaries.

Mombasa, Nairobi and Kisumu account for nearly half the total number of cases coming under observation.

Mombasa.		Nairobi.		Kisumu.		Other Localities.	
Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
4	1	9	1	-	-	18	-
293	16	343	24	243	5	904	46
297	26	352	25	243	5	922	46

The condition was observed in 33 out of a total of 34 medical stations in the Protectorate. It would appear that the bacillary type is accountable for the majority of cases. Medical Officers in charge of stations have drawn attention to the most encouraging results following the exhibition of emetine. The causes can generally be assigned to polluted water supplies and fly infection.

Europeans.
Other Nationalities.

ENTERIC

159

The reported cases are as follows:-

Mombasa.		Nairobi		Other Localities.	
Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
4	-	10	1	6	-
	-	-	-	4	-
Total	-	10	1	10	-

Europeans.

Other Nationalities.

Total

The extent to which this disease is distributed among the various native tribes is unknown. Arrangements are being made to provide facilities for inoculation, both preventive and curative, in the near future.

CEREBRO-SPINAL MENINGITIS.

169

Commence-
ment of
Epidemic.

On the 4th of May the Medical Officer in charge of the Native Civil Hospital, Nairobi, reported that a case of Cerebro-Spinal Meningitis had been admitted into Hospital, the patient coming from the Railway quarters; within a few days others were found in an hotel, Police Lines, and bazaar. Towards the end of the month reports were received from Kyambu (7 miles from Nairobi due E., Lagoretta (7 miles from Nairobi due W.), Kikuyu (14 miles from Nairobi due E.), that an unusual sick and death rate had been observed. Investigation showed that Cerebro Spinal Meningitis was rife in these districts.

Geographi-
cal distri-
bution.

In June, July and August the disease had spread with great virulence through Ukamba, Naivasha, and Kenia, while reports from this time to the end of the year showed that Seyidie and Nyanza provinces, as well as stations on the Railway line and outlying places such as Machakos and Kitui had been invaded.

From the date of the first reported case in Nairobi (May 1913) to the end of the year, the invasion of the provinces followed this order:-

1. Ukamba Province.
2. Kenia "
3. Naivasha "
4. Seyidie "
5. Nyanza "
6. Tanaland "

vide map No.

78

From the available statistics of case incidence and deaths supplied, it might be inferred that the epidemic was not of a serious nature; this in reality is not so. It is the most widely distributed and fatal epidemic that has ever been recorded in the history of the Protectorate, unfortunately affecting those districts from whence the labour supply of the country is principally derived; and though its effect on the birth rate is a matter of conjecture only, the recorded fact that its virulence was noticed chiefly among young adults and children suggests that its presence will exert some unfavourable influence on the future labour supply.

The published returns are those obtained from the Medical Staff and Medical Practitioners only, and refer to observed cases.

The extent and severity of the outbreak, which occurred concurrently with that of plague, in various parts of the Protectorate, taxed the capacity of the Medical Staff to the utmost, and precluded the possibility of either checking its spread in any locality with the exception of Nairobi township; or of rendering that aid and assistance which the occasion demanded.

Little could be done beyond segregating the sick and dying in out stations, and sending Medical Officers and members of the subordinate staff through the out districts to investigate and report. For this purpose a of the personnel of the Department were sent into districts within the Nyanza, Kenia and Ukamba provinces; and their reports are supplemented by those of Medical Missionary Staff whose cooperation and assistance was

79

loyally and whole-heartedly given, as well as those of the Administrative Officers who were asked to help in any way possible, and who employed every means at their disposal to help the natives.

Case incidence.

Excluding townships and out stations no record could possibly be kept of the total number of cases that occurred, as the virulence of the epidemic was noticed principally in the Native Reserves and in places where information was difficult to obtain; but the following extracts from reports clearly show that the magnitude of the epidemic has not been underestimated. -

Extract of Reports to 1st January 1914:-

District Commissioner, Dagoretti.

"Out of a total count of 3 locations in this sub-district of 10,619 natives, from enquiries made I find that there have been 360 deaths directly attributed to Cerebro-Spinal Meningitis or rather over 3% of the population..... and the mortality for the district at nearly 1,700 persons."

Dr. Arthur, Scotch Mission.

"Kikuyu, Limuru, Dagoretti, Kabete, 50% deaths. Has been considerable mortality. Hundreds of cases in this Province, and in Kenia it is worse."

District Commissioner, Machakos.

"Many deaths and sickness, symptoms of which appear to be Cerebro-Spinal Meningitis and unusual mortality."

Assistant District Commissioner, Kyambu.

"Unable to get labour for my roads, reason
 "being that the men have returned to their
 "villages to bury their wives and children. In
 "my opinion hundreds have died."

Kenia Province: Medical Officer, Fort Hall.

"It is quite impossible to estimate the number
 "of cases with the death roll.
 "As a rough estimate I should say there have
 "been 15,000 with a very large percentage of
 "deaths."

District Commissioner, Nyeri.

"The following total gives the population and
 "the number of deaths among chiefs who have been
 "able to furnish figures:-

"	Approximate " <u>population.</u>	Deaths from " <u>Meningitis.</u>	Average.
"	61,900	1,442	1 in 48"

Dr. Philip, Church of Scotland Mission.

"Thousands have died."

District Commissioner, Fort Hall.

"Within the last four months, however, the
 "sickness has broken out with great violence
 "originating from Kibarabaras country and its

164

"old starting place Njiris and gradually
"spreading to the eastward. The number of deaths
"that have occurred it is utterly impossible to
"estimate. I can only give the Kikuyu estimate
"of percentage of deaths of those attacked, which
"is about 50% of the men attacked have died,
"about 75% of the women attacked have died and
"hardly a child who has once contracted the
"disease has lived. I have heard of six
"children dying from one family in three days.
"To summarise my information it appears that the
"epidemic has left the North Western and Western
"parts of the district, and is now more or less
"confined to the Eastern half where it apparently
"continues to rage with unabated force. A
"Compounder in a recent tour of inspection
"authorised by the Medical Officer, Fort Hall,
"from the Thika along the Native Reserve to
"Waithaka and its vicinity brought back the
"following statistics. Total deaths 546 which
"gives a very fair proportionate idea of what the
"ravages and virulence of the disease must have
"been throughout the district.

The greatest virulence and highest death rates
occurred in the highlands in Ukamba, Kenia, Naivasha and
North Kavirondo, i.e. at an elevation of between 3,000 to
7,000 feet; and while the Coast Belt remained
practically untouched, it is of great interest to record
the fact that the number of cases was greatest during
the cold weather, viz: May, June, July and August, and
case incidence gradually declined as the hot weather set

influence
of season.

in. This period also coincides with that of 165 comparatively dry weather.

Tables showing the rainfall and temperature for such places where observations have been taken are given in table V.

The total number of deaths recorded by the Medical Staff was:-

Ukamba Province	202	
Kenia "	594	
Naiyasha "	25	
Tanaland & Seyidie "	10	Coast belt.
Nyanza "	297	
	<hr/>	
	1,128	
	<hr/>	

Means adopted to cope with the epidemic.

Hospitals and Segregation Camps.

Ukamba Province.

Nairobi.

1. A ward in the existing Quarantine Hospital reserved, Medical Officer of Health in charge.
2. Out boarding establishment of European School closed, and opened as a fully equipped hospital. Resident Surgical Officer, European Hospital, in charge.
Temporary Matron - Nursing Sister MacMillan.
Nurse - Miss Mosen.
3. A ward reserved in the Native Civil Hospital - Medical Officer, Native Civil Hospital, in charge.
4. A ward reserved in the European Hospital - Resident Surgical Officer in charge.

Machakos.

1. Huts erected in quarantine area. Sub-Assistant Surgeon in charge.

Kitui.

1. Huts erected in quarantine area. Sub-Assistant Surgeon in charge.

Kyambu.

1. Huts and tents erected in quarantine area. Sub-Assistant Surgeon in charge.

Dagorroti.

1. Huts erected. Patients visited by Medical Staff and Missionary Doctors.

Kikuyu Regiment.

Huts erected, and segregation established where possible; this area was visited by the Medical Staff, Drs. van Ameron, Radford, and Cherrett, and Sub-Assistant Surgeons from Nairobi and Kyambu.

Kenia Province.

Quarantine stations established at Fort Hall, Meru and Nyeri, and the entire Medical Staff were engaged in patrolling the district.

Nyanza Province.

The Quarantine Camp at Kisumu was utilised, where the Medical Officer of Health and subordinate staff was in charge. Areas in North Kavirondo were patrolled by the Medical Officer of Health, and Assistant Medical Officer of Health, and a Medical Officer temporarily engaged.

Segregation camps were also established by the chiefs in many places who maintained a system of quarantine in the Nacia District; this work was voluntarily undertaken by them.

Sevidie Province. -

Patients and contacts were removed to a temporary segregation within that used for plague cases, and were treated by the Special Plague Officer.

Quarantine camps were established at Gazi and Masindi; at the latter place the Assistant Surgeon was placed in charge.

Tanaland Province. -

A Quarantine camp was established on an island near to the town of Lamu under the care of the Medical Officer.

Diagnosis & treatment.

Every effort was made by the staff to eliminate errors in diagnosis, and instructions were issued that where practicable lumbar puncture should be performed, and a bacteriological examination made. At Nairobi the work in connection with examination of fluids and cultures was admirably performed by the Bacteriologist Dr. P.H. Ross.

A paper written by Drs. J.C. Shircore and P.H. Ross on meningo-spinal meningitis was published in the Transactions of the Society of Tropical Medicine and Hygiene, Vol. VII No. 2. A report on 3 cases amongst Europeans by Dr. J.L. Gilks is given in Section VI.

The symptoms of the disease therein described, and the methods of treatment adopted are those that were generally observed in all parts of the country; but with the exception of Nairobi, Mombasa and Kisumu, bacteriological examination could not be undertaken, and the diagnosis was based on clinical observation, and the appearance of the spinal fluid drawn off by lumbar puncture.

AS

Publicity was given to the existence of the disease by notification in the press, circularizing all Administrative and Medical Officers, and a section of the public and Missionaries; and a circular issued is attached as an appendix.

I
HELMINTHIC DISEASES.

Ankylostomiasis.- This disease is reported to have come under observation at all the coast centres, where its wide distribution along the coast belt has long been recognised. It is of interest to observe that one case has been reported at Nyeri in the Kenia Province, an individual who had returned to his home from the coast. The possibility of infection being thus carried into the Highlands is a matter that should receive attention, as it is from the Kenia and Kavirondo Provinces that labourers are chiefly recruited.

Taeniasis.- The presence of this infection has been recognised in all parts of the country, but from the recorded cases it is not a high one.

Bilharzia.- From the returns it appears that this condition is limited to the coast belt; cases are reported to have come under observation at Mombasa and Kisumu.

Guinea-worm.- I am glad to say, that no case has been reported.

87

SEWAGE DISPOSAL.

In no township within the Protectorate has any water-borne sewage scheme been installed, but in a few isolated instances septic tanks have been sited to residences; with these exceptions, night soil is generally disposed of by dumping into the sea, trenching, reception into cess pools or distribution on the ground.

At Mombasa this material from the European Quarters is collected in iron tank trollies and dumped near the light house at the mouth of the harbour, in consequence at certain periods during the N. E. monsoon the foreshore is littered with undesirable material deposited there by the current. At the dumping ground no provision is made for washing out the soiled tank trollies, and at no place in the island is this most necessary operation put into practice.

The duplicate bucket system is not installed.

In the Native and Indian town, latrine pits can be found inside almost every house or hut, especially in the old Arab houses, where the retention of such a feature is practically universal; needless to say none of these pits or funnels leading to them are provided with traps or ventilating shafts. As is often the case, these cess pits being in close relation with the wells which are bored in coral rag, the danger to the community by their retention is obvious.

Nairobi, Kisumu, Machakos, Nakuru, and some other towns have adopted the trenching system; it is necessary to emphasise the importance of maintaining proper supervision, and in the selection of suitable ground

PHOTOGRAPHS.

No. 6

171

River Road, Nairobi, showing sewage discharging on to the main road, taken November 1913.



purpose. At Kisumu systematic endeavours are being made to utilise this ground for the cultivation of crops.

171
Nairobi sewage disposal calls for more than a passing reference. The drains that have been constructed under the Bransby-Williams Scheme initiated in 1907 were intended to take flood water, surface drainage, and effluents of nearly all descriptions, with the exception of water-borne sewage; but since the time the scheme was evolved Nairobi has developed in a manner that precludes the possibility of their extended use for other than the purposes mentioned; land on both sides of the Nairobi River for its entire length to the junction with the Athi has been alienated as farms, depending on the river for practically their sole water supply; and to throw the sewage of the township untreated in any way into it, can only be regarded as a measure that would exert an inimical effect on the public health, and indeed involve the Government in possible litigation.

It is urged that due consideration be given to a water-borne scheme of sewage disposal to serve the densely inhabited areas of the town totally independent of any existing drains; the sewage to be led from collecting depots to a sewage farm on the outskirts of the township, and the effluent after appropriate treatment discharged into the Nairobi River.

In townships where cess pools are not installed, a bucket system is in operation, but in no instance does any township within the Protectorate possess any effective organisation by which a duplicate bucket system can be carried into effect, or where proper scientific means exist for sterilising the soiled buckets.

Special attention is directed to the absence of means

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No. 7

Earth drain River Road, Nairobi, taken November
1913.



No. 8

Courtyard facing River Road, Nairobi, taken November
1913.



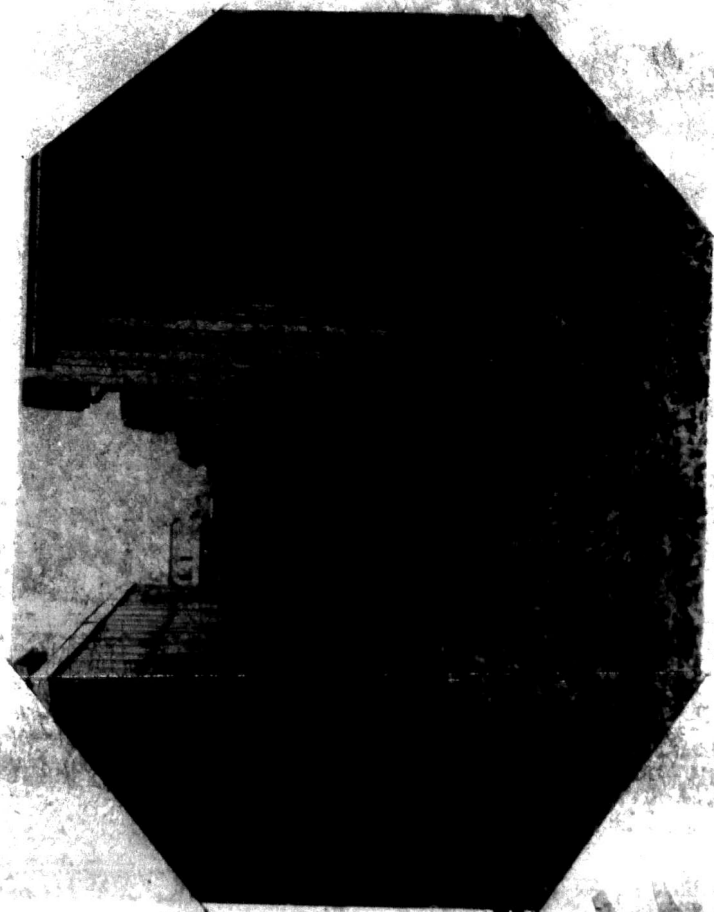
afforded in the Protectorate Hospitals for the disposal of Enteric stools; in some instances this material is placed in receptacles generally used by the entire establishment, and special precautions are not, in all cases, adopted to prevent fly infection. The existing latrine arrangements at the European Hospital, Nairobi, are not constructed or maintained in a manner that in any way can be regarded as sanitary, or fulfilling even ordinary requirements; their use is common to both sexes, the adoption of the open bucket system; absence of means for treating Enteric stools and for scalding bed pans, the retention of night soil for 24 hours on the premises, the total absence of drainage for the boys' latrines, are all matters requiring immediate attention, and that previous reports have failed to remedy.

With the exception of the towns of Mombasa, Nairobi, Nakuru, and Kisumu, systematic methods in dealing with night soil removal are conspicuous by their absence, and the condition of some is deplorable in consequence.

The difficulty and expense of sanitating some of the stations in this country is great. In many of these residences are extremely scattered, the slope of the hill considerable, so that anything like a comprehensive system of sewers is out of the question, both on the ground of expense, and on account of engineering difficulties. A very material improvement, however, can be made in the sanitation of bazaars, more crowded areas, and isolated units such as gaols and hospitals by putting in skeleton sewers, dumping depôts and connected public latrines; the sewer terminating in a small septic tank situated below the area or building, and discharging the effluent into streams; these may be regarded as the main lines on which the disposal of sewage, and disposing of night soil may

886

Condition of sanitary lane, serving inhabited
houses Nairobi in November 1913.



171

reasonably be expected to produce an improvement in the general sanitation of towns and communities residing under tropical conditions. The objections to a continuance of a hand removal system are manifold. By far the most important is the fact that faecal matter, dirty buckets and receptacles are left exposed for many hours at a time open to the air, and accessible to flies; the very best method of reducing this pest being a rapid and satisfactory disposal of all mal-odorous rubbish. The system depends on the satisfactory work performed by a class of persons daily becoming more difficult to obtain and supervise; while the expense incurred by the maintenance of a large staff, equipment and plant is out of all proportion to the amount of work performed, and cannot be considered economical from a financial point of view.

SCAVENGING.

The responsibility of the removal of house refuse and general scavenging in the towns of Mombasa, Nakuru, Kisumu, and some of the smaller townships is vested in the Administration, and in the case of Nairobi in the Municipal Committee, a body of officials and representatives from the general public nominated by His Excellency the Governor.

In no case can it be said that the work is satisfactorily performed. Attention has already been drawn to the necessity that existed during the plague epidemic at Mombasa, for the Health Authorities to temporarily assume control in this direction, and extend this necessary service, facilities for doing so being afforded by a special grant of money for that purpose. At Nairobi the Municipal Committee is fully alive to the fact that the means at their disposal, both in respect of plant and personnel, are deficient to successfully carry out their

J.L.

ANNUAL SANITATION REPORT 1918.

PHOTOGRAPHS

No. 10

177

Sanitary Lane, Cross Estate, Nairobi, taken in
November 1915, showing total absence of drainage and
general conditions prevailing.



ANNUAL SANITATION REPORT 1913.

PHOTOGRAPHS.

No. 11

173

Nairobi. Drainage of back quarters Government Road,
November 1913.



responsibilities; and it is hoped that efforts will be made to place this Department on a satisfactory basis.

The law, as it at present stands, necessitates that specific sanction should be given by a Town Clerk, Superintendent of Conservancy or District Officer before any action for breaches of Township Regulations can be taken to Court, the responsibility of the Medical Officers of Health and Sanitary Inspectors being restricted to giving advice as to what should be done. This dual control, both as regards effective work and its actual performance, has resulted in many misunderstandings, and has frequently prejudiced these decisions of the Courts in favour of granting relief to a delinquent, who, had there been no loop hole for escape that the existing procedure now permits, would certainly have been convicted.

Though it may be admitted that complaints against local authorities in sanitary matters are often made without much discrimination, and Health Officers are given too little credit for what they accomplish there can be no question that dual authority and divided responsibility adversely affects the results desired. It is desirable that a revision of the present regulations be made regarding matters of sanitation, so that the sanitation of towns and districts may be accomplished by the authority of one department of the Government, instead of with several departments and public bodies as is now the case.

The passing of a new Public Health Act, the essentials of which have received Professor Simpson's careful consideration, will be a means towards that end.

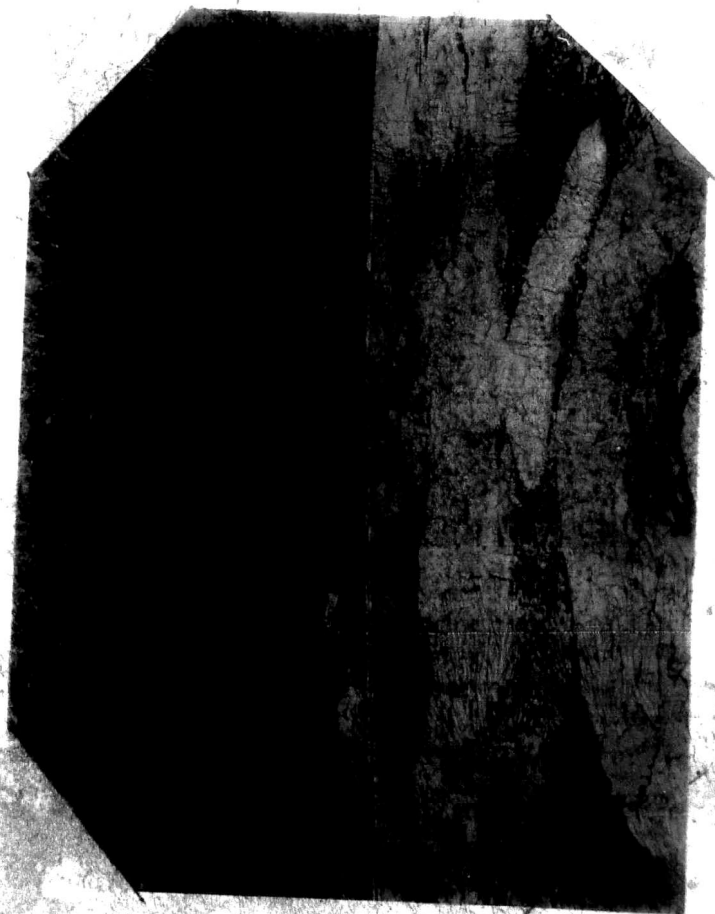
WATER SUPPLY.

There are certain matters in connection with the existing or proposed water supplies for the various town-

No. 11

Nairobi Water Works. Reservoir - Showing cultivation
and defects in the protecting dam.

Take November 1913.



townships that call for comment; principles that should be adopted and carried into effect in order that an assurance may be given to the public that the supply is uncontaminated.

182
It must be accepted as a postulate that all African rivers are polluted, and if their waters are distributed among a community without first receiving appropriate filtration and treatment, the public health is jeopardised.

Safeguarding the source should be the first consideration, and at Nairobi this cannot be regarded as satisfactory in any way; the Health Department should need no support whatever from the Laboratory Division to condemn a water supply to which polluting matters can gain access; that this principle has not been fulfilled the attached photographs show. Further the bacteriological and general analyses establish beyond question that the supply is polluted and to-day contains the essential bacteriological elements for distributing disease. The fact that the epidemic of Enteric in Nairobi in 1911 was traced to an infected water supply should not be forgotten, the conditions prevailing at the source differing very little to that from which the present supply is derived. Another point that calls for immediate remedy is the provision that should be made to coat the inside of all the distributing zinc pipes with Angus Smith solution, as the solvent action of the water on the zinc is very great.

Similar examinations of the proposed supplies for the townships of Nakuru and Kisumu establish the fact that water derived from the proposed sources if delivered in an untreated manner to the general public will be a source of danger to, rather than a means of, preserving the public health.

Safeguarding the sources, filtration and storage of waters and in some cases their chemical treatment, are essentials that must be considered, and the cost for their inclusion should be estimated in all cases where supplies of this nature are contemplated.

Systematic bacteriological and analytical examinations of waters derived from actual and proposed sources have been made by the Bacteriologist and Analyst throughout the year; and the unanimous conclusions arrived at but confirm the opinions expressed.

DRAINAGE.

With the exception of Nairobi township, where the Bransby-Williams scheme is now well in hand, and every effort is being made to hasten its completion, no town possesses a drainage scheme of a kind that can be regarded as affording the protection to the public health that is essential. At Mombasa and in the scattered residential districts, thanks to the absorbent nature of the ground, the need for such has hardly arisen; but in the densely over-crowded areas the necessity for its inclusion is urgent. This need will be accentuated when the new water supply is distributed by means of stand pipes, and the existing wells closed.

A large amount of work performed by the mosquito destruction gangs is caused by the absence of adequate provision for the removal of waste water; the object lesson at Nakuru is instructive; here the chief mosquito breeding foci can be located in an earth drain receiving the overflow from the Railway tanks and shops.

Hitherto, in order to satisfy the urgent demand that has arisen to supply house accommodation for all classes of the rapidly increasing population, sanitation in the direction of appropriate surface drainage has not received the attention it deserves; this is especially noticeable in the more crowded areas in Nairobi near the River Road and adjoining properties, where development is rapidly being pushed in a manner practically regardless of sanitary requirements; the serving of this area by the main surface drainage scheme is a matter calling for immediate attention; and though much must be done by the

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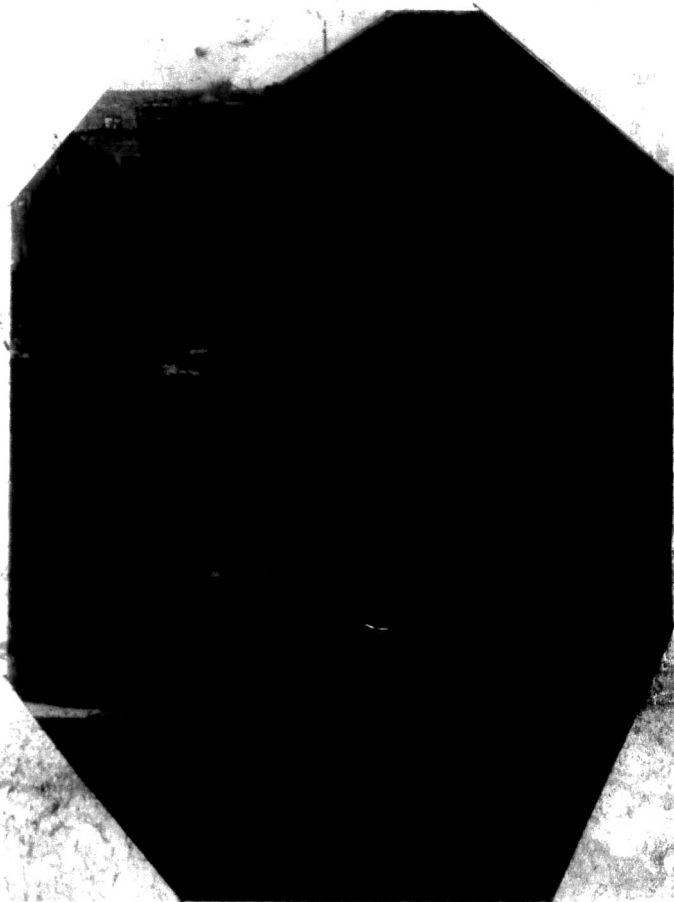
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Photographs taken in Nairobi, September and November 1913.

No. 14

Drainage in the Indian Bazaar, showing sewage discharging from latrines on to the ground and flowing into masonry sumps which have no outlet, taken



respective owners, it is but reasonable to expect that the portion of the general drainage scheme which the Government has declared its intention to construct shall be proceeded with without delay. This is rendered necessary not only on the grounds that it is an integral part of the general scheme, but also ~~that~~ it receives some of the effluent from a very congested area, which from the nature of things is now retained on plot areas or discharged on to the main roads.

Special attention is directed to the necessity of putting in an adequate system of plot drainage for the following in Nairobi:- Government House, the Prison and Police Depot, Markets, Indian Bazaar, European Hospital, European School, River Road, as well as in places and Government Buildings generally in the Protectorate.

Photographs taken in Nairobi September and November 1913.

No. 15

187

Sanitary lane between buildings erected on
Government Road (Government Road in mid-distance),
sewage flowing from latrines and water standing on
the ground. *taken 11 Nov 1913*

Location: Government Road Nairobi



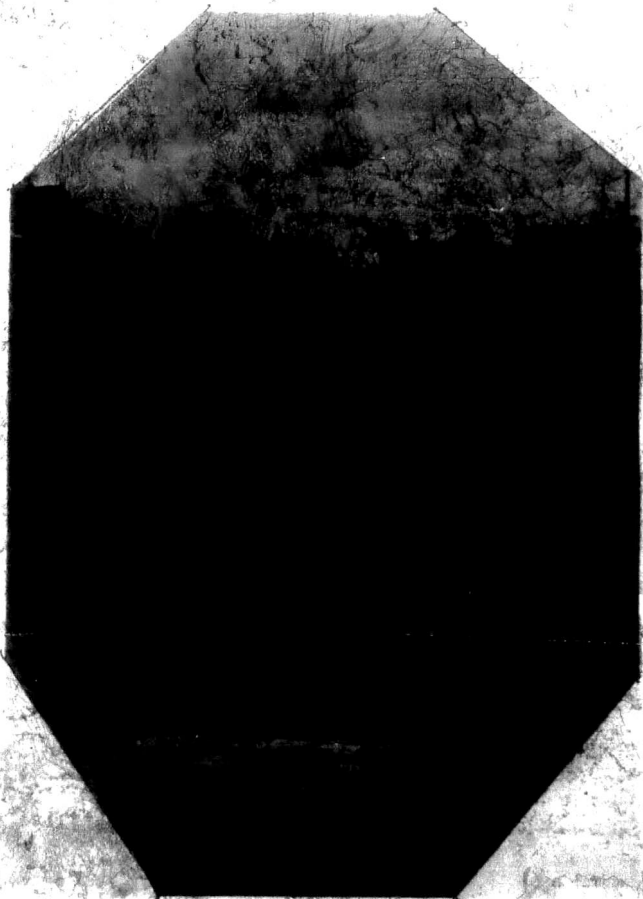
ANNUAL SANITATION REPORT 1913.

PHOTOGRAPHS.

1874

No. 16

Nairobi. Drainage of Victoria Street, November
1913.



Photographs taken in Nairobi September and November 1913.

No. 17

An improvised Laundry over town drain,

taken November 21

183



Special attention is directed to the reports of work done by the Sanitary Divisions in the three principal towns as shown in table IV.

The work represents not only bush cutting, but the more important "root stubbing" it being realized that cutting bush per se performed twice yearly entails an unnecessary amount of labour and unjustifiable expenditure, and the efforts in this direction are most encouraging. The alterations in the general appearance of certain areas in Mombasa, Nairobi, and Kisumu due to steady sustained efforts, are most surprising, and beneficial in every way.

Dr. R. Small, Medical Officer of Health, Mombasa, states that owing to shortage of labour and the calls for an increased number of hands in dealing with specifically anti-plague measures this work was hindered during the first part of the year.

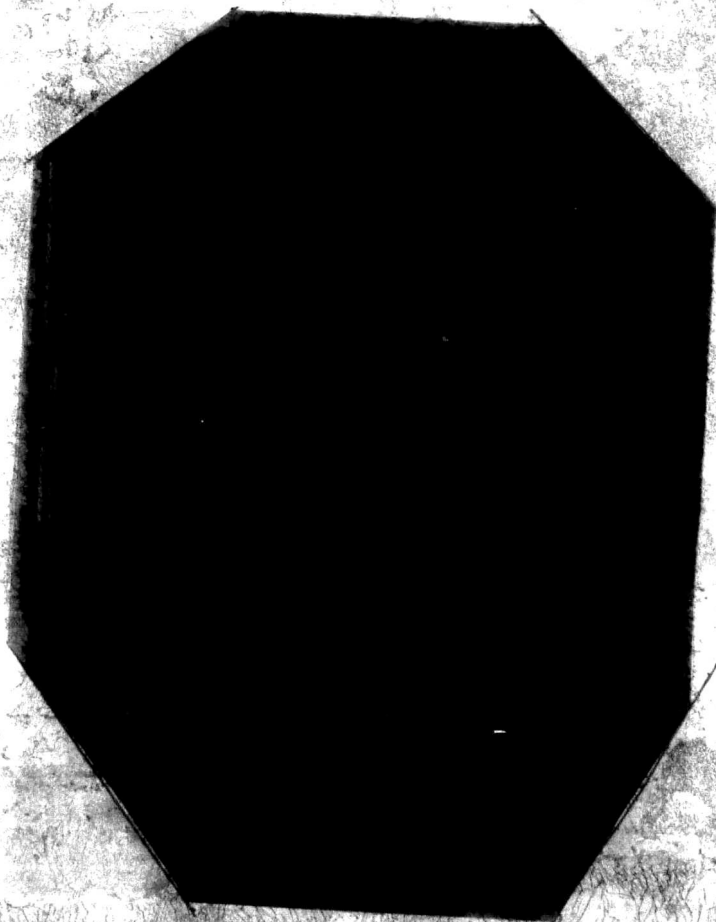
By a piece of good fortune however the labour at his disposal was increased towards the end of the year and a most thorough clearing was rendered possible.

The southern part of the island is now clear of bush with the exception of a part the ownership of which is disputed and it was necessary to await the decision of the courts before completing this useful work.

It being impossible to expend Government funds on clearing land which was not certainly Government property, and as the ownership is doubtful it would be impossible to recover the cost.

No. 18

River Road, Nairobi; building plots showing general condition of the water logged ground near the main road leading into Nairobi, taken November 1913.



Dr. B. W. Cherrett, Medical Officer of Health, Nairobi, states that the whole of the township during the year has been cleared of bush and rank vegetation by convicts, lent by the District Commissioner. The number at his disposal varied between 20 and 40.

Acreage cleared by convicts - 1,229 acres.

The Railway have cleared their own zone. This clearing of bush has been a great improvement, as in the past this bush has been the latrines for natives, dumping ground for rubbish and a harbour for mosquitoes besides being an eye-sore. The convicts have also been employed in filling up depressions, burrow pits, and the draining of swamps.

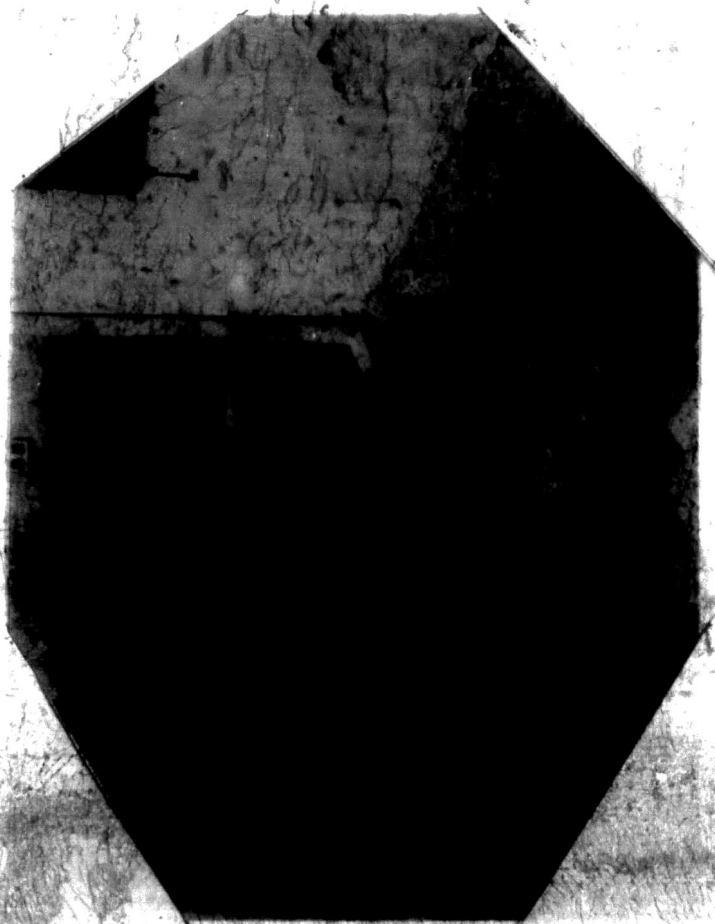
At Kisumu an area of nearly four square miles has been cleared and stumped.

PHOTOGRAPHS.

193

No. 19

Building plot, Cross Estate, Nairobi; note sewage
staging on ground and surrounding inhabited house, taken
November 1913.



The following shows the work done under this heading at the three principal towns as reported by the Medical Officers of Health.

CLEARANCE OF UNDERGROWTH, LONG GRASS, AND JUNGLE - MOMBASA.

	1911.	1912.	1913.
Number of square yards of weeds, grass and vegetation cut and removed...	Approx. 150 Acres.	Approx. 150 acres.	Approx. 1000 acres.
Average frequency of clearance of rank vegetation on same area...	6 months	6 months	6 months.

CLEARANCE OF UNDERGROWTH, LONG GRASS, AND JUNGLE - NAIROBI.

	1911.	1912.	1913.
Number of square yards of weeds, grass and vegetation cut and removed...	-	70000	5481540
Average frequency of clearance of rank vegetation on same area.	Twice a year.	Monthly.	When necessary.

CLEARANCE OF UNDERGROWTH, LONG GRASS, AND JUNGLE - KISUMU.

	1911.	1912.	1913.
Number of square yards of weeds, grass and vegetation cut and removed...	-	-	2 square miles
Average frequency of clearance of rank vegetation on same area...	-	-	twice yearly

Outside the three townships mentioned little, if any, effort has been made to undertake systematic work of this nature. Special attention is being directed to bush cutting in some of the known sleeping sickness areas on the Kaviroondo Gulf, this step being rendered necessary by the fuel cutting operations for the Uganda Railway. No person from a clean district will be permitted to be employed in these regions, the operations being conducted by the resident community. Special rules to be observed in these localities have been drawn up and are about to be enforced.

es/ 7
A general review of the conditions under which the Native and Asiatic communities reside within the principal towns of the Protectorate establish the fact that a great contributory cause in the permanence of disease is ~~due to~~ overcrowding. In the past it may have been impossible to reserve sufficient ground for housing the various communities in locations erected and maintained on sanitary lines. In consequence the increased prosperity and general development of the country has necessitated the inclusion of thousands of individuals, each unit of whom who is employed must be regarded as an economic necessity, for whom housing accommodation has not been erected on a scale commensurate with their requirements in any particular.

The demand for accommodation, therefore, has in every instance and locality exceeded that available, and overcrowding has become an essential condition of life. The Asiatic, especially in centres such as Mombasa, the bazaars at Nairobi, Kisumu, Nakuru and other towns and in localities such as River Road, Nairobi, has met the difficulty by an ingenious system of sub-leasing, by which a few square feet of space within the dwelling are let to tenants; a proceeding that comes within the protection of the law, and has hitherto circumvented any attempts that legislation, in respect of Lodging House Rules, was intended to remedy.

The system provides abundant compensation for the investor in house property, while the unfortunate sub-tenant alone suffers, who, by force of circumstances, is compelled to pay an exorbitant rental for insanitary and undesirable accommodation.

98

The attached tables demonstrate the system that generally obtains to-day in Nairobi.

196

(Refer to plans Nos. showing the subdivision of plots in the Indian Bazaar, Nairobi, in December 1913, and key plan No. of that portion of the Indian Bazaar, Nairobi, of details referred to in plan No.).

ABSTRACT FROM RETURN CONTAINED IN ORIGINAL OFFICE OF REVENUE, CALCUTTA.
 17th JANUARY 1915.

Original plot No. 7 of No. 747 Madrabbi.
 100 feet x 50 feet.

Rental paid by owner A to Government Rs. 48 per annum.
 Subdivided into two portions.

Tenant B pays A Rs. 30 per annum.

Tenant D pays A Rs. 48 per annum.

Tenant C pays B Rs. 7/60 per annum.

Tenant E pays D Rs. 3 per annum. 20 tenants pay D (on verandah) Rs. 7/60 per annum.

3 persons pay A Rs. 15 per annum.

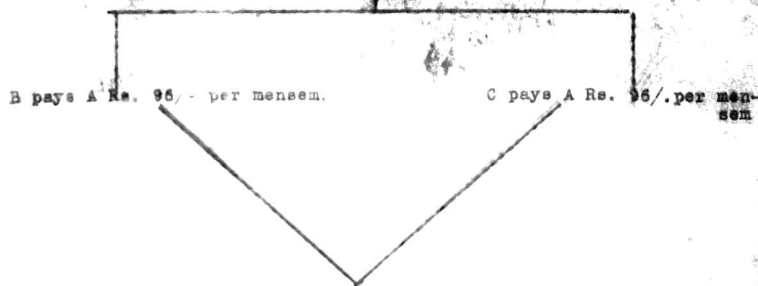
Original cost of building about Rs. 1,600, total number of persons residing on plot 20.

Original owner A pays Rs. 48/- per annum rent.
 A receives Rs. 174/6 per annum rent.
 Sub-tenant B & C pay Rs. 996/-
 B & C receive Rs. 994/-

197

River Road 100' x 75 feet plot area.

Rental paid by owner A Rs. 48/- per annum.



B pays A Rs. 95/- per mensem.

C pays A Rs. 95/- per mensem

10 persons pay B & C Rs. 14/50 per mensem each.

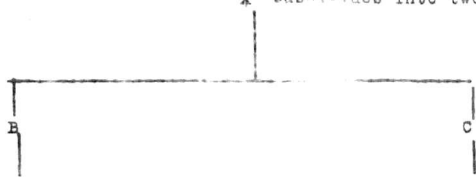
- A. pays Rs. 48/- per annum.
- A. receives Rs. 2,204/- per annum.
- B & C. pay A Rs. 2,204/- " "
- B & C. receive Rs. 2,610/- " "

Almond

Plot 20 No. 734

100 x 30 feet.

A subdivides into two portions.



10 persons pay
 Rs. 7/50 per mensem = Rs. 900
 per annum.

1 person pays
 Rs. 70/- per mensem
 = Rs. 840/p. annum

15 persons pay
 Rs. 7/50 p. mensem
 = Rs. 1080 per
 annum.

= 26 persons.

At Kisumu a camp has been established for the retention of labourers for a few days, coming from the Kavirondo Province where medical examination, vaccination and inoculation are performed prior to their despatch to other parts of the Protectorate. This represents the only attempt made to exercise supervision over the Native Labour Supply.

The extension of this procedure to other parts of the country is most essential, as the transfer of labour from infected into clear districts, and vice versa, is daily taking place. The prosperity of the country depends, in a great measure, on the preservation of the health of these persons, and an organisation is required which should include supervision and medical attention both at the source of the supply, during its transit, at its destination and on its return.

The important bearing that the establishment of Native Locations in Townships, and elsewhere, will exert on the public health cannot be over estimated; as by this means the many natives, who now reside where and how they can, will be accommodated in sanitary dwellings, and these be subjected to supervision.

Acquisition of suitable land for this purpose in Mombasa, and the adjustment of preliminaries for the utilisation of such as are available in other places, represent the means that have been adopted in the realisation of a scheme that is considered to be one of the most important measures in the country.

The Health Board appointed to act under the preliminary Public Health Ordinance No. 10 of October 1915, has appreciated the importance of defining zones for the segregation of race, business and residential areas, and open spaces in any town planning scheme considered by it, and the application of these principles is gradually being extended to existing Townships.

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241

IV. - CONDITION OF TRADES AND FACTORIES.

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Some

PUBLIC MARKETS.

Those at present constructed are:-

Mombasa	2
Nairobi	2
Kisumu	1

In other townships spaces have been reserved, and generally provision has been made for the comfort of the public by roofing over some portion of the space.

Of these in the larger townships, little can be said in commendation of their construction or drainage, but they are generally kept in a cleanly condition.

SLAUGHTER HOUSES.

At Nairobi the control of the Slaughter House is vested in the Municipality, who have appointed a meat inspector; in all other parts of the country supervision is exercised by the Administration, and inspection of meat is performed by the Veterinary Department or the Sub-Assistant Surgeons of the Medical Department.

Paved and drained slaughter houses exist at the following places:-

Mombasa	2
Nairobi	1
Kisumu	2

Owing to a land slip, the building at Mombasa has undergone considerable alteration.

At Nairobi the return of beasts slaughtered was:-

	<u>Slaughtered.</u>	<u>Condemned.</u>
Oxen	1,519	83
Sheep and Goats	34,886	170
Pigs	131	1

Frequent inspections of meat intended for sale were made at Kisumu, where a considerable quantity was destroyed on account of "trichinae" and "Fluke".

WATER FACTORIES.

In Mombasa these remain in the same condition as before, and the public has no guarantee that it is not being supplied with a highly polluted and dangerous product.

In view of the approaching licensing period a strict examination of these premises was made, and the conditions upon which licences would be granted in the forthcoming year made clear.

One of these conditions was that each factory should supply itself with a bacteria-proof filter of an approved type.

Up to the present none have been installed but several have been ordered from home.

In view of the fact that several cases of enteric undoubtedly acquired here have occurred these conditions will be stringently enforced.

At Nairobi water is laid on to the factories; 42 analyses showed 10 contaminations with lead or copper. One of the premises was closed down twice, and another on one occasion, and were kept closed until they were able to produce a sample free from contamination.

The Railway Department possesses an up-to-date plant, and aerated waters from this source are supplied to its personnel, and to the general public at the Station Dak bungalows and buffets.

LAUNDRIES.

Piped water at Nairobi derived from the town supply is used; this precaution represents practically the only safeguard to the public. The Municipal quarters

135

are fairly satisfactory where 20 persons are provided with one room for sleeping and living. No provision is made for boys, and the drainage is unsatisfactory. In other towns in the country the provision of public laundries is a matter that calls for consideration.

DAIRIES.

203

Within the Protectorate practically no control or supervision is exercised over the milk supply either at its source of origin, or during its distribution.

At Mombasa during the year the cow-keepers have been moved from the centre of the town to sites in the plantations around.

If the methods of dairying in vogue have not improved, the defects are less evident and the removal from congested streets and alley-ways to spacious gardens at least offers those concerned the opportunity of carrying on their business in a less objectionable manner than heretofore, and vastly improves the condition of the quarters from which they were removed.

Though the bottles used for the distribution of the milk are but partly cleansed with, in most cases, foully polluted well-water, and often stoppered with a twist of paper, no cases of sickness directly attributable to the shortcomings of the milk-sellers or the contamination of the milk supply have come to the knowledge of the Health Office. This apparently satisfactory state of affairs is the product of two factors, viz:- the very sound practice of Europeans of thoroughly sterilizing their milk immediately on arrival by boiling, and the fact that many slight alimentary derangements pass unreported, or are attributed to "climate" or "cold on the stomach", etc.

A disease which probably is communicated by means

106

of milk adulterated with polluted water, or conveyed in bottles rinsed in the same, is dysentery.

At Nairobi 88 samples have been sent by the Police, Sanitary Staff, and private persons to the Government Analyst, and the percentages of adulterations reached the high figure of 34%; the adulteration has invariably been added water varying from 12% upto 70%; 12 prosecutions with 7 convictions have resulted. This high percentage of adulteration indicates a very serious condition in the milk supply of the town.

Elsewhere the conditions under which the milk is sold can only be described as affording no safeguard to the public.

BAKERIES.

Nairobi possesses 6 bakeries, licensed premises, 2 under European, and 4 under Coan supervision. In all cases the premises are kept clean, while the lighting and water supplies are satisfactory. Elsewhere in the country the bakeries are generally the property of Asiatics.

SHIPPING.

Bills of Health issued at one port held good for Kilindini, including Mombasa, Lamu and Kismayu.

The numbers issued during the year were:-

Port.	1911		1912		1913	
	Steamers.	Dhows.	Steamers.	Dhows.	Steamers.	Dhows.
Kilindini	381	213	383	110	427	146
Lamu	46	-	18	-	22	-
Kismayu	74	30	45	2	69	4

Shipping on Victoria Nyansa:-

1912		1913.	
Steamers	Dhows.	Steamers.	Dhows.
176	213	268	246

The following table shows the number of steamers and sailing ships and dhows that have received pratique at Mombasa and Kilindini with the numbers of souls on board:-

Year.	Number of vessels.	Number of dhows.	Total number of souls.
1911	581	213	77,737
1912	383	110	81,213
1913	427	146	81,993

Hitherto practically no restriction has been placed on Asiatics and others landing with their goods and chattels in the country, but during the months plague was epidemic at Mombasa, every such person was medically inspected, inoculated and his baggage fumigated; the necessity for the continuance of this measure is shown by the numbers of persons landing in the country at Mombasa though not necessarily remaining there:-

Year.	Europeans.	Africans.	Asiatics.	Total
1911	3,156	2,393	5,442	10,991
1912	3,156	1,990	6,113	11,259
1913	3,875	2,233	9,190	15,298

Revenue derived from Bills of Health at the Coast Ports in 1913, and the number of vessels and dhows to whom they were issued:-

Port.	Amount Rs. Cts	Number of Steamers.	Number of Dhows.
Kismayu	547.50	69	4
Lamu	172.50	22	-
Mombasa	3510.00	427	146
Total	4230.00	518	150

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

) *Part*
sub 8

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Police. Lectures on Sanitation by the
 Medical Officer in charge.

School Teaching. Lectures Demonstrations on
 Elementary Sanitation by Teaching Staff.

Lectures on Sanitation by the Medical Officer
 in charge, European Hospital, Bombasa.

Press Notices and Circulars regarding the pre-
 cautions to be observed against Plague,
~~Cerebro spinal meningitis, Inoceric fever~~
~~and Malaria~~, have been freely circulated
 among the General Community.

Hand Bills 20,000 printed in 5 Languages
 regarding Plague.

(c) RECOMMENDATIONS FOR FUTURE WORK. *See 208*

It is not considered desirable to submit any recommendations, as such will be fully dealt with by Professor Simpson, C.S.I., in his report on the sanitation of the Protectorate.

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IV.- METEOROLOGY.

There is no Bureau of Meteorology in the Protectorate, and the Department which makes itself responsible for collating such statistical information as is available is the Agricultural. Its tables are based on returns furnished it by the Permanent Way Inspectors on the railway, from District Commissioners' offices, and from a large number of farmers and settlers throughout the country. There is a total of 136 centres at which the rainfall is noted; 26 of these, in addition, record temperatures. The accuracy of these returns cannot be accepted unhesitatingly. Only at the Laboratory, Nairobi, are hygrometrical observations taken; nowhere are solar temperatures or notes as to the force and direction of the wind recorded.

As regards the rainfall for the year, the following extracts from representative points in the different zones, given in Table V, will give the comparison with the two previous years. Generally speaking, the volume that fell was considerably less than in the two previous years; still it may be said that if below the average there was sufficient to ensure fair average crops practically everywhere and occasion no distress.

Tables showing mean annual rainfall at various points in the different areas for the three years.

Coast Area.

Randall

COAST AREA.

	1913	1912	1911
Malindi	46.74	24.88	58.07
Mombasa	42.88	37.58	41.59
Mazeras	43.35	35.86	59.35
Mackinnon Road	24.72	23.29	21.23
Voi	22.27	30.73	16.20
Taveta	28.31	25.39	29.14

MOUNTAINOUS AREA.

Masongaleni	20.11	39.52	59.35
Makindu	17.72	29.72	20.57
Kiu	42.77	29.72	23.43
Athi River	30.01	39.21	30.52
Nairobi Laboratory	30.71	54.21	41.29
Kabete (near Nairobi)	34.24	55.85	42.16
Naivasha	26.57	33.90	29.04
Nakuru	35.03	40.93	28.74
Molo	52.98	62.35	46.62
Eldama Ravine	40.12	47.89	37.39

NYANZA & KENIA PROVINCES.

Lusaka	52.10	50.60	34.97
Mohoroni	39.80	91.65	92.25
Kisumu	43.15	46.28	36.28
Namia	61.53	72.49	58.21
Karungu		37.56	-
Kericho	64.65	71.38	64.30
Nandi	66.77	69.13	57.12

NYANZA & KENIA PROVINCES :- Contd.

	1913	1912	1911
Fort Hall	44.33	60.52	48.08
Nyeri	43.12	37.54	33.63
West Kenia	48.91	54.34	35.92

DESERT AREA.

Kisumu	13.71	8.97	10.47
Gosha Alexandra	29.47	25.33	19.72

Temperature and rainfall tables for Mombasa,
Nairobi, Kisumu and Fort Hall are inserted in Table V
of Returns.

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134

SECTION V. —

213

HOSPITALS, DISPENSARIES AND INSTITUTIONS.

(1) EUROPEAN HOSPITALS AT NAIROBI AND MOMBASA.)

*per
Lonic*

At Nairobi the nursing staff consisted of one matron and three - subsequently increased to five - nursing sisters, while Mombasa had in all three sisters, the total increase of staff for the year being two nursing sisters. In addition to this, it was necessary during the year to engage outside help on two occasions on account of the number of serious cases, mostly Enteric, in hospital, who required special nurses. One maniacal case (alcoholic) was transferred to the Lunatic Asylum. The longest residence of any one patient in Nairobi Hospital was 144 days, in Mombasa 46 days, due respectively to Tuberculosis and Fracture.

TABLE SHOWING ADMISSIONS, DEATH RATE, NUMBER OF BEDS, ETC., AT THE TWO HOSPITALS.

	1913.	1912.	1911.
Total number of beds *	29	29	29
Daily average occupied	16	11.5	8
Total number of admissions	347	276	230
Total number of days residence	5946	4368	3718
Average residence to each patient.	17.13	15.82	16.16
Discharged - Cured	273	227	173
Improved	55	38	43
Died	14	11	14
Death-rate <i>per cent.</i>	4.63	3.99	6.09

* 7 at Mombasa, 22 at Nairobi.

Of the admissions 194 were Officials and 153 non-Officials, giving a percentage of 56. for the former and 46. for the latter.

The prevailing diseases which came under treatment during the year were:-

Malaria.- 101 cases, (39 of which were Officials) as against 92 last year, an admission rate of 40.52 compared with 33.33% for 1912. There were three deaths, giving a death-rate for this year of 2.97 as against 1.08% of admissions in 1912. The great bulk of the cases came, as might be expected, from Mombasa and were admitted during the second quarter of the year, the type being mostly sub-tertian.

Blackwater Fever.- 4 cases were admitted during the year 2 at each hospital, with also one death at each. The Nairobi cases were both imported; neither were Officials. Of the 2 cases at Mombasa 1 was an Official and 1 a missionary. This disease is the subject of a special report.

Enteric.- 18 cases were treated during the year as against 25 last year. Of these one died at Nairobi Hospital. The admission rate was 5.18 compared with 8.33% for the previous year, and the death-rates respectively were 4.34% and 17.39%. The occurrence of the disease was pretty evenly distributed throughout the year, and its character much the same as recorded in previous reports. Nairobi contributed by far the largest number of cases. 5 Officials were admitted during the year, and the only death recorded was an Official.

Dysentery.- In 1912 there were 13 cases, in 1911, 10 cases; this year there was a decrease, 7 only being admitted. Of these one died at Mombasa. Two of these depended on the infection by the amoeba, one was bacillary

in origin, and the rest undetermined. 2 of the cases ^{Funf} were officials.

Epidemic cerebro-spinal meningitis.- During the epidemic 4 cases were admitted to the Nairobi Hospital during the middle months of the year. There was one death. Later on 4 of these cases were transferred to a temporary isolation hospital which had been improvised. One of the cases treated was an official and the death which occurred in hospital was a non-official. One death occurred out of hospital in a member of the European Police Force in Nairobi.

Respiratory diseases.- These accounted for 7 admissions mostly in Nairobi as against 13 last year. There was one death from Broncho-pneumonia in Mombasa Hospital.

Operations.- 32 major operations were performed during the year, all with the exception of two at Nairobi. These included:- Removal of the appendix 5, Resection of rib for empyema 2, Deep abscess of neck, of knee, of liver (2) peccas, of appendix, pelvic cellulitis with abscess - 7, perforation of typhoid ulcer, drainage of gall-bladder, fistula in ano, Whitehead's operation for haemorrhoids, reposition of retroverted uterus, ditto and prolapse of ovaries, ovariectomy, gall-stones, polypus recti, etc., That with the one exception of the perforation of the typhoid ulcer, these varied cases were successful and were discharged/cured is a testimony to the efficiency of the hospital under the Resident Surgical Officer and Nursing staff.

Diseases which caused deaths:-

Officials:-

Malaria	2
Abscess of liver	1
Enteric Fever	1
Cirrhosis of liver	1

General European Population:-

Cerebro-spinal meningitis	1
Dysentery	2
Malaria	1
Blackwater Fever	2
Broncho-pneumonia	1
Pneumonia	1
Valve Disease of Heart	1

As a result of representations by the Chief Sanitation Officer the sum of £.200/- was spent in improving the internal arrangements of the Nairobi Hospital, thereby considerably improving the conditions of the earth-closets, providing an additional bath-room, a mortuary, and utilising three of the rooms in the administrative block as additional wards. The main drain was extended, but in default of a scheme for the drainage and care of the 1½ acres of compound in which the hospital stands, it will be necessary to render mosquito-proof the whole hospital. The increase in the nursing staff has so congested the nurses' quarters that they have overflowed into one of the wards. It is satisfactory to know that this matter is receiving serious attention.

The Mombasa Hospital remains in the same condition as noted in 1911 report. The conversion of the old building into an administrative block, and the erection of new wards is a necessity.

(2) THE CIVIL HOSPITALS AND DISPENSARIES:) *Kenya*
Sonia

The figures recorded in the statistical tables at the end show that the work at the various centres has steadily increased. A summary of the cases treated is as follows:-

	1911.		1912.		1913.	
	In.	Out.	In.	Out.	In.	Out.
Admissions.	5,548	80,262	15,233	77,837	11,012	95,778
Deaths.	592	-	522	-	764	-
Death rate per 1000.	106.70	-	34.25	-	69.57	-

There are a total of 41 Native Hospitals and Dispensaries scattered throughout the country at the various stations. Only two of them may be considered as really hospitals - those at Mombasa and Kisumu built of stone with administrative blocks and separate ward units. The buildings at Nairobi, Makindu and Nakuru are old converted railway construction hospitals, hopelessly insanitary and out of date. At the outstations the general type is a bungalow of galvanized iron and wood, with a small dispensary and a ward of 4-8 beds under the charge of a Sub-Assistant Surgeon. The majority of these meet the requirements of the district or station, being all that the finances of the country can afford. *Seventeen* 17 of the stations with a Sub-Assistant Surgeon or Hospital Compounder in charge possess no beds - only a dispensary.

The value of these hospitals is greatly militated against, as pointed out in the previous year, by the impossibility of obtaining from the resources of the country any reliable trained nursing staff, and the hopeless expense of considering the engagement of such from other countries.

Howling

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(3) LUNATIC ASYLUM, *Michigan*

218

The total numbers which have been under treatment at the Asylum for the last three years are:-

	1911.		1912.		1913.	
	No.	Deaths.	No.	Deaths.	No.	Deaths.
Males	60	11	68	22	62	14
Females	11	11	4	11	6	2
Total	60	11	72	22	68	16

Of these the following were Europeans:-

	1911.	1912.	1913.
Males	5	1	5

Delirium Tremens and Delusional Insanity were the cause of two of the admissions, while of the three cases detained under ten days' remand for observation two were occasioned by excessive bouts of alcohol.

Of the general admissions there were 6 cases of idiotcy, with two deaths, one due to advanced tubercle of the lungs, and the other to paralysis. There were 17 cases of mania, with three deaths consequent on the extreme violence of the paroxysms. Three cases were discharged as cured, the same number as in the 27 cases of insentia which occurred. The deaths which resulted in this condition were generally caused by exhaustion.

One

121

One death ^{due to tubercular adenitis} occurred amongst the ~~7~~ cases of delusional insanity. Six of the observation cases were discharged at the end of the ten days.

The main causes of admissions to the Asylum were, so far as the history of each case could be elicited, due to obvious syphilis, congenital or acquired, and to drink. In one instance the insanity was caused by malarial infection which rapidly yielded to appropriate treatment.

There was no epidemic disease during the year.

The mortality rate showed a considerable improvement over that of last year, but still remains very high. While much remains to be done to improve and extend the structural arrangements of the buildings, the undue mortality cannot be attributed to that cause, nor to any fault in the management of the institution, which I consider reflects credit on the superintending staff, and their supervision of a raw untrained staff of native boys. The majority of patients are in a very bad way when they arrive, and are prone to succumb to intercurrent conditions. The rate for the last three years has been 235.5 per mille for 1913, 305.5 for 1912, 183.3 for 1911.

Restraint had to be resorted to on 16 occasions eight times in the case of one European.

Escapes.— One case of mania, a Masai, escaped during the year, and was not re-captured.

(4) GOVERNMENT DENTAL SURGERY, / Dec. 1911

The necessity of taking some steps for the care and preservation of officials' teeth had been before the Administration ever since 1909, as it had long been recognised that the effects of this particular climate on teeth were intensely and rapidly destructive. However complete was the scheme of medical attendance in force for officials, it was realized that unless there was, as an integral part of it, some similar provision for dental hygiene, one of the most important branches of defence against the effects of the tropics on health was omitted. It was not until this year, however, owing to the possession by one of the medical staff - Dr. V. G. L. van Someren - of the requisite dental qualifications, that it was possible to make a provisional attempt to remedy the deficiency. Accordingly a Dental Surgery was opened in March and was carried on by the fortunate circumstance of Dr. van Someren being in possession of the necessary outfit, the Medical Store not being in a position to equip him with instruments and accessories. Owing to a variety of causes which it is unnecessary to specify here, the routine of the work can only be said to have been constituted for the last six months of the year.

From July to December, during a working period of 140 days, a total of 170 Government officials (including wives, families and households) obtained dental attendance, requiring, exclusive of free advice, a total of 386 appointments. This does not represent the possibilities of the office, for its institution was not gazzeted, and, further, the time for dental work was broken into by the

obligation to perform certain purely medical duties which have since been removed

The main conditions which came under review were Dental caries, 317 cases; Dento-alveolar abscess, 69; Pulpitis, 30; Pyorrhoea, 21, and Erosion 20. The number of the first mentioned disease shows the important part played by it on the general health of the official. Pyorrhoea, mild or advanced is also extremely prevalent, and the association of this condition with articular rheumatism was evident in several instances. So also were cases of general septic toxæmia, characterized by intense headache and gastric symptoms which were not amenable to ordinary medical treatment. The statistical tables of the work done will be found on page of returns.

There are two main gaol establishments; one is the mediaeval fort at Mombasa with a daily average lock up of 245 prisoners, the other at Nairobi. This is in a new building erected in 1911 on lines which will admit of suitable additions being made; attached to the Nairobi Prison is a field Prison Boma, situated some 22 miles out of Nairobi on the Fort Hall Road. These men live under canvas. The daily average lock up for this prison was 300, and for Nairobi 447. On the whole, the general health of the prisoners was good during the year. The principal causes of admissions were malaria, respiratory and digestive diseases, and local injuries. The mortality from pneumonia was unduly high for Nairobi, 74 per cent of admissions, due in large measure to the more inclement climate during the rainy season. The overcrowding mentioned in last year's Report still continued.

TABLE SHOWING SICK AND DEATH RATES AMONGST PRISONERS
AT THE MOMBASA, NAIROBI AND N'DARUGU
OMA GAOLS FOR 1913.

	Mombasa.	Nairobi.	N'darugu.
Number of prisoners on 1.1.13	243	384	301
Number admitted during 1913	716	2373	561
Average daily number in Gaol	245	447	300
Total number placed on sick list during year ...	572	330	163
Total number of days on sick list ...	3771	2980	1231
Average number daily sick ..	10.33	8.16	5
Total number of deaths ...	7	50	4
Percentage of deaths to average daily strength	2.85	11.18	1.33

The causes of deaths were as follows:-

Malaria	7
Dysentery	4
Tuberculosis	6
Broncho-pneumonia	3
Pneumonia	27
Pleurisy	5
Bronchitis	1
Cerebro-spinal meningitis	2
Diarrhoea	1
Ascites	1
Cirrhosis of liver	1
Jaundice	1
Peritonitis	1
Melancholes	1
	<hr/>
	61

(1) BACTERIOLOGICAL.

As usual the large number of routine examinations conducted interfered considerably with the time for original work. The account of the investigations made in connection with the outbreak of cerebro-spinal meningitis will be found in Dr. Rose's and Dr. Shircore's paper, Appendix No. ... while further details of the general work of the Laboratory are given in Vol. IV of the Laboratory Reports for 1913, Parts I and II.

summary of examinations.

<u>Blood</u> :- Negative	...	...	...	...	300
Differential leucocyte counts	...	...	...	...	789
Large mononuclear increases	...	...	...	...	289
-do-	showing pigment	...	...	...	42
<u>Malaria</u> -Benign tertian	...	...	...	...	12
Quartan	...	...	...	...	5
Sub-tertian	...	...	...	...	174
<u>Spirochaeta heminis</u>	...	...	...	...	7
<u>Treponema pallida</u>	...	...	...	...	4
<u>Bacillus leprae</u>	...	...	...	...	1
<u>Microfilaria perstans</u>	...	...	...	...	1
<u>Meningococci</u> -cerebro-spinal fluid	positive	...	...	...	147
	negative	...	...	...	62
nasal secretions	...	...	...	...	2
blood	...	...	...	...	3

<u>Plague:-</u> Human	...	...	...	positive	29
				negative	25
Rats	...	...	...	positive	34
				negative	3084
				decomposed	16
<u>Estimation of Haemoglobin</u>	...	...	...	positive	2
<u>Wassermann reaction</u>	...	...	...	positive	11
				negative	10
				doubtful	2
<u>Widal reaction</u>	...	...	...	positive	33
				negative	75
<u>Malta fever:-</u>	...	...	...	Negative	3
<u>Faeces-amoebae:-</u>	...	...	...	positive	18
				negative	42
Ova	...	...	...	...	13
<u>Sputa:-tubercle bacilli</u>	...	...	...	...	13
pneumococci	...	...	...	...	28
negative	...	...	...	...	44
<u>Urines:-</u> chemical	...	...	...	...	70
microscopical	...	...	...	...	13
spermatozoa	...	...	...	...	3
tubercle bacilli	...	...	...	...	?
bacillus coli	...	...	...	...	1
gonococci	...	...	...	positive	28
				negative	46
<u>Water:-</u> bacteriological	...	...	...	...	4
<u>Various</u>	...	...	...	...	23
<u>Tissue sections</u>	...	...	...	...	7
<u>Veterinary examinations</u>	...	...	...	...	64
Total					5561

12-18

Preparation of Vaccines.

Autogenous	...	...	...	...	...	...	8
Calf-lymph:	glycerinated, in tubes of 5 doses -						370,862
	desiccated, in ampoules of 36 doses -						5,400

Last year the number of examinations was 3510 (including some 800 veterinary ones). This increase of over 2000 is one expression of what epidemic work entails, not only in routine duties, but also in the manufacture of vaccines necessitating the issue of more than a quarter of a million injections than last year.

(11) ANALYTICAL LABORATORY.

The volume of work carried out at this Laboratory has more than trebled during the year and the increasing value of this Institution to the Protectorate cannot be too highly emphasized.

The following is a brief summary of the varied investigations carried out during the year -

SAMPLES ANALYSED.

		<u>1913</u>	<u>1912</u>
Milk		1083	356
Water:-			
	Sanitary	107	
	For poisonous metals	97	
	Mineral constituents	9	
		<hr/>	
		213	86
Food		30	27
Soil:-			
	Fertility	27	
	Capacity to retain arsenic	44	
		<hr/>	
		71	31
Minerals		38	23
Toxicological cases		24	13
Blood and seminal stains		8	4
Arsenical cattle dips		57	-
Miscellaneous		31	9
		<hr/>	<hr/>
		2055	548
		<hr/>	<hr/>

REPORT ON THE EPIDEMIC OF PLAGUE IN MOMBASA,
 BY CAPT. D. S. SKELTON, R.A.M.C.

CONTENTS.

223

- (1) Review, with Table I.
- (2) Course of the epidemic with Tables II and III.
- (3) Influence of temperature on the course of the epidemic (with Table IV).
- (4) Origin of the outbreak
- (5) The Plague position in August 1913.
- (6) General organisation of anti-plague work.
- (7) The Plague Staff.
- (8) Disinfection work (with Table V).
- (9) Rat destruction (with Table VI).
- (10) Inoculation work (with Table VII).
- (11) Plague in out-stations.
- (12) Plague in its relation to contacts.
- (13) Plague amongst inoculated persons (with Table VIII).
- (14) Addendum for September and October 1913.
- (15) Camps and treatment.
- (16) Finance.

VI. - S C I E N T I F I C

REPORT ON THE EPIDEMIC OF PLAGUE IN MOMBASA.

BY CAPT. D. S. SKELTON, R.A.M.C.

CONTENTS.

223

- (1) Review, with Table I.
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- (8) Disinfection work (with Table V).
- (9) Rat destruction (with Table VI).
- (10) Inoculation work (with Table VII).
- (11) Plague in out-stations.
- (12) Plague in its relation to contacts.
- (13) Plague amongst inoculated persons (with Table VIII).
- (14) Addendum for September and October 1913.
- (15) Camps and treatment.
- (16) Finance.

REPORT ON THE OUT-BREAK OF PLAGUE IN MOMBASA.
FOR THE YEAR SEPTEMBER 1912 - SEPTEMBER 1913.

1.-REVIEW.

(1) The total number of cases registered as due to plague between 1st January 1913 and 31st August 1913 was 176 and one doubtful case, to which must be added 27 cases, which were notified between 8th September 1912, the date of the first case, and 31st December, making in all 204 cases. An analysis of these cases shows the following varieties of the disease and the result.

TABLE I.

Month.	Bubonic.	Septicæmic.	Pneumonic.	Doubtful.	Total.	Deaths.
September 1912.	2	3	-	-	5	4
October.	-	11	1	-	12	12
November.	-	-	-	-	-	-
December.	8	-	4	1	10	9
January.	-	-	-	-	-	-
February.	6	-	-	-	6	6
March.	1	-	-	-	1	1
April.	16	-	3	-	19	19
May.	13	-	1	-	14	11
June.	39	1	3	-	43	38
July.	37	-	14	-	51	41
August.	38	-	7	-	45	38
	184	15	33	1	203	177

Trick

2. COURSE OF THE EPIDEMIC.

trans (2) Table 11. shows in chart form the monthly rise and fall during the year September 1912 - September 1913 week by week.

(6.11)

Assuming, for the moment, plague actually began for the first time in September 1912, it may be said, that the epidemic began in a normal manner: that is to say, with 3 cases of Septicaemic out of a total of 5 for the first month. It will be seen, that between September and March 34 cases occurred, of which 14 were Septicaemic and 5 Pneumonic, that is a combined percentage of 55.8, compared with a ratio of 21.3 % for the whole epidemic up to the end of August. It is almost unnecessary to go into the possible reasons for this high ratio of the more virulent forms of the disease in its earliest stage, but the following factors may have some influence.

In the first place, in Mombasa the colder weather is disappearing about September, and this of course affects first the fleas and secondly the rats. Rats are said to breed four times a year, although so far as I know, the seasons have not been worked out as far as Mombasa is concerned.

Cold weather influences the flea population, in as much as it is stated, that fleas do not breed in hot weather. It can be seen that, in what is usually the hottest month of the year, there was but one case of plague (vide Table III.). So that with a scanty rat population and fewer fleas plague must be dependant for its propagation on the highly infectious varieties of Pneumonic and Septicaemic.

In the second place, it may be said to be more or less characteristic for plague to appear and continue for a while in its virulent form, and the Mombasa outbreak seems not to differ from that of other countries.

Reverting to the Table (I) again, the fact that plague entirely disappeared during the month of November 1912 and January 1913 / raises the question (1) as to whether this disappearance was absolute or relative, and this leads to the point as to whether (2) plague actually did start in Mombasa about September 1912, or whether it was in existence but unrecognised prior to this date. Taking these two questions in inverse order, an analysis of the death returns as recorded in the Mombasa Health Office since January 1906 until the end of July 1913 shows a total number of deaths from all causes of 5092 over a period of 91 months which gives a monthly average of approximately 55 per month.

Now, roughly speaking there has been a total excess of deaths over the mean since April 1912 of 396. But an allowance must be made for an increase of population and a falling birth rate (the latter factor holds good over the greater part of the East African littoral), therefore it may be taken that the excess is about 300.

During 1912-1913 there was an epidemic of Small-pox, which accounted for 76 deaths. The number of deaths from plague up to 31st July 1913, was 141. Deducting these two death totals from the excess figure leaves roughly 80 deaths to be accounted for. The first serious deviation from the mean monthly death return begins in July 1912, as Table III shows.

136
 TABLE III.

Month.	No. of deaths.	Average for 8 years.	Excess over mean.	Deaths from plague.	Deaths from Small-pox.	Unaccounted for excess figures.
1912.						
July.	79	47.6	11.4	-	2	9.4
August.	64	54.1	9.9	-	7	2.0
September.	75	51.1	23.9	4	19	-
October.	61	47.7	13.3	12	13	-
November.	52	41.0	11.0	-	9	2
December.	96	66.6	38.5	9	11	18
1913.						
January.	62	53.0	9.0	-	2	7
February.	73	47.8	25.5	6	4	15
March.	71	49.6	21.5	1	5	15.5
April.	79	52.6	26.5	19	3	4.6
May.	112	58.7	43.3	11	-	22.3
June.	150	77.6	72.5	36	1	33.6
July.	148	67.6	80.4	41	-	39.4

However, from the above table, it is seen, that in the latter half of 1912 the unaccounted for excess is nothing to speak about. Such excess as does occur might be ascribed to small-pox. In September plague and small-pox almost exactly make up the excess. It is not until February 1913 is reached, that the unaccounted for excess figure becomes worthy of notice. I am inclined to think, that (any way in May, June and July) there may have been more deaths from plague than appear in the registers, whilst on the whole, I agree with the view, that plague began in Mombasa somewhere about September 1912.

Handwritten: 234
It further appears quite likely after an examination of the tables I have prepared, that plague did practically disappear in November and possibly also in January. However the large increase in the number of deaths unaccounted for in May, June and July does require some explanation other than that they were all due to plague.

In view of the care that the Health Officers have taken in the investigation of all deaths in the town with special regard to plague, the possibility of such a large margin of error occurring is almost precluded.

It may be possible the explanation lies in the fact that these cases were cerebro-spinal meningitis, which was certainly epidemic in other parts of the Protectorate during this period. The diagnosis of this disease after death presents very great difficulties, unless a Bacteriologist can devote his whole time to clearing up the mystery. Such an officer has not been available in Mombasa.

3. INFLUENCE OF TEMPERATURE ON THE COURSE OF THE EPIDEMIC.

The experience in Mombasa coincides with that of other Tropical towns as regards the incidence of plague in its relation to temperature.

This can be seen by reference to Table IV where the average monthly maximum shade temperature is shown in red and the incidence of plague in black. In general, as the red line falls the black line rises.

The explanation of this rise and fall has been the occasion for a good deal of conjecture and indeed still remains a subject for discussion, but the explanation offered in para (3) will be sufficient for the purpose of this report.

In Bombay there is usually a decline in the epidemic figure when the mean temperature is above 82° F. Mean temperatures above 85° F. are as a rule unsuitable for epidemic prevalence. I have shown the mean maximum temperature in my table, because I think this is more important than the mean between maximum and minimum. In Mombasa, especially the variation month by month of mean temperatures is very slight and the result would not be so striking, if shown graphically on a chart.

4. ORIGIN OF THE OUT BREAK.)

proceedence

State

The origin of the epidemic is described by Dr. Small in his report for 1912. It need only be recalled here, that following a number of deaths among the rats in the Public Works Department landies near the Railway Station came at least two cases of plague among people living in the premises.

through

Where these infected rats came from has not so far as I know been discovered. It may be presumed that the original rat may have come down by train in merchandise from Kisumu or Nairobi. I am informed that rats have actually been seen to emerge from grain vans on the Railway.

5. THE PLAGUE POSITION IN AUGUST 1913.) *See
Journal*

Having received orders from the Principal Medical Officer, British East Africa, to proceed to Mombasa for plague duty, I reported myself to Dr. Small, the Medical Officer of Health, on August 7th. In order to relieve the pressure of work on the Medical Officer of Health, it was decided that I should be in charge of anti-plague measures in the town, so that he (the Medical Officer of Health) should have more time to devote himself to the routine of his duties. Having discussed the situation, and with the assistance and advice of Professor W. J. Simpson, C. M. G., it was decided that the anti-plague measures should include the following, many of which were already in being:-

- a. Prompt notification of all cases of suspicious illness or deaths amongst the population.
- b. The investigation of such illness or death by a responsible official from the Health Office, together with the microscopical examination of smears taken from the spleen, lungs and liver of any deceased.
- c. The immediate removal of the patient and all contacts to one of community camps.
- d. The inoculation of the entire population of Mombasa.
- e. An organised rat campaign, followed by a microscopical examination of the spleen of every rat brought to the office or found by the rat gang.
- f. The disinfection in as thorough a way as means

allowed

141

allowed of all premises actually uninhabited by a case of plague, together with those houses in the vicinity. In the case of permanent houses the disinfection was to be done with Clayton Gas, and in the case of huts with Jeyes and Kerosine. We also decided that the makuti roof should be removed so as to allow sun light into the interior of the hut.

The conclusion was also come to, that in addition to actual active anti-plague measures the sanitary condition of the town must be improved. The Medical Officer of Health took charge of this work, and it therefore does not come within the province of this report. The importance of this measure however is not to be under-estimated. The native and especially the Indian population has to be taught the rudiments of municipal cleanliness, and no matter how unpopular such a measure should prove, it had to be carried out, opposition or no opposition.

The cleaning of the town included:-

- (1) the systematic examination of alleys and lanes, and their subsequent scavenging.
- (2) an improvement in house drainage.
- (3) the removal of ruins, collections of wood and stores and rubbish left lying about in the streets.

We realised that until Mombasa was put in a condition of decent sanitation, measures such as inoculation, rat campaigns, disinfection and

all

all that were but palliative and almost futile. Such measures, under the present insanitary condition of the township, might easily be prolonged indefinitely, until, finally, Mombasa would attain the distinction of being one of the world's endemic centres of plague.

- h. Finally, it was considered necessary to have, practically speaking, a systematic sanitary survey of the town.

Such a survey was to be made house to house on the attached form with added information as to wages, occupation and the rent paid by the head of the family renting the premises.

6. GENERAL ORGANISATION OF PLAGUE WORK. *Mica Ionie*

The organisation of staff and labour for these many duties took a considerable time, and efforts were hampered to a large degree by a scarcity of labour. Dr. Small very generously handed over to the Plague Officer a large proportion of his staff, who in ordinary circumstances would have been employed on sanitary work. Thanks to this, a certain amount of work could be begun almost at once.

In the first instance, for plague purposes the town was divided into four main districts and a Sub-Assistant Surgeon was put in charge of each. His orders were to attend to any case of plague that was reported in his district, and to arrange as to the removal of contacts and the closure of the house.

As soon as the patient or corpse had been removed, the disinfecting gang appeared on the scene and washed out the premises with disinfectants. The house was then locked and sealed by the police and the permission was withheld for any one to live in the house during the next week or ten days.

House to house visits in the neighbourhood were made by the Sub-Assistant Surgeon, who had orders to inoculate every one not in possession of a certificate to the effect that he had recently been inoculated. If by any chance there was a refusal to undergo inoculation on the part of the near neighbour, he or she was looked upon as a contact, and in these circumstances was removed to the contact camp.

In view of the shortage of trained assistants in plague work the Government of Zanzibar had placed such of its resources

resources as could be spared at the disposal of the East Africa Protectorate. As the outcome of this on 14th August, an Engineer and a portable Clayton Gas Machine, together with a competent rat dissector and laboratory assistant arrived.

7. PLAGUE STAFF.) *via Jovic*A. Rat Work.

Medical Officer in Charge.

Dr. J. H. Thompson.

Poisoner and Dissector.

A. I. Raval.

Interpreter.

Usman Abdullah.

12 rat catchers.

B. Disinfecting Work.

(a) Clayton Gas Engineer.

P. Castro.

12 Gang-men.

(b) Medical Officer in charge.

Asst. Surgeon R. Holmes.

4 Gang-men.

(c) Disinfecting Station.

Medical Officer in charge.

Dr. J. H. Thompson.

Clerk & Interpreter.

C. F. de Souza.

Engineer in charge.

Goolam Hoosein.

C. Inoculation Work.

(a) Customs Ferry.

Sub-Asst. Surgeon
Chablani.

(b) Kilindini.

" " Z. Singh.

(c) Likoni.

" " J. Singh.

(d) Kisoni

" " Dula Ram.

(e) Office Males.

A. I. Raval.

" Females.

Miss Tomlinson.

" Clerk.

Malam Dawa.

Miss de Chavis

Abedi.

D. Sanitary Survey.

District No. 1.

Dr. P. F. Nunes.

Interpreter.

Andrew.

District No. 2.

Dr. A. M. Freitas.

Interpreter.

Suleman Juma.

E. Clerical.

Clerk to Plague Officer. Sub-Asst. Surgeon Chuher Khan.

F. Camps.

Medical Officer in charge. Asst. Surgeon Nys.

Compounder. Metha.

G. Out-stations.

Medical Officer in Charge. Sub-Asst. Surgeon Bhatt.

H. Assistant to Plague Officer. " " Murari Lal.

Plague Officer. Capt. D.S. Skelton, R.A.M.C.

8.-DISINFECTATION WORK.

Dolan

It is no part of my duty to comment on the fact, that, previous to 14th August, the Department was working without a Clayton machine.

Anything like satisfactory disinfection from the point of view of plague without a Clayton is in my opinion practically useless. This attitude is not merely a point of view, but is supported by actual evidence of the uselessness of just spraying disinfectant on floors and walls with the idea of hoping to kill fleas and such like.

The machine having arrived, it was decided to claytonise systematically every house that could be done, beginning at the Piggot Markets.

This area is a densely populated one. In general the houses are of stone with galvanised iron roofing. Practically every house is a shop of some sort, the majority being interested in the sale of food-stuffs. On the ground floor grain, flour, rice, etc., is stored, whilst the family lives as a rule on the upper story although in some cases they live actually in the shop itself.

The inner rooms are devoid of light or ventilation. If the grain sacks are taken out, rat holes are everywhere evident. Such houses as are not shops are chawls or lodging houses, where every sanitary rule is broken. In some of the chawls the ground floor level is below that of the street. These houses also are infested with rats, and not infrequently are in a semi-ruinous condition. It was on such that the Clayton machine gang set to work, street by street and block by block. The inhabitants offered no opposition, and in many cases the applications received for houses to be disinfected were more numerous than the single machine could deal with.

KL

It may be mentioned here, that after claytonisation a guinea-pig was put into any house suspected of being infected and left there for 4 days. In no case has the experimental guinea-pig died from plague.

The disinfection of the native makuti roofed hut with walls made of wattle and daub presented a difficulty. I eventually adopted the plan I had used in Zanzibar during an epidemic of cholera. I ordered the roof to be taken off any hut in which a case of plague occurred, and that all clothing, clothes and such like should be burnt on the spot. A careful list of articles destroyed was kept and compensation was paid. The makuti was carefully stacked near the hut so that it could be used again. Meantime the walls and floors were washed down with Jeyes and Kerosine mixed; a householder was not allowed to put back his roof for a week or 10 days, during which time the sun's action was allowed full play.

A list of houses in which more than one case of plague has occurred is attached, together with a note showing how the premises have been treated. There has been no recurrence of plague in any disinfected house since the arrival of the Clayton machine.

Unfortunately, there has been no opportunity for testing scientifically the efficacy of the claytonising process by leaving a culture of b. pestis in any house under treatment. However, the Clayton process is now such a recognised measure of disinfection that, provided the work is done conscientiously by a competent engineer, such a test is hardly necessary.

149

TABLE V.

List of Houses, where occurred more than one Plague case. 246

No.	No. of house and Section of town.	No. of cases.	Dates of cases occurred.	Remarks.
1.	60 Ndia Kuu	2	13-2-13 } 14-2-13 }	Claytonised.
2.	22 Commercial street.	5	3-4-13 } 3-4-13 } 11-4-13 } 12-4-13 } 12-4-13 }	Claytonised.
3.	35 Commercial street.	3	14-4-13 } 16-4-13 } 25-7-13 }	Claytonised.
4.	5 Mlangospa	2	31-5-13 } 31-5-13 }	Disinfected.
5.	4 A. Neorbhey street.	3	13-6-13 } 13-6-13 } 4-7-13 }	Derofed and disinfected.
6.	566 Mjimpia	2	11-7-13 } 20-7-13 }	Disinfected.
7.	569 Mjimpia	2	24-7-13 } 20-8-13 }	Unfit for habitation. Uninhabited.
8.	599 Mjimpia	2	10-6-13 } 10-6-13 }	Disinfected.
9.	26 Longolekui-nana.	3	25-7-13 } 27-7-13 } 22-8-13 }	Derofed 23-8-13 Unfit for habitation.
10.	28 Kilindini Road.	2	7-8-13 } 9-8-13 }	Claytonised and whitewashed.
11.	33 Mzizima Road	2	12-6-13 } 12-6-13 }	Disinfected.
12.	34 Mkenyageni	3	17-4-13 } 19-4-13 } 20-4-13 }	Disinfected but not claytonised.
13.	5 Mambeni	2	17-4-13 } 24-4-13 }	do.
14.	324a Mambeni	2	3-5-13 } 30-5-13 }	do.
15.	1065 Mambeni	2	29-5-13 } 4-6-13 }	do.
16.	655 Makadara	2	11-4-13 } 4-6-13 }	do.
17.	117 Kilindini Road.	3	21-8-13 } 27-8-13 } 27-8-13 } contacts	Claytonised.

much

It is laid down in all text books, that rat examination and rat destruction are the two important measures in combating an epidemic of plague. Yet, when it comes to putting the measures into practice, it is found to be extraordinary difficult, in the first place to find any rats, and in the second to catch them. The reason for this is, that the general population has in mind the idea, that if rats especially infected rats, are found on his premises he will be quarantined or his house will be disinfected or both. The consequence is, that he will not purchase or accept a trap. I have been reduced to telling shop-owners that if they did not show me their rat traps, I would have all their belongings put out in the street in order to search for rat holes. They then accept a trap, grudgingly; but if by any chance a rat was found in it in the morning they would certainly take the precaution of letting the beast go. The Swahili either hangs the traps up or stuffs up the entrance with a cloth, in order that next morning he may show an empty trap and say "There are no rats here".

Eventually the heads of the communities were asked to meet at the Health Office and the position was explained to them. They all promised to help and in turn to explain to their fellow townsmen the position of affairs. The effect has been small. The largest number of rats brought to the Health Office in 24 hours has been between 50 and 60 and this in spite of a reward of 6 cents per rat living or dead.

During the early part of August, the rat Brigade was under charge of Mr. Raval, whose experience of rat work in Zanzibar qualified him for that work. 12 rat catchers with baited traps were sent out to sections of the town in

the evenings. The traps were well baited and scented with aniseed to get rid of the human "bouquet". An auction was held daily at 11 a.m. in the Piggott Market when the 6 cent reward was loudly proclaimed. In the evening rat poison of various sorts was put down in selected quarters. Such rats as were brought in labelled, then dissected and the spleen coloured by Czizinski's method, a stain which when properly used gives beautiful results.

The daily record of rats caught and examined in August is as follows:-

TABLE VI.

August, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10th	Nil.
11th	5
12th	12
13th	7
14th	22
15th	27
16th	22
17th	7
18th	23
19th	14
20th	17
21st	50
22nd	30
23rd	24
24th	6
25th	23
26th	28
27th	21
28th	31
29th	24
30th	17
31st	3

132

241
Of this number only 5 were found to be plague infected.

On the arrival of more Medical Officers from England, Dr. Thompson was put in charge of the rat work and the rat gangs. A large consignment of Liverpool virus arrived and this was put down freely in those parts of the town where cases were cropping up.

Experiment showed however, that the virus had lost its virulence on the journey from England. Some tubes were therefore forwarded to Dr. P. H. Ross in order that it might be reactivated. There is no doubt whatever that if a really virulent strain of this bacillus can be obtained for tropical use, it should be of the greatest benefit. The use of the arsenic and phosphorus poison is very limited among an unintelligent population, for one accident with a child or even a goat would do more harm than can be put right in twelve months. The Liverpool virus can be put down broadcast, whereas the greatest care must be exercised in the case of "Ratline" or "Common Sense".

153

One of the great objects in plague work in Mombasa has been to get as many as possible of the population inoculated with Haffkine's vaccine.

It was realised that with the town in the insanitary condition in which it was, some considerable time must elapse before any evident improvement in the general condition took place, meanwhile to have a solid block of population more or less immune any way for a time, was the best measure. Every possible effort therefore was made by the plague staff to bring this about. Sub-Assistant Surgeons made house to house visits in their districts, a Medical Officer visited the market daily, whilst the lady inoculator was at the disposal of natives whose ladies were "Purdah". Fortunately very little opposition was met with; Ramadan interfered to a certain degree, but not very much, the idea where this excuse was urged being that the slight fever following the inoculation produced thirst which rendered the keeping of Ramadan more difficult.

By the end of August nearly 24,000 persons out of a population of say 30,000 had been inoculated, and it became difficult to find any one in the town who had escaped the activities of the Plague Staff.

This accomplished, the Chief Sanitation Officer considered that the trains and ferries should be picketed with inoculators. This led to the inoculation of a large proportion of the population in what may be called the suburbs. In addition to this, an inoculator was despatched to Jamvu. He worked his way up to Rabai and inoculated all persons he could find in that district. The figures for the outlying districts have not been included in the totals naturally, and re-inoculation figures are kept in a separate return. Table VII shows the weekly inoculation figures in chart form.

11. PLAGUE IN OUT-STATIONS.) *Mombasa*

251

The following reports by members of the Plague Staff deal with the small and fortunately localised out-breaks of plague in villages in proximity to Mombasa.

Report of Sub-Assistant Surgeon Bhatt on sickness
at Kwajomvu, investigations at Tsangazini, and
inoculations at Maryia-Kani and at Rabai.

253

I left Mombasa on the 9th instant by 6.40 a.m. train, and went to Kwajomvu as ordered by you. Owing to rainfall I reached there at 10 a.m., and took charge of the Medical and camp equipment, patients, and contacts there.

In the afternoon I went into the town with inoculation equipment, and asked the headman to get as many persons for inoculation as possible. The aakari also accompanied him, but that day I could not get even a single person for inoculation. Next day that is on the 10th I began disinfecting houses which took me three days. On the 12th I went to the surrounding places and got some persons for inoculation. Then I went to meet the local trains at Kwajomvu as per your order, and inoculated persons there.

On the 14th I continued inoculation at Kwajomvu station. When I went there were 4 cases of plague isolated by my predecessor, and 3 contacts; two cases out of 3 died of Bubonic plague in the town; third one, also bubonic plague, was kept in the camp till he was cured, when I departed and then told the headman to keep him there for three days more. At Kwajomvu the total number of inoculation performed by me was 94. On the 15th I received orders from you through Sub-Assistant Surgeon Murarilal to remove my camp to Rabai, and we both went to Rabai and reported ourselves to the Assistant District Commissioner. On the very day Sub-assistant Surgeon Murarilal was sent to Mariakani for investigation and no sickness was reported by him there. I continued inoculations and could not find many men, so Assistant District Commissioner ordered me to proceed to Mariakani on the 16th to inoculate persons there.

After finishing this I was ordered to proceed to Teangasini via Majiachumvi. On the 17th I left Mariakani and went to Majiachumvi. On the 18th at 6 a. m. I left Majiachumvi for Teangasini with one guide and a boy. After four hours walk I reached there and called the headman and investigated about the sickness but I was informed that nobody was sick.

I searched about the place for nearly an hour but could not find any sickness there, then I went back to Majiachumvi and caught the first possible train. I came back to Mariakani same day and inoculated the remaining persons there. On the 19th I left for Rabai and caught the first possible train. In the evening I reached Rabai and reported to the Assistant District Commissioner about my investigations. On the 20th I did not get many men for inoculation and I wired the matter to the Medical Officer of Health being asked by the Assistant District Commissioner to do so. I did not receive any reply to this till on Monday morning the 22nd instant (September) when I got a wire from the Plague Officer to return to Mombasa on the first opportunity. The total persons inoculated by me were 361.

122
Report of Sub-Assistant Surgeon Morari Lal on
sickness at Kwajomvu and Maryia Kani.

251

I left for Kwajomvu by the morning local on the 15th and arrived in the village at 9 a.m. All the houses had been disinfected by Sub-Assistant Surgeon Bhatt, and there was nobody in the quarantine camp; the only sick old woman who had been isolated is alright and fit to be discharged in a day or two. No fresh cases reported during the last few days, and no fresh death after the 11th. Each and every person of that village ^{has} been inoculated.

As per your instructions I removed the camp of Sub-Assistant Surgeon Bhatt to Rabai arriving there at 11.30. On interview with the Assistant District Commissioner I was ordered to proceed to Maryia Kani station with the head old man to investigate the sickness there as was reported by the headman of that place. I came down to Mazeras and caught mixed train at 1.30, and arrived at Maryia Kani station at 2.15 and then walked to the village, and examined the sick men which were 12 in number. 11 out of them complained of slight ailments like cough, cold, stomach-ache and etc., (temperature normal), but one had malaria due to constipation (temperature 99.4 only). It seems that these people had been ordered by the Assistant District Commissioner to come down to Rabai for inoculation, but they have put forward their inability to come to Rabai through illness and etc., which is not the case at all.

In my opinion there is no infectious disease at Maryia Kani. All these people are willing to get inoculated but at Maryia Kani station and not at Rabai as ordered by Assistant District Commissioner. I have sent the result of my investigation to Assistant District Commissioner, Rabai, and have requested him to arrange with Sub-Assistant Surgeon Bhatt to get the people of Maryia Kani inoculated.

159

at their village only.

The Assistant District Commissioner, Rabai, had collected men from another village for inoculation and Mr. Bhatt started inoculation there at 2 p.m.

Report of Asst. Surgeon A. N. Nyss, on the sickness
at Tsangazani a village 20 miles distance from Rabai.

Arriving at Rabai at 1.30 p.m. on 11th September 1913, I made inquiries as to where the village was in which a number of deaths had recently occurred, and found that it was at Tsangazani, a village 20 miles from Rabai.

An askari was sent out to this village by the District Commissioner, Rabai, on 10-9-13 and his report was as follows. That the last case of illness at the village was 3 days prior to his arrival at the village, the patient only living for 24 hours from the outset of the illness; this patient had buboes in the Axilla and Groin and finally ulcers also appeared on the neck.

I made a visit to the village at 7 a.m. on 12th September 1913, where on inquiries from the chief of the tribe, I found out that 8 deaths had occurred in the village in one week, the last case being 4 days prior to my visit. The duration of the illness of each of these persons was not longer than 36 hours, and all had very marked buboes, in the axillae and groins.

None of the patients have been inoculated. On inquiring if any of the patients had been to Mombasa recently, the chief stated that none of them had left the village for the last three months, although some of the other people of the tribe had been in Mombasa a few days before, but all these had been inoculated, numbering 14 persons in all.

The first case of plague occurred in a man who had come to the village from Katoni on foot; this man lived for three days in the village, developed symptoms of plague and died in 24 hours. The 8 deaths were among the men only, they were of different families, and lived in different huts; of these four men died in the open, and four men in

their huts. I saw these 4 huts, had them vacated, and closed, and told the chief not to have them opened for 15 days.

On requesting the chief to have himself and all his tribe inoculated he gladly consented and I inoculated 143 men, women and children, which comprised the entire population of the village and also of two other villages about 2 miles distant from the infected one.

There were no cases of sickness in the village, since the last death about 4 days before my visit.

REPORT ON THE OUT-BREAK AT THE LABOUR CAMP, MTESA,
BY THE PLAGUE OFFICER.

253

(1) On 25th September 1913, I received information from the Deputy Principal Medical Officer that there had been an out-break of disease among the labourers at the water works camp at Mtesa, which required investigation. I accordingly arranged to go out there the next day.

(2) I was met by Mr. Hamp, the Assistant Resident Engineer, who gave me the following history:-

On September 20th, one of the labourers was taken ill with cough and a high temperature. There was a history of 24 hours illness only. He died at midnight on the 21st.

A second man was removed to the hospital at Mombasa Gap. He was thought to be suffering from cerebro-spinal meningitis. He died on the evening of the 22nd after 48 hours illness. These men shared the same hut and worked in the same gang.

This man was seen on the 22nd September. He complained of headache, and had high temperature. He died on the 23rd. He worked in the same gang as I and II.

This man died on the 25th September, with a large bube in the right groin.

His case gave the required clue to the nature of the out-break. From this it appears justifiable to infer, that case (I) was pneumonic and cases (II) and (III) septicaemic.

This man I saw myself. He had the physical signs of pneumonia but had the general appearance, I may

163

say the almost characteristic appearance, of pneumonic plague. His sputum showed no ^{ac. ill.} ~~B. pestis~~. He died the evening I saw him and have no doubt in my mind that, despite the microscopical examination, he died of plague.

There were two other cases in a separate camp under observation for meningitis. However, neither presented to me any symptom justifying any suspicion of this disease. I took blood films, and both showed a malarial infection. As there is no reason to suppose that the blood from a Kavirondo would not show parasites, I directed that they should still be kept under observation apart from their fellows.

(3) As to the movement of the batch of labourers in which the cases have occurred. The majority had arrived from Kisumu some five months previously. On the 21st September 36 new men arrived from Kisumu, and on the 23rd another batch of 160 came in.

(4) Origin. -

From inquiries I made, I came to the conclusion, that the disease was in all probability brought into camp from the Maseras or Changamwe districts. My reasons for this opinion are as follows:- There is little or no communication direct between the labourers and Mombasa. The messengers, who came into town from the camp, are Wadigo, and they have nothing to do with the Kavirondo. It has been the custom on the part of the Resident Engineer to give leave to a certain number of men to go on Sundays into Maseras and as many as 50 or 60 take advantage of the privilege.

Now case No. 1 was taken ill on the 20th September. It may be presumed he acquired the infection somewhere between the 14th and 17th. We have definite information that there was plague at Kwajomvu about 14th September.

Kwajonvu is the next station to Changanwe, and there is nothing to have prevented him walking over in that direction, instead of going to Makras.

In short, although no information can be obtained as to the recent movements of the deceased yet (1) we do know that he did not come into Mombasa, and (2) that he had the opportunity of going to any of the villages near to the line, some of which were plague infected. Further, September 14th is a Sunday, and is a day which coincides with his leave opportunity, and also the date about when he acquired the disease from which he died.

(8) Preventive Measures.—

Mr. Hamp, the Resident Engineer, in the absence of Mr. Linnell, as soon as he suspected the nature of the disease took very prompt measures for the isolation of the sick, of suspected cases, and of immediate contacts, and at the same time he ordered all labour to be confined to camp till further orders. The general measures in fact were so excellent, that on my arrival to inquire into the matters there was little left to be done.

I take this opportunity of bringing to your notice the very excellent work of this young officer, and desire, that you will be so good as to bring his name before the Director of Public Works.

On my arrival Mr. Hamp collected all his men together and every single man was inoculated or re-inoculated unless his certificate was very recent.

Sites were chosen and work begun on

- (1) a plague hospital,
- (2) an observation camp for cases of suspicious illness,
- (3) a contact camp.

265

All these were spread and put under guard. Each camp had its own attendant rigidly isolated.

Mr. Hamp agreed to select a site for a camp in which all labourers, whose tour of work had expired, might be quarantined for 7 days before going to their homes.

A camp three miles away was arranged for the reception of any new batch of labour which might come up.

All leave was stopped, and when the men were off work, as on Sundays, a roll was called every two hours.

Eight men, Wadigo, were selected as messengers for communicating with Mombasa and these men are segregated.

In addition to special measures the ordinary routine disinfection procedure was of course adopted.

On 27th September Dr. Tompson and Sub-Assistant Surgeon Bhatt were ordered to proceed to Mtesa on Plague Duty.

On 28th September I again visited the camp and found that Mr. Hamp had carried out all my recommendations as to the sub-camps.

I requested the Sub-Assistant Surgeon in charge of the Mombasa Gap camp hospital to remain at Mtesa leaving a Compounder in charge at the former place, and to remove such of his hospital equipments as he needed over to Mtesa.

I am in hopes that such arrangements as have been made will prove adequate to stop the epidemic, and I think that the present staff will be found sufficient to deal with the outbreak.

Note. The total cases at Mtesa amounted to 9.

12. PLAGUE IN ITS RELATION TO CONTACTS.)

262
Pica
Sonic

Since the out-break, 1,005 persons being contacts have been segregated. Out of this number 9 have developed the disease within the prescribed period, of whom 8 died.

They are distributed as follows:-

Year.	Contacts	Cases of plague.	Died.
1912	162	1	1
1913	843	8	7
	<u>1005</u>	<u>9</u>	<u>8</u>

The details of these 9 cases are instructive.

No.	Nature of original case.	Date of Isolation	Date of onset of disease.	Date of death.
1	Septicaemic	19-11-1912	24-11-1912	24-11-1912
2	Bubonic	18-4-1913	19-4-1913	23-4-1913
3	Pneumonic	12-7-1913	15-7-1913	17-7-1913
4	Bubonic	7-8-1913	9-8-1913	10-8-1913
5	Bubonic	21-8-1913	25-8-1913	29-8-1913
6	Bubonic	21-8-1913	25-8-1913	Recovered.
7	Pneumonic & Bubonic.	15-9-1913	16-9-1913	19-9-1913
8	Pneumonic	17-9-1913	18-9-1913	21-9-1913
9	Pneumonic	17-9-1913	19-9-1913	23-9-1913

From this it is seen, that the average date of onset is 3 days from the date of isolation. It is therefore justifiable to say, that the infection was not acquired in camp, but was brought in by the contact himself.

167

13. PLAGUE AMONGST INOCULATED PERSONS. *Page limit 263*

A series of 224 consecutive cases has been examined and among them cases of plague after inoculation have occurred in 20 persons, that is 8.9% of the total in the series.

Of these:-

In case 1	the disease was reported	6 days	after inoculation.
" " 2	" " " "	6	" " "
" " 3	" " " "	11	" " "
" " 4	" " " "	14	" " "
" " 5	" " " "	22	" " "
" " 6	" " " "	7	" " "
" " 7	" " " "	28	" " "
" " 8	" " " "	5	" " "
" " 9	" " " "	10	" " "
" " 10	" " " "	41	" " "
" " 11	" " " "	5	" " "
" " 12	" " " "	12	" " "
" " 13	" " " "	16	" " "
" " 14	" " " "	16	" " "
" " 15	" " " "	9	" " "
" " 16	" " " "	16	" " "
" " 17	" " " "	30	" " "
" " 18	" " " "	90	" " "
" " 19	" " " "	90	" " "
" " 20	" " " "	44	" " "

These cases may be placed in one of the following categories:

- (1) When the patient was inoculated whilst he was undoubtedly incubating the disease.
- (2) Cases where the patient had not time to obtain any very great degree of immunity after inoculation.
- (3) Cases where inoculation did not protect.
- (4) Cases where inoculation probably saved the patient's life.

In the first class are included:-

261

Cases Nos. 1, 2, 8, and 11; that is the patient was incubating the disease at the time when inoculation was performed.

In the second class, cases Nos. 6, 9, and 15, even if the patient was not actually incubating the disease, there was no time to acquire any very great degree of immunity.

In the third class, cases Nos. 3, 4, 12, 13, 14, and 16 the immunity should have been about at its highest point at the time disease was acquired.

Nos. 7 and 20 should have fared better.

Nos. 10, 17, 18, and 19 were probably losing their immunity.

In the fourth class, Nos. 5, 9, and 13 recovered and probably owe their lives to having been inoculated. Of the twenty cases whose histories are quoted in detail below, all except Nos. 8, 16, 18, 19, and 20 suffered from Bubonic Plague. These had Pneumonic, and had practically no chance.

From the 20 cases then, 4 should be deducted, that is those who were incubating the disease, whilst possibly the three cases in the second category should come out too; that leaves 13 cases to be considered in which inoculation did not protect. That is 5.8% of the total series of cases, or, if the second category cases be included 7.1%.

The details of the cases shortly are as follows:-

- (1) Case No. 44, Marian-binti Omiar (Mayamezi). Age 40, female. Bubonic. Inoculated on 29th May 1913. Reported ill 4th June. Said to have been taken ill on June 2nd. Died on 4th June. Was a contact of case 34, a Bubonic case.
- (2) Case No. 45, Fatma-binti Ali (Mayamezi). Age 35, female. Bubonic. Inoculated 29th May 1913. Admitted to camp 4th June 1913. Said to have been taken ill on June 2nd. Died on 6th June. Was a contact of case 44.

169

Both these cases were probably incubating the disease at the time of inoculation.

- (3) Case No. 49. ~~Ammar bin Hamid~~, (Swahili). Age 45, male. Bubonic. Inoculated 29th May, reported ill 9th June 1913. Died 9th June. This is a border line case. No great degree of immunity could have been arrived at between 29th May and say 4th or 5th June, about when it may be presumed the disease was acquired.
- (4) Case No. 58. ~~Masidi bin Hamid~~, (Swahili). Age 35, male. Inoculated on 29th May, reported sick on 12th June. Died on the 12th. A border line case like the preceding one.
- (5) Case No. 134. ~~Sekur~~, (Indian Memon). Age 18, servant, male. Bubonic. Inoculated on 7th July 1913. Reported ill on 29th July, and admitted to hospital. Recovered, and discharged on 20th August. The inoculation did not protect against the disease being acquired, but probably saved his life, once he had got it.
- (6) Case No. 140. ~~Jenebat Valji~~, (Khoja). Age 24, female. Bubonic. Inoculated on 28th July 1913. Died on 4th August.
An undoubted case of inoculation during the period of incubation.
- (7) Case No. 150. ~~Ibrahim Faiz~~, (Indian Sawa Mussulman). Age 40, male, a blacksmith. Bubonic. Inoculated on 12th July 1913. Reported ill on 9th August. Died on the 10th.
Here inoculation did not protect at all.
- (8) Case No. 157. ~~Sharifabet Doss~~ (Memon). Age 14, female. Pneumonic. Inoculated on 8th August 1913. Reported ill on 13th August. Died on the 18th. Contact with case 145.

- (9) Case No. 163. ~~Mansoor Abdul Karim~~, (Indian Khoja). Age 12, male, a milk seller. Bubonic. Inoculated 11th August. Reported ill 21st August. Recovered. Possibly inoculation saved his life.
- (10) Case No. 164. ~~Farooq Khan~~, (Swahili). Age 36, male, meat seller. Bubonic. Inoculated 11th July. Reported ill 21st August. Died 21st August. Here immunity did not protect.
- (11) Case No. 165. ~~Sadeq bin Awad~~, (Washihiri). Age 30, male, a water carrier. Bubonic. Inoculated on 17th August. Reported ill on 22nd August. Died on 22nd August. Inoculation during incubation.
- (12) Case No. 167. ~~Mahmud binti Nyagi~~, (Taita). Age 25, female, labourer. Bubonic. Inoculated on 17th August. Became ill on 19th August 1913. Reported sick on 23rd August. Died on 25th August. No time for any great degree of immunity.
- (13) Case No. 172. ~~Sherban Abdul Hamid~~, (Khoja). Age 13, female. Bubonic. Inoculated on 11th August. Reported sick on the 27th. Contact with case 163. Recovered. Inoculation probably saved her life.
- (14) Case 173. ~~Zahar Mohamed~~, (Khoja). Age 35, male, a milk seller. Bubonic. Inoculated on 11th August. A contact of case 163, taken ill in camp on 27th August. Died on 29th August. Refused a second inoculation. Inoculation should have protected him but did not.
- (15) Case No. 178. ~~Sadeq bin Karim~~, (Washihiri) labourer. Age 30, male. Pneumonic. Inoculated on 23rd August. Reported ill on 1st September. Died on same day. No time to acquire any degree of immunity.

- (16) Case No. 186. ~~Kamen wa Hombu~~ /Akikuyu/. Age 26, male. Bubonic. Inoculated 1st September. Fell sick 16th September 1913. Died 18th September. Inoculation did not protect him at all.
- (17) Case No. 191. ~~Ferebji Kala~~ /Hindu/. Age 35, male. Bubonic. Inoculated 22nd August, fell sick 19th September 1913. Died 23rd September. Inoculation did not protect him.
- (18) Case No. 195. ~~Ramji~~ /Hindu Cutchi/. Age 45, male. Pneumonic. Inoculated in July, fell sick 13th October. Died 15th October. The immunity was passing off.
- (19) Case No. 196. ~~Isabim Affatita~~ /Indian Mohamedan/. Age 40. Pneumonic. Inoculated July, fell sick on 16th October. Died 17th October. The immunity was passing off.
- (20) Case No. 197. ~~Wavirji Jadewji~~ /Hindu/. Age 30 years. Pneumonic. Inoculated (1) 30th July, (2) 6th September, fell sick 14th October. Died 18th October. A very disappointing result.

With reference to Table VIII the figures on the inoculated side are, for the purposes of statistics, too small to be of much value.

At the same time, it is clearly shown, that the incidence of plague among inoculated persons only amounted to ³ three in every 10,000 persons, whilst on the other side the incidence amongst those who had not been inoculated to ^{announced} 34 per 10,000.

The case mortality figures also, unfortunately for the purposes of statistics, are too small to make a comparison; but still, including those cases among the inoculated who were actually incubating the disease at the time of the operation, there is a drop and even if our inoculation work has saved but seven lives in every hundred plague cases, it has done something in the battle.

Finally in connection with inoculation, I think Mombasa must hold an almost unique position among plague stricken towns, in that practically speaking, the entire population has been inoculated. At the beginning of the epidemic, the population of the town is estimated to have been about 30,000. As the epidemic grew, a large number of people left the town, consequently, deducting these and adding to the figure the number of children under 8 years of age, there remains but few who have avoided inoculation.

Month.	Popula- tion.	Attacks.	Deaths.	Inci- dence Per 1,000.	Case mor- tality per cent.	Popula- tion	Attacks.	Deaths.	Inci- dence Per 1,000.	Case mor- tality per cent.
1912.										
September						30,000	5	4	0.1	80
October	500					29,900	12	12	0.3	100
November	400					29,600	-	-	-	-
December	600					29,400	10	9	0.3	90
1913.										
January	1,000					29,000	-	-	-	-
February	1,400					28,600	6	6	0.2	100
March	1,600					28,400	7	1	0.3	100
April	1,800					28,200	19	19	0.6	100
May	2,500					27,500	14	11	0.5	78
June	4,000	4	4	1.0	100	26,000	39	34	1.1	84
July	8,300	3	2	0.3	66	23,700	48	39	2.0	91
August	23,800	6	5	0.3	75	6,200	34	30	5.4	86
Total		15	12		80		188	165		87

Table showing in summary form incidence among the inoculated and the uninoculated population.

A further report on Plague for the months of September and October 1913.

(1) During September, the case incidence fell from 42, the figure for August, to 17; and in October it came down to 6.

The actual virulence of each individual case, instead of getting less, appears to have been more intense, in as much as the case mortality was 100% instead of 87%, which is the crude mortality rate for the first year. It may be, however, that cases of pestis ambulans have been occurring of which we know nothing.

The varieties and distribution of the 23 cases referred to above are as follows:-

1913.	Subonic.	Septicaemic.	Pneumonic.	Total.	Deaths.
September	6	4	7	17	17
October	1	-	5	6	6

(2) The localities in which these 23 cases occurred is shown as under:-

- | | | |
|-----|-----------------------------------|-------------------|
| 1. | Commercial Street | on 1st September. |
| 2. | Mwembeni | " " " |
| 3. | Kilifi | " 3rd " |
| 4. | Mjimpia | " 7th " |
| 5. | Mwembeni | " 7th " |
| 6. | <u>Kilindini Railway Quarters</u> | " 7th " |
| 7. | Mjimpia | " 8th " |
| 8. | Mwembeni | " 9th " |
| 9. | " | " 10th " |
| 10. | <u>Kilindini Railway Quarters</u> | " 17th " |
| 11. | Mwembeni | " 17th " |
| 12. | Mwembeni | " 17th " |

13.	<u>Kilindini Railway Quarters</u>	on 18th September
14.	" " "	" 19th "
15.	Ndia Kuu	" 20th "
16.	<u>Kilindini Railway Quarters</u>	" 20th "
17.	" " "	" 23rd "
18.	" " "	" 10th October
19.	" " "	" 15th "
20.	" " "	" 17th "
21.	Commercial Street	" 18th "
22.	<u>Kilindini Railway Quarters</u>	" 22nd "
23.	" " "	" 30th "

Now this is a case distribution which requires some explanation. The Kilindini Railway area forms a little township by itself. It is situated about a mile and a half from the town proper. Outside the railway railings on the town side is a small suburb of Mombasa, called the Kilindini Bazaar; otherwise the Railway area is entirely cut off from the main town by intervening shambas.

The Railway quarters themselves consist of buildings, ancient and modern. The old buildings were erected in the early days of the Railway history, and by this time have reached a state of decay and dilapidation, which is sufficient to cause their condemnation at sight. They consist of two kinds of buildings, (a) those of galvanised iron (with a wooden lining), supported on wooden pillars, and (b) these also of iron with no sort of lining or flooring at all. Those with the wooden lining are, as might be expected, rat infested, and the other sort are alive with fleas of all descriptions, as men and animals all live together in them.

Besides these iron buildings, there exists a Swahili village of railway workers who live in the mud huts with a thatched roof.

The modern buildings are model dwellings and beyond criticism.

In the course of routine rat examination since the campaign against rodents came into being, it was noticed that infected rats were being found first, mostly near Mombasa harbour, then westward near the Salim Road, then across the Salim Road in Mwambeni, until finally the infection was found in the Kilindini area. It looks as if some migration of rats from the town into the country was in progress. Infected rats were found in Kilindini on 16th, 24th, 28th, 30th September and 17th October, and in Mwambeni on 15th August, 3rd and 13th September and not since.

We thus had warning of the danger. We made every effort to catch rats or poison them; we gave the inhabitants of the houses traps and bait, and we warned them. But the whole area was in such an insanitary state generally, that little good could come of it, as no rat will go into a trap, when, without the slightest trouble, it can get any amount of food outside.

On the 29th September I called the attention of the Principal Medical Officer and the Chief Sanitation Officer to the fact that there was a high percentage of infected rats in Kilindini; on the 30th September I asked for permission to demolish the landies. I said in my telegram "It was asking for trouble to do anything short of demolition."

On October 16th I warned the Chief Sanitation Officer and recommended getting the Railway employees out of their houses.

On the 17th October there was a strike among the

Locomotive men as ^{to} [they objected] being sent to the quarantine camp. A special camp was therefore put up for these men in Kilindini, and this formed the nucleus of the present large Canvas Town.

The authorities at Nairobi were by this time thoroughly aware of the danger. The difficulty however was to get enough tents in which the people could be housed.

However, towards the end of October, a large camp had been pitched, and the danger zone was practically speaking evacuated. Great care was exercised in the pitching of the camp, as it was realised, that a dirty camp is worse almost than dirty permanent quarters.

Dr. Thomson was put in sanitary charge, and I think it may be recorded here, that his knowledge of Camp Hygiene, derived from his having served as an officer of the Royal Army Medical Corps (Territorials), stood him in great use. I may add that I have seldom seen a large camp of natives of all sorts of castes and races kept in such a cleanly sanitary condition.

I consider that Dr. Thomson is deserving of credit for having brought about this desirable state of affairs, and for seeing that it was maintained. Writing this report, as I do, at the conclusion of my work as Plague Officer in Mombasa I can only hope, now the dirty, insanitary, and dangerous dwellings in the Railway area have been evacuated and shortly will be demolished, giving way to modern rat-proof dwellings, that the epidemic will be stopped in that district.

Altogether, since the disease began in Mombasa, 17 cases of plague have occurred among the Railway employees living in the Railway area; that is to say there is a case incidence of approximately 10 per thousand. Compare this incidence with that of the general inoculated population (all Railway employees have been inoculated at least once

and the majority twice), which in August 1913 was 0.3 per 1000. It is seen therefore that if one lives in the Railway area the chances of getting plague are about 30 times as great as if one lived in the town. I refrain from further criticism, as the Railway authorities both here and at headquarters actually did all they could to help us when the position was brought home to them.

As to the remainder of the September and October cases, Mwambeni had 6 cases and the stone part of the town 5.

Case 21 which occurred on the 18th October was a source of disappointment.

The unfortunate victim had been inoculated twice, his house was quite a good one, it had been fumigated only a week before he died and no other case was known to have existed near his house since 13th August.

The Clayton Gas Machine unless called away to disinfect a plague house, has been at work systematically treating the poorer class of stone houses in the town.

This work has been carried out house by house and street by street, with a view of destroying rats and vermin.

The number of buildings claytonised up to 31st October was 115. As many of these buildings and large blocks each containing many rooms, the number of premises disinfected will amount to about 1000.

INOCULATION. 279

This work has been vigorously continued.

It was considered advisable to persuade people to be re-inoculated in order to obtain additional immunity. A large number of the inhabitants responded.

The weekly figures for September and October are as follows:-

Week ending	Primary Inoculation.	Re-Inoculated.
6th September	1606	nil.
13th "	1661	198
20th "	1382	386
27th "	938	1099
4th October	1240	918
11th "	768	2986
18th "	665	1810
25th "	479	849
1st November	346	459

The total number of inoculations at 12 noon on 1st November stood thus:-

Primary inoculations	32,744
Re-inoculations	8,702
	41,446

The vaccine used is Haffkine's prophylactic. So far as I know not one single untoward result has followed. Considering that in many instances the operation has been carried out in not too favourable circumstances and under conditions, which, if one had the choice, one would not select as highly desirable, this result reflects credit on the inoculation staff for their care in trying to obtain asepsis.

This section of anti-plague work has afforded the most disappointing results in the whole organisation.

In the first place, the inhabitants, whether due to an active or passive apathy I do not know, practically refused to co-operate with the department in rat catching. How far Hindu and Arab susceptibilities are offended by rat destruction I cannot gauge. The heads of the various communities were invited to attend at the Plague Office, and there the reasons for rat catching were carefully explained to them by Professor Simpson. No appreciable result followed and the general run of the population continued as apathetic as ever.

In the next place our experiments showed, that not only the Liverpool virus, but Danyez's also had lost its virulence, whilst for some extraordinary reasons caged rats fed on two of the best known patent rat poisons not only survived but flourished.

It became necessary, therefore, that some reliable poison should be obtained, and I was obliged to fall back on white arsenic. This I mixed with ghee and spread on bread. I found that rats which nibbled at this died within 3 hours. This mixture therefore was put down in selected places under the supervision of Dr. Tudhope, who was in charge of the rat brigade and the rat work. Notices were published, that a dangerous poison was being put down all over Mombasa, and all persons were warned not to let valuable animals stray. So far the total casualty list apart from rats amounts to three chickens; that is so far as we know.

The number of rats caught, dissected and examined microscopically is as follows:-

Months	M. Decumanus.	M. Alexandrinus.	M. Rattus.	Total.	Infected.
August	254	115	88	457	3
September	333	166	31	530	9
October	209	101	10	320	4
Total	796	382	109	1287	16

That is a percentage of infection of 1.2. The 273
infection was found to be present in:-

M. Alexandrinus.	3
M. Decumanus.	10
M. Rattus.	1

16

STAFF

During the period under notice the following changes took place. Arrivals.

Name.	Date.	Duty.
Sub-Asst. Surgeon D.S. Tipnis	18th September	Rat Work.
Dr. W.H. Tudhope	2nd October	Rat Work.
Dr. E. N. Russell	29th October	General Duty.

Dr. P. F. Nunan was ordered to Nairobi on 24th October, his work on the Sanitary Survey being practically finished.

Sub-Assistant Surgeon Dula Ram was ordered to Nairobi in September.

15. TREATMENT OF PLAGUE. *→ P. J. Jones*

283

Now that the etiology of the disease is becoming so well understood, plague officers are devoting themselves to improving the methods of treatment.

When all is said and done, symptomatic treatment more often than not does little else but make the patient more comfortable before death. In the treatment of a disease like plague it is understood that drug treatment can be of but small use; what must be aimed at is the elimination of the bacillus from the host and the neutralisation of the toxin. Naturally, therefore, we look to Sera, to the ready made anti-body that is to say for our remedy. Trials, and extensive trials, have been made of the following sera,—Yersin and Lustig's, Cruz's, and Galletti's alkaline nucleo-proteid solution with varying success. Tead records 17 recoveries out of 40 cases treated with 20-400 c.c. of anti-plague serum, whereas previously he lost all his patients.

Other workers, again, have employed vaccine therapy, using either Haffkine's or Pfeiffer's vaccines, Terni and Bandi's peritonical exudate or Strong's attenuated living vaccine.

In Mombasa during my period of duty no serum of any description was available. Assistant Surgeon Nyse, who was in charge of the Plague Camps, therefore decided to fall back on vaccines, and he used Haffkine's prophylactic, injecting 1 c.c. subcutaneously on the admission of the case. In no case was there any indication to repeat the injection, as the patient either died or the disease took on a favourable course.

The result this officer obtained compels, I think, some attention, as the following tables show.

Table IX deals with a series of 80 cases which were

183

not treated by vaccine therapy, out of which 18 recovered and 68 died, a mortality figure that is of 77.5%. *for control*

Quick
Out of the 86 cases however which died some correction in the mortality figure must be made on account of 14 of them having been previously inoculated. In Table VIII, where the relative protection afforded by inoculation is shown, it is seen that the case mortality among the inoculated is 80% and among the uninoculated 87%. *for control*
I propose therefore to deduct the difference in order to get a correlated or corrected result and to call the final case case mortality figure among those not treated by vaccine therapy 70.5%.

Table X next deals with a series of cases which were treated with Haffkine's vaccine. In this series there are 17 cases of which 10 recovered and 7 died. The uncorrected case mortality is therefore 41.1%. In this series 3 had been inoculated previously. I find it impossible to make any correlation here, though I have no doubt that mathematically there is a way of doing it. Even if the 3 cases which appear in the series with a previous inoculation to their record be eliminated altogether, the case mortality among the remainder is 64.3%. Without then bringing to bear on the subject any of the higher mathematics of statistics, it is seen that in the two series of cases treated:-

- (a) Symptomatically, the mortality was 70.5%
(b) By vaccine therapy, " " 41.1%

It may be added that in each case under observation in the (b) series the presence of *Bacillus* *Bacillus* pestis was demonstrated bacteriologically.

The temperature charts and a short note on some of the cases in (b) series are attached.

Caste of Native	Total Number of cases	No. of Admissions into all camps.		Number of Deaths.	Type of Disease	Percentage %		Number of patients not included.
		Males.	Females.			Deaths.	Recoveries.	
Indians	35	36	19	42	46	76%	24%	10
Africans	25	16	7	19	10	83%	17%	4
Arabs	3	2	-	1	2	50%	50%	-

TABLE I.
 CASES TREATED BY VACCINE THERAPY.

Grade of Native.	No. of cases treated with vaccine.		No. of Recoveries.	No of Deaths.	Type of Disease.		No. of cases previously inoculated.	No. of cases not inoculated.
	Males.	Females.			Bubonic.	Pneumonic. Combined.		
Indians	9	1	6	4	9	1	7	3
Africans	7	-	4	3	-	5	1	6
Arabs	-	-	-	-	-	-	-	-

63" 5 24

188

Antigeno

Plague

Notes of Case

~~Strains~~

Name

~~Smith~~

Age

Diet

Case Book No. 100

Treated with Hoffman's
Prophylactic vaccine.
Had not been previously
inoculated.

Patient had a large
lesion in right axilla
6. pus found in
pus

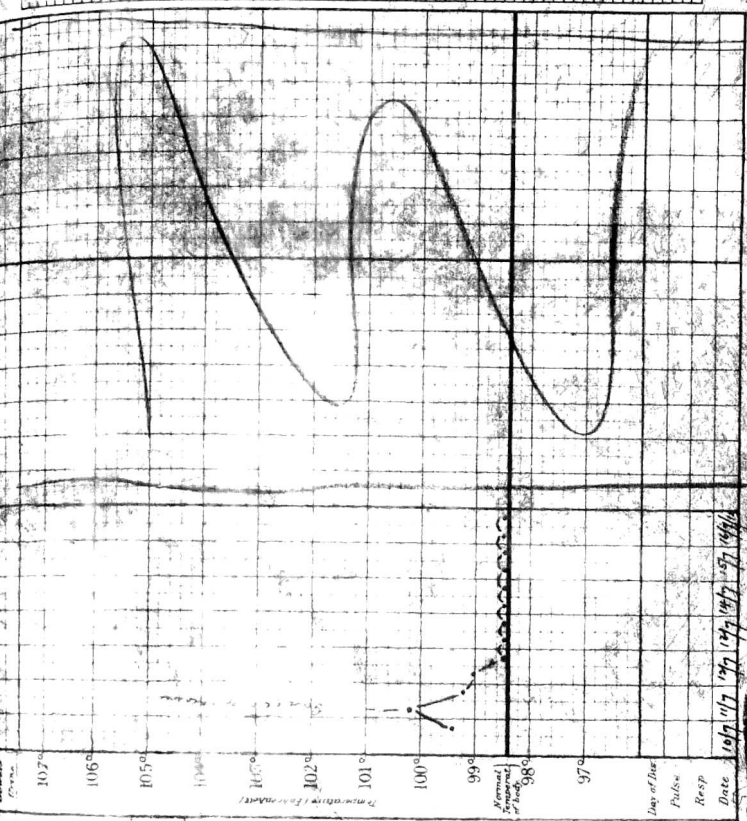
281

Date of admission

10th July 1913

Result Discharged

5th July 1913.



Date 10/7/17 17/7/17 17/7/17 17/7/17 17/7/17

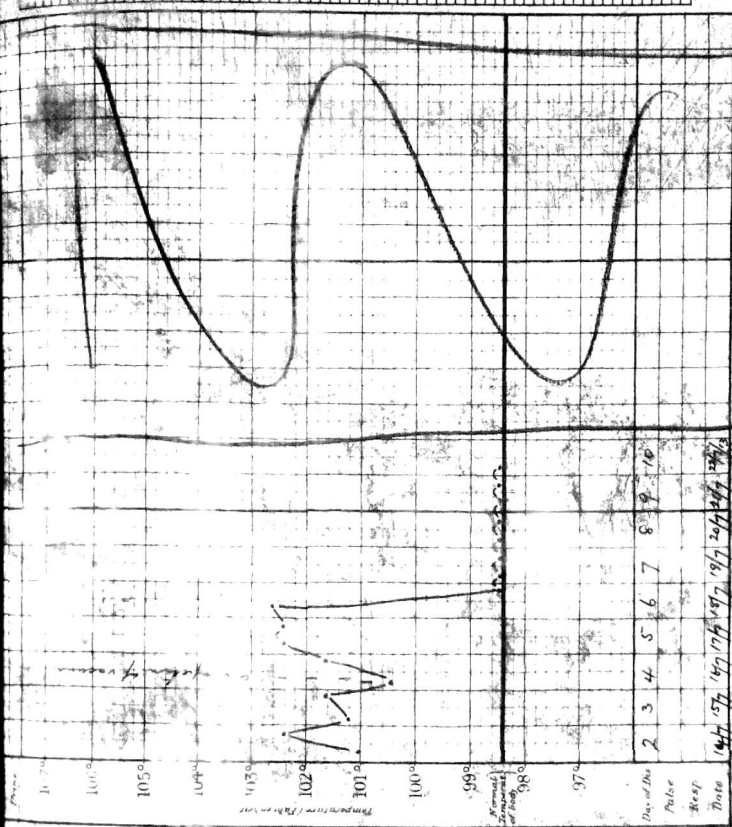
Smith - Original Case

Name: Henry C.
 Notes of case: B. coli
 Name: Richard
 Age: 25
 Diet: milk
 Case Book No. 111

Treated with 40000
 prophylactic vaccine
 that not less than 100
 nearly inoculated
 B. coli found
 in the spleen on
 admission
 absent on the
 6th day.

285

Date of admission
14th July 1912
 Report forwarded
22 July 1913



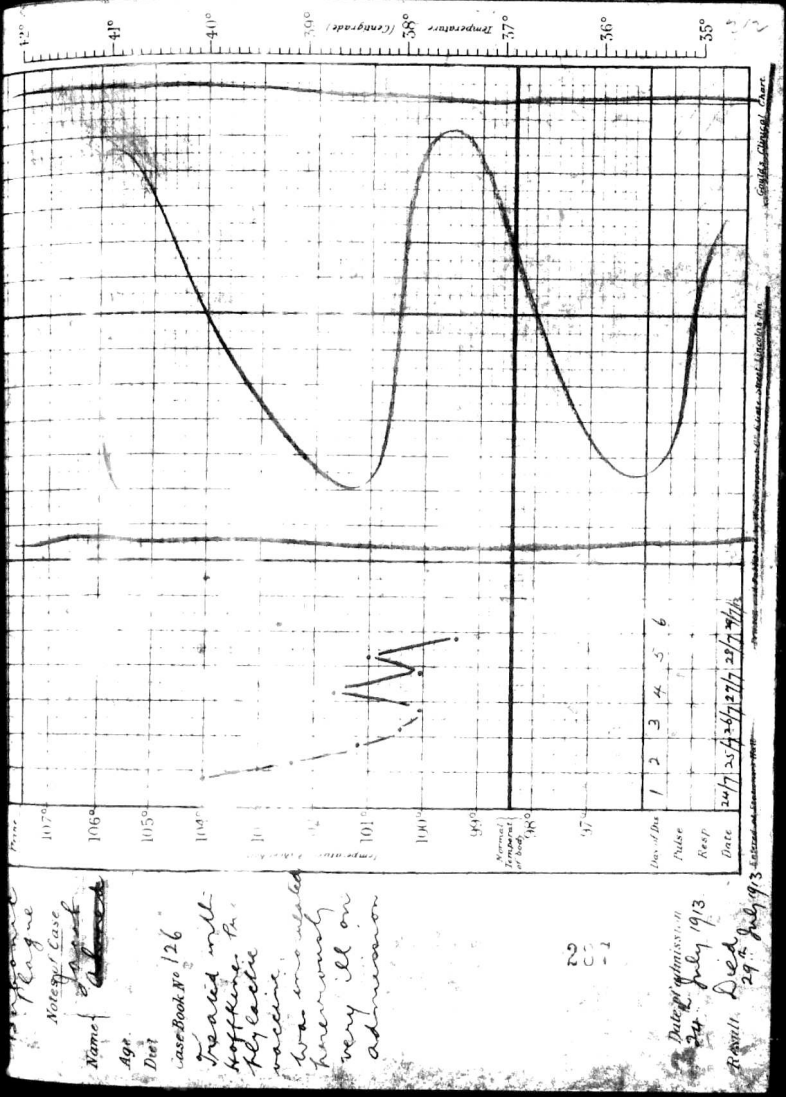
Day of Dis. 2
 Pulse 89
 Resp. 18
 Date 14/7/12

1017°
 106°
 105°
 104°
 103°
 102°
 101°
 100°
 99°
 98°
 97°

Name Al
 Age
 Diet
 Case Book No. 126

Treated with
 Hoffkine. P.
 Poly lacte
 vaccine.
 was inoculated
 here shortly
 very ill on
 admission

207
 Date of admission 11
24 July 1913
 Died 29 July 1913



P. Leque

Notes of Case

Morgan, Paul

Name

Age 14 Years

Diet

Case No 28

Sent in with a lobe in right groin, has also found others lobe submitted on the above being incised. In another lobe the femoral region of the femur is well defined to a line that is irregularly contoured.

22
23
24

Date of admission

July 25 1917

Result

Discharged

16th August 1917

107.0

106.0

105.0

104.0

102.0

101.0

100.0

99.0

98.0

97.0

Day of Dis

Pulse

Resp

Date

2 6 4 5 6 8

27 27 27 27 27 27

76 76 76 76 76 76

25 25 25 25 25 25

Temperature (Fahrenheit)

Normal Temperature of Body

Rectal opening

42° 41° 40° 39° 38° 37° 36° 35°

Temperature (Cenigrade)

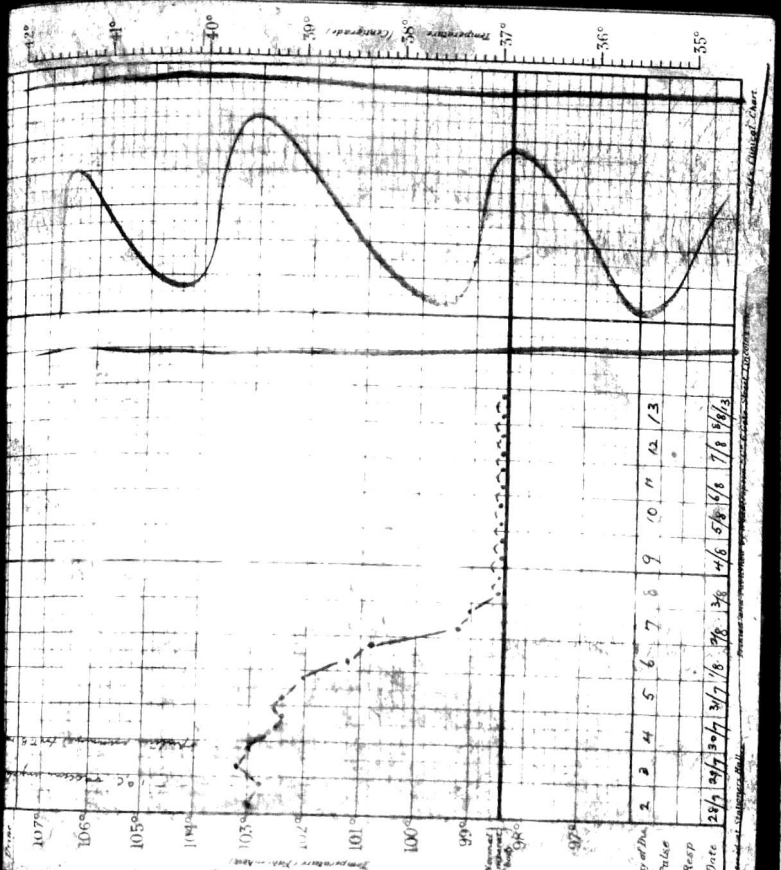
Plague
 Notes of 1256
 Name: Allypba
 Age: 24
 Diet

Page Book No | 32
 Died with
 Hitting the
 blacke wane
 was mordered
 8 day from the
 admission

Plague Bunch
 present in
 skin on side
 seen but was
 fire from skin
 on the 4th day

Very weak &
 all on strain
 22
 52

Date of admission
July 28/13
 Discharge



Wm. H. Dillig - Chart

Name: Alayne
 Notes of case: Vaccines
 Name: Alayne
 Age: 3
 Diet: None

Case Book No. 133

Quis Mary Bubs
 Lung symptoms
 rapidly subsided

Treated by Dr.
 Sana Rose
 Not inoculated
 Refrained from exercise
 while ill

200

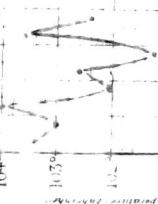
Date of admission
July 28/1913

Result Due July 31/1913

42°
 41°
 40°
 39°
 38°
 37°
 36°
 35°



Died 31/7/13



Day of Dis. 3 4 5 6
 Pulse
 Resp
 Date 30/7 29/7 30/7 31/7/13

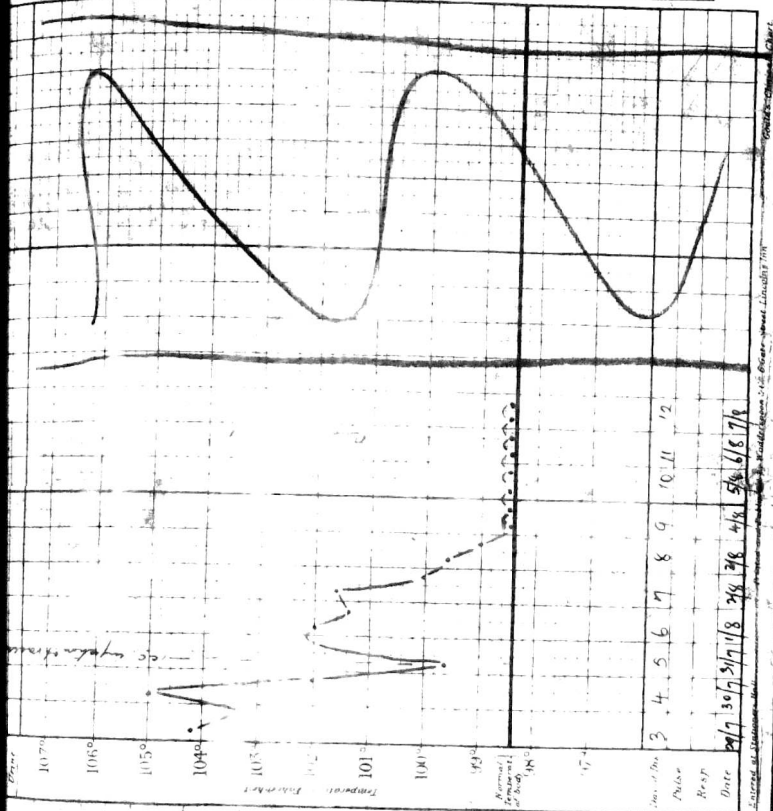
Name: Hubert
 Age: 10
 Diet: Hubert

Case Book No. 134

Large Babo
 in light capsule
 fed slow in
 table on 7th
 July 1913

Treated with
 Hoffmann's Pro.
 thylacine
 Valerine.

Date of admission: July 29/1913
 Result: Discharge



Printed at Singapore. No. 10, Raffles Place. Singapore.

ABSTRACT OF SPECIAL "EPIDEMIC" VOTE ACCOUNT.

Month.	Cash Transactions.		Charges Dr. to other Govt. Departments.		Personal Expenditures		Compensation Claims.		Foodstuff, Pesho, etc.		Monthly Total.		Grand Total	
	Rs.	cts.	Rs.	cts.	Rs.	cts.	Rs.	cts.	Rs.	cts.	Rs.	cts.	Rs.	cts.
July	899	20	-	-	305	21	-	-	-	-	1204	41	1904	41
August	10929	26	12	27	1159	22	6	00	128	89	12234	63	15439	94
September	1963	25	-	-	5855	86	27	00	272	68	8118	78	21887	85
October	887	71	2856	52	3006	48	10	00	817	67	7578	38	20136	21

NOTES ON EIGHT CASES OF EPIDEMIC CEREBRO-SPINAL
MENINGITIS OCCURRING AMONG EUROPEANS
IN NAIROBI.

BY DR. J. L. GILKS.

During the epidemic of cerebro-spinal meningitis which occurred among the natives in and near Nairobi from May 1913, till the end of the year, there came under my notice 8 cases among Europeans, with one death. The symptoms and signs were, except in two cases, very obscure and the cases formed a very interesting series.

The diagnosis unfortunately was only confirmed bacteriologically in four cases. Three cases occurred at one hotel from which native cases had been removed.

Symptoms. In every case headache was the chief symptom complained of, and this was situated in the occipital region and also over and behind the eyes and in the neck. Every case but one had some stiffness of the neck. Eye symptoms occurred in three cases, the complaint being in one case of a temporary blindness, in another of seeing flashes of light, and in the third that, after shutting his eyes, he still saw objects he had previously been looking at. Two cases complained of seminal emissions before admission to hospital. Pharyngitis had been present in two cases. The knee jerks were brisk in five cases but the other reflexes did not appear to be altered and there was never any contraction of the hamstrings. Eye reactions were always normal. The temperature was intermittent or remittent and did not seem to have any relation to the severity of the attack. It was noticed that the 2 p.m. temperature was usually the highest. Epilptiform seizures occurred in one case. In four of the cases there have been after effects which have lasted up to the present.

20/10/28

These have been: —

1-2

- Impairment of vision in two cases.
- Affection of memory in two cases.
- Rheumatic pains in limbs and joints in two cases.

The blood count showed nothing definite, and varied very much with the different cases. Whenever a diagnosis of cerebro-spinal meningitis was arrived at clinically, lumbar puncture was performed, and in every case cerebro-spinal fluid escaped under pressure. This fluid was perfectly clear in every case but one, and on microscopical examination, after centrifuging, only showed meningococci in two cases, the other being the case with turbidity.

In five cases the cerebro-spinal fluid was incubated with both and in one case a small amount of meningococci took place after four days. Treatment was in every case by intramuscular injections of soamin which was usually administered in V grain doses on each of the first two days after commencement, followed by gr. iiii on the fourth day, and, if necessary on account of an irregular temperature, occasional further doses were given.

No bad effects from the soamin occurred. Sera were not tried as it was conclusively shown in native cases that their effect was more in the direction of aggravating than in curing the disease. This might possibly be due to the climatic influences to which the sera must be exposed on their journey from England to East Africa.

Lumbar puncture always gave great relief to the headache and was a valuable asset in the treatment of the case in addition to its diagnostic value.

The following are the details of the cases:—

small type and slight in dent

1. ~~Male~~, male, age 42, admitted in a desperately ill condition on 4th June, of pneumonia on 4th June.

No.

191

No history obtainable, but he had been up for medical examination two days before as to his fitness for Government service, and had been rejected

because of albuminuria and signs of phthisis of the right apex, T. 99.2, P. 140, R. 40. Condition present with sign of pneumonia at the apex of the right lower lobe. The following day stiffness and restriction of the neck developed and lumbar puncture gave a turbid fluid under pressure and swarming with gram negative intracellular diplococci. The condition got worse and proptosis and paresis of the right side developed, and death occurred on 8th June.

11. ~~Case~~ female, age 34, admitted on 19th July with a history of 11 days' illness beginning with headache, shivering and slight diarrhoea which lasted for a day only, and pain in the back of the neck developed. The headache continued, and she had been in bed for six days with a high temperature ranging between 101 and 103. The pulse had been slow and examination of blood for malaria and typhoid had both been negative. She had some cough for three days. On admission T. 101, P. 60, R. 24. The only physical signs were the presence of a few crepitations over the base of the right lung P. No positive diagnosis was arrived at. The Widal reaction was again negative.

small
to the
I
Slight
incident)

Treatment was purely symptomatic and the temperature gradually steadied down and she was discharged on 7th August. It was noted that rapid wastage had occurred and she rapidly became very weak. The next day she was re-admitted with a temperature of 101.4, P.112, R.22. The cough had returned, she had vomited once, and the nose had bled badly. Blood examination was again negative. The physical signs were as before and there was no affection of the reflexes. On the 10th August the result of lumbar puncture on the next two cases induced us to carry out the same procedure here; fluid under pressure was withdrawn. The fluid was quite clear and microscopically negative. Intra muscular injections of soamin were given and the condition improved somewhat. On the 25th August the site of a quinine injection, given a month before for diagnostic purposes, became inflamed, and shortly after an abscess developed and a large slough came away. Improvement was more rapid after this, and she was discharged well on 15th September and has had no after effects.

III. ~~M.A.~~ A., male, age 26, admitted on 5th August complaining of pain over the eyes and back of neck and shoulders and had had a high temperature for 4 days. On admission T.102, P.100, R.20.

2. Splenic

small

d

slight

incident

The physical signs were nil. No stiffness of neck. Reflexes normal. No malaria in blood and Widal reaction negative. The temperature remained high and on one occasion reached 104.8. On the 9th August he complained of seeing "flames and lights" when the eyes were closed, and he was noted as wasting rapidly. On the 10th August lumbar puncture was performed and a large amount of a perfectly clear fluid escaped under pressure. The cerebro-spinal fluid was negative for meningococci, but a specimen of blood incubated with broth gave a profuse growth of the diplococcus after ten days. With serum injections the temperature dropped considerably, but remained irregular for a long time, and he was not fit for discharge till 29th September.

After discharge from hospital he developed rheumatic pains in the limbs and joints necessitating leaving the country.

IV. ~~Mr.~~ B., male, age 26, admitted on 6th August complaining of pain and stiffness of the neck and acute pain in the eyes of three days' duration. He also complained after shutting his eyes that the image of objects he had been looking at did not disappear. For some time he had had nocturnal emissions. On admission T. 100.4, P. 108, R. 28, knee jerks very brisk.

(small
type
&
slight
in dex)

A blood slide showed 18% of large mono-nuclear cells but no other change. He was treated with soamin injections before a lumbar puncture was done on the 10th August when perfectly clear fluid under pressure was withdrawn. The fluid showed no diplococci. He improved rapidly in himself, but for ten days he was unable to read and since discharge he complains of his eyes being weaker than before. He wasted rapidly and was very feeble when he first got up and before discharge on the 10th September.

Soler

V. ~~Case~~ B., male, age 33, first seen on 18th August, when he was complaining of intense pain over the eyes with stiffness and pain in the neck of three days' duration. He had been in close contact with cerebro-spinal cases at Magadi and had helped the Medical Officer to perform lumbar puncture on these cases. Temp. 102.6, P. 100, R. 28. He had numerous signs of bronchitis over both lungs; knee jerks reduplicated; neck very stiff; lumbar puncture gave a copious clear fluid under pressure which showed a few meningococci after centrifuging. He was put on soamin injections, recovered rapidly and has had no after effects.

VI. ~~Case~~ C., male, age 36, a medical man who had been in constant contact for weeks with cases of cerebro-spinal meningitis, admitted in a delirious

delirious condition on 27th August. He had been unwell for some time, and the day previous had had fever and pain over the eyes and had examined some nasal discharge which was present finding gram negative diplococci. An injection of soamin had been given before admission, T.100, P.100, R.20, knee jerks accentuated. The following two mornings he had epileptiform convulsions, and his speech centre was badly affected. The cerebro-spinal fluid was drawn off under pressure, and was negative as regards the finding of meningococci. He improved rapidly, but was troubled for some days with weakness of the sphincters, and also suffered from some loss of sensation in the legs. He was invalided home on 11th September, and complained for some time after of mental irritability with some loss of memory and pain in the back.

- VII. ~~M.~~ F., male, age 33, admitted on 24th August in a delirious condition. His friends stated that he had been taken ill while travelling and complained of headache and a stiff neck. There was also a history of spasms of the extremities, and once he had complained of loss of sight. T.102.6, P.84, R.24. There was stiffness of the neck. No accentuation of knee jerks. A lumbar puncture

puncture gave a perfectly clear fluid under pressure, which was negative for meningococci. Under injections of soamin he improved for a time, but afterwards got worse and a fortnight after admission to hospital malaria parasites were found in the blood. Under injections of quinine he again improved, but the temperature remained variable for some time. He wasted rapidly and developed a bed sore and boils during the first part of his stay in hospital. He was discharged on 20th October. After discharge he complained of loss of memory and great weakness until leaving the country.

VIII. M.N., male, age 40, admitted on 3rd September complaining of pain in the back of the head and stiffness of the neck. The mental condition was not clear, but he said he had had a high temperature for some days with some pharyngitis. His wife said he had changed mentally very much. T.101.4, P.90, R.24; some injection of fauces and impairment of note at the right base P. Knee jerks accentuated. Lumbar puncture gave an absolutely clear fluid under pressure, which was negative for meningococci. Under soamin injections he improved rapidly, but on getting up he was very weak. Discharged on 19th September and has had no after effects.

Remarks.- It was unfortunate that the diagnosis of cerebro-spinal meningitis was only bacteriologically confirmed in four of the cases, and possibly the diagnosis is open to doubt in cases II, IV, VII, and VIII. It is to be remembered, however, that in case IV injections of soamin had been given before lumbar puncture was performed and it was noted among the natives that soamin very quickly destroyed meningococci in the cerebro-spinal fluid. Also in case VI, an undoubted case of cerebro-spinal meningitis, no diplococci were found in the spinal fluid.

Clinically the classical symptoms were chiefly remarkable by their absence, particularly Koenig's sign, but in case III, where there were no definite physical signs of any kind a positive diagnosis was arrived at bacteriologically.

The points which to my mind confirmed the diagnosis were -

- 1) The rapid wasting and weakness which took place in every case and was so marked in case III.
- 2) The relief afforded to the headache by lumbar puncture.
- 3) The effect of treatment by injections of soamin which as in the native cases was rapid and marked.
- 4) The presence of after effects which occurred in cases III, IV, VI and VII.
- 5) The general similarity of symptoms.
- 6) The fact that three of the cases, II, III and IV of which No. III was undoubtedly cerebro-spinal meningitis came from one hotel.

Attention

Attention is directed to the report on native cases by Dr. P. H. Ross and Dr. J. O. Shircore which appeared in the "Transactions of the Society of Tropical Medicine and Hygiene" for December 1913, in which there appears an account of an European case whose only symptoms were headache, pain in the neck, and a high temperature. This case was not diagnosed during life as cerebro-spinal meningitis and died very suddenly when he appeared to be almost well. At the post mortem examination there was meningitis and a few meningococci were found in the fluid from the ventricles, but in the fluid from the spinal canal no micro-organisms could be found, neither was there an excess of the fluid itself.

Also in that report there are two other cases mentioned in which the cerebro-spinal fluid was negative but a pure culture of meningococci resulted from incubating the blood with broth.

Robert S. Sherrin

Nervous System

RECORD OFFICE, LONDON

Note on the proportion of cases of Ankylostomiasis occurring among the patients in Kilindini Hospital (1906) by Dr. Norman L. Leys.

The method employed was as follows. The stools of all the patients in Hospital on June 1st were examined. Every case admitted after that date was similarly examined until August 11th the number of 100 was reached. The stools of a few were for unavoidable causes not examined. These have not been counted in the return.

The return shows a proportion of infection of 30%, but whereas only 3 out of 42 Indians were infected, 29 out of 58 Africans and Arabs harboured the parasite. The number of Arabs admitted during the period of observation was not large enough to allow of separate statistics. But what I have seen in the outdoor department leads me to believe that they suffer even more than Africans. The 3 cases among Indians had all been six months and upwards in Africa. Most of the rest were (i.e. the unaffected newcomers. Any error in the figures tends to underestimation of the proportion of the infected. The ova once seen are unmistakable. When scanty they have probably occasionally been missed.

Of the 32 cases 7 were admitted for the disease (and three of these died), 6 more had symptoms attributed to the parasites, and the remaining 19 had no symptoms. In the fatal cases the diagnosis was verified post mortem.

While half of the Africans in Hospital harbour ankylostomes, I do not suppose that half the Africans in the island harbour them. The average hospital patient is poorer, dirtier and therefore more liable to infection, than the average man. In addition the disease itself is not only a primary but a secondary

secondary cause of the degree of ill-health which gives a man the title to admission. But I feel certain that not less than a fifth of the people on the Island are infected, and that much ill-health, often undiagnosed, and sometimes not believed in except by the patient, is to be attributed to this cause.

The Swahili and Arabs know the disease well, and call it by an Arabic word meaning "swelling", in allusion to the oedema characteristic of the advanced type. They recognise a preliminary stage which they treat with a solution made by steeping iron scales fresh from a forge, and say is cured thereby. The type with oedema they say is incurable. Arabs from Zarzibar tell me the disease is very common there. It is well known among the Wateita and Wanyika and I have seen an extreme case in a man who had not been out of Kachakos for several years.

I am aware that infection by the skin is possible. But I presume it is the general opinion that a parasite which lives in the intestinal canal gains access thereto by the mouth. On such a supposition the three most likely methods of infection are as follows.

- (1). Earth eating. This is common among the Swahili, specially among the women and children. It is not the Geophagy mentioned in the books as a symptom of insanity. Large quantities are not eaten. Those who indulge simply nibble as they feel inclined, much as one smokes tobacco, or as American schoolboys chew gum. A certain red earth is a favourite kind and was sold in the Bazaar till Mr. Sanderson stopped it a year ago. But many have little or no preference and quite commonly eat scuffings from the walls of their houses.
- (2). Cleaning pots and table dishes with sand is another possible source of infection.
- (3). Drinking well water is the third obvious source.

These wells are the only means of getting water which the natives have, and all contain surface drainage water.

All these three sources are of course made possible by soil infection by faeces, an infection as constant and extensive on this Island as if sanitation was unheard of. Before the advent of Europeans it was the custom to make a convenience of the seashore. The police have stopped that largely. No other place is provided. There is not one public latrine on the Island. As a result every plot of grass or scrub, the shelter of every tree, every lane and back yard, is defiled. Even in the public streets, men, most commonly Indian Coolies, may be seen committing offence.

A classification of the stools of 100 consecutive cases admitted to Kilidini hospital during May - August 1906, giving the number of the cases which contained, and of those which did not contain, the ova of the Ankylostomum duodenale

	Present	Absent	Total
Indians.	3	39	42
Africans & Arabs.	9	29	58
	<u>32</u>	<u>68</u>	<u>100</u>

Osler

NOTES ON INTERESTING CASES BY
SUB ASST. SURGEON G. V. PATEL, MERU DISTRICT.

During the month of January 1913, a patient was brought in very emaciated and unable to attend his usual work. He had many sand fleas (Jiggers) in feet, knees, glutial regions, back and palms of hands. Every possible examination of his body was made to find out the cause of emaciation but no organic disorder was made out; and so the case was treated for jiggers.

Treatment:- The affected part was washed with antiseptics and kept in running stream of water. The treatment was carried out for about ten days, with the effect that the jiggers washed off and the general health improved to such an extent that the man was observed working as a private boy during the next month. The attached picture gives a little idea about the condition of the patient before admission. Some of the jiggered areas are also visible.

(A good picture)

Remarks:- Jiggers are generally considered to cause trifling injury; but in the above case it would have resulted fatal if ^{prolonged} a little longer. Also a running stream of water for such advanced cases does more good than pokes of needles.

During my tours in the District, a case of goitre was seen. The disease, I believe is not endemic. A picture of the case is herewith attached.



3.3



230

slide

RETURNS.

TABLE I. *Spice Lomic*

ADMINISTRATIVE DIVISION.

303

Dr. A. D. Milne, Principal Medical Officer.
 Dr. J. A. Haran, C.M.G., Deputy Principal Medical Officer.
 Mr. R. Stanley, Office Superintendent.
 Mr. T. Preston, Clerk, Principal Medical Officer's Office.
 Mr. J. S. Robertson, Medical Storekeeper.

MEDICAL DIVISION.

Dr. L. D. Lowsley, Senior Medical Officer.
 Dr. W. Owen-Prichard, Senior Medical Officer.
 Dr. C. L. Chevallier, Medical Officer.
 Dr. F. I. Henderson " "
 Dr. A. Robertson " "
 Dr. J. O. Shireere " "
 Dr. G. R. H. Shell " "
 Dr. T. F. Lumb " "
 Dr. J. L. Gilke " "
 Dr. J. Pugh " "
 Dr. R. Hamilton, Probationary Medical Officer.
 Dr. C. J. Wilson " "
 Dr. V. G. L. Van Someren " (Dentist)
 Dr. A. D. J. B. Williams " "
 Dr. T. H. Massey " "
 Dr. G. Dunderdale " "
 Dr. P. F. Nunan " "
 Dr. J. H. Thomson " "
 Dr. J. H. H. Pirie " "
 Dr. W. Tudhope, Temporary Medical Officer.
 Dr. H. H. V. Welch " "
 Dr. F. Cellar " "
 Dr. E. N. Russell " "

MEDICAL DIVISION (Contd.)

319

Dr.R. W. Spence, Temporary Medical Officer.
Dr.J. M. Mackinnon "
Mr.G. Gillespie, Dispenser.
Mr.F. Knott "
Mr.H. Ogden "
Miss K. E. Stollard, Matron, European Hospital.
Miss E. R. Brown, Nursing Sister.
Miss A.M. Hersten "
Miss M. MacMillan "
Miss H. M. Whitburn "
Miss S. E. Lumsden "
Miss L. Merryweather "
Miss R. Paul "
Miss I. L. Majumdar "
Mr.W. Henfrey, Superintendent, Lunatic Asylum, Nairobi.
Mrs.L. A. Henfrey, Matron, " " "

LABORATORIES DIVISION.

Dr.P. H. Ross, Bacteriologist.
Mr.V. H. Kirkham, Analyst.

SANITATION DIVISION.

Dr.W. J. Redford, Chief Sanitation Officer.
Dr.R. Small, Medical Officer of Health, Mombasa.
Dr.A. Meuat, " " " " Kisumu.
Dr.B. W. Cherrett, Medical Officer of Health, Nairobi.
Mr.H. Lyon, Sanitary Inspector.
Mr.A.F. Bennett, " "
Mr.B.E.P. Watkin " "
Mr.W. H. Wood " "
Miss M.A. Thomlinson, Nurse attached to Health Office, Mombasa.

205

TABLE II. *S. Mut. Zone*

FINANCIAL.

The sanctioned Medical Budget for the year 1913-14 was a total of £42,336, which was augmented by a special warrant for £28,000 to provide for measures being taken to combat an outbreak of plague in Mombasa, and a special warrant for £11,620 providing for the expenses of the Sanitary expert, making a grand total of £82,356, as compared with £53,844 for the preceding year.

Of the 1913-14 grand total, £50,211 were expended, leaving an unexpended sum of £2,125 as savings.

EXPENDITURE.

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

SCHEDULE XIV.- MEDICAL DEPARTMENTS. *im paid caps*

	Estimate £.	Actual Expenditure. £.
Personal emoluments ...	14,053	12,310

(Under this heading are included the salaries, and any duty allowances granted, of the *Principal Medical Officer, Deputy Principal Medical Officer, Medical Officers, Bacteriologist, Analyst, Medical Store-keeper and clerical establishment*).

OTHER CHARGES.

Conservancy rates	54	50
Contingencies	300	440
Transport	1820	2200
Typewriter	23	21

SANITATION DIVISION.

312

	Estimate	Actual Expenditure.
Personal emoluments ...	5,329	3,959

(Under this heading are included the salaries, and any duty allowances granted, of the Chief Sanitation Officer, Medical Officers of Health, Sanitary Inspectors, Nurses, Assistant and Sub-Assistant Surgeons, Vaccinators, Native Attendants for Infectious Diseases Hospitals, and clerical establishment).

OTHER CHARGES.

Epidemics	500	8,484
Special warrant No.19 for plague measures, Mombasa.	8,000	
Special warrant No.13. Expenses of Sanitary expert.	1,620	1,859
Sanitary station, Zanzibar	750	807
Transport	770	569
Typewriter	23	21
Hospital equipment for 3 Infectious Diseases Hospitals.	900	675
Maintenance of 3 Infectious Diseases Hospitals.	1,095	494
Disinfecting apparatus	100	122
Working and maintenance of Clayton	50	-
Disinfectants	100	-
Bush clearing, mosquito and sleeping sickness preventive measures.	1,200	152
Contingencies	50	40

SCHEDULE XV.- HOSPITALS AND DISPENSARIES.)

San Juan Cape

107

Estimate Actual Expenditure

Personal emoluments 10,572 10,025

(Under this heading are included the salaries of the Nursing Staffs of the European Hospitals, Superintendent and Matron of the Lunatic Asylum, European Dispensers, Indian Subordinate Medical Establishment, and native menial attendants).

OTHER CHARGES.

Upkeep of European Hospitals	850	1,143
" " Laboratory	160	134
" " Native Hospitals	854	728
" " Lunatic Asylum and Leper establishments.	280	232
Medical and Surgical Stores	2,475	2,813
Transport	1,398	1,769
Furniture and equipment	100	184
Ration allowance to medical subordinates, Northern Frontier District	100	33
Gas plant and microscope	300	251
Uniforms for Hospital Staff	100	20

REVENUE.

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

Hospital fees	1,851
Bills of health	282
Registration fees	27
Laboratory fees	180
Sales of medicines, etc.	242
<i>Total</i>	<u>2,582</u>

Last year the total revenue collected amounted to

2,1,878.

208

Quick

TABLE III.) *Sisal Lonia*

Return of Statistics of Population for the year 1913.

East Africa	European and White	Africans	Asiatics
Number of inhabitants in 1913	6,510	3,000,000*	20,000*
Number of Births during 1913	109	+	+
Number of Deaths during 1913		+	+
Number of Immigrants during 1913	3,375	2,233	9,190
Number of emigrants during 1913	2,571	1,826	4,676
Number of inhabitants in 1912	6,151	3,000,000*	14,640*
Increase	1,359	-	5,358*
Decrease	-	-	-

*approximately.

+ not registered.

Table IV (A)) *Kenya*

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

315

Area of Town.

	1. Approximate area	Number of proclaimed open spaces.
1911	8 1/2 square miles	1 public park
1912	" " "	" " "
1913	7 " "	" " "

	2. Population:		
1911	17481	(including 684 Goans and 90 Eurasians)	
1912	19900	610	90
1913	25300	700	80

	Number of Asiatics and of Natives.		Number of Europeans.		Total.
	Males	Females	Males	Females	
1911	7018	8648	814	230	16707
1912	8686	8814	935	265	19200
1913	25300 ^u		1600		24600

^u No means of estimating according to sex

3. Housing.

	Number occupied by Europeans.	Number occupied by Natives and Asiatics.
1911	284	362
1912	319	463
1913	377	519

Number of Huts:-	
1911	1500
1912	1549
1913	1585

4. Mosquito Protection of Houses.

316

	1911	1912	1913
of European houses wholly mosquito-protected	Nil	Nil	Nil
of European houses with mosquito room	"	"	"
rendered during the year wholly mosquito-protected	"	"	"
rendered during the year partially mosquito-protected	"	"	"

5. Erection of New Buildings during the year.

	1911	1912	1913.
of public buildings erected with sanction as to site, construction and relation to other buildings	--	3	2
of houses erected with sanction as to site, construction and relation to other buildings	63	156	116
of huts erected with sanction as to site, construction and relation to other buildings	67	46	75
of houses built without sanction	--	5	13
of huts built without sanction	--	--	--

Action Taken.

	Number of prosecutions		Number demolished	
	Huts	Houses	Huts	Houses.
1911	--	4	16	15
1912	--	1	3	--
1913	--	51	34	2

This includes mud and wattle huts tin shanties, and "boys" quarters.

6. Markets.

	Total number	Number paved and drained.	Number unpaved.
1911	3	2	1
1912	3	2	1
1913	2	1	1

1910 year

7. Slaughter-Houses.

317

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

8. Latrines.

For Males

For Females.

Number

Number of Seats.

Number

Number of Seats.

Number of Public Latrines:-

1911	11
1912	10
1913	10

Public latrines

are only for

Only one

Asiatics and

public

Africans, and

latrine for

are used in

Europeans

common by

at Railway

males and

Station.

females.

Number of New Public Latrines
constructed during the year:-

1911	1	4
1912	3	20
1913	3	24

Number of Public Latrines
closed during the year:-

1911	4	--
1912	2	--
1913	2	16

Number of Public Latrines
abolished during the year:-

1911	1	8
1912	1	6
1913	3	--

Latrines:

313

	1911.	1912.	1913.
Number of Private Latrines	855	1400	1433
Average number of pails of nightsoil removed daily.	1481	1381	1453
Average number of soiled pails removed and clean pails substituted.	Nil	Nil	Nil
Number of nightsoil men employed to clean latrines and remove excreta	39	43	60
Number of cesspools	81	107	101
Number of cesspools cleaned	81	107	101
Number of new cesspools constructed during the year	17	9	7
Number of old cesspools abolished	--	1	13
Number of cesspools siled regularly by Department.	--	--	--

9. Removal of Refuse.

	1911.	1912.	1913
Number of carts	245	254	550
Number of carts at work daily to remove refuse from streets	7	6	4
Quantity of refuse removed daily	10 tons	20 tons	4 cart-loads.
Number of carts at work daily to remove refuse from yards and premises	7	12	16
Quantity of refuse removed daily from yards and premises.	5 tons	10 tons	33 cart-loads
Number of men employed for moving refuse.	14	54	88

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

	Daily average number of pails of excreta.			Daily average number of cartloads of refuse.			Daily average No. of cartloads of slaughter house and Market Offal		
	1911.	1912.	1913.	1911.	1912.	1913.	1911.	1912.	1913.
Disposed or trenched	1481	1000	1433	--	--	20	1	2	3
Disposed into sea	--	--	--	14	15	17	--	--	--
Otherwise dealt with	--	--	--	--	--	--	--	--	--

11. Average daily number of cartloads of Tin Cans, Bottles, Broken Crockery, and other Incombustible Material, removed from Houses, Huts and Compounds.

1911	2	
1912	35	
1913	20	319

12. Water Supply.

Nature of Water Supply.	1911.	1912.	1913.
Source:-			
River and Spring	116,140	461,500	481,950
Number of linear yards	12	10	57
Number of stand-pipes along roads and houses.	405	546	610
Public:-			
Number	Nil	Nil	Nil
Number with pumps protected against surface water and mosquito-protected	"	"	"
Private:-			
Number	8	2	2
Number protected against surface water and mosquito-protected	---	---	---
Public:-			
Number underground	0	0	0
Number Mosquito-protected and served by pumps	0	0	0
Number above ground	Nil	Nil	Nil
Number mosquito-protected	0	0	0
Number of 400 gallons capacity or less	0	0	0
Number above 400 gallons	0	0	0
Private:-			
Number underground	Nil	Nil	Nil
Number mosquito-protected	Nil	Nil	Nil
Number above ground	229	255	270
Number mosquito-protected	229	255	270
Number of 400 gallons capacity or less	30	102	102
Number above 400 gallons	199	153	168
Capacity of tanks:-			
Wood	Nil	Nil	Nil
Iron	209	255	270
Concrete	Nil	Nil	Nil
Material:-			
Number	Nil	180	170
Number mosquito-protected	Nil	180	---

13. Drainage.

320

Nature of Drainage.	Public.	Private.
Boundary drains:-		
Lineal yards of masonry drains:-		
1911	5504	
1912	5804	
1913	9495	
Lineal yards reconstructed during the year:-		
1911	Nil	
1912	Nil	
1913	Nil	
Lineal yards repaired during the year:-		
1911	Nil	
1912	Nil	
1913	Nil	
Lineal yards of new drains constructed during the year:-		
1911	647	
1912	300	
1913	8689	
Ditches or drains:		
Number of lineal yards of ditches cleaned:-		
1911	398	
1912	3980	
1913	No information	
Number of lineal yards of ditches dug and graded:-		
1911	450	
1912	3600	
1913	4400	
Average frequency of clearing ditches of grass:-		
1911	Twice a year	
1912	Monthly	
1913	When necessary	

14. Clearance of Undergrowth, Long Grass & Jungle

	1911	1912.	1913.
Number of square yards of weeds, grass and vegetation cut & removed	---	70,000	5,481,540
Average frequency of clearance of vegetation on same area....	Twice a year.	Monthly	When necessary.

15. Excavations of low-lying land.

321

	1911	1912	1913
Number of pools and excavations	25	237	138
Number of excavations filled up	50	21	108
Amount of low-lying and marsh land raised and drained	10 acres	6 acres	5 acres
Number of pools, marshes, &c. fish-stocked			
Number of cubic yards of material used for filling up pools and excavations	No information	No information	No information
Number of persons fined for making new excavations			
Average number of men daily employed in filling up pools, &c.	60	60	40

16. Oiling.

	1911	1912	1913
Number of drains oiled			
Number of pools and excavations oiled	55	50	79
Number of tanks and barrels oiled			
Average number of men daily employed for oiling drains, pools, and water tanks or barrels	5	5	7

17. Inspections and Prosecutions.

	1911	1912	1913
Number of inspectors employed	1	1	1
Number of houses inspected	25	30	898
Number of houses where larvae were found	22	20	54
Number of notices served to remove conditions causing the breeding of larvae			
Number of persons fined for having mosquito larvae on premises			
Number of notices served to remove insanitary conditions on premises	402	96	906
Number of persons fined for not removing insanitary conditions after notice	8		44
Number of soda and aerated water factories inspected	5	4	5

[Signature]
MEDICAL OFFICER OF HEALTH

TABLE IV. (B) *Puca Lonic*

327

I. SUMMARY OF ROUTINE SANITARY WORK DONE DURING THE YEAR IN THE TOWN OF MOBASA. 322

Approximate Area.	Number of proclaimed Open Spaces.
1911 ... } Island, 3,470 acres	1 public garden Area, 1.8 acres.
1912 ... } Native town, 220 acres	
1913 ... }	

II. POPULATION

	Number of Natives		Number of Europeans		Total
	Males	Females	Males	Females	
1911 ...	Approx. 2,900		223	55	Approx. 36,200
1912 ...	" 2,500		274	62	" 24,786
1913 ...	" 2,224		231	41	" 26,997

III. HOUSING.

Number of houses	Number occupied by Europeans.	Number occupied by Natives.
1911	90	927
1912	91	984
1913	100	930

Number of Huts:-

1911	3,182
1912	3,244
1913	3,369

217

4. MOSQUITO PROTECTION OF HOUSES.

323

	1911	1912	1913
Number of European houses wholly mosquito-protected			
Number of European houses with mosquito-protected room			
Number rendered during the year wholly mosquito-protected	None	None	None
Number rendered during the year partially mosquito protected			

5. Erection of new buildings during the year.

	1911	1912	1913
Number of public buildings erected with sanction as to site construction and relation to other buildings	-	-	-
Number of houses erected with sanction as to site, construction, and relation to other buildings	17	26	14
Number of huts erected with sanction as to site, construction, and relation to other buildings	127	157	125
Number of houses built without sanction	-	-	-
Number of huts built without sanction	-	-	-

45 + 46

Drain

ACTION TAKEN.

324

	Number of prosecution		No. Demolished	
	Huts	Houses	Huts	Houses
1911	-	1	45	2
1912	-	-	85	-
1913	-	2	29	1

6. Markets.

	Total Number	Number paved & drained.	Number unpaved.
1911	3	2	1
1912	3	3	1
1913	3	0	3

7. SLAUGHTER HOUSES.

	Total Number	Number paved & drained	Number unpaved.
1911	3	2	1
1912	3	2	1
1913	2	2	-

219

46

B. LATRINES.

325

	For Males		For Females	
	Number	Number of seats	Number	Number of seats
Number of Public Latrines:				
1911	1		-	-
1912	4	5	-	3
1913	4	5		3
Number of Public Latrines ^{new} erected during the year:				
1911	1	2	-	-
1912	3	3	-	3
1913	9	-	-	-
Number of Public Latrines repaired during the year:				
1911	One	-	-	-
1912	None	-	-	-
1913	None	-	-	-
Number of Public Latrines demolished during the year:				
1911	None	-	-	-
1912	None	-	-	-
1913	None	-	-	-

6647

LATRINES, contd.

520

	1911	1912	1913
Number of Private Latrines	189	190	70
Average number of pails of nightsoil removed daily		310	173
Average number of soiled pails removed and clean pails substituted	None	None	None
Number of nightsoil men employed to clean latrines and remove excreta	18	13	15
Number of cesspools	About 18,000	About 2,000	About 2,000
Number of cesspools cleansed	None	None	102
Number of new cesspools constructed during the year	About 125	About 125	About 167
Number of old cesspools abolished	About 40	About 40	About 6
Number of cesspools sited regularly by Department	None	None	None

9. REMOVAL OF REFUSE.

	1911	1912	1913
Number of dustbins	9	9	112
Number of carts at work daily to remove refuse from streets	13	13	20
Amount of refuse removed daily	11 tons	12 tons	30 tons
Number of carts at work daily to remove refuse from yards and premises	2	1	1
Amount of refuse removed daily from yards and premises	1 ton	1 ton	1 ton
Number of men employed for moving refuse	102 "	104 "	200 "

10. MODE OF DISPOSAL OF EXCRETA, REFUSE AND OFFAL

	Daily average number of Pails of Excreta.			Daily average number of Cartloads of refuse			Daily average number of Cartloads of Slaughter-house and market Offal.		
	1911	1912	1913	1911	1912	1913	1911	1912	1913
Buried or trench- ed	-	-	-	-	-	-	-	-	-
Burnt	-	-	-	-	-	34	-	-	-
Thrown into sea	305	310	173	-	-	-	200	205	10
Otherwise dealt with	-	-	-	13	-	-	-	-	-

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

	1911	1912	1913
Thrown into sea	1	1	2

Nature of Water supply.	1911	1912	1913
Pipe-borne water:-			
Source (river, lake or spring)			
Number of linear yards	None	None	None
Number of stand-pipes along roads	None	None	None
Number of stand-pipes in courts and houses	None	None	None
Public			
Number protected against water and mosquito-protection		28	28
Number	90	93	98
Number protected against water and mosquito-protection		None	None
Public			
Number underground			
Number mosquito-protected served by pumps			
Number above ground			
Number mosquito-protected			2
Number of 400 gallons capacity or less	2	2	2
Number above 400 gallons			
Private:-			
Number underground	70	73	66
Number mosquito-protected	Unknown	Unknown	Unknown
Number above ground	20	20	20
Number mosquito-protected	Unknown	Unknown	Unknown
Number of 400 gallons capacity or less			
Number above 400 gallons			66
Nature of tanks:-			
Wood			
Iron	20	25	3
Concrete	70	70	66
Barrels:-			
Number	About 1000	About 1000	100
Number mosquito protected	None	None	None

OFFICE RECORDS OFFICE, LONDON

13. DRAINAGE.

329

Kind of drainage.	Public	Private
Masonry drains:-		
Lineal yards of masonry drains:-		
1911	390	
1912	760	
1913	2600	
Lineal yards reconstructed during the year:-		
1911	-	
1912	-	
1913	250 yds.	
Lineal yards repaired during the year:-		
1911	Approx. 150	
1912	50	
1913	30	
Lineal yards of new drains constructed during the year:-		
1911	-	
1912	30	
1913	250 yds.	
Earth drains or ditches cleaned:-		
Number of lineal yards of ditches cleaned:-		
1911	None	
1912	None	
1913	None	
Number of lineal yards of ditches dug and graded:-		
1911	None	
1912	None	
1913	None	
Average frequency of cleaning ditches:-		
1911	None	
1912	None	
1913	None	

9450

Hondding

333

14. CLEARANCE OF UNDERGROWTH, LOW GRASS, AND JUNGLE.

	1911	1912	1913
Number of square yards of weeds, grass and vegetation cut and removed	150	150	1000
Average frequency of clearance of rank vegetation of same area	15 months	15 months	15 months

15. EXCAVATIONS AND LOW-LYING LAND.

	1911	1912	1913
Number of pools and excavations	-	-	2
Number of excavations filled up	-	-	2
Amount of low-lying and marsh land raised and drained	-	-	2
Number of pools, marshes, etc. fish stocked	-	-	-
Number of cubic yards of material used for filling up pools and excavations	None	None	10
Number of persons fined for making new excavations	-	-	-
Average number of men daily employed in filling up pools, etc.	-	-	Casual labourers

225

50

16. OILING.

331

	1911	1912	1913
Number of drains oiled	A few	A few	A few
Number of pools and excavations oiled	hundreds	hundreds	hundreds
Number of tanks and barrels oiled...	....	Many barrels	Many barrels
Average number of men daily employed for oiling drains, pools, and water tanks or barrels	8	8	8

17. INSPECTIONS & PROSECUTION.

	1911	1912	1913
Number of Inspectors employed	2.	2.	2
Number of houses inspected	-	173	1186
Number of houses where larvae were found	-	Uncounted.	10
Number of notices served to remove conditions causing the breeding of larvae	-	-	58
Number of persons fined for having mosquito larvae on premises ..	111	111	111
Number of notices served to remove insanitary conditions on premises ..	75	165	1049
Number of persons fined for not removing insanitary conditions after notice ..	-	1	38
Number of soda and aerated water factories inspected... ..	3	3	3

TABLE IV. (c) *Siica Lomic*

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

332

Approximate area. Number of proclaimed open spaces.

1911.

1912.

1913. 2½ sq. miles. 1

2. Population.

Year.	Number of Asiatics and natives.		Number of Europeans.		Total.
	Males.	Females.	Males	Females.	
1911					
1912					
1913	6,310	182	66	24	6,582

3.-Housing.

Number of Houses. Number occupied by Europeans. Number occupied by Natives.

1911

1912.

1913. 43

Number of Huts:-

1911

1912

1913 768

4.-Mosquito Protection of Houses.

	1911.	1912.	1913.
Number of European houses wholly mosquito protected.			4
Number of European houses with Mosquito room.			1
Number rendered during the year wholly mosquito-protected.			Nil.
Number rendered during the year partially mosquito-protected.			5

Randall

5.-Erection of New Buildings during the year.

1911. 1912. 1913.

Number of public buildings erected with sanction as to site, construction, and relation to other buildings.

333 1

Number of houses erected with sanction as to site, construction, and relation to other buildings.

6

Number of huts erected with sanction as to site, construction, and relation to other buildings.

173

Number of houses built without sanction.

Nil.

Number of huts built without sanction.

16

Action Taken.

	Number of Prosecutions.		Number demolished.	
	Huts.	Houses.	Huts.	Houses.
1911				
1912				
1913			20	

6.-Markets.

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

7.-Slaughter-Houses.

	Total number.	Number paved and drained.	Number unpaved.
1911			
1912			
1913	2	2	

YEARLY RECORD OFFICE, LONDON

8. Latrines.

334

	For Males		For Females.	
	Number.	Number of Seats.	Number.	Number of Seats.
Number of Public Latrines:				
1911				
1912				
1913	11	97		
Number of new Public Latrines erected during the year:-				
1911				
1912				
1913	2	14		
Number of Public latrines repaired during the year:-				
1911				
1912				
1913	6	Not re- corded.		
Number of Public Latrines demolished during the year.				
1911.				
1912				
1913	Nil.			

Public latrines are only provided for Asiatics and Africans and are used in common by males and females.

1911. 1912. 1913.

Number of private latrines.			232
Average number of pails of nightsoil removed daily.			520
Average number of soiled pails removed and clean pails substituted.			Nil.
Number of nightsoil men employed to clean latrines and remove excreta.			33
Number of cesspools.			113
Number of cesspools cleaned daily.			113
Number of new cesspools constructed during the year.			7
Number of old cesspools abolished.			8
Number of cesspools siled regularly by Department.			10

9. Removal of Refuse.

1911. 1912. 1913

Number of dustbins.			169
Number of carts at work daily to remove refuse from streets.			8
Amount of refuse removed daily. (Carts)			12
Number of carts at work daily to remove refuse from yards and premises.			8
Amount of refuse removed daily from yards and premises (carts)			12
Number of men employed for removing refuse.			31

229

10. Mode of disposal of Excreta, Refuse, and Offal.

	Daily average number of pails of excreta.			Daily average number of cartloads of refuse.			Daily average number of cartloads of slaughterhouse and market offal.		
	1911.	1912.	1913.	1911	1912	1913	1911	1912	1913
and trench-			520						
into sea.									
wise dealt						12 cart- ts.			1 cart.

11. Average Daily Number of cartloads of tin cans, bottles, broken crockery, and other incombustible material removed from houses, huts, and compounds.

1911. 1912. 1913.

Water supply

Nature of water supply.

1911. 1912. 1913.

Pipe-borne water:-

Source (river, lake, or spring)

Lake Lake. Lake.

Number of linear yards

10,162

Number of standpipes along roads.

8

Number of standpipes in compounds and houses.

62

Well:-

Public:-

Number.

Number with pumps protected against surface

Nil.

water and mosquito-protected.

Nil.

Private:-

Number.

Number protected against surface water and

Nil.

mosquito-protected.

Nil.

Tanks:-

Public:-

Number underground.

Number mosquito-protected and served by pumps.

Number above ground.

Number mosquito-protected.

Number of 400 gallon capacity or less.

Number above 400 gallons.

Tanks:-

Private:-

1911. 1912. 1913.

Number partially underground			2
Number mosquito-protected.			111
Number above ground.			127
Number mosquito protected.			129
Number of 400 gallons capacity or less.			-
Number above 400 gallons.			129

Nature of Tanks:-

Wood.			-
Iron Galvanized.			95
Concrete.			34

Barrels:-

Number			-
Number mosquito-protected.			-

13.-Drainage.

Nature of Drainage.

Public. Private.

Masonry Drains:-

Lineal yards of masonry drains:-

1911			
1912			
1913			

930

Lineal yards reconstructed during the year:-

1911			
1912			
1913			

Lineal yards repaired during the year:-

1911			
1912			
1913			

Lineal yards of new drains constructed during the year:-

1911			
1912			
1913			

Earth drains or ditches:-

Number of lineal yards of ditches cleaned:-

700 yds. daily.

1911			
1912			
1913			

Number of lineal yards of ditches dug and graded:-

400 yds.

1911			
1912			
1913			

Earth drains or ditches. - (Contd.)

337

Average frequency of clearing ditches of grass:-

Public. Private.

1911

1912

1913

daily.

14.- Clearance of Undergrowth, Long Grass, and Jungle.

Number of square yards of weeds, grass, and vegetation cut and removed.

1911. 1912. 1913.

2 sq. miles.

Average frequency of clearance of rank vegetation on same area.

twice a year.

15.-Excavations and Low-lying land.

Number of pools and excavations.

1911. 1912. 1913.

Number of excavations filled.

-

Amount of low-lying and marsh land raised and drained.

20

Number of pools, marshes, streams etc. fish-stocked.

-

Number of cubic yards of material used for filling up pools and excavations.

-

Number of persons employed for making new excavations.

No record

Average number of men daily employed in filling up pools, etc.

-

16.-Oiling.

Number of drains oiled.

1911. 1912. 1913.

Number of pools and excavations oiled

66

Number of tanks and barrels oiled

130

Average number of men daily employed for oiling drains, pools and water-

24

tanks or barrels.

one man.

17.-Inspections and Prosecutions.

Number of inspectors employed.

1911. 1912. 1913.

Number of houses inspected.

2

Number of houses where larvae were found.

5

Number of notices served to remove

daily.

conditions causing the breeding of larvae.

6

3

No. 17. Inspections and Persecutions (contd.)

1911. 1912. 1913.

Number of persons fined for having mosquito larvae on premises.

Nil.

Number of notices served to remove insanitary conditions on premises.

236

Number of persons fined for not removing insanitary conditions after notice.

Nil.

Number of soda and aerated water factories inspected.

1

~~236-24.~~

~~236-24~~
~~236-24~~

TABLE V. *Victoria* *Kenia*

METEOROLOGICAL RETURN FOR THE YEAR 1918.

GOVERNMENT LABORATORY - NAIROBI.

Temperature.					Rainfall.		Winds.		Remarks.
Solar Maximum.	Minimum on grass.	Shade Maximum.	Shade Minimum.	Mean Range.	Mean.	Amount in inches.	Degree of Humidity.		
							9 a.m.	4p.m.	
							General Direction.	Average Force.	
71.34	55.11	16.23	63.22	0.05	73.7	65.7			
76.34	57.46	18.88	66.90	3.41	79.9	62.1			
76.87	56.50	18.37	67.68	2.23	82.1	67.6			
74.85	59.13	15.12	67.29	4.36	84.9	63.3			
75.70	59.4	16.30	67.55	4.92	82.7	66.2			
71.63	56.87	15.80	63.73	3.91	82.3	75.2			
70.92	53.06	17.84	62.0	0.10	82.7	69.8			
70.56	53.10	17.45	61.82	0.48	79.3	69.3			
77.30	55.86	21.42	66.59	0.09	78.2	59.6			
76.46	58.38	18.08	67.42	1.06	77.4	60.1			
73.66	58.78	14.88	66.22	2.76	81.7	67.9			
74.37	56.43	17.93	65.40	2.32	79.6	68.4			
74.16	56.60	17.36	66.48	30.71	80.4	66.3			

TABLE V.
METEOROLOGICAL RETURN FOR THE YEAR 1913.

349

KARETE FARM, NAIROBI.

	Temperature.					Rainfall.		Winds		Remarks.	
	Solar Maximum.	Minimum on grass.	Shade Maximum.	Shade Minimum.	Range.	Max. & Min. Mean Combined.	Amount in inches.	Degree of Humidity.	General Direction.		Average Force.
January.	-	-	79.0	43.0	36.0	62.3	0.06	-	-	-	
February.	-	-	82.5	45.0	36.5	64.6	2.59	-	-	-	
March.	-	-	82.5	45.5	37.0	64.2	11.00	-	-	-	
April.	-	-	77.5	52.0	25.5	64.5	3.84	-	-	-	
May.	-	-	77.0	51.0	26.0	63.4	5.14	-	-	-	
June.	-	-	74.5	44.5	30.0	59.9	3.02	-	-	-	
July.	-	-	76.0	37.0	39.0	56.0	0.06	-	-	-	
August.	-	-	77.5	36.5	41.0	59.0	1.12	-	-	-	
September.	-	-	81.0	41.0	40.0	63.5	0.14	-	-	-	
October.	-	-	82.8	47.5	35.3	65.2	2.92	-	-	-	
November.	-	-	80.2	50.0	30.2	64.1	2.20	-	-	-	
December.	-	-	82.0	45.0	37.0	63.4	2.13	-	-	-	
Year Average.			79.4	44.9	34.5	62.7	54.24	-	-	-	

T A B L E V.

METEOROLOGICAL RETURN FOR THE YEAR 1918.

COCHABAMBA.

to the end

Temperature				Rainfall	Winds	Remarks
Winds	Minimum	Maximum	Range	Amount	Direction	
Force	Shade	Shade	Shade	inches	Degree	
Force	Maxi	Mini	Mini	inches	Humidit	
Force	Maxi	Mini	Mini	inches	General	
Force	Maxi	Mini	Mini	inches	Direct	
Force	Maxi	Mini	Mini	inches	Average	
Force	Maxi	Mini	Mini	inches	Force.	
-	88.0	72.0	16.0	79.7	0.02	
-	90.0	74.0	16.0	81.8	0.37	
-	91.0	75.0	16.0	81.3		
-	87.5	72.0	15.5	80.2		
-	87.0	70.0	17.0			
-	87.0	70.0	17.0			
-	87.0	68.4	18.6			
-	87.0	67.0	20.0			
-	87.0	67.0	20.0	76.0		
-	86.0	70.8	15.2	75.4	.03	
-	89.4	70.0	19.4	74.4		
-	87.0	73.0	14.0	74.9		
-	86.3	70.5	15.8	78.6	.68	

T A B L E V. 100-10-11
 METEOROLOGICAL RETURN FOR THE YEAR 1913.

K I S U M U.

342

	T e m p e r a t u r e .					Rainfall.	Winds.		Remarks.	
	Shade Maximum.	Minimum on Grass.	Shade Maximum.	Shade Minimum.	Range.	Max. & Min. Mean Combined.	Amount in Inches.	Degree of Humidity.		General Direction.	Average Force.
January.	-	-	91.0	63.0	28.0	76.4	0.64	-	-	-
February.	-	-	93.0	61.0	32.0	75.0	2.00	-	-	-
March.	-	-	90.0	62.0	28.0	74.2	10.89	-	-	-
April.	-	-	88.0	63.0	25.0	73.0	2.08	-	-	-
May.	-	-	86.0	62.0	24.0	72.4	5.52	-	-	-
June.	-	-	86.0	63.0	23.0	71.6	4.65	-	-	-
July.	-	-	83.0	61.0	22.0	71.4	2.64	-	-	-
August.	-	-	86.0	61.0	25.0	72.4	1.52	-	-	-
September.	-	-	91.0	63.0	28.0	73.0	0.00	-	-	-
October.	-	-	90.0	63.0	27.0	74.4	2.50	-	-	-
November.	-	-	90.0	62.0	28.0	75.2	2.58	-	-	-
December.	-	-	92.0	61.0	29.0	74.9	2.07	-	-	-
Year Average.	-	-	86.8	62.2	26.7	74.0	43.15	-	-	-

TABLE V.

METEOROLOGICAL RETURN FOR THE YEAR 1913.

FORT HALL.

343

	Temperature.						Rainfall.		Winds		Remarks
	Solar Maximum	Minimum on grass.	Shade Maximum.	Shade Minimum	Range.	Max. & Min. Mean Combined.	Amount in inches	Degree of Humidity.	General Direction.	Average force.	
January.	-	-	82.0	46.0	36.0	63.4	0.02	-	-	-	
February.	-	-	86.0	46.0	40.0	66.1	3.30	-	-	-	
March.	-	-	93.0	50.0	43.0	71.2	11.20	-	-	-	
April.	-	-	87.0	50.0	37.0	66.6	5.46	-	-	-	
May.	-	-	82.0	52.0	30.0	66.4	8.42	-	-	-	
June.	-	-	80.0	46.0	34.0	62.1	2.94	-	-	-	
July.	-	-	79.0	40.0	39.0	60.6	0.18	-	-	-	
August.	-	-	87.0	41.0	46.0	63.1	0.61	-	-	-	
September.	-	-	89.0	53.0	36.0	68.1	0.00	-	-	-	
October.	-	-	85.0	52.0	33.0	68.3	5.25	-	-	-	
November.	-	-	88.0	52.0	36.0	66.3	5.90	-	-	-	
December.	-	-	85.0	50.0	35.0	65.6	1.15	-	-	-	
Year Average.	-	-	85.2	48.1	37.1	65.6	44.33	-	-	-	

232

Edvard

Table VI. *Africa Somali*

344

~~Hospital Cases~~ EUROPEAN OFFICIALS

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

Diseases.	Remaining in Hospital at end of 1912	Yearly Total.		Total Cases Treated	Remaining in Hospital at end of 1913	Remarks.
		Admissions	Deaths			
Beri-Beri ...	✓	✓	✓	✓	✓	
Cerebro-Spinal Fever ...		2	1	2		
Chicken-Pox ...		1		1		
Cholera ...						
Dengue ...						
Diphtheria ...						
Dysentery ...		7		7		
Endocarditis—infective ...						
Euteric ...	1	6	1	7		
Erysipelas ...	1	1		2		
Gonorrhoea ...				2		
Influenza ...				8		
Kala Azar ...						
Leprosy (a) Nadulu ...						
(b) Anaesthetic ...						
Malaria (a) Tertian ...		41		41	3	
(b) Quartan ...						
(c) Aestivo-antumnal ...	2	108	2	110		
(d) Chronic Malaria ...						
(e) Black-water ...		1		1		
Measles ...						
<i>moderant</i> Mala Fever ...						
Plague ...						
Pneumonia ...		8		8		
Rabies ...						
Relapsing Fever ...						
Total ...	4	182	4	186	3	

The form shown in this table is the arrangement of diseases in the nomenclature of the Royal College of Physicians, 1913 Edition. To save space, the unimportant diseases of any class can be grouped in their places as "Other Diseases" of the class.

* i.e., the year previous to that for which the Return is made.
 † "Total cases treated" will, of course, include those remaining in Hospital at the end of the previous year.
 ‡ The figures in this column to be carried on to the next year's Return.

EUROPEAN OFFICIALS

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

Diseases	Number in Hospital at end of 1912	Yearly Total		Total Cases Treated	Remaining in Hospital at end of 1913	Remarks
		Admissions	Deaths			
Brought forward	4	208	4	207	5	
Sub-section 1						
Neuritis...						
Meningitis ...						
Myelitis...						
Hydrocephalus...						
Encephalitis ...						
Abscess of Brain ...						
Congestion of Brain ...						
Sub-section 2						
Apoplexy ...						
Paralysis ...						
Chorea ...						
Epilepsy ...						
Neuralgia ...			6		6	
Hysteria ...						
Other Nervous Disease			1		1	
Sub-section 3						
Mental Diseases—						
Idiocy ...						
Mania ...						
Melancholia ...						
Dementia ...						
Delusional Insanity ...						
Total	4	210	4	214	5	

LOCAL DISEASES

DISEASES OF THE NERVOUS SYSTEM

Hospital or Institution

EUROPEAN OFFICIALS

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

Disease	Remaining in Hospital at end of 1912	Yearly Total.		Total Cases Treated	Remain- ing in Hospital at end of 1913	Remarks
		Admissions	Deaths			
Brought forward	4	210	4	214	5	
Diseases of the Eye—						
Conjunctivitis		1		1		
Keratitis						
Ulceration of Cornea		1		1		
Iritis						
Optic Neuritis						
Cataract						
Diseases of the Ear—						
Inflammation		1		1		
Other Diseases						
Diseases of the Nose—						
Diseases of the Circulatory System—						
Pericarditis						
Endocarditis						
Valvular Mitral						
Aortic		2		2		
Tricuspid						
Pulmonary						
Arterial Sclerosis						
Aneurism						
Other Diseases		2		2		
Diseases of the Respiratory System—						
Laryngitis						
Bronchitis		10		10		
Total		227	4	231		

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

Diseases.	Remaining in Hospital at end of 1912	Yearly Total.		Total Cases Treated	Remain- ing in Hospital at end of 1913	Remarks.
		Admission	Deaths			
Brought forward						
Diseases of the Respiratory System—cont.						
✓ Broncho-pneumonia		1		1		
✓ Abscess of lung						
✓ Gangrene of Lung						
✓ Emphysema						
✓ Pleurisy		1		1		
✓ Empyema						
Other Diseases		3		3		
Diseases of the Digestive System						
✓ Stomatitis						
✓ Caries of teeth						
✓ Glossitis						
✓ Soft Throat		2		2		
✓ Inflammation of Tonsilla		10		10		
✓ Gastritis						
✓ Ulceration of Stomach						
✓ Haematemesis						
✓ Dilatation of Stomach						
✓ Stricture of Stomach						
✓ Dyspepsia		3		3		
✓ Enteritis		5		5		
✓ Appendicitis		3		3	1	
✓ Colitis						
✓ Ulceration of Intestines						
✓ Sprue						
✓ Hernia						
✓ Diarrhoea		6		6		
✓ Constipation						
✓ Cholelithiasis		2		2		
✓ Hemorrhoids		4		4		
Total	4	267	4	271	6	

Local Diseases

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

Diseases	Remaining in Hospital at end of 19 12	Yearly Total.		Total Cases Treated.	Remaining in Hospital at end of 19 13	Remarks
		Admissions	Deaths			
Brought forward	4	267	4	271	8	
Diseases of the Digestive System—cont.						
Pancreatitis						
Hepatitis—Acute						
Abscess		1	1	1		349
Cirrhosis		2	1	2		
Jatndice		1		1		
Peritonitis		1		1		
Ascites						
Other Diseases		10		10		
Diseases of the Lymphatic System						
Epithelitis						
Inflammation of Lymphatic Gland		5		5		
Suppuration of Lymphatic Gland		1		1		
Lymphangitis						
Elephantiasis						
Diseases of the Urinary System						
Acute Nephritis						
Bright's Disease						
Pyelitis						
Calculus						
Renal Colic						
Cystitis						
Vesical Calculus						
Stricture						
Hematuria						
Chyluria						
Other Diseases		1		1		
	4	269	5	274	8	

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

Diseases.	Remaining in Hospital at end of 19 12	Yearly Total.		Total Cases Treated	Remain- ing in Hospital at end of 1913	Remarks.
		Admissions	Deaths			
Brought forward	4	289	6	293	6	
Diseases of the Generative System						
♂ Male Organs :-						
Urethritis ...						
Gleet ...						
Stricture ...		1		1		
Prostatitis ...						
Soft chabero ...						
Condyloma ...						
Inflammation of Scrotum ...						
Hydrocele ...		1		1		
Orchitis... ..		1		1		
Epididymitis ...						
Abscess of Testicle ...						
Other Diseases ...		2		2		
♀ Female Organs :-						
Ovaritis ...						
Ovarian Cyst ...						
Endometritis ...						
Displacement of Uterus ...						
Vaginitis ...						
Amenorrhoea ...						
Dysmenorrhoea ...						
Menorrhagia ...						
Leucorrhoea ...						
Abortion ...						
Delayed Labour ...						
Postpartum Haemorrhage ...						
Retained Placenta ...						
Eschare Birth ...						
Puerperal Septicemia ...						
Mastitis ...						
Abscess of Breast ...		1		1		
Other Diseases						
Total		295	6	299	6	

~~AMERICAN MEDICAL OFFICERS~~ EUROPEAN OFFICIALS

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

Diseases.	Remaining in Hospital at end of 19 12	Yearly Total.		Total Cases Treated at end of 19 13	Remain- ing in Hospital at end of 19 13	Remarks
		Admissions	Deaths			
Brought forward	4	295	6	299	5	
Diseases of Organs of Locomotion--						
Osteitis						
Arthritis		1		1		
Spondylitis						
Bursitis						
Other Diseases		4		4		
Diseases of Connective Tissue						
Cellulitis						
Abscess		6		6		
Elephantiasis						
Other Diseases		1		1		
Diseases of the Skin--						
Urticaria		1		1		
Eczema		1		1		
Boil		2		2		
Carbuncle		2		2		
Herpes						
Psoriasis		1		1		
Oriental Scab						
Tinea						
Scabies						
Aene						
Furuncle						
Other Diseases		2		2		
Injuries--General						
Local		14		14		
Total	4	330	6	334	6	

~~AMERICAN COLLEGE OF PHYSICIANS~~ EUROPEAN COLLEGE OF PHYSICIANS

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

Diseases.	Remaining in Hospital at end of 1912	Yearly Total.		Total Cases Treated	Remain- ing in Hospital at end of 1913	Remarks
		Admissions	Deaths			
Brought forward	4	666	6	334	6	
Surgical Operations...		344		344		
Furunculi						
Malignant Growths						
Poisons			1		1	
Parasites-Animal						
Protozoa						
Trematoda (Flukes)			1		1	
Cestoda—						
Taenia Solium						
Taenia Saginata						
Nematoda—						
Ascaris						
Trichocephalus Dejeani						
Trichina						
Lithonchus						
Filaria						
Strongylus						
Ascaris						
Oxyuris						
Trichocephalus						
Nematode						
Nematode						
Total	4	332	6	336	6	

*- Recorded under respective Diseases.

Table VI.

Hospital and Institutions

Native Officials.

353

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

Diseases.	Remaining	Yearly Total.		Total Cases Treated	Remain- ing in Hospital at end of 1913	Remarks
	in Hospital at end of 1912	Admissions	Deaths			
Acute Diseases.						
Beri-Beri.	✓		1	1		
Ebbero-Spinal Fever.			1	1		
Rocken-Pox.			4	4		
Cholera.						
Dysentery.						
Dysentery.	1	102		103		
Endocarditis-infective.						
Erysipelas.						
Gonorrhoea.			5	5		
Influenza.	1	20		21	2	
Leishmania Azar.						
Leishmania (a) Nodular.						
Leishmania (b) Anaesthetic.						
Malaria (a) Tertian.	1	225		226		
Malaria (b) Quartan.	1	103		104		
Malaria (c) Aestivo-autumnal.	4	948	1	952	9	
Malaria (d) Chronic Malaria						
Malaria (e) Black-water.						
Malaria.			1	1	1	
Malaria Fever.						
Dysentery.			5	5		
Pneumonia.			13	13	1	
Typhoid.						
Typhoid Fever.			1	1		
Total	8	1490	1	1491	12	

345

~~Hospital - ...~~ Native Officials.

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

Diseases	Remaining in Hospital at end of 1912	Yearly Total Admissions	Total Deaths	Total Cases Treated	Remaining in Hospital at end of 1913	Remarks
Brought Forward.	8	1429	2	1437	13	
Acute Diseases.						
Typhoid Fever.		37		37		
Malaria.						
Malarial Anemia (Sleeping Sickness)						
Typhus.		1		1		
Cholera (a) Primary.		5		5		
(b) Secondary.		7		7		
(c) Inherited.						
Tuberculosis.		3		3		
Whooping Cough.						
Typhus.						
Typhoid Fever.						
Other Diseases.		9		9		
Leucations.						
Cholera.						
Chinism.						
Typhus.						
Other Diseases.						
Anemia.		6		6		
Anemia - Pernicious.						
Typhus.		1		1		
Ophthalmic Goitre.						
Leucocythaemia.						
Ekin's Disease.						
Oedema.						
Typhus.		6		6		
Typhus.						
Typhus.						
Other Diseases.	1	24	1	25	2	
Total	9	1520	4	1527	15	

Table VI.

355

~~Hospital as a whole~~ Native Officials.

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

Diseases.	Remaining in Hospital at end of 1912	Yearly Total.		Total Cases Treated	Remain- ing in Hospital at end of 1913	Remarks
		Admissions	Deaths			
Brought Forward	0	1829	4	1833	15	
Diseases						
Diseases of the Nervous System.						
Section 1.						
neuritis.		1		1		
meningitis.						
cellitis.						
hydrocephalus.						
encephalitis.						
abscess of Brain.						
congestion of Brain.						
Section 2.						
epilepsy.						
paralysis.						
chorea.						
epilepsy		1		1		
neuralgia.		34		34		
 hysteria.						
Other Diseases.		6		6		
Section 3.						
Mental Diseases.						
idiocy.						
mania.						
melancholia.						
 dementia.						
Periodical Insanity.						
Total	0	1870	4	1874	16	

Table VI.

Hospital or Institution

Native Officials.

356

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

Diseases.	Remaining in Hospital at end of 1912	Yearly Total Admissions/Deaths	Total Cases Treated.	Remain- ing in Hospital at end of 1913	Remarks.
Brought Forward.	9	1870	4	1874	15
Diseases.					
Diseases of the Eye -					
Conjunctivitis.		46		46	2
Coronitis.		1		1	
Exposure of Cornea.		7		7	1
Glaucoma.		1		1	
Iris Neuritis.					
Cataract.					
Other Diseases.		11		11	
Diseases of the Ear -					
Inflammation.		6		6	
Other Diseases.		6		6	
Diseases of the Throat -		58		58	1
Diseases of the Circulatory System -					
Pericarditis.					
Endocarditis.		1		1	
Valvular Mitral.		2		2	
Stenosis, Aortic.					
Tricuspid.					
Pulmonary.					
Arterial Sclerosis.					
Aneurysm.					
Other Diseases.		1		1	
Diseases of the Respiratory System -					
Pharyngitis.		2		2	
Pneumonia.		212		212	4
Total	9	1924	4	1933	23

~~Alleged and Inhabitants~~

Native Officials.

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

Diseases	Remaining in Hospital at end of 1912	Yearly Total Admissions	Total Cases Treated	Remain- ing in Hospital at end of 1913	Remarks
Brought Forward	0	1924	4	1923	26
Diseases.					
Diseases of the Respiratory System - cont.					
Pneumonia.		12	2	12	
Emphysema of Lung.					
Angina of Lung.					
Pharyngitis.		11		11	1
Tracheitis.					
Other Diseases.		22		22	1
Diseases of the Digestive Sys-					
Gastritis.		3		3	
Pericoronitis of teeth.		13		13	
Stomatitis.					
Pharyngitis of Throat.		3		3	
Inflammation of Tonsils.		24		24	
Proctitis.		16		16	1
Obstruction of Stomach.					
Emetesis.					
Distention of Stomach.					
Indigestion of Stomach.					
Dyspepsia.		18		16	
Gastritis.		3		3	
Enteritis.		1		1	
Colitis.					
Obstruction of Intestines.					
Diarrhoea.		2		2	
Constipation.	1	50		50	1
Ascites.	1	16		17	
Jaundice.	1	40		41	
Haemorrhoids.		12		12	
		216	0	217	27

252

PUBLIC RECORD OFFICE, LONDON.

Table VI.

Hospital - *London* Native Officials.

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

353

Diseases	Remain- ing in Hospital at end of 1912	Yearly Total Admissions & Deaths	Total Cases Reported	Remain- ing in Hospital at end of 1913	Remarks
Brought forward.	11	2168	2168	27	
Diseases of the Digestive System - cont.					
Pancreatitis.					
Gastritis - Acute.		4	4		
Gastritis.		4	4		
Duodenitis.					
Enteritis.					
Colitis.					
Other Diseases.		9	9		
Diseases of the Lymphatic System -					
Tuberculosis.		14	14		
Inflammation of Lymphatic Gland.		4	4		
Suppuration of Lymphatic Gland.		7	7		
Tonsillitis.					
Lymphadenitis.					
Diseases of the Urinary System -					
Acute Nephritis.		1	1		
Bright's Disease.					
Cystitis.					
Calculus.		2	2		
Renal Colic.					
Prostatitis.					
Renal Calculus.					
Hypertension.					
Diabetes.					
Other Diseases.		2	2		
Total	11	2210	2210	27	

HOSPITAL RECORD OFFICE, LONDON

Bills

~~Native Officials.~~

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

Disease	Remaining in Hospital at end of 1912	Yearly Total Admissions Deaths	Total Cases Treated	Remaining in Hospital at end of 1913	Remarks
Brought forward	11	2215	6	2226	27
Diseases of the Generative System					
Organs:-					
Prostatitis.					
Epididymitis.					
Orchitis.					
Gonorrhoea.					
Chancres					
Syphilis.					
Erythema.					
Ulceration of Scrotum.					
Hydrocoele.		3	3	2	
Orchitis.		12	12		
Epididymitis.					
Torsion of Testicle.					
Other Diseases.		1	1		
Female Organs:-					
Vaginitis.					
Bartholin's Cyst.					
Cervicitis.					
Displacement of Uterus.					
Leucorrhoea.					
Menorrhoea.					
Metrorrhoea.					
Haemorrhagia.					
Dysmenorrhoea.					
Leucorrhoea.					
Ergotism.					
Prolapsed Labour.					
Post-partum Haemorrhage.					
Retained Placenta.					
Premature Birth.					
Puerperal Septicaemia.					
Eclampsia.					
Dysplasia of Breast.					
Other Diseases.					
Total	11	2221	6	2227	

Post-partum

359

~~XXXXXXXXXXXX~~ Native Officials.

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

Diseases	Remaining in Hospital at end of 1912	Yearly Total.		Total Cases Treated	Remain- ing in Hospital at end of 1913	Remarks.
		Admissions	Deaths			
Brought Forward.	12	2221	6	2227	29	
1 Diseases.						
Diseases of Organs of Locco- ion -						
teitis.		1		1		
thritis.		1		1		
ondylitis.						
rsitis.						
her Diseases.		77		77		
Diseases of Connective Tissues						
llulitis.		11		11	1	
ccess.	1	44		45		
phantiasis.						
her Diseases.		2		2		
Diseases of the Skin.						
tiaria.		3		3		
zema.	1	4		5		
il.		34		34	2	
rbuncle.		1		1		
rpes.		1		1		
criasis.						
ental Sore.				2		
nea.						
abies.		17		17		
ne.						
ickly Heat.						
her Diseases.		33		33		
ries - General.		5	1	5		
Local.	1	295		296	11	
Total	12	2728	7	2735	40	

Hospital on Institution Native Offshoots.

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

Disease	Remaining in Hospital at end of 19 12	Yearly Total		Total Cases Treated	Remains in Hospital at end of 19 13	Remarks
		Admissions	Deaths			
Brought Forward.	14	2762	9	2771	13	
Surgical Operations.						
Accidents.			2	2		
Informations.						
Parasites-Animal.						
Protozoa						
Trematoda (Flukes)						
Cestoda -						
Taenia Solium.						
Taenia Saginata.						
Nematoda -						
Ascaris.		1		1		
Tricocephalus Dis- par						
Trichina.						
Dracunculus.						
Filariasis.						
Strongylus.						
Ankylostomiasis.						
Oxyuris.						
Insecta -						
Myiasis.						
Other Diseases		20		20	2	
Total	14	2785	7	2792	45	

Table VI.

GENERAL EUROPEAN POPULATION

362

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

Diseases.	Remain- ing in Hospital at end of 1912.	Yearly Total.		Total Cases Treated.	Remain- ing in Hospital at end of 1913.	Remarks.
	Admissions	Deaths				
Beri-Beri ...						
Cerebro-Spinal Fever ...	3	8	1	8		
Chicken-Pox ...						
Cholera ...						
Dengue ...						
Diphtheria ...						
Dysentery ...	1	10	2	11	1	
Endocarditis—infective ...	2					
Enteric ...	1	14		15	1	
Erysipelas ...		1		1		
Gonorrhoea ...						
Influenza ...						
Kala Azar ...						
Leprosy (a) Tubercular ...						
(b) Annæsthetic ...						
Malaria (a) Tertian ...		31	1	31	1	
(b) Quartan ...						
(c) Acute-antimalarial ...		60		60		
(d) Chronic Malaria ...						
(e) Black-water ...		4	2	4		
Measles ...				1		
Mala Fever ...						
Plague ...		1		1		
Pneumonia ...	1	4	1	5		
Relapsing Fever ...		1		1		
Total ...	5	155	7	155	5	

The form shows in the main the arrangement of diseases in the nomenclature of the Royal College of Physicians 1902 Edition. To save space, the unimportant diseases of any class can be grouped in their places as "Other Diseases" of the class.

* For the year previous to that for which the return is made.

† "Total cases treated" will, of course, include those remaining in Hospital at the end of the previous year.

‡ The figures in this column to be carried on to the next year's Return.

GENERAL EUROPEAN POPULATION

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

Diseases	Remainder	Yearly Total		Total Cases Discharged	Remainder in Hospital at end of 1913	Remarks
	in Hospital at end of 1912	Admissions	Deaths			
Brought Forward		155	7	154	0	
Rheumatism		3		3		
Septicæmia						
Trypanosomiasis (Sleeping Sickness)						
Small-Pox						
Syphilis (a) Primary						
(b) Secondary		1		1		
(c) Inherited						
Tetanus						
Tuberculosis		4	1	4		
Whooping Cough						
Yaws						
Yellow Fever						
Other Diseases		1		1		
ENTONTOLOGY						
Alcoholism		3		3		
Morphinism						
Others						
GENERAL DISEASES						
Anæmia		3		3		
Anæmia—Pernicious						
Diabetes						
Exophthalmic Goitre						
Gout		1		1	1	
Leucocythæmia						
Hodgkin's Disease						
Myxœdem						
Purpura						
Rickets						
Scurvy						
Other Diseases		1		1		
Total	8	160	8	153	4	

~~Hospital Statistics~~ GENERAL EUROPEAN POPULATION

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

Diseases.	Remaining in Hospital at end of 1912	Yearly Total.		Total Cases Treated	Remain- ing in Hospital at end of 1913	Remarks
		Admissions	Deaths			
Brought forward	3	150	8	153	4	
Sub-section 1.						
Neuritis...						
Meningitis ...						
Arachnitis ...						
Hydrocephalus...						
Encephalitis ...						
Abscess of Brain ...						
Congestion of Brain ...						
Sub-section 2.						
Apoplexy ...						
Paralysis ...						
Chorea ...		1		1	1	
Epilepsy ...						
Neuralgia ...		4		4		
Hysteria ...		1		1		
Mental Diseases—						
Idiocy ...						
Sub-section 3.						
Mania ...						
Melancholia ...						
Demencia ...						
Delusional Insanity ...		1		1		
Other Diseases		4		4	1	
Total	3	161	8	164	6	

LOCAL DISEASES
 DISEASES OF THE NERVOUS SYSTEM

GENERAL EUROPEAN POPULATION.

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

Diseases.	Remaining	Yearly Total.		Total	Remain-	Remarks.
	in Hospital at end of 1912	Admissions	Deaths				Cases Treated	ing in Hospital at end of 1913
Brought forward	3	161	8	164	6	
Diseases of the Eye—						
Conjunctivitis						
Keratitis						
Ulceration of Cornea						
Iritis						
Optic Neuritis						
Cataract						
Other Diseases		1		1		
Diseases of the Ear—						
Inflammation						
Other Diseases						
Diseases of the Nose—						
Diseases of the Circulatory System						
Pericarditis						
Endocarditis						
Valvular Mitral						
Aortic		1	1	1		
Tricuspid						
Pulmonary						
Arterial Sclerosis						
Aneurysm						
Diseases of the Respiratory System—						
Laryngitis						
Bronchitis		9		9		
Total	3	172	9	176	6	

LOCAL DISEASES

~~REPORTER'S REPORT~~ GENERAL EUROPEAN POPULATION

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

Diseases	Remaining	Yearly Total		Total Cases Treated	Remaining	Remarks
	in Hospital at end of 1912	Admission	Deaths		in Hospital at end of 1913	
Brought forward	3	172	9	176	8	
Diseases of the Respiratory System—cont.						
Broncho-pneumonia		2	1	2		
Abscess of Lung						
Gangrene of Lung						
Emphysema						
Pleurisy		3		3		
Empyema						
Other Diseases		2		2		
Diseases of the Digestive System						
Stomatitis						
Caries of teeth						
Glossitis						
Sore Throat		2		2		
Inflammation of Tonsils		5		5		
Erosion of Stomach						
Dyspepsia		2		2		
Enteritis		7		7		
Appendicitis	1	5		6	1	
Colitis		1		1		
Elevation of Intestines						
Sprue						
Hemata		1		1		
Diarrhea		7		7		
Constipation		4		4		
Colic		5		5		
Hemorrhoids		2		2		
Total	4	335	10	339	7	

~~XXXXXXXXXXXXXXXXXXXX~~ GENERAL EUROPEAN POPULATION

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

Diseases	Remaining in Hospital at end of 1912	Yearly Admission	Deaths	Total Cases	Remaining in Hospital at end of 1913	Remarks
Brought forward	4	226	10	230	7	
Diseases of the Digestive System—cont.						
Pancreatitis						
Hepatitis—Acute						
Abscess						
Carbuncles		3		3	1	
Janthion						
Peritonitis						
Ascaris						
Diseases of the Lymphatic System						
Splenitis						
Inflammation of the Spleen						
Suppuration of the Spleen		1		1		
Tuberculosis		1		1		
Elephantiasis						
Diseases of the Urinary System						
Acute Nephritis						
Bright's Disease		2		2		
Proctitis						
Cystitis						
Renal Colic		1		1		
Cystitis						
Vesical Calculus						
Stricture						
Hematuria						
Chyluria						
Other Diseases		1		1		
Total	4	234	10	238	7	

~~Warrick District~~

GENERAL EUROPEAN POPULATION

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

Diseases	Remaining in Hospital at end of 1912	Yearly Total	Deaths	Remain- ing in Hospital at end of 1913	Remarks.
Broadly ...	4	254	10	256	8
Male Organs:					
Ephritis					
Gleet					
Stricture	1	1		2	
Prostatitis					
Soft chancre		2		2	
Condyloma					
Inflammation of Scrotum					
Hydrocele					
Orchitis...		1		1	
Epididymitis					
Abscess of Testich					
Female Organs:					
Ovaritis..					
Ovarian Cyst		1		1	
Endometritis					
Displacement of Uterus					
Vaginitis					
Amenorrhoea					
Dysmenorrhoea		2		2	
Menorrhagia					
Leucorrhoea					
Abortion		5		5	
Delayed Labour					
Postpartum Haemorrhage					
Retained Placenta...		2		2	
Premature Birth					
Puerperal Septicaemia					
Mastitis					
Abscess of Breast		4		4	
Other Diseases					
Total	6	252	10	257	8

GENERAL EUROPEAN POPULATION.

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

Diseases	Remaining in Hospital at end of 1912	Yearly Total Admissions	Deaths	Total Cases Treated	Remaining in Hospital at end of 1913	Remarks
Brought forward	5	252	10	257	8	
Diseases of Organs of Locomotion --						
Osteitis						
Arthritis						
Spandylitis						
Bursitis...						
Other Diseases		2		2		
Diseases of Connective Tissue						
Cellulitis		3		3		
Abscess		1		1		
Elephantiasis						
Diseases of the Skin --						
Erysipela						
Eczema						
Boil						
Carbuncle						
Herpes						
Psoriasis						
Oriental Sore						
Tinea						
Scabies						
Acne						
Prickly Heat						
Other Diseases		2		2		
Injuries--General						
Local		13		13		
Total	5	275	10	280	8	

RECORD OFFICE, LONDON.

~~XXXXXXXXXXXX~~ GENERAL EUROPEAN POPULATION

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

Disease	Remaining in Hospital at end of 1912	Yearly Total Admissions	Yearly Total Deaths	Total Cases Treated	Remaining in Hospital at end of 1913	Remarks
Boils forward	5	276	10	263	8	
Surgical Operations						
Tumours						
Malformations						
Poisons		1		1		
Parasites-Animal						
Protozoa						
Malaria (Plukes)						
Cestoda						
Taenia Solium			1	1		
Taenia Saginata						
Nematoda						
Ascaris						
Trichocephalus Dispar						
Trichina						
Dimeunculus						
Filaria						
Strongylus						
Ancylostomiasis						
Oxyuris						
Insecta						
Mycosis						
Total	5	277	10	262	8	

Report by the Registrar-General, London, 1914

265

RECORD OFFICE, LONDON

GENERAL NATIVE POPULATION

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

Diseases	Remaining in Hospital at end of 1912	Yearly Total		Total Cases Treated	Remain- ing in Hospital at end of 1913	Remarks
		Admissions	Deaths			
Brought forward	117	4481	583	4898	120	
ALL DISEASES						
Diseases of the Nervous System.						
Sub-Section 1.						
Neuritis					1	
Meningitis			1	1	1	
Ophthalmia	1			1		
Hydrocephalus						
Encephalitis						
Abscess of brain		1	1	1		
Congestion of Brain		1		1		
Sub-section 2.						
Apoplexy						
Paralysis	4	8	2	12		
Chorea						
Epilepsy		8	3	8		
Neuralgia	2	95		97	1	
Hysteria		5		5		
Other Nervous Diseases		17	1	17		
Sub-section 3.						
Mental Diseases -						
Alcohol	3	4	2	7	3	
Dementia	12	9	3	21	10	
Melancholia	2	2	1	4	1	
Idiocy	11	18	10	29	16	
Delusional Insanity	4	6	1	10	2	
Other Mental Diseases	1	6	2	7		
Total	157	4828	603	5431	135	

Table VI.

GENERAL NATIVE POPULATION

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

Diseases	Remaining in Hospital at end of 1912	Yearly Total			Remaining in Hospital at end of 1913	Remarks
		Admitted	Deaths	Discharged		
Brought forward	15	4625	605	4738	155	
LOCAL DISEASES (Contd.)						
Diseases of the Eye-						
Conjunctivitis	2	111		113	5	
Hepatitis	1	7		8		
Ulceration of Cornea		11		11	1	
Iritis		6		6	2	
Optic Neuritis						
Cataract		11		11		
Other Diseases		20		20		
Diseases of the Ear-						
Inflammation		10		10		
Other Diseases		4		4	2	
Diseases of the Nose-						
Diseases of the Circu- latory System-						
Pericarditis		2	1	2		
Endocarditis						
Valvular Mitral		3	2	3		
Aortic						
Tricuspid						
Pulmonary						
Arterial Sclerosis						
Aneurism		1		1		
Other Diseases		5		5		
Diseases of the Respi- ratory System-						
Laryngitis		9	2	9		
Bronchitis	13	381	3	385	7	
	172	5165	612	5541	195	

Hospital - Institution General Native Population.

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

Disease	Remaining in Hospital at end of 1912	Yearly Total Admissions - Deaths	Total Dis- charges	Remain- ing in Hospital at end of 1913	Remarks
Brought Forward.	172	5169	611	5341	198
Acute Diseases.					
Diseases of the Respiratory System - contd.					
Pneumo-pneumonia	9	159	47	168	1
Empyema of Lung.		1		1	
Angioma of Lung.					
Emphysema.		1		1	
Aneurysm.	1	55		56	
Pyemia.		1		1	
Other Diseases.		37	3	37	
Diseases of the Digestive System -					
Gastritis.		4		6	
Caries of teeth.	1	9		10	1
Stomatitis.					
Pharyngitis.	1	7		8	
Inflammation of Tonsils.	8	19		27	
Esophagitis.		23		23	1
Dyspepsia of Stomach.		1	1	1	
Emetesis.		1		1	
Dilatation of Stomach.					
Narrowing of Stomach.					
Dyspepsia.		17		17	
Gastritis.	4	1		4	
Appendicitis.	1			1	
Colitis.					
Dyspepsia of Intestines					
Diarrhea.		9	2	9	1
Parasitism.	9	402	20	411	7
Constipation.		23		23	1
Hemorrhoids.		67	1	67	1
Hemorrhoids.		4		4	1
Total	301	6014	686	6217	190

Table VI.

Hospital of Insane General Native Population.

370

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

Diseases	Remain- ing in Hospital at end of 1912.	Yearly Total Admissions	Total	Remain- ing in Hospital at end of 1913	Remarks
Brought Forward.	201	6016	686	6217	190
Local Diseases.					
Diseases of the Digestive System - contd.					
Pancreatitis.					
Hepatitis - Acute.		10		10	
Abscess.		8	5	8	
Cirrhosis.		3	2	3	
Jaundice.		8	2	8	
Peritonitis.		2	2	2	
Cystitis.	2	8	4	10	
Other Diseases.		46	3	45	
Diseases of the Lymphatic System -					
Splenitis.		16		16	1
Inflammation of Lymphatic Gland.		62		52	1
Suppuration of Lymphatic Gland.	1	29		30	3
Lymphangitis.		4		4	
Elephantiasis.		4		4	1
Other Diseases.					
Diseases of the Urinary System -					
Acute Nephritis.				1	
Bright's Disease		6		6	
Cystitis.					
Calculus					
Vesical Calcic.		2		2	
Cystitis.		7	1	7	
Vesical Calculus.					
Hematuria.		2		3	
Nocturia.		3		3	
Polyuria.		1		1	
Other Diseases.		8		8	
Total		600	6500	707	544

Table VI.

General Native Population. 373

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

Diseases	Remaining in Hospital at end of 1912	Yearly Total Admissions Death		Total	Remain- ing in Hospital at end of 1913	Remarks
Brought Forward	207	6322	712	6836	200	
Local Diseases.						
Diseases of Organs of Locomotion-						
Osteitis				7	1	
Arthritis	2	30		32	2	
Spondylitis						
Bursitis		1		1		
Other Diseases		92	1	94	4	
Diseases of Connective Tissue-						
Cellulitis	2	1		83	1	
Abscess	3	173		178	7	
Elephantiasis			1	1		
Other Diseases		19	3	29	1	
Diseases of the Skin-						
Urticaria				8	1	
Eczema	1			21	1	
Boil				46		
Carbuncle						
Herpes		2		2		
Psoriasis						
Oriental Sore	3	20		23	3	
Tinea	1			1		
Scabies		38		38	2	
Acne						
Frickly Heat						
Other Diseases	3	139	1	142	3	
Injuries - General	1	27	6	28		
Local	42	1187	23	1229	44	
Total	267	8223	747	8490	270	

Table VI.

~~XXXXXXXXXXXXXXXXXXXX~~

General Native Population

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

Diseases	Remaining in Hospital at end of 1912	Year 1913	Year 1914	Year 1915	Remain- ing in Hospital at end of 1915	Remarks
Brought forward	267	8225	742	8490	270	
Surgical Operations		89		89		379
Tumours	2	16		18	2	
Malformations						
Poisons		16	1	16		
Parasites - Animal		5	1	5		
Protozoa.						
(Trematoda (Flukes)		3		3		
Cestoda-						
Taenia Solium		3		3		
Taenia Saginata		1		1		
Nematoda-						
Ascaris		1		1		
Trichocephalus						
Trichina						
Dracunculus		3		3		
Filariasis		3	2	3		
Strongylus						
Ankylostomiasis	1	14	4	15	1	
Oxyuris						
Insect -						
Myiasis						
Others		3		3		
Total	270	8291	787	8661	273	

* Recorded under respective diseases

274

MURKIN REPORTS

Return of Diseases (Out patients) for the year 1913.

Tuberculosis Male

INFECTIVE DISEASES:-

Beri-Beri	-
Cerebro-Spinal Fever	-
Chicken-Pox	-
Cholera	-
Dengue	-
Diphtheria	-
Dysentery	-
Endocarditis-Infective	-
Eratia Fever	-
Erysipelas	-
Gonorrhoea	6
Influenza	1
Kala Azar	-
Leprosy (a) Nodular	-
(b) Anaesthetic	-
Malaria (a) Tertian	50
(b) Quartan	-
(c) Acute-automal	27
(d) Chronic Malaria	-
(e) Black-water	-
Measles	-
<i>insulant</i>	-
Measles	-

Total

278

EUROPEAN OFFICIALS

Return of Diseases (Out patients) for the year 1913.

Disease	Male
Brought forward	83
INFECTIVE DISEASES (contd)	
Plague	-
Pneumonia	-
Rabies	-
Relapsing Fever	1
Rheumatic Fever	2
Septicaemia	-
Trypanosomiasis (Sleeping Sickness)	-
Small-Pox	-
Syphilis (a) Acute	-
(b) Secondary	-
(c) Inherited	-
Tetanus	-
Tuberculosis	-
Whooping Cough	-
Yaws	-
Yellow Fever	-
Other Infective Diseases	-
INTOXICATIONS	
Alcoholism	-
Opiumism	-
Others	-
Total	83

EUROPEAN OFFICIALS

Return of Diseases (Out-patient) for the year 1913.

Disease	Male
Brought forward	82
GENERAL DISEASES	
Anæmia-Pernicious	10
Diabetes	-
Exophthalmic Goitre	-
Gout	-
Leucocythæmia	-
Hodgkin's Disease	-
Myxœdema	-
Purpura	-
Rickets	-
Scurvy	-
Other General Diseases	2
LOCAL DISEASES	
Diseases of the Nervous System	
Nervous	37
of the Eye	1
of the Ear	5
of the Nose	8
of the Circulatory System	3
of the Respiratory System	34
of the Digestive System	85
of the Lymphatic System	2
Total	277

EUROPEAN GERIATRIC

Return of Diseases (Out patients) for the year 1946

Disease

Brought forward

LOCAL DISEASES (contd)

Diseases of the Urinary System	1
" " " Genitive System	2
" " " Organs of Location	13
" " " Connective Tissue	3
" " "	30

INJURIES:-

General -

Local 42

TUMOURS 1

POISONS 1

PARASITES-ANTHEAL 6

 Total 381

Table VII.

309
301

Native Officials (including Asiatics.)

Return of Diseases (Out-patients) for the year 1913.

Disease.	Males.
INFECTIVE DISEASES:-	
Beri-Beri.	
Cerebro-Spinal Fever.	
Chicken-Pox.	3
Cholera.	
Dengue.	
Diphtheria.	3
Dysentery.	34
Endocarditis - infective.	
Euteric Fever.	
Erysipelas.	
Gonorrhoea.	14
Influenza.	
Kala Azar.	
Leprosy. (a) Nodular.	
(b) Anasethetic.	
Malaria (a) Tertian.	403
(b) Quartan.	
(c) Aestivo-autumnal.	472
(d) Chronic Malaria.	
(e) Black-Water.	
Measles.	
Malta Fever.	
Plague.	
Scarletina.	
Smallpox.	
Relapsing Fever.	
Rheumatic Fever.	

54

See carried forward

279

09

Native Officials (including Asiatics).
 Return of Diseases (Out-patients) for the year 1913.

Disease.	Males.
Brought forward	907
INFECTIVE DISEASES (contd.)	
Septicæmia.	
Trypanosomiasis (Sleeping Sickness)	
Small-Pox.	
Syphilis. (a) Primary.	
(b) Secondary.	6
(c) Inherited.	
Tetanus.	
Tuberculosis.	
Whooping Cough.	
Yaws.	2
Yellow Fever.	
INTOXICATIONS.	
Alcoholism.	1
Morphinism.	
Others.	
GENERAL DISEASES.	
Anæmia.	32
Anæmia - Pernicious.	
Diabetes.	
Exophthalmic Goitre.	
Gout.	1
Leucocythæmia.	
Hodgkin's Disease.	
Myxœdema.	
Purpura.	
Rickets.	
Total carried forward	1,029

Native Officials (including Asiatics)
 Return of Diseases (Out-patients) for the year 1913

Disease.	Males.
<u>Brought forward.</u>	
	987
INFECTIVE DISEASES (contd.)	
Septicaemia.	
Trypanosomiasis (Sleeping Sickness)	
Small-Pox.	
Syphilis. (a) Primary.	
(b) Secondary.	6
(c) Inherited.	
Tetanus.	
Tuberculosis.	
Whooping Cough.	
Yaws.	
Yellow Fever.	2
INTOXICATIONS.	
Alcoholism.	
Morphinism.	1
Others.	
GENERAL DISEASES.	
Anaemia.	
Anaemia - Pernicious.	32
Diabetes.	
Exophthalmic Goitre.	
Gout.	1
Leucocythaemia.	
Hodgkin's Disease.	
Myxoedema.	
Purpura.	
Rickets.	

Total carried forward 1,029

Table VII.

Native Officials (including Asiatics)

Return of Diseases (Out-patients) for the year 1913.

Diseases.	Males.
Brought forward	1,820
GENERAL DISEASES (contd.)	333
Scurvy.	1
Other General Diseases.	24
LOCAL DISEASES.	
Diseases of the Nervous System.	99
Mental Diseases.	-
Diseases of the Eye.	142
Diseases of the Ear.	53
Diseases of the Nose.	78
Diseases of the Circulatory System.	-
Diseases of the Respiratory System.	329
Diseases of the Digestive System.	593
Diseases of the Lymphatic System.	72
Diseases of the Urinary System.	5
Diseases of the Generative System.	13
Diseases of Organs of Locomotion.	60
Diseases of Connective Tissue.	61
Diseases of the Skin.	248
INJURIES:-	
General.	25
Local.	519
Surgical Operations.	2*
Tumours.	-
Parasites - Animal.	32
Total	3385

* Recorded under respective diseases.

TABLE VII

EUROPEAN GENERAL POPULATION (NON-OFFICIALS)

387

Return of Diseases (Out-Patients) for the year 1913.

Disease	Male	Female
INFECTIVE DISEASES:-		
Beri-Beri	-	-
Cerebro-Spinal Fever	-	1
Chicken-Pox	2	-
Cholera	-	-
Dengue	-	-
Diphtheria	-	-
Dysentery	8	6
Endocarditis-infective	-	-
Enteric Fever	3	2
Erysipelas	-	-
Gonorrhoea	13	-
Influenza	4	5
Kala Azar	-	-
Leprosy (a) Nodular	-	-
(b) Anaesthetic	-	-
Malaria (a) Tertian	52	21
(b) Quartan	-	-
(c) Aestivo-autumnal	28	10
(d) Chronic Malaria	-	-
(e) Black-Water	-	-
Measles	-	1
Malta Fever	-	-
Plague	-	-
Pneumonia	-	-
Rabies	-	-
Total	110	42

282

TABLE VII

303

EUROPEAN GENERAL POPULATION (NON-OFFICIALS) contd.
 Return of Diseases (Out Patients) for the year 1913.

Disease.	Male	Female
Brought forward	110	45
INFECTIVE DISEASES:— (contd):		
Relapsing Fever	-	-
Rheumatic Fever	5	-
Septicæmia	-	-
Trypanosomiasis (Sleeping Sickness)	-	-
Small-Pox	-	-
Syphilis (a) Primary	-	-
(b) Secondary	-	-
(c) Inherited	-	-
Tetanus	-	-
Tuberculosis	1	-
Whooping Cough	-	-
Yaws	-	-
Yellow Fever	-	-
Other Infective Diseases	-	1
INTOXICATIONS.		
Alcoholism	1	-
Morphinism	-	-
Others	-	-
GENERAL DISEASES		
Anaemia	7	11
Anaemia-Pernicious	-	-
Diabetes	-	-
Exophthalmic Goitre	-	-
Gout	-	-
Total	118	56

293

EUROPEAN GENERAL POPULATION (NON-OFFICIALS) contd.
 Return of Diseases (Out Patients) for the year 1913.

Disease	Male	Female
Brought forward	131	60
GENERAL DISEASES (contd.)		
Leucocythæmia	-	-
Hodgkin's Disease	-	-
Myxoedema	-	-
Purpura	-	-
Rickets	-	-
Scurvy	-	-
Other General Diseases	8	-
LOCAL DISEASES:-		
Diseases of the Nervous System	15	17
" " " Eye	7	5
" " " Ear	3	3
" " " Nose	3	3
" " " Circulatory System	5	2
" " " Respiratory "	46	31
" " " Digestive "	99	60
" " " Lymphatic "	3	-
" " " Urinary "	4	1
" " " Generative "	3	20
" " " Organs of Locomotion	11	5
" " " Connective Tissue	6	5
Total	346	218

EUROPEAN GENERAL POPULATION (NON-OFFICIAL) Contd.
 Return of Diseases (Out-Patients) for the year 1912.

Disease	Male	Female
Brought forward	346	216
LOCAL DISEASES contd.		
Diseases of the Skin	31	15
INJURIES:-		
General	7	7
Local	14	6
POISON	2	-
PARASITES	5	3
Total	417	240
SURGICAL OPERATIONS	6	6

EUROPEAN GENERAL POPULATION (NON-OFFICIALS) Total
 Return of Diseases (Out Patients) for the year 1913.

Disease	Male	Female
Brought forward	316	218
LOCAL DISEASES contd.		
Diseases of the Skin	5	11
INJURIES:		
General	3	-
Local	4	6
POISON	1	-
PARASITES	5	3
Total	430	240
SURGICAL OPERATIONS	4	6

TABLE VII.

Handwritten marks

GENERAL NATIVE POPULATION.

331

Return of Diseases (Out Patients) for the year 1913.

Disease	Male	Female.
INFECTIVE DISEASES:-		
Beri-Beri	2	-
Cerebro-Spinal Fever	16	-
Chicken-Pox	165	-
Cholera	-	-
Dengue	-	-
Diphtheria	-	-
Dysentery	1096	118
Endocarditis-infective	-	-
Enteric	4	1
Erysipelas	3	1
Gonorrhoea	266	36
Influenza	53	6
Kala Azar	-	-
Leprosy (a) Nodular	2	-
(b) Anæsthetic	3	-
Malaria (a) Tertiar.	5646	968
(b) Quartan	1	-
(c) Aestivo-autumnal	545	414
(d) Chronic Malaria	32	2
(e) Black-water	1	-
Measles	20	3
<i>measles</i> Typhoid Fever	-	-
Total	11,835	1,560

TABLE VII

392

GENERAL NATIVE POPULATION (Santa.)
 Return of Diseases (Outpatients) for the year 1913.

Disease	Male	Female
Brought forward	11,836	1,880
INFECTIOUS DISEASES (Contd.)		
Cholera	15	1
Pneumonia	49	7
Arabies	-	-
Relapsing Fever	-	1
Rheumatic Fever	809	146
Septicæmia	-	-
Trypanosomiasis (Sleeping Sickness)	1	-
Dysentery	19	-
Syphilis (a) Primary	354	45
(b) Secondary	488	81
(c) Inherited	84	18
Tetanus	6	-
Tuberculosis	68	12
Crouping Cough	7	3
Yaws	107	31
Yellow Fever	-	-
Other Infective Diseases	42	4
INTOXICATIONS		
Alcoholism	-	-
Morphinism	-	-
Others	-	-
Total	13,864	1,898

287

GENERAL NATIVE POPULATION (Continued)
 Return of Diseases (Out Patients) for the year 1913.

DISEASE	MALE	FEMALE
<u>Brought forward</u>	<u>13,666</u>	<u>1,898</u>
GENERAL DISEASES		
Anaemia	80	59
Anaemia-Fernicious		
Diabetes	7	1
Exophthalmic Goitre	1	-
Gout	1	-
Leucocythæmia	1	-
Poliglandular disease	-	-
Lymphedema	-	-
Purpura	1	-
Rickets	1	-
Scurvy	15	7
Other General Diseases	159	57
LOCAL DISEASES		
Diseases of the Nervous System		
Mental	234	249
Eye	2473	703
Ear	322	128
Nose	1035	48
Circulatory System	59	8
Respiratory	10270	1032
Digestive	13427	1685
Lymphatic	848	51
Total	46,368	6,974

GENERAL NATIVE POPULATION (Contd)

Return of Diseases (Out Patients) for the year 1913

Disease	Male	Female
Brought forward	46,666	3,974
LOCAL DISEASES (Contd)		
Diseases of the Urinary System	53	8
" " " Generative "	408	127
" " " Organs of Locomotion	2280	140
" " " Connective Tissue	1857	162
" " " Skin	8712	978
INJURIES:-		
General	78	15
Local	22096	1771
TUMOURS		
	18	10
POISONS		
	18	2
PARASITES		
	913	408
Total	82,808	9,593
SURGICAL OPERATIONS		
	177	48

TABLE SHOWING DENTAL TREATMENT DURING 1913.

337

The following shows the respective number and class of patients per month from July to December:-

	July.	Aug- ust.	Septem- ber.	Octo- ber.	Novem- ber.	Decem- ber.	Total.
Appointments.	84	62	55	55	54	76	386
European Officials.	18	11	6	20	13	14	82
Wives, families and households.	9	10	7	7	10	10	53
Goans and Indians.	5	1	6	3	8	6	29
Africans (Treated after hours)							6
Total treated.							170

The following conditions were treated:-

Simple caries.	317
Pulpitis.	30
Dento-alveolar abscess.	60
Dento-alveolar periostitis.	2
Dental neuralgia.	3
Pyorrhoea.	21
Erosion.	20
Polypus of Gum.	1
Polypus of Pulp.	2
Exostosis.	1
Stomatitis.	2
Antrum disease.	1
Gingivitis, acuta.	3
Necrosis of jaw.	1
Total	464

Vital Statistics.

The following table gives the population and the numbers of births and deaths for the European population for the last three years :-

	1911	1912	1913
POPULATION	6173	6151	6510
BIRTHS	95	85	108
DEATHS	19	20	51

The essential ratio is, therefore, as follows :-

	1911	1912	1913
BIRTHS	1.54	1.38	1.66
DEATHS	0.31	0.33	0.78

Pracha

Tables showing mortality amongst Europeans in the 399
East Africa Protectorate by periods of age and residence
for the last 2 years. 1913

Ages	Residence in the Protectorate					
	under 1 year	1 year & under 2 years	2 years & under 3 years	3 years & under 5 years	5 years & under 10 years	over 10 years
Under 1 years	10					
" 2 years		1				
" 3 years						
" & under 5 years						
" " 10 years						
" " 15 years						
" " 20 years						
" " 25 "	1					1
" " 30 "	5	2	2		2	
" " 35 "	1				1	
" " 40 "	2	1	3			1
" " 45 "	2				1	
" " 50 "		3		1		
50 and upwards	4				2	5
Total	25	7	5	3	6	7

1912

Ages	Residence in the Protectorate					
	under 1 year	1 & under 2 years	2 & under 3 years	3 and under 5 years	5 & under 10 years	over 10 years
1 year	5					
2 years						
3 "	1					
under 5 years	1					
10 "						
15 "				1		
20 "		1				
25 "	2					
30 "	3	1			1	
35 "	1	2	3		1	
40 "		2			1	
45 "						1
50 "	1					
4 upwards	2	3		1	1	
Total	16	9	3	3	4	1

EAST AFRICA PROTECTORATE.

DIVISION.
SANITATION DEPARTMENT.

CIRCULAR No. 164.

401

Epidemic Cerebro Spinal Meningitis.

Epidemic cerebro spinal meningitis is a disease caused by infection by a bacterium known as the "*Meningococcus*."

Symptoms and course.—The symptoms and course of the disease are liable to vary very much. Abnormal and mild cases can only be diagnosed by a man with some experience of the disease and often require the services of a bacteriologist for a certain diagnosis to be made.

In typical cases the first symptoms are fever, of sudden onset, and headache. The headache becomes localized in the back of the head and neck and becomes not so much an ache as an acute pain which may extend down the spine. The head becomes drawn back and there may be tenderness along the spine. At this stage the patient's mind may be clear but extreme restlessness is common. In mild cases the disease may stop here and the symptoms pass off; in severe cases the symptoms become aggravated, the patient becomes delirious or unconscious and may fall into a state of coma and die after only a few days' illness. Should the coma clear up, the patient may become convalescent.

In the case of Europeans and Africans a history of fever and headache is usually all that is obtainable, but among intelligent European cases it is often possible to obtain a history of "cold in the nose" with or without sore throat preceding by some days the onset of the typical symptoms. As will be shown later, this "cold in the nose" is a most important point when dealing with the spread of the disease.

Spread of the Disease.—In recent years it has been recognised that cases of epidemic cerebro spinal meningitis are really cases of a much milder but more widespread disease in which a severe and dangerous complication has arisen. This widespread disease is a "meningococcal nasopharyngitis" or cold and sore throat caused by the *Meningococcus*. People may suffer from this milder complaint and recover without ever showing any sign of the dangerous complication, or they may develop the dangerous complication and become typical cases of meningitis. But a person suffering from the milder symptoms is able to pass the microbe to healthy persons who may develop meningitis. These cases of meningococcal "colds" are the great difficulty in the way of attempts to stop the spread of the disease, the sufferers being known as "carriers." A case of meningitis can be isolated and precautions taken but it is not possible to decide whether every person is suffering from the ordinary form of cold or from a meningococcal one.

Precautions.—When dealing with a case of acute meningitis, the patient should be isolated and the greatest care taken to disinfect sputum and nasal discharge. The *meningococcus* is easily killed by drying or heat, so that articles of furniture in a room should be frequently tipped out into the sun and any articles used by the patient should be put into boiling water. Handkerchiefs should be frequently changed and the soiled ones put at once into boiling water. The patient when convalescent should use antiseptic gargles and nasal douches, and these should be used as a routine by attendants on a patient.

When meningitis is known to be about, every "cold" should be looked on with suspicion and any one suffering from a "cold" should use antiseptic gargles and nasal douches. Particular attention should be paid to handkerchiefs which should be frequently changed, promptly boiled, and never, as is sometimes done, used for a child or indeed for anybody else.

EAST AFRICA PROTECTORATE.

MEDICAL DEPARTMENT.

403

CIRCULAR No. 150.

Memorandum of Advice regarding R.A.T. Destruction.

The following measures will be found useful for this purpose, viz:—

III.—THE LAYING OF RAT POISON.

Various preparations exist. One commonly used in this country is called "Common Sense Exterminator." Full directions for its use are given on the labels of the tins containing it.

The following precautions should be taken when laying it:—

- (1) The prepared bait should be placed near the runs and holes of rats as possible *at night*. The number of portions laid should be counted.
- (2) All bait left over next morning must be removed and burnt.
- (3) Repeat nightly till no more bait is taken.

III.—THE SETTING OF TRAPS.

(1) Wire Traps.

The large wire traps are a serviceable type. They can be advantageously set near the animals' haunts and preferably close to a wall.

Great care should be taken in setting baits; these should be changed frequently and should be of a nature to attract the rat.

(2) Barrel Traps.

This form is useful in warehouses and other places where rats are known to exist in large numbers. It consists of a barrel or cask half full of water with a lid which is pivoted so that the rat can enter the water beneath. The lid should be made airtight and a hole in the top of the barrel to allow it to cant freely. An iron bar which should be fixed at the top of the barrel. A large piece of rough cloth is attached beyond the middle of the lid to serve as a bait.

The trap is completed by placing a board on the hinges of the barrel and resting it on the floor to ensure the approach of the rat from the proper side.

III.—All live rats should be killed by drowning in water to which a disinfectant has been added.

IV.—All rats killed, or found dead, should be sent to the Government Laboratory for examination in a tin containing a solution of disinfectant with the following information:

Name of place or address.

Sender's name.

Date.

V. WHEN MEASURES OF RAT EXTERMINATION ARE INITIATED OR IN PROGRESS:—

- (1) Warning should be given to the inhabitants of the neighbourhood in which poison is laid as to its danger.
- (2) Precautions should be taken to prevent rats having access to food-stuffs. Such should be locked up when poison is distributed.
- (3) Records should be kept of poison laid in any particular place.
- (4) Traps should be kept clean by scalding.
- (5) Great care should be exercised in handling the bodies of dead rats; these should be lifted by means of a pair of tongs, a shovel, sticks or some such means and dropped into a tin containing a solution of disinfectant.
- (6) Kitchen or other refuse or diseased food-stuffs should not be allowed to accumulate near the main building or outhouses.

EAST AFRICA PROTECTORATE.

MEDICAL DEPARTMENT—SANITATION DIVISION

CIRCULAR No. 158

PLAGUE.

403

Plague is a dangerous disease and every case of sickness should be immediately reported to the Health Office or Medical Officer.

Plague shows itself in three forms, *viz.* Bubonic, Septicæmic and Pneumonic. In the Bubonic there are swellings, or buboes, in the groin, armpit, or neck. In the Septicæmic and Pneumonic there are no buboes or swellings. The two latter forms without buboes or swellings are the most fatal. The Pneumonic form attacks the lungs.

All forms of plague take their origin from a flea as carrier, and it is by rats that the Bubonic or Septicæmic forms of plague are spread. The rats spread the disease in two ways. The fleas on the sick rat infect the human beings and infect them with plague. The sick rats also infect food and those who eat this food are attacked with plague.

Bugs also spread plague. The other, and Pneumonic plague is directly contagious and is spread by the coughs of those who suffer from the disease.

Precautions

1. **INOCULATION AGAINST PLAGUE.**—Inoculation gives an extraordinary protection against an attack of plague, and in those exceptional cases where an inoculated person is attacked he has twice the chance of recovery over that of one not inoculated. Everyone should be inoculated against plague.

(a) This will be done at the Health Offices or Government Dispensaries daily, between half past eight and noon, and again from two to four, Sunday excepted, free of charge by a Medical Officer.

(b) There is a special room in the Health Office at Mombasa where ladies and women can be inoculated privately by a lady inoculator.

The inoculation is perfectly harmless and is much less painful than vaccination against small-pox.

(c) Arrangements can also be made in Mombasa for inoculation by a lady inoculator of parties of Parties of Zanzibaris provided they assemble at a private house or public place.

(d) Inoculation in private houses with Haflinger's prophylactic will be only performed under conditions noted hereafter.

2. **DESTRUCTION OF RATS.**—All rats inside and outside the house should be destroyed and the bodies burnt.

3. **PROTECTION OF FOODSTUFFS.**—All food should be kept in covered vessels so that rats may not infect it.

4. **REMOVAL OF WASTE AND RUBBISH.**—All accumulations of uneaten foodstuff and of rubbish in and outside the house, also in court yards and back yards, should be collected and placed in covered kerosine oil tins or baskets and should be put outside the house, whence they will be removed by the conservancy staff. Any complaints of non-removal should be addressed to the Health Officer. If this rubbish cannot be removed by a conservancy staff, it should be destroyed by burning, or buried in pits.

5. **CLEARING OF BUSH.**—Bush or undergrowth around houses and in compounds should be cleared in order to avoid the harbouring of rats.

6. **CATS.**—Each householder should keep a cat on his premises.

7. ADMISSION OF AIR AND SUNLIGHT TO HOUSE. Every door and window of a house should remain open during the day so that fresh air and sunlight should be admitted into the house.

8. DAILY EXERCISE. Physical exercise should be taken daily. Washing of face, clothes, ears, nose, and hands should be done daily. The body should be exposed to the sun and fresh air. The body should be thoroughly washed daily.

9. CLEANSING OF HOUSE. The floor, walls, and furniture of the house should be washed with disinfectant daily. The house should be kept clean and free from dirt.

10. GENERAL CLEANLINESS. The house should be kept clean and free from dirt. The floor, walls, and furniture should be washed daily.

11. ISOLATION. The Medical Officer, Assistant Medical Officer, or Health Officer should be consulted in all cases of infectious diseases. The patient should be isolated and the house should be disinfected.

12. ISOLATION OF INFECTIOUS DISEASES. The patient should be isolated and the house should be disinfected. The patient should be kept in bed and the house should be kept clean and free from dirt.

The Medical Officer, Assistant Medical Officer, or Health Officer should be consulted in all cases of infectious diseases. The patient should be isolated and the house should be disinfected.

In all cases of infectious diseases, the patient should be isolated and the house should be disinfected. The patient should be kept in bed and the house should be kept clean and free from dirt.

The patient should be kept in bed and the house should be kept clean and free from dirt. The patient should be isolated and the house should be disinfected.

Under no circumstances should any representative of the Medical Department be allowed to enter the house for the purpose of inoculating a patient with any vaccine unless a specific request is presented which must state the reasons for such entry.

No representative of the Medical Department shall receive any fee or remuneration in any form for the purpose of inoculating a patient with any vaccine unless a specific request is presented which must state the reasons for such entry.

The patient should be kept in bed and the house should be kept clean and free from dirt. The patient should be isolated and the house should be disinfected.

A

Plans of typical examples of houses in the Indian

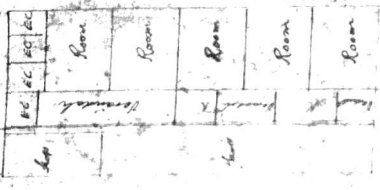
Scale 1/4" = 1' - 0"



1. Plan of house 22' wide



2. Plan of house 25' wide



3. Plan of house 25' wide



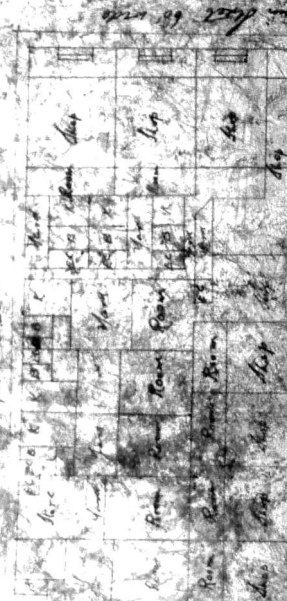
4. Plan of house 25' wide



5. Plan of house 25' wide



6. Plan of house 25' wide



7. Plan of house 25' wide



8. Plan of house 25' wide



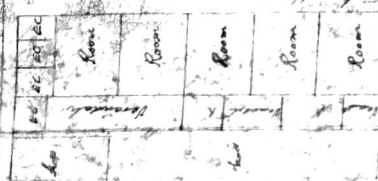
A

Plans from typical samples of process in the area

Water front 200 ft

Water front 200 ft

Water front 160 ft



Water front 160 ft

Water front 160 ft

Water front 160 ft

Water front 160 ft

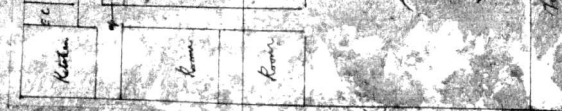
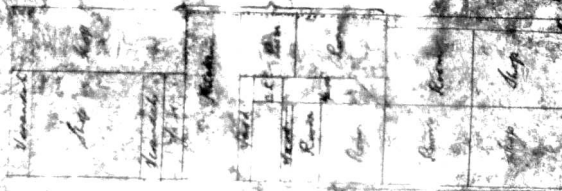
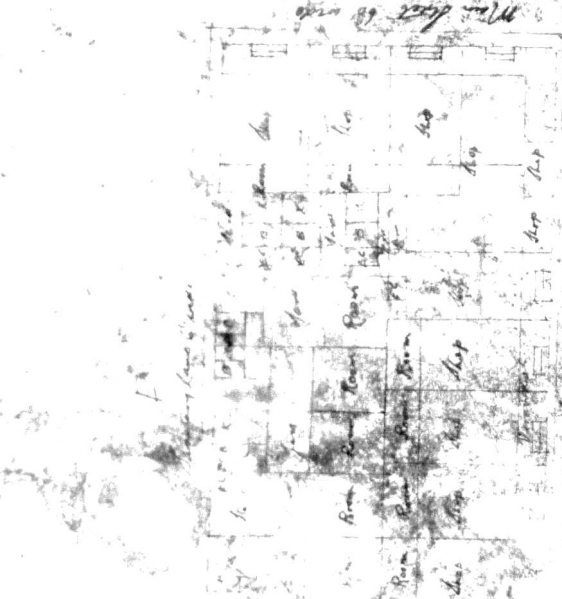
Water front 160 ft

Water front 160 ft

Water front 160 ft

Water front 160 ft

Water front 160 ft



Water front 160 ft

Water front 160 ft

Water front 160 ft

Water front 160 ft

Water front 160 ft

Plan showing - Plots - Sanitary Lines - Drainage - Sumps



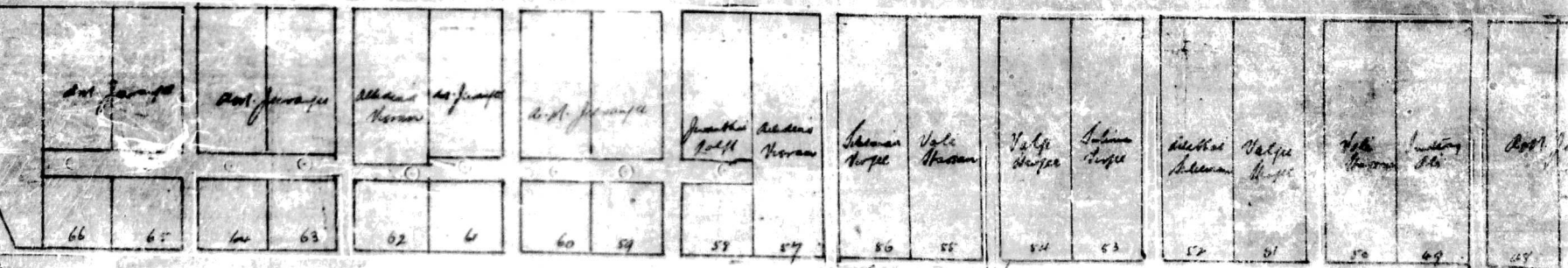
Scale 32 to 1 inch

Main Drain

Sanitary Line



Main Street

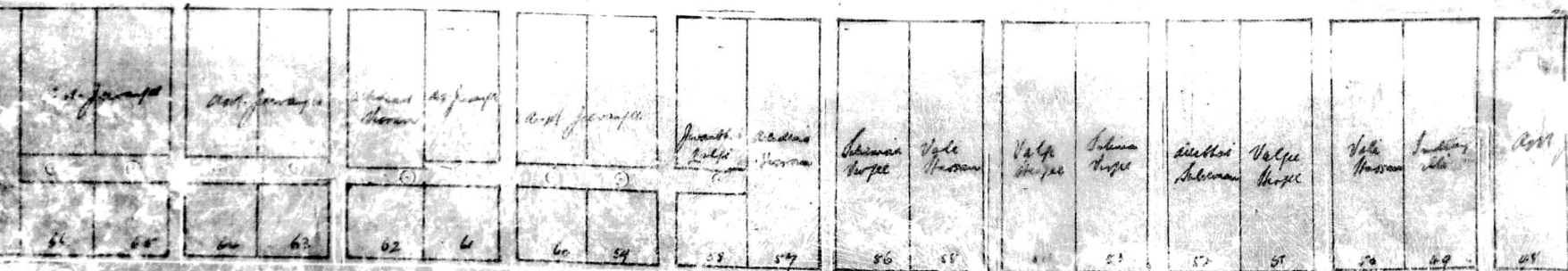


Sanitary Line (Wagon Burrows)

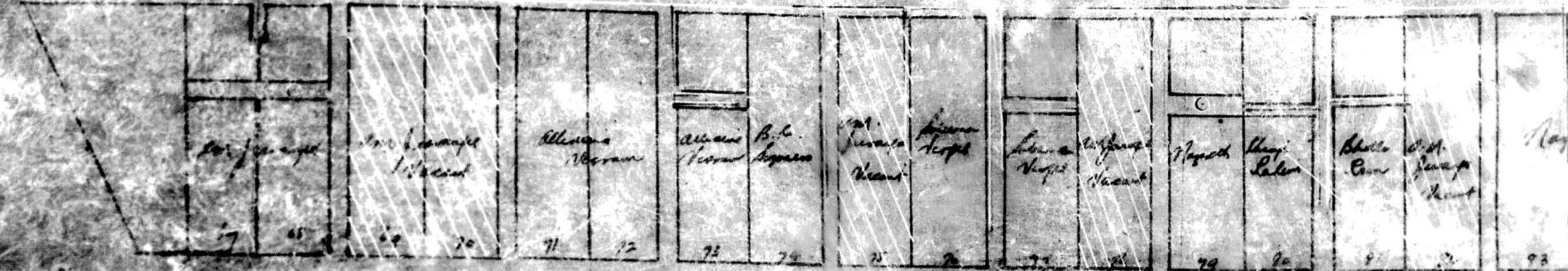
Sulphur Sump

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----

Main Street



Sanitary Lane (Vale Bazaar)



Foot Street

Typical plan of a
 house in the
 Vale
 typical plan of a house in plan A

Vale
 Garden

14	15	16	17	18	19	20	21	22	23	24
W. J. ...	W. J. ...	W. J. ...	W. J. ...	W. J. ...	W. J. ...	W. J. ...	W. J. ...	W. J. ...	W. J. ...	W. J. ...

25	26	27	28	29	30	31	32	33	34
W. J. ...	W. J. ...	W. J. ...	W. J. ...	W. J. ...	W. J. ...	W. J. ...	W. J. ...	W. J. ...	W. J. ...

35	36	37	38	39	40	41	42
W. J. ...	W. J. ...	W. J. ...	W. J. ...	W. J. ...	W. J. ...	W. J. ...	W. J. ...

43	44	45	46	47	48	49	50
W. J. ...	W. J. ...	W. J. ...	W. J. ...	W. J. ...	W. J. ...	W. J. ...	W. J. ...

51	52	53	54	55	56	57	58
W. J. ...	W. J. ...	W. J. ...	W. J. ...	W. J. ...	W. J. ...	W. J. ...	W. J. ...

59	60	61	62	63	64	65	66
W. J. ...	W. J. ...	W. J. ...	W. J. ...	W. J. ...	W. J. ...	W. J. ...	W. J. ...

Drain
 Main
 West
 East
 Drain

(Map Barren)

W. J. ...

PUBLIC RECORD OFFICE.

405

- Two
One Document, being
- ③ plans giving typical examples of plans in the Indian system, Nairobi.
 - ④ plan showing plots, sanitary lines, drainage ramps, in Indian bazaar, Nairobi.

has been removed to

MPSS 59

9:68

1st Knightbridge

PUBLIC RECORD OFFICE.

405

- Two
One Document, being
- ③ plans giving typical examples of premises in the Indian language, etc.
 - ④ plan showing plots showing no. average sample, in Indian language, etc.

has been removed to

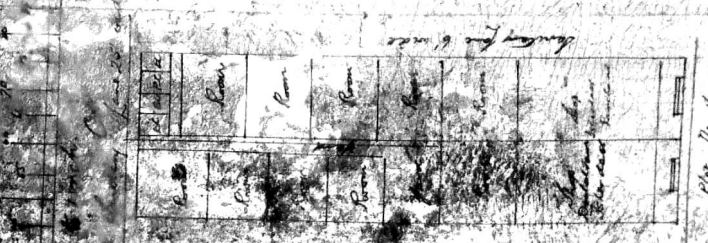
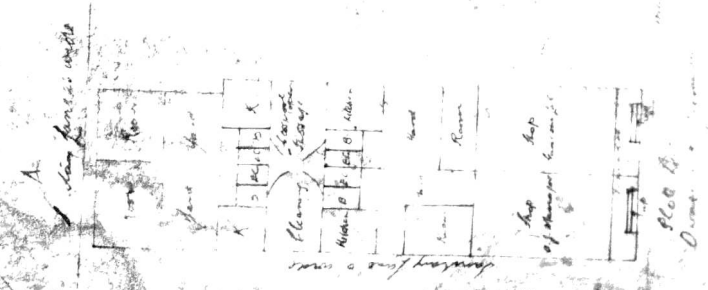
MPS 59

16.9.68

17th Wrightside

A

Plans given typical examples of progress on the Main



Main Hall 60 wide

Side

Plan No. 16
Dinner Room 6' x 10'

Plan No. 17
Dinner Room 6' x 10'

Plan No. 18
Dinner Room 6' x 10'

Plan No. 19
Dinner Room 6' x 10'



Plan No. 20
Dinner Room 6' x 10'

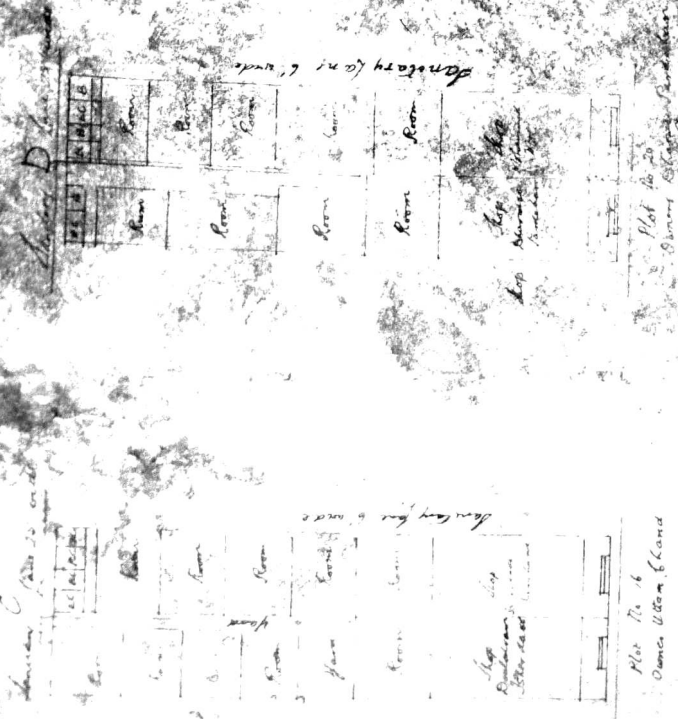
Plan No. 21
Dinner Room 6' x 10'

Plan No. 22
Dinner Room 6' x 10'

Plan No. 23
Dinner Room 6' x 10'

... in the Indian Boyer ...

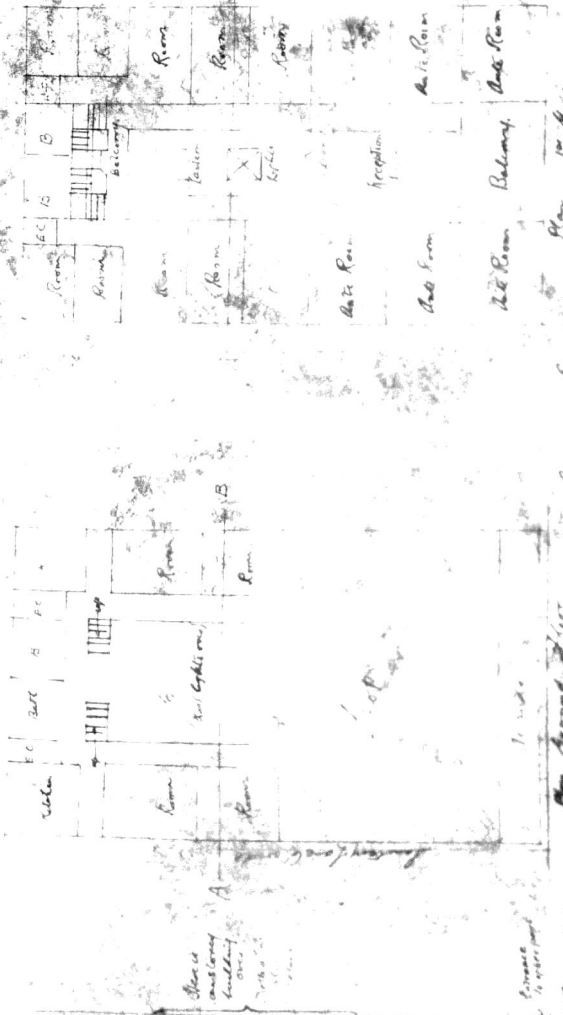
Note: Drainage (bottom) ...



Indian Boyer

0 wide

Sanitary Lane 25' wide



Sanitary Lane 25' wide

0 wide

194

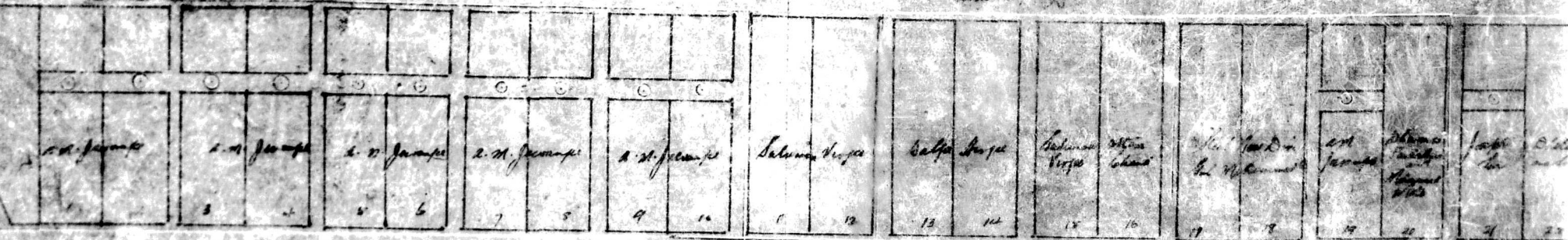
Plan showing - Plots - Sanitary Lines - Drainage - Sumps



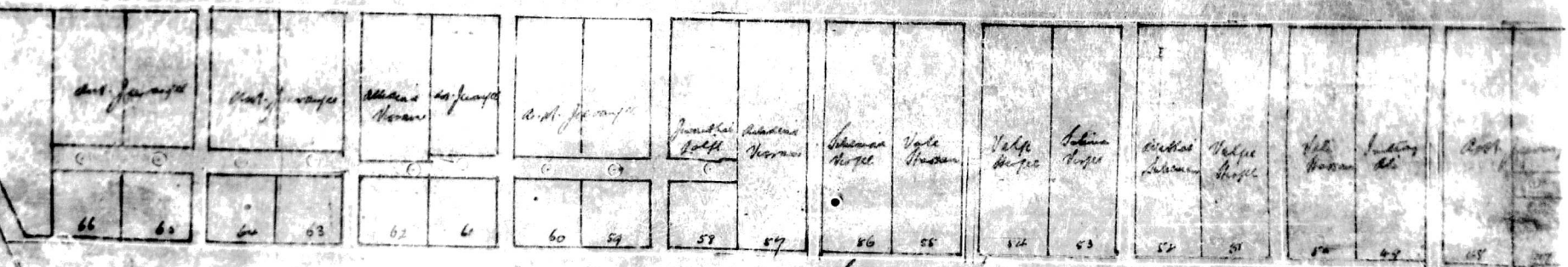
Scale 30 to 1 inch

Main Drain

Street Level



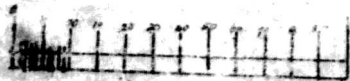
Main Road



Sanitary Lane (Nga. Bazaar)

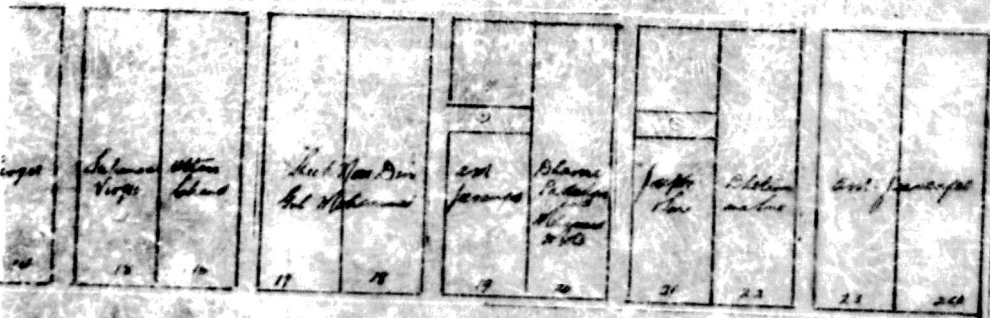


Sanitary Lines - Drainage - Sumps in Indian Bagar, Kerala

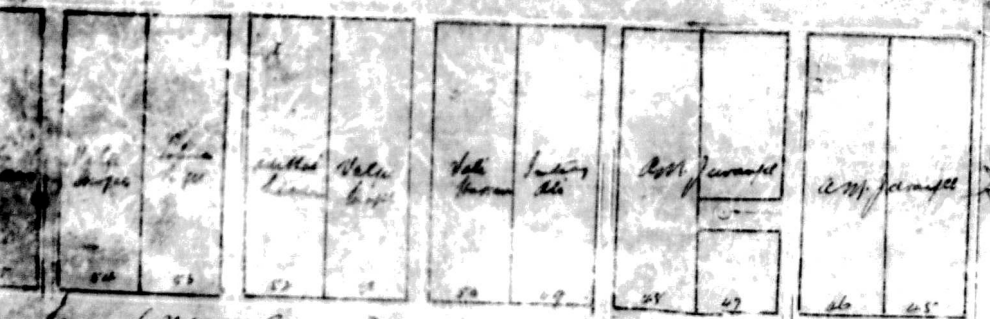


Scale 1" to 100'

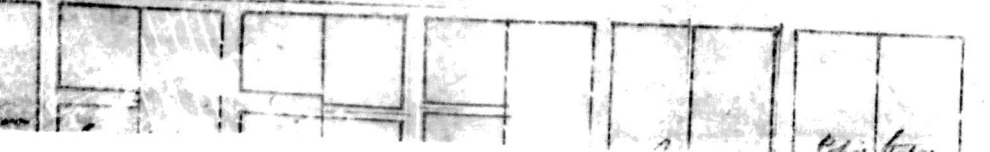
Sanitary Lines



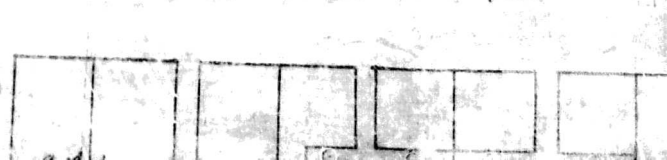
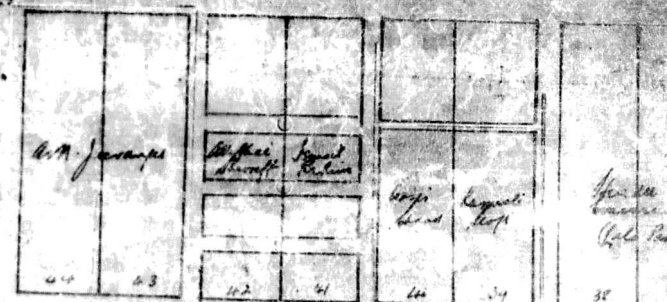
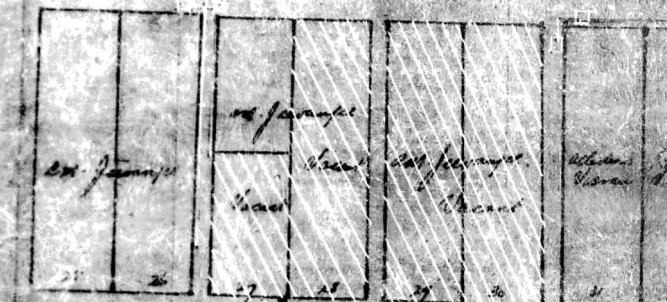
Sanitary Lines



Sanitary Lines (Map Bagar)

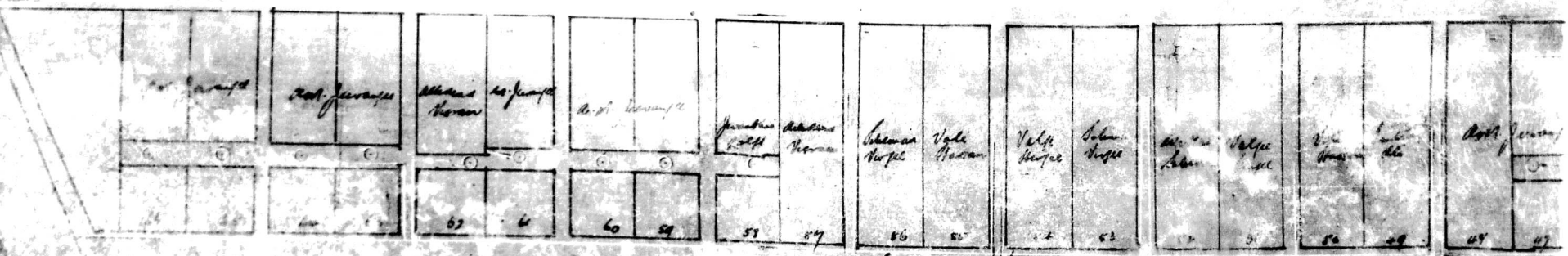


Sanitary Lines (Map Bagar)

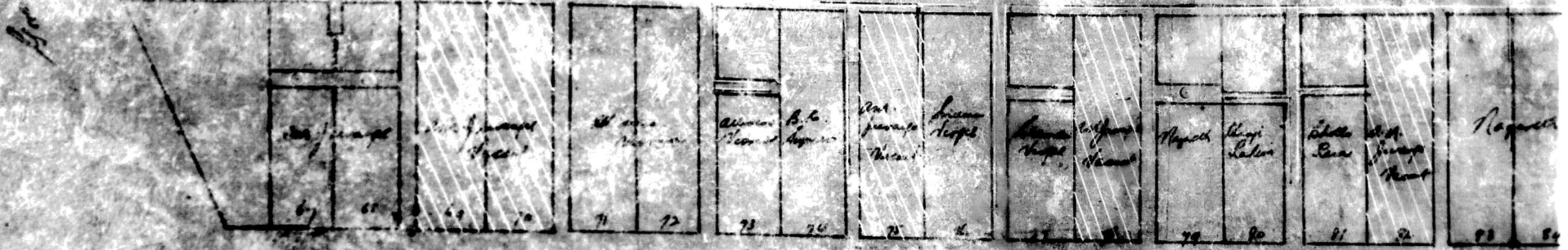


1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----

Main Street



Santa Lane (Naga Bazaar)



East Street

Part built on
 ground
 House
 Typical houses shown on plan A

Javanese Gardens

C O
23877
~~RECEIVED~~
~~NOV 16 1910~~

C O
23877
~~RECEIVED~~
~~JUL 15 1964~~