CONTINUED FROM PREVIOUS FILM

PUBLIC RECORD OFFICE

THE PAGES IN THIS VOLUME ARE TOO TIGHTLY BOUND FOR ALL WORDS TO BE REPRODUCED IN ENTIRETY

indeed many of the samples were somewhat worse than the water from the main Nairobi water supply in spite of filtration. The source of the additional contamination was sought, and the two points at which it apparently occurred were in the storage of the water after filtration in an open tank exposed to dust, etc. and in the use of bottles cleaned out with Nairobi water with a wire brush of doubtful cleanliness. Since the discovery that the soda water was liable to contamination, control of the factories has been maintained by bacteriological examinations at regular intervals.

The main difficulty has been the fixing of some standard by which the purity of the water could be judged. It is obvious that the number of B. coli may be large owing to their entrance into water from bird dropping, vegetation etc. but in a water undoubtedly liable to pollution from human sources, it would be unsafe to pass as satisfactory a large B. coli count on these grounds. Rather than give a false sense of security by presenting satisfactory reports, it seems better to maintain a high standard and hope that the water may come to conform to it either by the provision of a proper storage reservoir followed by filtration, or by chemical disinfection. Thresh lays down in his book "The Examination of Waters and Water Supplies" that

> "Upland and moorland surface waters, collected "
> " in reservoirs, may be regarded as satisfactory "
> " if they afford no evidence of the presence of "

"the

* the Bacillus coli communis in 10 c.c.and *
* especially if the B. enteritidis sporogenes *
* cannot be detected in 50 c.c.. (Loc cit p. 230)*

Again he states as follows:-

* The results obtained upon examining waters *
* for the various B. coli groups and for the *
* spores of B. enteritidis sporogenes may be *
* grouped as under:

* 1. Waters 100 c.c. of which contain no *
* bacteria capable of fermenting bile-salt *
* glucose broth, and which contain no spores *
* of the B. enteritidis sporogenes or its allies *
* in 50 c.c. These are of the highest degree *
* of purity, and afford no evidence of pollution *
* with sewage or manurial matter, or with surface *
* water. *

* 2. Waters 100 c.c. of which contain no *
* bacteria capable of fermenting bile-salt glucose *
* broth, but which contain the spores of B. *
* enteritidis sporogenes or its allies. It will *
* generally be found that a little surface water *
* is gaining access to the water and that other- *
* wise it would be of excellent quality. *

* 3. Waters 100 c.c. of which contain bacteria *
* capable of fermenting bile-salt glucose broth, but not lactose broth, *
* and which are free from the spores of B. enteritidis *
* sporogenes and its allies. Waters of this *
* character are very common. They are not of so *
* high a degree of bacterial purity as those of *
* Group 1, but they afford no evidence of conta- *

mination

contamination with sewage, manure, or surface water.

4. Waters 100 c.c. of which contain bacteria capable of fermenting bile-salt glucose broth, but not lactose broth, and giving the milk reaction for B. enteritidis sporogenes and its allies. Such waters will almost invariably prove to be more or less affected by admixture with surface water or imperfectly filtered subsoil water.

5. Waters giving with 100 c.c. or less the presumptive and confirmatory reactions for the presence of colon bacilli, but not containing the true B. coli (flagimac, saginac, and aginac) and not giving the B. enteritidis sporogenes reaction with the milk test. These waters give indications of surface relationship or of being derived from subsoil, which has been affected by manurial matter. Whilst not exhibiting signs of dangerous pollution, some knowledge of the source would be required before giving a definite opinion. Repeated analyses should also be made, and especially of samples collected after heavy rainfalls.

6. Waters as group 5, but containing also the B. enteritidis sporogenes in 50 c.c. or under. These waters give more decisive indication of the presence of impurities derived from an objectionable source, and inquiries and inspections should be made before giving any definite opinion.

7. Waters containing bacteria of the true colon type, but no spores of B. enteritidis sporogenes in

in 20 c.c.

Here the question of "relative abundance" and the source of the water have to be taken into consideration. The majority of waters submitted to examination come into this class, and give rise to endless disputes as to the interpretation of the results. The water may contain colon bacilli in 1 c.c. and yet be derived from a source beyond the risk of pollution, or it may only contain a single colon bacillus in 100 c.c., and yet this come from a dangerous source. If the B. coli is not found in 10 c.c. and streptococci cannot be found in 50 c.c., or B. enteritidis sporogenes in 500 c.c., the pollution at the time the sample was taken could scarcely have been of a dangerous character, but further examinations alone can tell whether more serious contamination ever occurs. Moorland and upland waters may not reach even this standard, and yet be perfectly wholesome, if the source upon examination is found free from the risk of contamination by human beings.

3. Waters containing both B. coli and the spores of B. enteritidis sporogenes. Such waters must be regarded as contaminated with sewage or manurial matter, but whether dangerous or not can only be ascertained (if at all) by an examination of the source. I have known the presence of a large number of gulls on a reservoir cause pollution of this character.

"I doubt

" I could not say that the water was unwholesome " but it enabled me to press the necessity for " careful filtration. "

" It is perfectly obvious that a chemical or " bacteriological examination of a sample of water " can only justify an opinion upon that particular " sample, and not upon the source from which it was " obtained. Yet a large number of people who send for " odd samples of water for examination conclude that " if the report is satisfactory, the source is also " satisfactory. It is quite true that if the " water is found to be polluted, the source is " unsatisfactory (assuming that the sample was " properly taken), but it does not follow that if " the sample is of good quality the source is a " safe one from which to derive water. The source " which yielded the impure sample may be inherently " unsatisfactory and incapable of being made satis- " factory, or, on the other hand, it may admit of " being adequately protected, possibly with very " little trouble or expense". (Loc cit p. 34.).

As the Nairobi water usually contains B. coli in 10c.c. and B. enteritidis sporogenes in 10 c.c. and as from the surroundings of the collecting area it is obviously open to pollution with sewage or manurial matter, it has seemed best to condemn its use in an unboiled or unfiltered condition.

As regards soda waters inasmuch as these are supposed to be subject to adequate filtration, it has been customary to demand that no colonies should grow on lactose bile salt neutral red agar from 1 c.c. and after in 1 c.c.

and

and that B. coli, streptococci and B. enteritidis sporogenes should be absent from 50 c.c. With the present laboratory equipment and staff the testing of larger quantities of water except in special cases is impossible as a routine measure. The soda water from two of the factories has given consistently good results after bacteriological control of the water was instituted, except for one sample from the Nanda Railway Soda Water Factory. This was traced to dirty bottles, and since adequate methods of cleaning returned empties were instituted the soda water from this factory has been practically sterile.

In Appendix II will be found a summary of the results of the various water analyses.

M. H. Kaiser

Senior Bacteriologist E.A.P.

Enclosures of

APPENDIX I.

	HUMAN																Cow	Dog	Rats	VARIOUS					
	Ascitic Fluid	Blood	Cerebro Spinal Fluid	Faeces	Exudate from lung	Lung tissue	Nasal secretion	Pus	Serum	Skin	Spleen or Lymph Gland	Sputum	Exudate from throat	Ulcers (Secretion)	Urethral or Prostatic Fluid	Urine	Blood	Blood	Blood	Spleen	Water supplies	Mineral Waters	Milk	Cloth	Various tissues	Cereals Meal
Total specimens submitted	1	3491	53	869	3	4	3	20	4	3	21	422	3	62	435	301	3	1	1	2609	30	38	10	3	16	6
Estimation of Haemoglobin		4																								
Enumeration of Erythrocytes & Leucocytes		2																								
Differential Leucocytes Counts — Large Mononuclear increase		50																								
Large mononuclear increase with pigmented leucocytes		22																								
Various results		389																								
Plasmodium vivax		90																								
Plasmodium malariae		11																								
Plasmodium falciparum		309																								
Plasmodium falciparum with crescents		31																								
Spirillum duttoni		88																								
Filaria perstans		6																								
Anaplasma marginale																										
Piroplasma canis																										
Piroplasma parva																										
Treponema pallidum																										
Entamoeba histolytica				32																						
Entamoeba coli				18																						
Lamblia																										
Trichomonas intestinalis				7																						
Spermatozoa																							3			
Ankylostoma			1											10												
Filaria																										
Leprae																										
Pestis											7									7						
B. tuberculosis							8				48															

Parasites detected by Morphology or staining reaction.

	Trichomonas intestinalis				7												
	Spermatozoa																3
	B.anthracis		1										10				
	B.leprae																
	B.pestis									7		3			7		
	B.tuberculosis										88						
	B.Coli																
	M.catarrhalis				1												
	Gonococci													189			
	Meningococci		5														
	Pneumococci		1					1			8						
	Staphylococci							5					1				
	Negative	43	19	770	4		3	4	4	4	6		11	246	2602		
Agglutination Tests	B.typhosus	36															
	B.paratyphosus A	2															
	B.paratyphosus B																
	M.melitensis																
	Negative	297															
Cultural Examination	B.coli			3													
	B.dysenteriae Flexner			1													
	B.typhosus	15															
	Gonococci																
	Meningococci		1														
	Pneumococci	1															
	Staphylococci	1											1				
	Negative	38	1	18		2							2				
	Ova Ankylostoma duodenale			161													
	Ova Ascaris lumbricoides			31													
	Ova Schistosoma mansoni			15													
	Ova Taenia saginata			123													
	Ova Trichuris trichiura			75													
	Ova Double infections			54													
	Ova Triple infections			18													
	Ova Negative			492													
	Larvae Strongyloides stercoralis																
Chemical Examinations														190			

[illegible] intracellularis			7											
Spermatozoa													3	
B.enteritidis		1				1					10			
B.leprae														
B.pestis														
B.tuberculosis										88				
B.Coli														
M.catarrhalis				1										
Gonococci											.49			
Meningococci		5												
Pneumococci		1				1				8				
Staphylococci						6					1			
Negative	43	19	770	4	3	4	4	4	6		246	2602		
B.typhosus	16													
B.paratyphosus A	2													
Agglutination Tests B.paratyphosus B														
M.melitensis														
Negative	297													
B.coli			3											
B.dysenteriae Flexner			1											
B.typhosus	18													
Gonococci														
Meningococci		1												
Pneumococci				4										
Staphylococci														
Negative	50	1	18	2							1			
Cultural Examination Ova Ancylostoma			161											
Ova Ascaris lumbricoides			31											
Ova B.enterobius vermicularis			15											
Ova Taenia saginata			125											
Ova [illegible]			75											
Ova Double infections			54											
Ova Triple infections			16											
Ova Negative			492											
Larvae Strongyloides stercoralis			9											
Chemical Examinations											190			

Helminths

Pneumococci	1			1							
Staphylococci	1				1						
Negative	38	1	18	3	2	1			9		
Ova Ankylostoma duodenale			161								
Ova Ascaris lumbricoides			31								
Ova Schistosoma mansoni			15			1					
Ova Taenia saginata			123								
Ova Trichuris trichiura			76								
Ova Double injections			54								
Ova Triple injections			18								
Ova Negative			492								
Larvae Strongyloides stercoralis			9								
Chemical Examinations						190					
Microscopical Examination of deposits						104					
Complete Bacteriological Examinations							20	38	1		
Wassermann reactions — Positive Result	199	1									
Wassermann reactions — Negative Result	140	6									
Count of Cellular content		1									
Sections										16	
Physical Examination											6

Total Examinations .. 8182

Stock Vaccines issued

Desiccated Calf lymph	42,800 doses
Glycerinated Calf lymph	880,329 doses
Mixed Dysentery Vaccine	6,000 doses
B. coli Vaccine	500 doses
T.A.B. Vaccine	2250 doses

Autogenous Vaccines prepared and issued

For Furunculosis	9
" Gonorrhoea	2
" Urethritis	1
" Pyorrhoea	1
" Arthritis	2
" Coluria	1
" Nasal catarrh	1

APPENDIX II.

Source	Colonies on Gelatine per c.c.	Colonies on Agar per c.c.	Colonies on L. B. A per c.c.	B. coli per litre	Streptococci per litre	B. enteritidis sporogenes per litre
Nairobi main	7335	3580	336	20 - 100	< 20	20 - 100
Soda water	415	?	400	20 - 100	< 20	< 20
Soda water	0	15	0	< 20	< 20	< 20
Ginger Ale	?	?	324	1000 - 10000	< 20	< 20
Soda water	?	?	401	1000 - 10000	20	20
Soda water	?	?	801	100 - 1000	< 20	< 20
Nairobi reservoir	?	?	925	100 - 1000	< 20	< 20
Distributing tanks Nairobi	180	70	120	100 - 1000	< 20	> 100
Soda water	200	170	?	100 - 1000	< 20	20 - 100
Soda water	?	338	310	100 - 1000	< 20	20
Soda water	?	103	48	20 - 100	< 20	20
Soda water	?	160	100	20 - 200	< 20	< 20
Nairobi main	0	335	110	?	?	?
Soda water	210	100	110	1000 - 10000	1000 - 10000	> 100
Soda water	300	40	10	100 - 1000	< 20	< 20
Soda water	1550	1188	80	1000 - 10000	< 20	< 20
Nairobi, reservoir	530.	750	70	100 - 1000	< 20	20
Nairobi main	30	130	55	100 - 1000	< 20	> 100
Soda water	70	160	70	1000 - 10000	< 20	20 - 100
Soda water	?	158	25	1000 - 10000	< 20	< 20
Soda water	?	120	30	< 20	< 20	< 20
Soda water	0	100	0	< 20	< 20	< 20
Nairobi main	?	250	15	< 20	< 20	< 20
Nairobi main	80	1020	65	100 - 1000	< 20	> 100
Soda water	120	280	40	1000 - 10000	< 20	> 100
Nairobi main	0	2720	1370	1000 - 10000	< 20	< 20
Soda water	145	138	45	100 - 1000	< 20	20 - 100
Soda water	110	47	4	20 - 100	< 20	< 20
Nairobi main	210	203	65	< 20	< 20	< 20
Filtered water	150	137	54	100 - 1000	< 20	> 100
Soda water	130	104	13	< 20	< 20	< 20
Well Kabugai	420	0	13	1000 - 10000	100 - 1000	< 20
Spring Kabugai	810	0	0	> 10000	< 20	> 100
Nairobi main	340	0	224	> 10000	< 20	> 100
Soda water	656	210	22	1000 - 10000	< 20	> 100
Soda water	120	?	6	< 20	< 20	< 20
Soda water	155	?	5	< 20	< 20	< 20
Soda water	0	?	30	< 20	< 20	< 20
Soda water	0	?	0	< 20	< 20	< 20
Soda water	0	?	20	< 20	< 20	< 20
Nairobi main	760	?	50	100 - 1000	< 20	< 20
Soda water	0	?	4.6	< 20	< 20	< 20
Soda water	0	?	0	< 20	< 20	< 20
Nairobi main	610	460	120	1000 - 10000	< 20	20 - 100

No. 1 samples was taken shortly after the cleaning (?) of the reservoir.

Soda waters Nos. 2,4,5,6,7,10,16,17, were contaminated owing to inefficient filtration.

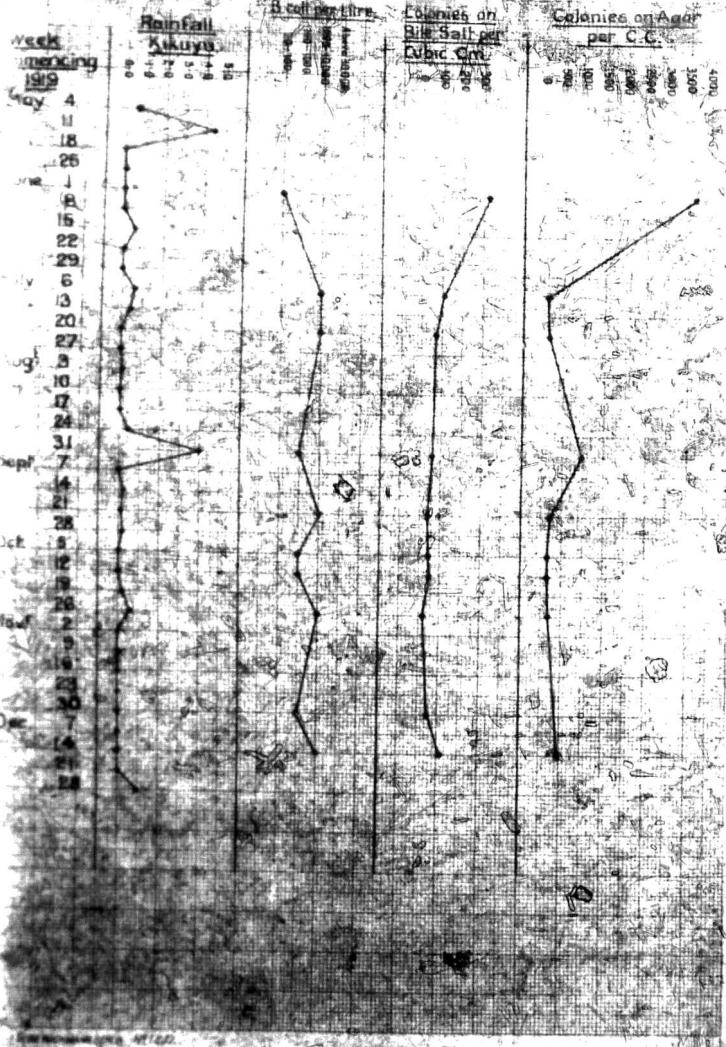
Soda water 26 was contaminated through the cleansing of the returned empty bottles by dirty water.

PENDIX III.

SHOWING RELATIONSHIP OF RAINFALL

BACTERIOLOGICAL EXAMINATIONS OF NAIROBI WATER

MAINS.



(38)

APPENDIX IV. Notes on the present accomodation at the Bacteriological Laboratory.

The present Laboratory is situated in Government Road, the main artery for traffic of all kinds from fast moving motor cars to slow moving and ponderous bullock carts. The building is only 10 feet from the road, and the main laboratory room has a window and opening on to it, as also has the sterilising room, and the calf lymph preparation room. During the dry weather clouds of dust are raised by the passing cars. About 30 feet behind the Laboratory building are the small animal house and two sets of African attendants' quarters, all under one roof. Immediately behind this is the calf shed, and the vaccination shed for the calves. Behind the calf shed the ground slopes sharply down to the main road to Parklands about 400 yards to windward of the Laboratory, and also a source of dust. Within the Laboratory compound are two latrines, one for Africans about 160 feet and one for Europeans about 40 feet from the laboratory building. As there is only a pail system in Nairobi and as the pails are improperly cleansed, and as no dry earth or other material is used for covering the excreta the latter are thus left exposed to attract flies which swarm round the latrines in large numbers and carry contamination far and wide. Amongst other places, these flies enter the Laboratory

as during the hot weather it is impossible to tolerate closed windows while working there. Within a radius of 100 yards there are 12 additional latrines(including one public latrine with eight buckets)mostly belonging to Indians and usually in a filthy condition. Furthermore Indian dwellings are situated next door to the Laboratory and their compounds are always full of rubbish. A considerable amount of time and patience is wasted in repeating subcultures of organisms which have become contaminated with various spores bearing organisms carried into the Laboratory with the dust. It is not only a waste of time and therefore waste of money, but also a great source of anxiety, particularly when it is realised that the Laboratory is the source of ~~production~~ SUPPLY of calf lymph and vaccines. Furthermore it militates against the discovery of new organisms for disease, as isolation of any particular organism has to be repeated several times to ensure that it really has been obtained from a particular case and is not merely a contamination.

Again there is an ice plant on order from England. When it arrives there is no accomodation for it. The Analytical Laboratory which forms a portion of the building is pressing for more room. The bacteriological laboratory is still more cramped, especially when the staff is enlarged. The present site of the Laboratory forbids extension enough to supply 3 rooms for each laboratory.

Consequently it would seem better policy to use the money that would otherwise be spent on building these 6 rooms, in the erecting of a part of a new Bacteriological Laboratory building on a fresh site, the Analytical Laboratory taking over the rooms in the present building that will then be vacated by the Bacteriological Department. (Dust does not interfere to any extent with the Analytical Laboratory work).

The question is apparently one of finance. It is estimated that to meet the present requirements of the Protectorate a sum of £ 22,000 must be expended over Laboratory buildings, stables and staff quarters, with a further £ 23,000 to complete the Laboratory as extensions of its work are rendered necessary. Now if the work done in the Laboratory during 1919 is estimated on the same scale as the charges to the outside public the actual revenue or saving of expenditure to the Government amounted to £ 9,249 distributed as follows:-

Examinations	£ 5,145.
Calf lymph	£ 2,692.
Vaccines	£ 1,412.
Total	£ 9,249

This sum is £ 6,000 in excess of the actual estimate of expenditure of the Laboratory for the financial year April 1919 to March 1920, and this does not include the value to the country of any research work done which cannot be calculated. Even from the financial point of view therefore the Laboratory is a paying investment.

APPENDIX. V. VACCINATION RETURN.

A table is appended showing the returns of all vaccinations performed in East Africa during the year 1919. It will be noted that an extremely large number is recorded af results unknown. This is inevitable in certain places, but is unexpected in such places as Nairobi Prison and the Police Depot. As an indication of the value of the lymph, the return is valueless, partly on the ground that so many results are unknown, and partly on the ground that of the results known, no indication is given of the number revaccinated and this must be considerable.

A second table is appended which gives a much fairer indication of the value of the calf lymph. It has been compiled from figures very kindly supplied by Mr. Greightom, Sanitary Inspector, Kisumu, from the results of his vaccinations in the Nyanza Province. In this place every care is taken to keep the supply of calf lymph at as low a temperature as it is possible to be under present conditions of transport, and the technique is perfect. The table has been made up to the latest possible date. It may be taken that all the children are first vaccinations. Some of the adults have been probably vaccinated at least once previously. It will be noted that the calf lymph does not seem to have been so satisfactory from December 1919 to April 1920, these being the months during which the laboratory and the European Hospital were run by one individual, and the production of calf lymph could not be adequately supervised. In spite of this, it would seem

seem that given good technique and good conditions of transportation, the present lymph gives 87 % of " takes " in previously unprotected individuals.

STATEMENT SHOWING THE PLACES AND NUMBER OF VACCINATIONS PERFORMED AT EACH STATION DURING THE YEAR 1919

ations.	Vaccination			
	Number	Failed	Perfect	Unknown
asa	12,424	-	-	12,424
.....	4,000	700	883	2,417
indi	3,119	9	17	3,093
indini	26	6	12	8
nakos	11,378	-	-	11,378
robi Prison	1,050	105	60	885
robi	62,496	-	-	62,496
mbu	1,048	49	65	934
kindu	2,228	15	152	2,056
tui	268	34	168	66
ikuru	1,840	-	-	1,840
ivasha	329	77	14	238
ima Ravine	1,751	-	-	1,751
arnet	969	-	66	903
aliba	126	40	57	29
rt Hall	51,806	508	334	50,364
eri	48,237	500	1,501	46,236
u	11,548	-	-	11,548
ru	560	92	449	19
umu	30,300	-	-	30,300
Native Civil Hospl.	131	-	-	131
as	4,217	-	-	4,217
risho	3,550	18	177	3,355
di	222	4	23	195
ana Prison	473	64	250	159
.....	4,900	465	970	3,465
.....	1,820	1,026	684	110
.....	382	40	163	179
ite Depot	280	50	110	120
her's Post	2,456	-	-	2,456
enia	500	-	-	500
Total	253,829	3,802	6,155	253,872

RESULTS OF VACCINATION IN NYANZA PROVINCE

Date	Adults.				Children			
	Vaccinated	Observed	Successful	Of those observed per cent successful.	Vaccinated	Observed	Successful	Of those observed per cent successful.
August, 1919	122	122	103	84.4	9	9	9	100.0
September 1919	32	9	9	100.0	15	15	15	100.0
October, 1919	68	8	8	100.0	14	14	14	100.0
November 1919	83	44	44	100.0	11	11	11	100.0
December 1919	29	29	27	93.1	55	55	52	94.6
January 1920	19	8	7	87.5	15	7	4	57.1
February, 1920	11	11	4	36.4	3	3	1	33.3
March 1920	44	8	7	87.5	9	9	3	33.3
April 1920	14	14	5	35.7	6	6	3	50.0
May 1920	32	23	15	65.2	47	47	41	87.2
Total	454	282	227	82.1	185	176	153	86.9

APPENDIX. VI.

By DR. R.A.S CLEARKIN, MEDICAL OFFICER,
NYANZA PROVINCE.

Malaria in Kisumu.

The chart shows the relationship of malaria to the rainfall for the past five years.

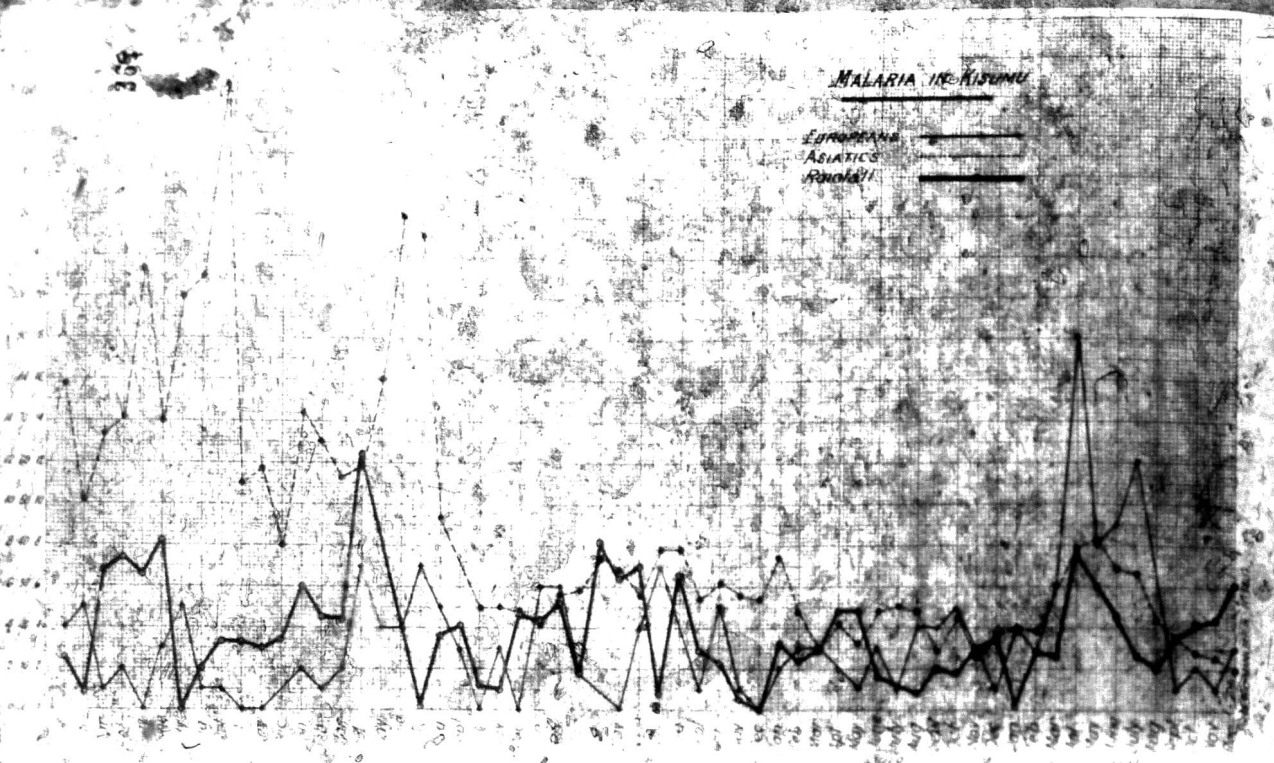
The first part to be noted is the great fall in incidence of malaria among Asiatics, from the year 1916. It was during this year that vigorous attempts were made by the Medical Officer of Health to bring about a more sanitary condition of affairs in the township. The foreshore were cleared. Papyrus cut and large areas cleared of bush, long grass and trees.

The European incidence does not seem to be any lower, and probably will not until segregation is enforced. At present the European population live mixed up to a great extent with Asiatics. The hill on which they reside is rocky, with rocky drains and pools which form excellent breeding grounds for Anophelines. Clearing will to some extent diminish the European incidence by exposing the pools to the sun and heavy rain. To diminish it further the holes must be filled and drains cemented or alternatively the source of mosquito infection removed i.e., segregation.

On inspection of the chart it will be seen that generally speaking, curve of malaria in Europeans rises to its highest when the rainfall drops and vice versa. One marked exception is in April 1919. Being in Kisumu at this time I can give which is probably the explanation.

During the early part of the year, Native

troops and porters were being repatriated from German East Africa and Portuguese East Africa. These troops and porters had been resident for many months in very malarious localities. Thousands passed through Kisumu every week, and all remained for a number of days in camp during the process of paying off etc. The camp was on the top of the hill in the European area. The mosquito population of the European area thus got heavily infected and the European population suffered.


MALARIA IN KISUMU
EUROPEANS
ASIATICS
RAINFALL

Month	TEMPERATURE						RAIN		WIND		Remarks
	Solar Maximum	Maximum on Grass	Mean Shade Maximum	Mean Shade Minimum	Range Mean Monthly	Max. & Min. Mean combined	Amount in inches	Degree of Humidity	General direction	Average Force.	
January	-	-	80°.4	55.3	25.1	67.89	0.24	5[illegible].50	-	-	
February	-	-	82°.1	56.1	24.0	70.[illegible]	3.3[illegible]	5[illegible].66	-	-	
March	-	-	84°.2	57.3	26.9	70.[illegible]8	7.69	40.23	-	-	
April	-	-	[illegible]	[illegible].2	19.3	[illegible]	[illegible]	[illegible].03	-	-	
May	-	-	7[illegible]	[illegible]	20.4	[illegible].43	3.46	[illegible]	-	-	
June	-	-	[illegible]	[illegible].4	23.4	[illegible]	0.[illegible]	4.25	-	-	
July	-	-	[illegible]	[illegible].0	[illegible]	60.68	2.43	73.[illegible]	-	-	
August	-	-	[illegible]	[illegible].8	24.[illegible]	[illegible]	3.12	[illegible]	-	-	
September	-	-	[illegible]	[illegible].4	[illegible].7	[illegible]	[illegible].12	[illegible].93	-	-	
October	-	-	74°.[illegible]	56.[illegible]	[illegible]	[illegible].44	3.64	66.[illegible]	-	-	
November	-	-	[illegible]	[illegible]	[illegible].9	[illegible]	[illegible]	[illegible].25	-	-	
December	-	-	[illegible]	54.0	[illegible]	[illegible].32	1.[illegible]	[illegible]	-	-	
Year Average	[illegible]	-	77°.[illegible]	[illegible]	21.[illegible]	[illegible]	36.24	54.03	-	-	

January 1919

[illegible] minimum	Rain	9 a.m. Wet bulb	9 a.m. Dry bulb	9 a.m. Dew point	9 a.m. Humidity	4 p.m. Wet bulb	4 p.m. Dry bulb	4 p.m. Dew point	4 p.m. Humidity
57.5	0.03	60.0	62.0	58.3	88.0	63.0	69.0	58.3	43.0
[illegible]	0.00	60.0	62.0	59.3	88.0	66.0	74.0	60.2	62.0
56.5	0.00	61.0	63.0	59.8	88.0	65.0	73.0	59.1	62.0
[illegible]	0.00	61.0	64.0	58.5	82.0	65.0	73.0	59.1	62.0
[illegible]	0.00	63.0	68.0	59.1	73.0	65.0	74.0	58.4	58.0
58.0	0.00	62.0	67.0	58.0	73.0	62.0	73.0	53.9	51.0
55.0	0.00	60.0	63.0	[illegible]	[illegible]	65.0	74.0	53.4	53.0
[illegible]	0.00	63.0	68.0	59.1	73.0	64.0	74.0	55.5	49.0
57.0	0.00	64.0	71.0	58.7	65.0	65.0	78.0	56.0	47.0
57.0	0.00	62.0	67.0	58.0	73.0	64.0	76.0	55.5	49.0
[illegible]	0.00	62.0	[illegible]	58.0	73.0	65.0	78.0	56.0	47.0
58.0	0.00	59.0	61.0	[illegible]	88.0	64.0	77.0	54.9	47.0
58.0	0.00	62.0	66.0	[illegible]	78.0	63.0	76.0	53.8	46.0
55.0	0.00	62.0	[illegible]	[illegible]	[illegible]	[illegible]	77.0	53.2	44.0
54.0	0.00	60.0	[illegible]	56.7	[illegible]	63.0	75.0	54.4	49.0
56.0	0.00	58.0	60.0	56.2	88.0	64.0	[illegible]	54.9	47.0
55.0	0.00	[illegible]	67.0	59.8	78.0	64.0	[illegible]	[illegible]	44.0
53.0	0.00	[illegible]	[illegible]	56.9	61.0	[illegible]	80.0	54.8	41.0
[illegible]	0.19	63.0	[illegible]	[illegible]	[illegible]	[illegible]	77.0	[illegible]	44.0
50.0	0.00	63.0	70.0	[illegible]	65.0	64.0	79.0	53.7	42.0
56.0	0.00	61.0	68.0	55.5	[illegible]	[illegible]	80.0	[illegible]	37.0
57.0	0.00	62.0	72.0	[illegible]	54.0	64.0	[illegible]	51.9	[illegible]
58.0	0.02	61.0	70.0	54.0	57.0	65.0	82.0	53.6	38.0
52.0	0.00	61.0	68.0	[illegible]	64.0	65.0	81.0	[illegible]	39.0
53.0	0.00	61.0	69.0	54.8	[illegible]	63.0	82.0	50.2	[illegible]
[illegible]	0.00	61.0	67.0	56.2	[illegible]	63.0	80.0	51.4	[illegible]
[illegible]	0.00	60.0	[illegible]	[illegible]	[illegible]	61.0	80.0	48.0	[illegible]
53.0	0.00	61.0	[illegible]	[illegible]	[illegible]	61.0	78.0	49.?	[illegible]
54.0	0.00	62.0	70.0	[illegible]	[illegible]	63.0	[illegible]	50.?	[illegible]
[illegible]	0.00	63.0	71.0	[illegible]	[illegible]	64.0	[illegible]	51.9	[illegible]
55.0	0.00	[illegible]	71.0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Mean maximum 80.40
Mean minimum [illegible]
Maximum recorded [illegible]
Minimum recorded 50.00
Extreme daily range 32.00
Extreme monthly range 35.00
Mean monthly range 25.11
" " temperature 6?.36

Rainfall.

Total rainfall 0.24 inches

Number of wet days 3

Mean Humidity 9 a.m. [illegible]

4 p.m. 46.16

February 1919.

			9 a.m.				4 p.m.			
	Minimum	Rain	Wet bulb	Dry bulb	Dew point	Humidity	Wet bulb	Dry bulb	Dew point	Humidity
	57.0	0.00	62.0	71.0	55.4	73.0	63.0	83.0	49.1	35.0
	57.0	0.00	62.0	70.0	55.8	61.0	63.0	84.0	48.1	30.0
	56.0	0.00	62.0	71.0	56.2	57.0	63.0	82.0	48.6	31.0
	56.0	0.00	62.0	73.0	53.9	59.0	63.0	83.0	49.0	32.0
	55.0	0.00	63.0	73.0	54.6	54.0	63.0	82.0	50.0	33.0
	58.0	0.00	61.0	66.0	54.0	73.0	61.0	77.0	49.8	38.0
	59.0	0.00	62.0	68.0	57.3	68.0	63.0	73.0	57.0	60.0
	59.0	0.00	62.0	67.0	58.6	73.0	63.0	82.0	50.7	33.0
	60.0	0.00	64.0	71.0	58.7	68.0	63.0	82.0	50.0	33.0
	57.0	0.00	65.0	72.0	59.9	68.0	63.0	80.0	51.4	37.0
	60.0	0.00	60.0	66.0	58.9	73.0	63.0	80.0	51.4	37.0
	59.0	0.00	61.0	68.0	56.5	68.0	62.0	65.0	59.5	83.0
	60.0	0.23	62.0	67.0	59.0	83.0	66.0	80.0	52.4	44.0
	60.0	0.33	62.0	69.0	56.7	74.0	62.0	80.0	49.7	37.0
	57.0	0.00	62.0	66.0	58.8	78.0	60.0	78.0	50.9	38.0
	56.0	0.00	60.0	63.0	57.5	83.0	61.0	77.0	49.8	36.0
	57.0	0.00	61.0	67.0	57.2	68.0	63.0	77.0	53.2	44.0
	60.0	0.17	63.0	70.0	57.7	68.0	63.0	77.0	46.1	30.0
	60.0	0.20	61.0	65.0	57.2	78.0	62.0	76.0	54.8	41.0
	57.0	1.43	61.0	65.0	57.0	78.0	62.0	76.0	49.6	30.0
	56.0	0.00	62.0	68.0	59.6	83.0	63.0	71.0	56.9	67.0
	59.0	0.00	64.0	70.0	59.4	78.0	64.0	72.0	58.0	61.0
	58.0	0.00	65.0	70.0	61.1	83.0	64.0	68.0	54.3	44.0
	60.0	0.00	64.0	73.0	59.3	68.0	65.0	72.0	53.6	38.0
	57.5	0.00	63.0	71.0	56.9	61.0	62.0	72.0	48.0	31.0
	57.0	0.16	63.0	73.0	56.8	64.0	67.0	69.0	58.0	61.0
	58.0	0.27	62.0	70.0	56.8	70.0	64.0	74.0	54.4	41.0
	57.0	0.00	61.0	67.0	57.0	73.0	63.0	74.0	53.8	42.0

Mean maximum ..... 69 . 0 °
" minimum ..... 58 . 00 °
Maximum recorded ..... 83 . 00 °
Minimum " ..... 49 . 00 °
Extreme daily range ..... 34 . 00 °
" monthly " ..... 31 . 00
Mean " " ..... 14 . 00
" temperature .. 70 . 00 °

Rainfall.

Total rainfall ..... 4.00 inches
Number of wet days 8
Mean monthly rainfall 6.82
" " 4.0 inches. 45.60

March 1919.

			9 a.m.				4 p.m.			
x- Min- Rain um imum			Wet bulb	Dry bulb	Dew point	Humidity	Wet bulb	Dry bulb	Dew point	Humidity
	62.0	0.75	64.0	70.0	59.4	69.0	64.0	70.0	59.4	69.0
.0	58.5	0.00	61.0	65.0	51.4	88.0	64.0	72.0	58.0	61.0
.0	58.0	0.00	63.0	65.0	59.5	83.0	65.0	75.0	57.8	55.0
.0	57.5	0.00	62.0	65.0	59.5	83.0	66.0	77.0	56.1	50.0
.0	58.0	0.00	63.0	68.0	56.1	73.0	67.0	79.0	56.4	44.0
.0	57.0	0.00	63.0	67.0	59.0	78.0	64.0	79.0	54.9	47.0
.0	58.0	0.00	61.0	67.0	56.8	78.0	64.0	80.0	53.1	39.0
.0	58.0	0.00	65.0	67.0	63.4	88.0	65.0	79.0	56.4	44.0
.0	59.0	0.00	65.0	67.0	63.4	88.0	64.0	78.0	54.3	44.0
.5	57.0	0.00	64.0	70.0	56.4	69.0	65.0	80.0	54.8	41.0
.5	52.5	0.00	62.0	66.0	58.8	78.0	64.0	78.0	52.7	42.0
.0	55.0	0.00	62.0	70.0	55.8	61.0	62.0	70.0	52.8	61.0
.5	57.0	0.00	62.0	72.0	55.8	61.0	64.0	80.0	53.1	39.0
.0	61.0	0.00	63.0	70.0	57.6	65.0	64.0	82.0	51.9	35.0
.0	60.0	0.00	63.0	68.0	59.1	73.0	63.0	80.0	51.4	37.0
.0	58.0	0.00	61.0	70.0	57.6	65.0	63.0	77.0	52.0	39.0
.0	54.5	0.00	63.0	68.0	57.3	68.0	63.0	80.0	51.4	37.0
.5	58.0	0.00	63.0	69.0	58.3	68.0	63.0	80.0	51.4	37.0
.0	54.0	0.00	62.0	68.0	57.3	68.0	63.0	80.0	51.4	37.0
.5	55.0	0.00	64.0	70.0	57.8	65.0	64.0	82.0	50.0	33.0
.0	51.0	0.00	65.0	72.0	59.2	65.0	63.0	81.0	49.7	33.0
.0	55.0	0.00	63.0	70.0	57.6	65.0	64.0	82.0	50.0	33.0
.0	57.0	0.00	64.0	70.0	57.6	65.0	64.0	82.0	50.0	33.0
.0	60.0	0.00	64.0	71.0	58.2	65.0	63.0	80.0	49.7	34.0
.0	59.0	0.73	63.0	67.0	59.8	78.0	62.0	77.0	50.3	37.0
.5	59.0	0.11	62.0	70.0	55.8	61.0	62.0	76.0	50.1	41.0
.5	57.5	1.49	62.0	70.0	55.8	61.0	62.0	74.0	53.0	44.0
.0	51.0	0.00	63.0	67.0	59.8	78.0	62.0	67.0	58.0	73.0
.0	59.0	0.05	61.0	63.0	59.3	88.0	60.0	66.0	55.5	68.0
.0	58.0	0.79	62.0	64.0	60.3	88.0	61.0	63.0	59.3	88.0
.0	58.0	0.73	61.0	63.0	59.3	88.0	61.0	67.0	53.8	78.0

Mean Maximum ..... 84 . 21 F.
" minimum ..... 57 . 34 F.
Maximum recorded ..... 89 . 00 F.
Minimum " ..... 51 . 00 F.
Extreme daily range .... 11 . 50 F.
" monthly " .... 38 . 00 F.
Mean " " ..... 26 . 00 F.
" Temperature .... 70 . 78 F.

Rainfall.

Total rainfall 3.69 inches
Number of wet days
Mean Humidity 9 a.m. 73.26.
4.0 p.m. 47.19.

	Min-imum	Rain	9 a.m. Wet bulb	Dry bulb	Dew point	Humidity	4 p.m. Wet bulb	Dry bulb	Dew point	Humidity
	58.0	0.32	63.0	62.0	58.3	88.0	63.0	70.0	59.6	65.0
	60.0	0.08	62.0	64.0	60.3	88.0	64.0	72.0	58.0	61.0
	58.0	1.45	63.0	65.0	61.4	88.0	64.0	71.0	58.7	65.0
	59.0	0.05	63.0	65.0	61.4	88.0	61.0	68.0	55.5	64.0
	59.0	0.02	65.0	73.0	59.1	63.0	61.0	63.0	59.1	88.0
	58.0	1.31	61.0	63.0	59.3	88.0	62.0	66.0	58.8	78.0
	56.0	0.83	61.0	65.0	60.1	84.0	64.0	75.0	56.1	52.0
	56.5	0.35	62.0	66.0	58.8	78.0	63.0	74.0	57.0	55.0
	57.0	0.54	63.0	70.0	57.6	65.0	62.0	67.0	58.0	73.0
	59.0	0.19	63.0	70.0	57.6	65.0	64.0	74.0	58.7	55.0
	59.0	0.00	61.0	65.0	57.7	78.0	63.0	72.0	56.2	57.0
	59.0	0.00	63.0	68.0	59.1	73.0	64.0	75.0	56.1	52.0
	53.0	0.00	63.0	68.0	57.3	68.0	64.0	75.0	56.1	52.0
	54.0	0.00	61.0	68.0	55.5	64.0	63.0	75.0	54.4	49.0
	56.0	0.00	62.0	68.0	57.3	68.0	65.0	78.0	50.9	39.0
	60.0	0.00	64.0	70.0	59.4	69.0	64.0	78.0	54.3	44.0
	60.0	0.12	63.0	69.0	59.8	78.0	64.0	73.0	57.1	58.0
	57.0	0.30	63.0	68.0	59.1	73.0	66.0	75.0	57.8	55.0
	58.0	0.13	63.0	70.0	57.6	65.0	61.0	66.0	57.0	73.0
	58.0	0.22	64.0	70.0	59.4	69.0	62.0	65.0	59.5	83.0
	60.0	0.29	63.0	68.0	59.1	73.0	65.0	75.0	57.8	55.0
	58.0	0.00	63.0	66.0	60.6	83.0	63.0	74.0	62.2	64.0
	58.5	0.05	62.0	67.0	58.0	73.0	63.0	72.0	56.2	57.0
	59.0	0.00	63.0	67.0	59.8	78.0	66.0	75.0	57.8	55.0
	59.0	0.00	64.0	70.0	59.4	69.0	65.0	75.0	57.8	55.0
	60.0	0.04	62.0	66.0	58.8	78.0	63.0	74.0	55.0	52.0
	59.0	0.00	62.0	68.0	57.3	68.0	65.0	75.0	57.8	55.0
	57.0	0.00	64.0	69.0	60.1	73.0	65.0	76.0	57.2	52.0
	61.0	0.00	65.0	72.0	59.7	65.0	65.0	80.0	54.8	41.0
	60.5	0.00	63.0	68.0	59.1	73.0	63.0	75.0	54.4	49.0

Mean maximum ..... 70.47 F.
" minimum ..... 60.13 F.
Maximum recorded ..... 81.00 F.
Minimum " ..... 53.00 F.
Extreme daily range ..... 25.00 F.
" monthly range ..... 28.00 F.
Mean " " ..... 10.38 F.
" relative humidity ..... 77.91 %

Rainfall.

Total rainfall ..... 6.18 inches
Number of wet days 17
Mean humidity 9 a.m. ... 74.73
4.0 p.m. 59.33

May 1919

	Min- imum	Rain	9 a.m. Wet bulb	Dry bulb	Dew point	Humidity	3 p.m. Wet bulb	Dry bulb	Dew point	Humidity
	50.0	0.00	63.0	68.0	59.1	73.0	63.0	73.0	55.4	54.0
	60.0	0.00	63.0	68.0	59.1	73.0	63.0	74.0	54.0	52.0
	60.0	0.00	61.0	67.0	56.2	68.0	63.0	74.0	55.9	52.0
.0	56.0	0.01	63.0	68.0	59.1	73.0	63.0	76.0	53.8	46.0
.0	53.0	0.00	63.0	69.0	58.3	68.0	64.0	78.0	54.0	42.0
.0	58.0	0.00	62.0	67.0	56.2	73.0	63.0	76.0	53.8	46.0
.0	60.0	0.00	64.0	73.0	57.3	68.0	64.0	78.0	54.3	44.0
.0	60.0	0.18	62.0	66.0	58.8	78.0	63.0	76.0	53.8	46.0
.0	59.0	0.00	61.0	67.0	56.2	78.0	65.0	75.0	57.8	52.0
	57.0	0.00	62.0	64.0	58.8	78.0	64.0	80.0	54.0	41.0
.0	53.0	0.00	62.0	69.0	58.0	73.0	65.0	70.0	55.6	61.0
.0	54.0	0.00	61.0	67.0	56.2	68.0	63.0	73.0	55.6	54.0
	52.0	0.00	62.0	67.0	58.0	73.0	63.0	74.0	54.0	50.0
	57.0	0.08	62.0	67.0	58.0	73.0	64.0	72.0	54.5	54.0
.0	54.0	0.12	60.0	64.0	59.5	83.0	63.0	71.0	56.9	61.0
.0	54.0	1.90	60.0	63.0	59.5	88.0	62.0	74.0	50.4	48.0
	50.0	0.45	61.0	67.0	57.0	73.0	62.0	68.0	57.1	65.0
.0	56.0	0.6	60.0	63.0	56.1	78.0	63.0	70.0	57.6	64.0
.0	58.0	0.00	60.0	64.0	54.1	68.0	61.0	70.0	57.6	64.0
.0	54.0	0.00	59.0	62.0	56.2	82.0	60.0	69.0	53.0	56.0
.0	56.0	0.00	59.0	63.0	55.6	77.0	61.0	69.0	54.8	60.0
	56.0	0.00	59.0	64.0	54.8	72.0	60.0	67.0	54.4	64.0
.0	49.0	0.00	60.0	64.0	56.7	77.0	62.0	72.0	54.5	54.0
	47.0	0.00	60.0	64.0	56.7	77.0	63.0	74.0	55.0	52.0
.0	46.0	0.00	61.0	64.4	57.0	73.0	63.0	73.0	53.9	51.0
.0	48.0	0.00	60.0	64.0	55.4	82.0	62.0	73.0	53.9	51.0
.0	50.0	0.00	59.0	64.0	54.8	77.0	63.0	73.0	55.4	54.0
	47.0	0.00	59.0	65.0	54.1	68.0	63.0	74.0	55.0	52.0
.0	50.0	0.00	60.0	64.0	56.8	77.0	63.0	72.0	54.5	54.0
.0	47.0	0.00	58.0	64.0	53.0	67.0	63.0	74.0	55.0	52.0
.0	51.0	0.00	58.0	64.0	53.0	67.0	61.0	72.0	52.7	51.0

Mean [illegible] ..... [illegible]

" minimum ..... [illegible]

Maximum temperature ..... 80.00 F

Minimum " ..... 49.00 F

Extreme daily range ..... 27.00 F

[illegible] ..... 15.00 F

[illegible] ..... 39.44 F

[illegible] temperature ..... 58.44 F

Rainfall

Total rainfall ..... [illegible]

Number of wet days 7

Mean humidity 9 a.m. ..... [illegible]

" " 3 p.m. ..... [illegible]

June 1917.

Max- imum	Min- imum	Rain	9 a.m. Wet bulb	Dry bulb	Dew point	Humid- ity	4 p.m. Wet bulb	Dry bulb	Dew point	Humid- ity
.0	56.0	0.00	58.0	62.0	54.6	77.0	72.0	75.0	52.6	46.0
.0	55.0	0.00	60.0	76.0	58.1	66.0	66.0	74.0	50.3	42.0
.0	56.0	0.00	60.0	64.0	55.7	77.0	64.0	74.0	52.6	43.0
.0	54.5	0.00	59.0	63.0	54.6	77.0	63.0	74.0	52.6	45.0
.0	53.0	0.00	58.0	62.0	54.6	77.0	65.0	75.0	52.6	46.0
.0	53.0	0.00	60.0	65.0	55.9	71.0	64.0	74.0	54.3	44.0
.5	54.0	0.00	59.0	65.0	54.1	68.0	63.0	74.0	55.6	50.0
.5	53.0	0.00	60.0	67.0	55.9	71.0	65.0	74.0	55.0	52.0
.0	53.5	0.00	61.0	66.0	57.8	78.0	62.0	73.0	53.3	51.0
.0	54.0	0.00	60.0	63.0	57.5	85.0	63.0	73.0	53.6	51.0
.5	54.5	0.04	59.0	62.0	56.4	83.0	62.0	71.0	54.7	54.0
.0	55.0	0.03	60.0	61.0	57.5	89.0	63.0	71.0	55.6	54.0
.0	55.5	0.00	59.0	62.0	56.4	83.0	63.0	73.0	53.6	51.0
.5	56.0	0.00	58.0	63.0	53.8	70.0	62.0	71.0	53.7	57.0
.5	56.0	0.00	58.0	63.0	54.7	77.0	63.0	73.0	53.6	51.0
.5	57.0	0.00	57.0	59.0	54.0	83.0	62.0	71.0	53.7	54.0
.0	52.0	0.00	60.0	65.0	54.1	71.0	60.0	68.0	53.7	60.0
.5	57.0	0.00	59.0	64.0	54.8	72.0	61.0	71.0	53.4	53.0
.5	59.0	0.00	59.0	64.0	54.8	72.0	61.0	71.0	52.7	51.0
.0	53.0	0.07	57.0	62.0	56.4	89.0	61.0	73.0	52.1	45.0
.0	53.5	0.00	57.0	61.0	55.6	89.0	61.0	73.0	52.7	48.0
.0	50.0	0.00	56.0	64.0	50.9	72.0	61.0	73.0	52.1	45.0
.0	43.0	0.00	58.0	60.0	54.1	84.0	61.0	73.0	52.1	45.0
.0	43.0	0.00	58.0	60.0	52.9	77.0	61.0	74.0	51.5	43.0
.0	48.0	0.00	56.0	70.0	54.7	77.0	61.0	75.0	52.8	45.0
.5	50.0	0.00	58.0	60.0	56.2	88.0	60.0	72.0	51.0	45.0
.0	46.0	0.00	56.0	60.0	52.7	78.0	60.0	68.0	53.7	60.0
.0	55.0	0.00	56.0	58.0	54.9	89.0	60.0	69.0	53.0	57.0
.0	50.0	0.00	56.0	61.0	54.7	83.0	60.0	70.0	53.3	53.0
.0	44.0	0.00	58.0	60.0	56.0	88.0	60.0	71.0	51.8	55.0

Mean [illegible] ..... [illegible]

" [illegible] ..... [illegible]

Extreme [illegible] ..... [illegible]

" [illegible] ..... [illegible]

Mean [illegible] ..... [illegible]

" [illegible] ..... [illegible]

Rainfall.

Total rainfall ..... 0.22 inches

Number of wet days 4

Greatest fall in 24 hrs. ..... [illegible]

Min-imum	Rain	9 a.m. Wet bulb	Dry bulb	Dew point	Humid-ity	4 p.m. Wet bulb	Dry bulb	Dew point	Humid-ity
54.0	0.00	57.0	59.0	55.2	88.0	62.0	73.0	53.9	51.0
54.0	0.00	56.0	62.0	54.6	77.0	60.0	71.0	51.6	50.0
55.0	0.00	56.0	60.0	52.5	77.0	60.0	70.0	52.3	53.0
54.0	0.00	57.0	60.0	54.4	83.0	60.0	70.0	52.3	53.0
54.0	0.02	57.0	61.0	53.5	77.0	60.0	68.0	53.7	60.0
54.0	0.04	54.0	58.0	54.4	88.0	58.0	67.0	54.4	64.0
51.0	0.00	54.0	60.0	52.5	76.0	61.0	71.0	53.4	58.0
57.0	0.00	58.0	60.0	54.6	77.0	62.0	72.0	53.7	51.0
51.0	0.03	58.0	60.0	54.4	77.0	60.0	70.0	52.3	53.0
51.0	0.80	54.0	58.0	54.2	86.0	58.0	70.0	54.4	64.0
56.0	0.54	56.0	58.0	54.3	93.0	58.0	63.0	53.8	70.0
54.0	0.01	56.0	58.0	54.3	93.0	60.0	68.0	56.9	93.0
55.0	0.08	54.0	57.0	53.1	93.0	58.0	63.0	53.8	73.0
54.0	0.92	56.0	58.0	56.1	93.0	60.0	63.0	53.8	73.0
53.0	0.08	56.0	58.0	54.2	87.0	59.0	64.0	54.4	82.0
53.0	0.05	54.0	56.0	52.1	87.0	58.0	60.0	54.4	82.0
53.0	0.10	54.0	56.0	54.1	93.0	60.0	64.0	56.7	77.0
49.0	0.80	52.0	57.0	53.3	93.0	63.0	65.0	52.6	46.0
46.0	0.00	52.0	53.0	50.4	87.0	61.0	73.0	52.1	48.0
47.0	0.45	48.0	60.0	56.2	88.0	58.0	60.0	56.2	88.0
52.0	0.00	58.0	62.0	54.6	77.0	60.0	66.0	55.1	68.0
52.0	0.00	55.0	58.0	52.3	81.0	60.0	67.0	54.4	64.0
54.0	0.00	55.0	59.0	51.4	76.0	60.0	68.0	55.1	68.0
55.0	0.00	56.0	60.0	53.3	82.0	59.0	65.0	52.3	53.0
50.0	0.00	54.0	58.0	52.0	93.0	60.0	64.0	58.0	82.0
50.0	0.00	54.0	56.0	52.1	87.0	61.0	65.0	52.7	73.0
53.0	0.00	54.0	58.0	53.0	87.0	60.0	62.0	56.3	88.0
54.0	0.00	55.0	57.0	53.2	87.0	60.0	67.0	54.4	64.0
48.0	0.00	57.0	57.0	53.3	82.0	61.0	72.0	52.7	51.0
47.0	0.00	54.0	57.0	48.3	75.0	61.0	73.0	52.7	51.0
49.0	0.00	54.0	59.0	51.4	76.0	61.0	73.0	52.1	48.0

Mean maximum	68.65	F.
" minimum	49.00	F.
Maximum recorded	77.00	F.
Minimum "	43.00	F.
Extreme daily range	29.00	F.
" monthly range	34.00	F.
Mean "	16.62	F.
" temperature	58.68	F.

Rainfall

Total rainfall.	2.43	inches
Number of wet days	13	
Mean humidity 9 a.m.	82.8	
12.0 p.m.	63.8	

Mini-mum	Rain	9 a.m. Wet bulb	Dry bulb	Dew point	Humidity	4 p.m. Wet bulb	Dry bulb	Dew point	Humidity
48.0	0.00	55.0	59.0	51.4	76.0	60.6	73.0	50.4	45.0
45.0	0.00	56.0	63.0	53.8	72.0	61.0	73.0	52.1	48.0
44.0	0.00	56.0	61.0	51.7	72.0	61.0	74.0	51.5	45.0
42.0	0.00	56.0	61.0	51.7	72.0	63.0	76.0	54.4	49.0
46.0	0.00	60.0	65.0	55.9	73.0	63.0	75.0	54.4	49.0
42.0	0.00	54.0	61.0	49.8	67.0	60.0	76.0	48.6	36.0
50.0	0.00	54.0	61.0	49.8	66.0	60.0	75.0	49.2	40.0
54.0	0.00	55.0	57.0	51.2	77.0	58.0	67.0	50.8	56.0
52.0	0.00	57.0	60.0	54.4	83.0	60.0	75.0	49.2	40.0
56.0	0.00	57.0	60.0	54.4	83.0	60.0	73.0	50.4	45.0
54.0	0.11	57.0	59.0	55.2	88.0	60.0	72.0	51.0	48.0
53.0	0.00	56.0	59.0	53.8	82.0	61.0	73.0	52.1	48.0
51.0	0.00	60.0	64.0	55.6	73.0	61.0	75.0	50.8	41.0
56.0	0.00	58.0	62.0	54.4	77.0	58.0	69.0	49.4	50.0
54.0	0.00	58.0	60.0	56.2	88.0	60.0	72.0	51.0	48.0
53.0	0.00	58.0	62.0	54.6	77.0	60.0	73.0	50.4	45.0
46.0	0.00	58.0	63.0	55.6	77.0	61.0	74.0	51.5	45.0
50.0	0.00	56.0	61.0	51.7	72.0	58.0	75.0		
53.0	0.00	56.0	60.0	52.5	76.0	62.0	75.0	52.6	46.0
51.0	0.00	55.0	58.0	52.3	81.0	58.0	69.0	53.8	72.0
56.0	0.00	54.0	58.0	52.3	81.0	60.0	78.0	52.3	53.0
53.0	0.00	58.0	60.0	56.2	88.0	60.0	71.0	51.6	50.0
54.0	0.00	55.0	57.0	53.2	87.0	60.0	68.0	53.7	69.0
55.0	0.00	58.0	60.0	55.5	76.0	62.0	74.0	53.2	48.0
56.0	0.00	58.0	63.0	53.8	72.0	61.0	72.0	52.7	51.0
57.0	0.00	59.0	62.0	56.4	82.0	61.0	74.0	51.5	45.0
57.0	0.00	60.0	64.0	56.7	77.0	60.0	63.0	57.5	82.0
58.0	0.02	60.0	63.0	57.5	82.0	60.0	62.0	58.3	88.0
58.0	0.29	59.0	61.0	57.3	88.0	60.0	71.0	51.6	50.0
56.0	0.12	60.0	63.0	57.5	82.0	60.0	64.0	56.7	77.0
58.0	0.02	60.0	62.0	55.1	78.0	60.0	62.0	58.3	88.0

Mean maximum	75	98 F
" minimum	51	84 F
Maximum recorded	82	50 F
Minimum recorded	42	00 F
Extreme daily range	36	50 F
" monthly range	40	50 F
Mean " "	24	14 F
" " temperature	63	91 F

Rainfall

Total rainfall,	1 . 12 inches
Number of wet days	5
Mean humidity 9 a.m.	82. 00
12.0 p.m.	51. 40

ax- imum	Min- imum	Rain	Wet bulb	Dry bulb	Dew point	Humidity	Wet bulb	Dry bulb	Dew point	Humidity
9.5	56.0	0.55	59.0	61.0	57.3	85.0	60.0	69.0	53.0	56.0
5.0	56.0	0.21	59.0	63.0	55.8	77.0	62.0	70.0	55.8	61.0
6.0	55.0	0.14	59.0	65.0	54.1	68.0	62.0	72.0	54.5	54.0
7.0	55.0	0.00	58.0	62.0	54.8	77.0	65.0	75.0	57.8	55.0
4.0	57.0	0.00	58.0	61.0	55.4	82.0	64.0	72.0	58.0	61.0
5.0	54.0	0.00	59.0	64.0	54.8	72.0	64.0	74.0	56.7	55.0
8.0	53.0	0.00	58.0	62.0	54.6	77.0	64.0	74.0	56.7	55.0
3.0	48.0	0.00	56.0	58.0	54.2	87.0	63.0	74.0	55.0	52.0
5.0	56.0	0.00	59.0	65.0	54.1	68.0	62.0	74.0	53.2	48.0
5.0	55.0	0.00	57.0	59.0	55.2	88.0	60.0	73.0	50.4	45.0
5.0	47.0	0.00	58.0	62.0	54.6	77.0	60.0	74.0	49.8	43.0
5.0	46.5	0.00	53.0	54.0	52.0	93.0	60.0	74.0	49.8	43.0
0.0	52.0	0.00	54.0	57.0	51.2	81.0	60.0	74.0	49.8	43.0
0.0	58.0	0.00	57.0	61.0	53.5	77.0	60.0	74.0	49.8	43.0
4.0	49.0	0.00	60.0	65.0	58.9	73.0	61.0	69.0	54.8	60.0
5.0	52.0	0.49	56.0	60.0	52.5	76.0	61.0	72.0	52.7	51.0
3.0	54.0	0.00	59.0	65.0	54.1	68.0	62.0	76.0	52.1	43.0
.0	52.0	0.00	58.0	63.0	53.8	72.0	61.0	73.0	52.1	48.0
.0	56.0	0.00	61.0	67.0	56.2	68.0	61.0	70.0	54.0	57.0
0.0	56.0	0.02	60.0	64.0	56.7	77.0	61.0	72.0	52.7	51.0
0.0	52.0	0.00	60.0	64.0	56.7	77.0	62.0	78.0	50.9	39.0
1.0	55.0	0.00	58.0	61.0	55.4	82.0	62.0	77.0	51.5	41.0
1.0	55.0	0.00	61.0	66.0	57.0	73.0	62.0	75.0	52.6	46.0
.0	59.0	0.01	63.0	68.0	59.1	73.0	65.0	77.0	56.6	50.0
1.0	58.0	0.20	62.0	66.0	58.8	78.0	60.0	68.0	53.7	60.0
0.0	54.0	0.16	60.0	62.0	58.3	88.0	60.0	68.0	53.7	60.0
0.0	58.0	0.04	60.0	66.0	55.1	68.0	62.0	75.0	52.6	46.0
0.0	58.0	0.00	60.0	64.0	56.7	77.0	62.0	74.0	53.2	48.0
0.0	58.0	0.00	61.0	66.0	57.0	73.0	61.0	70.0	54.0	57.0
1.0	56.0	0.32	60.0	64.0	56.7	77.0	60.0	70.0	52.3	53.0

Mean maximum	77 . 08 F.
" minimum	54 . 35 F.
Maximum recorded	83 . 00 F.
Minimum "	46 . 50 F.
Extreme daily range	30 . 00 F.
" monthly range	36 . 50 F.
Mean monthly "	22 . 73 F.
" " temperature .	65 . 72 F.

Rainfall.

Total rainfall	2.14 inches
Number of wet days	10
Mean Humidity 9 a.m.	77.06
12.0 p.m.	50.80

October 1919.

Max-imum	Min-imum	Rain	9 a.m. Wet bulb	Dry bulb	Dew point	Humid-ity	4 p.m. Wet bulb	Dry bulb	Dew point	Humid-ity
3.0	57.0	0.10	58.0	60.0	56.2	88.0	61.0	68.0	55.5	64.0
.0	56.0	0.02	59.0	63.0	55.6	77.0	61.0	70.0	54.0	57.0
2.0	57.0	0.16	58.0	59.0	57.1	94.0	61.0	66.0	57.0	73.0
.0	49.0	0.01	48.0	65.0	41.9	43.0	62.0	72.0	54.5	54.0
9.0	56.0	0.00	60.0	65.0	52.9	73.0	62.0	75.0	52.6	46.0
0.0	56.0	0.00	61.0	66.0	57.0	73.0	63.0	75.0	54.4	49.0
4.0	56.0	0.36	60.0	62.0	58.3	88.0	62.0	71.0	55.2	57.0
.0	56.0	0.17	61.0	63.0	59.3	88.0	62.0	73.0	53.9	51.0
3.0	56.0	0.00	60.0	65.0	54.9	73.0	62.0	71.0	53.4	53.0
.0	52.0	0.00	60.0	64.0	56.7	77.0	61.0	71.0	53.4	53.0
3.0	54.0	0.00	59.0	65.0	54.1	68.0	62.0	74.0	53.2	48.0
.0	56.0	0.00	59.0	65.0	54.1	68.0	61.0	73.0	52.1	48.0
0.0	58.0	0.00	62.0	66.0	58.8	78.0	61.0	75.0	50.9	43.0
0.5	56.0	0.19	61.0	62.0	60.1	94.0	61.0	69.0	54.8	60.0
.0	56.0	0.20	58.0	62.0	54.6	77.0	60.0	70.0	52.3	53.0
7.0	56.0	0.00	60.0	65.0	55.9	73.0	62.0	74.0	53.2	48.0
.0	56.0	0.00	61.0	67.0	56.2	68.0	63.0	71.0	56.9	61.0
7.0	58.0	0.00	61.0	67.0	56.2	68.0	62.0	75.0	52.6	46.0
8.0	59.0	0.10	61.0	65.0	57.7	78.0	62.0	75.0	52.6	46.0
8.0	58.0	0.03	61.0	65.0	57.7	78.0	62.0	76.0	52.1	43.0
.0	59.0	0.01	62.0	66.0	58.8	78.0	61.0	74.0	51.5	45.0
2.0	58.0	0.33	62.0	65.0	59.5	83.0	60.0	63.0	57.5	82.0
5.0	58.0	0.25	59.0	61.0	57.3	88.0	61.0	74.0	51.5	45.0
7.5	58.0	0.00	62.0	67.0	58.0	73.0	62.0	76.0	52.1	43.0
7.0	55.0	0.01	60.0	65.0	55.9	73.0	61.0	74.0	51.5	45.0
5.0	57.0	0.04	60.0	63.0	57.5	82.0	61.0	73.0	52.1	48.0
6.0	55.0	0.39	60.0	62.0	58.3	88.0	61.0	66.0	57.0	73.0
1.0	54.0	0.53	59.0	63.0	55.8	77.0	59.0	69.0	51.2	53.0
5.0	58.0	0.00	60.0	63.0	57.5	82.0	62.0	74.0	53.2	48.0
2.0	57.0	0.01	60.0	63.0	57.5	82.0	62.0	71.0	55.2	57.0
7.0	55.0	0.73	59.0	61.0	57.3	88.0	61.0	66.0	57.0	73.0

Mean maximum ..... 74 . 68 F.
" Minimum ..... 56 . 19 F.
Maximum recorded ..... 80 . 00 F.
Minimum " ..... 49 . 00 F.
Extreme daily range ..... 27 . 00 F.
" monthly " ..... 31 . 00 F.
Mean " " ..... 18 . 49 F.
" " temperature ..... 65 . 44 F.

Rainfall

Total rainfall ..... 3. 64 inches
Number of wet days 19
Mean humidity 9 a.m. 79
" 12 p.m. 53.5

November 1919

			9 a.m.				4 p.m.			
	imum	Rain	Wet bulb	Dry bulb	Dew point	Humidity	Wet bulb	Dry bulb	Dew point	Humidity.
.0	54.0	0.19	60.0	63.0	57.5	82.0	60.0	66.0	55.1	68.0
.0	55.0	0.11	60.0	64.0	56.7	77.0	62.0	72.0	54.5	54.0
.5	58.0	0.00	60.0	63.0	57.5	82.0	60.0	70.0	52.3	53.0
.0	56.0	0.00	61.0	65.0	57.7	78.0	62.0	72.0	54.5	54.0
.0	58.0	0.30	60.0	63.0	57.5	82.0	61.0	72.0	52.7	51.0
.0	58.0	0.00	63.0	66.0	60.6	83.0	63.0	72.0	56.2	57.0
.0	58.0	0.00	61.0	65.0	57.7	78.0	63.0	73.0	55.8	54.0
.5	58.5	0.00	62.0	66.0	58.8	78.0	63.0	74.0	55.0	52.0
.5	59.0	0.00	63.0	67.0	59.8	78.0	63.0	75.0	54.4	49.0
.0	58.0	0.00	64.0	70.0	59.4	69.0	61.0	65.0	57.7	78.0
.0	56.0	0.00	63.0	69.0	58.3	68.0	63.0	77.0	53.2	44.0
.0	57.0	0.00	61.0	67.0	56.2	68.0	62.0	71.0	58.2	57.0
.0	58.0	0.00	62.0	67.0	58.8	73.0	63.0	75.0	54.4	49.0
.0	56.0	0.01	61.0	62.0	60.1	94.0	62.0	66.0	58.8	78.0
.0	56.0	0.18	60.0	65.0	55.9	73.0	61.0	70.0	54.0	57.0
.0	56.0	0.05	60.0	62.0	58.3	88.0	62.0	71.0	55.2	57.0
.0	57.0	0.16	61.0	64.0	58.5	82.0	63.0	72.0	56.2	57.0
.0	53.0	1.63	59.0	60.0	58.1	94.0	62.0	67.0	58.0	73.0
.0	56.0	0.49	57.0	60.0	54.4	82.0	62.0	70.0	55.8	61.0
.0	57.0	0.00	59.0	61.0	57.3	88.0	61.0	71.0	53.4	53.0
.0	55.0	0.00	62.0	67.0	58.0	73.0	61.0	74.0	51.5	45.0
.0	57.0	0.00	61.0	65.0	57.7	78.0	61.0	74.0	51.5	45.0
.0	56.0	0.00	61.0	65.0	57.7	78.0	61.0	74.0	51.5	45.0
.0	58.0	0.02	60.0	63.0	57.5	82.0	61.0	72.0	52.7	51.0
.0	52.0	0.04	59.0	60.0	58.1	94.0	60.0	68.0	53.7	60.0
.0	53.0	0.00	62.0	66.0	58.8	78.0	61.0	72.0	52.7	51.0
.0	52.0	0.00	62.0	67.0	58.0	73.0	61.0	73.0	52.1	48.0
.0	54.0	0.19	61.0	65.0	57.7	78.0	63.0	72.0	56.2	57.0
.0	55.0	0.00	60.0	62.0	58.3	88.0	61.0	71.0	53.4	53.0
.0	52.0	0.00	62.0	66.0	58.8	78.0	61.0	72.0	52.7	51.0

Mean maximum	74	88 F.
" minimum	55	95 F.
Maximum recorded	72	96 F.
Minimum "	52	00 F.
Extreme daily range	25	00 F.
" monthly "	47	00 F.
Mean " "	18	73 F.
" " temperature	65	42 F.

Rainfall

Total rainfall ..... 3.35 inches

Number of wet days 12

Mean humidity 9 a.m. 79.3

" " 4 p.m. 55.6

December 1919.

Maximum	Minimum	Rain	9 a.m. Wet bulb	Dry bulb	Dew point	Humidity	4 p.m. Wet bulb	Dry bulb	Dew point	Humidity
75.0	54.0	0.00	60.0	65.0	55.9	73.0	60.0	70.0	52.3	53.0
75.0	52.0	0.00	60.0	65.0	55.9	73.0	60.0	73.0	50.4	45.0
76.0	53.0	0.00	61.0	67.0	56.2	68.0	60.0	73.0	50.4	45.0
78.0	57.0	0.00	62.0	70.0	55.8	61.0	61.0	75.0	50.9	43.0
73.0	56.0	0.00	61.0	65.0	57.7	78.0	62.0	75.0	52.6	45.0
70.0	56.0	0.00	62.0	67.0	58.0	73.0	61.0	73.0	52.1	48.0
77.0	57.0	0.00	61.0	63.0	59.3	88.0	61.0	73.0	52.1	48.0
77.0	57.0	0.00	62.0	65.0	59.7	83.0	61.0	73.0	52.1	48.0
78.0	57.0	1.74	61.0	63.0	59.3	88.0	61.0	72.0	54.2	52.0
74.0	53.0	0.00	61.0	65.0	57.7	78.0	61.0	70.0	57.6	65.0
76.0	53.0	0.00	62.0	67.0	58.0	73.0	62.0	72.0	54.5	54.0
75.0	57.0	0.00	62.0	67.0	58.0	73.0	62.0	74.0	53.2	48.0
77.0	57.0	0.00	63.0	67.0	59.8	78.0	62.0	74.0	53.2	48.0
74.0	57.0	0.00	62.0	65.0	59.8	78.0	62.0	74.0	53.2	48.0
74.0	57.0	0.00	60.0	65.0	55.9	73.0	62.0	73.0	52.1	48.0
78.0	58.0	0.00	62.0	66.0	58.8	78.0	62.0	73.0	53.9	51.0
75.0	59.0	0.00	63.0	67.0	59.8	78.0	63.0	75.0	54.4	49.0
77.0	53.0	0.00	60.0	64.0	56.7	77.0	62.0	73.0	53.9	51.0
75.0	47.0	0.00	61.0	67.0	56.2	68.0	63.0	73.0	55.6	54.0
75.0	47.0	0.00	61.0	67.0	56.2	68.0	63.0	73.0	55.6	54.0
77.0	52.0	0.00	60.0	68.0	53.7	60.0	63.0	72.0	56.2	57.0
77.0	48.0	0.00	60.0	65.0	55.9	73.0	63.0	74.0	55.0	52.0
75.0	56.0	0.00	62.0	67.0	58.0	73.0	63.0	74.0	55.0	52.0
79.0	53.0	0.00	62.0	69.0	56.5	64.0	63.0	75.0	54.4	49.0
75.0	52.0	0.11	62.0	66.0	58.8	78.0	62.0	72.0	54.5	54.0
75.0	55.0	0.00	62.0	67.0	58.0	73.0	63.0	73.0	55.6	54.0
76.0	53.0	0.00	62.0	67.0	58.0	73.0	64.0	76.0	55.5	49.0
78.0	57.0	0.00	62.0	67.0	58.0	73.0	64.0	75.0	56.1	52.0
77.0	48.0	0.00	60.0	64.0	56.7	77.0	64.0	73.0	57.3	58.0
73.0	54.0	0.00	61.0	68.0	55.5	64.0	63.0	74.0	55.0	52.0
78.0	52.0	0.00	63.0	70.0	57.6	63.0	65.0	76.0	57.2	52.0
82.0	56.0	0.00	63.0	71.0	56.9	61.0	64.0	74.0	56.7	55.0
							64.0	76.0	55.5	49.0

Mean maximum 76.63
" minimum 44.00
Maximum recorded 82.00
Minimum " 47.00
Extreme daily range 30.00
" monthly " 35.00
Mean " 22.63
" temperature 60.3

Rainfall.

Total rainfall ..... 1.85 inches
Number of wet days 2
Mean humidity 9 a.m. 73.1
" " 12 p.m. 51.4

Kenya

42359/20

331

7 Sept 1920

DRAFT.

Crown Agents

MINUTE.

Mr. Jewell 6.9.20
Mr. ~~Parkinson~~
Mr. Parkinson 6.9.20
Mr. Grindle ~~for Mr Moore~~
Sir H. Lambert.
Sir H. Read.
Sir G. Fiddes.
Col. Amery
Lord Milner.

Gentlemen

With ref. to the letter from this Dept No 52777/19 of the 4th of October, I am to transmit to you the accompanying Report on the Bacteriological Laboratory of the Kenya Colony and Protectorate for the year 1919.

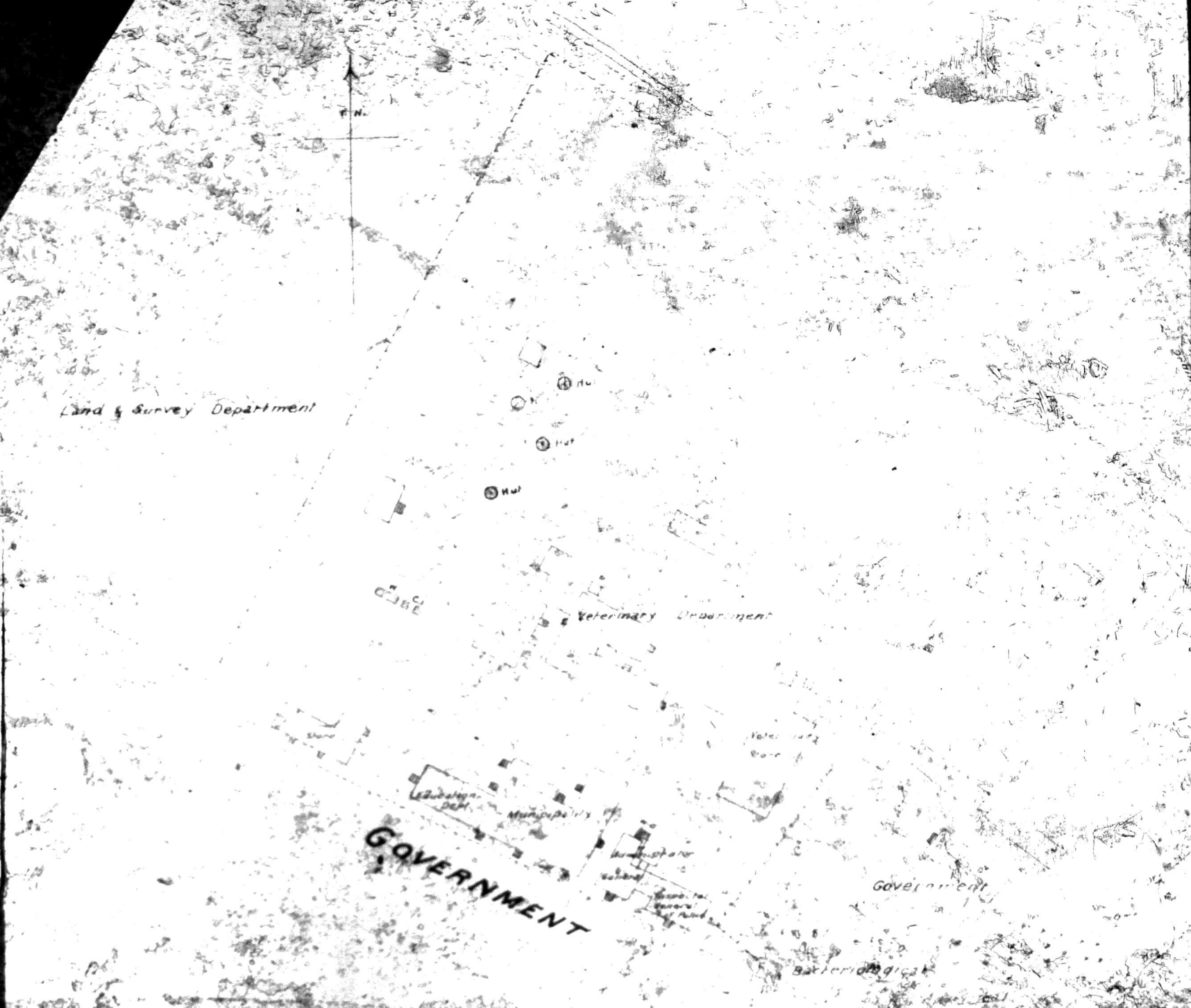
2. I am to request you to have 400 copies of the Report printed, of which 300 ~~Three hundred and fifty~~ copies should be sent to the Colony and the remaining 50 to this Dept. A proof copy should be submitted before the final copies are struck off.

to PD for despatch [illegible]

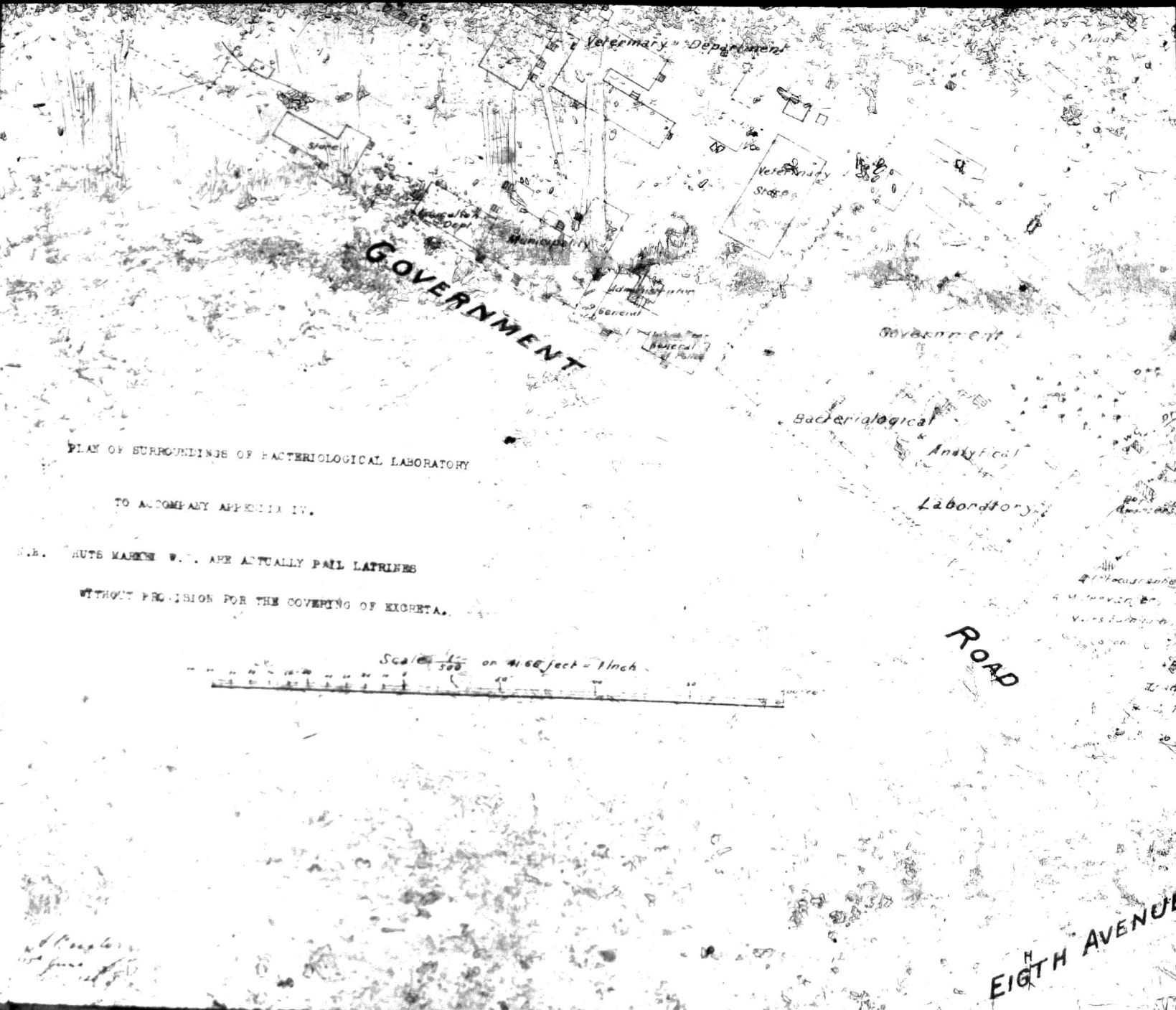
W. H. Ramage can be consulted on
any point of difficulty, and
in any case it will probably
be better to send the proof
to him for perusal before
it is sent to the Colonial Office

[illegible]

Enclosures of


Land & Survey Department
Veterinary Department
GOVERNMENT
Government


ROAD
Indian
Indian
Barbee
Shop



PLAN OF SURROUNDINGS OF BACTERIOLOGICAL LABORATORY

TO ACCOMPANY APPENDIX IV.

N.B. HUTS MARKED W.C. ARE ACTUALLY PAIL LATRINES

WITHOUT PROVISION FOR THE COVERING OF EXCRETA.

Scale 1/500 or 41.66 feet = 1 inch


ROAD
Indian
Duke
Indian
Duke
barber
shop
Bacteriological
Analytical
Laboratory
Store
ROAD
Home
Trading Co
Harrison
Cresswell
& Hopley
SWAMP
EIGTH AVENUE

Kenya

Gw 42359/21

331

DRAFT.

Kenya Conf.

Northey

MINUTE.

Mr. Jewell 12. 3. 21
Mr. Parkinson 12. 3. 21
Mr. Flood 12
Mr. Bottomley 12. 3. 21
Sir H. Lambert.
Sir H. Read.
Sir G. Fiddes.
Col. Amery.
Lord Milner.

print after despatch

15 March 1921

Sir,

I have the honour to ack the rect of your conf despatch No 133 of the 17th of July enclosing the Annual Report on the Bacteriological Laboratory for the year 1919, and to inform you that the Report was referred to the Advisory Medical & Sanitary Committee for Tropical Africa at a recent meeting.

2. Sir Patrick Manson enquired whether Necator americanus had ever been found, and whether Schistosoma haematobium had been observed; he also asked for further information as to the vaccines

treatment of rheumatoid arthritis.

Sir William [illegible] called attention to the possible occurrence of paratyphoid C and M. paramelitensis

Professor Simpson called attention to the condition of the water supply at [illegible]; he said that it was not safe from contamination and that the [illegible] of the slope should be cleared.

3. The Committee commended the report generally, as [illegible] considered was very well [illegible], and a useful [illegible] of work accomplished

L. S. AMERY

We want [illegible] something [illegible] [illegible] imperial [illegible] of [illegible]