A yormer yrigy 34 s. . $1928 ., 1$ tro a cony of a report by Art linger on 2 the concluswon of a servecy of 位 population aroind the shose of the Votiria kuangfof) he punpre of mataing a cimmen of ciscody

Tisiacton.

May we have youn onsons, hle ase Tresumably spreen shid po the th $x$ Burean of tygiene Thoktant na dicine ralso to the The sie Fly Sublommitter:夆 we ungitt ask for any so ows

An) The meantime ack Jiant

Ynevitiones wes mentionce ey cociviá Toleáper sutcios nextivi aend 20.q.

Yer and (4yon agee) asoncun that It. Engen's
shu be compluented on hin work, r that $A T$ in benj so informed.

And aform his accor dugley
Cogy y un sip. wienfly swa deo
 - THSC aut bo (HC oron leave unhlil 16 And) yyteel
$18 / 7$
We cuight also suggents 10 Ene. That y it hasnotralready heen done, a ormy swo hesent of Ottraganda for the affe the Drector? the Dasthute \& Tuphambiominais Rese anch an Elethe
 Acknswledqes ho. 4 which will be considered at 3 next muting of Commitiee of Civil Reseavick 6 (tic Thetse Hyy Sub Gionmolheg

Mr. Ashworts
accrounhorian

$$
20: 728
$$

hevil, culth. felows an madenef on the 1:1.000.000 mage eblith
$\qquad$
afio? hice f work.

$$
\mathrm{As}_{2}
$$

217.25



 ty
 hecel be delay o' fow weeks before A. Bugaterer has iffortinnity of reading At Enge's repont

Torit of farethe lolim trom

hat fecro ut bratue in ny-CHuar 世ran Nexivel. qeel
$?$ fuet by
alujondan

4 4 at once.
the Parthyeion Hothaing far from Brerean of Syygrene NTop biseaces or Loetice + My Sub b'lé. Atoray $(k n)$ $28 / 9 / 28$.
ur IfsC \& C.C. A. wh wo dour comsioce the at criar ansuling on 4 oet - Sorbue can worit
No reed is Merriöd B. $H$ ax. $\rangle$
+1/ mer Pantotiors,
Pliase see abore minutss. Hbthing furtuer yet heceirch. .D raunat fill. Alefrivon

$$
29 \cdot 10.28
$$

Thiv war amiduma at un veunt unerum y for give cha.
cis cob commi fruloo eof d
rammitter of livil Researeh 2 hovi 78 States that Jactas thy Sub Che comitar: theat So knjer's refore wrete kand ben of stel grati valu ty it had Jon pestica to obtan statikes more medily compianate frate thentiof therious obowom.
? too unde wite tyor ufts no ssan twat ge b.s.ye han now baut lat it te Couse fir sib chie have comntrel frenges

- leport \& after (pull Reswascoi recommentel in a para 2,2 , ark $t$ be iff whetior, etracmin can be mare a scomg korc -7

1) Wemind Burean Z
 The seique lume in $x, 0$ ) for thein ups espiy 8 - 2 aguis inat ? 'ble pronsesís. Yos communcute vad the Grs. The

 f unts awat the rectpt havel - forme the nourew yat han Av


DP8p Den UNER STATUTE of Agqeace hot Dis com +115

 same area in a few years' time. Doubts whether $J$. will be ableto furnden the comparable statistics asked for.

jxtics
$4\left(\begin{array}{l}71 \\ 6\end{array}\right.$
$2 \sin$ cruz of 7 10. 116 Fsocts thy nutieng? por cheir


$$
17 \cdot \times 18
$$

Tthent was woy incornarate ì.
Bagg.have's parme 3.4 wh the dentra wrthout swouctine the The lse fey Subtice? 'tishana 2, varey seews invented the passed in
hur heer
? pu uneor ho ar 5 and 4 ombting
At dina iona
*教算
1

I ain hot sune that ithin shined not have den a genanel pie (a, nghavimporint \& a gimeal hitocta), lut, of quedin'ts. alts is now Conces of the Anonsitule corme demex tnueves go on the geininal
$50826 / 28$ youl.
fle abont taghe tuossigatides. in fal coned no dnubt outhes a obtain cohce aluest made for the C.C.R.

11

$$
12 \cdot 12 \cdot 28
$$ ames.

# R－iartím <br> ut．Seel <br> 729.11 

4．Stantón 30 ． 1 is Mr．Panturison 30 P／s， Sir E．Hading．
sir J．Shuckburgh
Sy G．Gilnde．
Sir C．Dequis．
Sir S．Wham
Mr．Orimsby－Gore．
Lord Lovat．
Mr．Amery．
（20）


Downing street．

$\int \frac{\text { Diee }}{\text { Nequmbs }, 19 \text { tit．}}$
sir．

## DRAFT

## K 帛以

$40.8 \% 7$
No． 500 ，of the oth August，I hav
the honour to inform you thet the
Gov． $3 x 18 \mathrm{~g}$ ． 5


墅的tse Ply Sub－Compittee of the stale thad the
Committe of Civil Kesearoh，to－whe haverecervid with whenst tr？ ku aoy af ure J．inzex＇g froport on Exizax＇s valu alree Repont on Sieeping Siakness on the snores of

hewe suggested thut parts of the

Report would have been of still
greater value，it it had been possi to ottuin statistiog more nearly
a品purable with thuse of previpus acosfr if tran p shieche．
obstur vere（D）（H）


## 



Resesron nêve aigorungiy en－
quired whether ftevid be
poesible for une statiatios
ir ure Enzer＇soreport to be
re－exemined frum this point
of view． $\int \begin{aligned} & 3 \\ & I\end{aligned}$ understani it to
ve tne view of the ifrector
of tae surcale of tygiene and
e
you are anare，is a member of


quired whether ftwold be

$$
3 . x^{4}+
$$

Irofiegan Disease日 (woo, \&s
tae Isetse Fly Sub－Committee
whable is be
out who was agh presunt \＆t the
reteting when $\Delta r$ ．Shzer＇s
refors ade considered）thet

It is duadfful whether sucn
comparable dutizice could be Be wo ourme，
farndshed，sinae no userver，hims

Bitherbu jolembilit．ay exen．
1ned eveña lurge refortion

Victoria area, whereas Ir. Enter's figures exceed zoo, 000; \&nd that
inter in this respect the value
of his work is much greater then
that of any of his predecessors. I
shall, however, be glad if you will
cause the matter to be considered with a view to comparison with
previous statistics being established
if possible.
3. The Director of the burette
of ajesione and propiogl Di seases has
also expressed the hope that ir
durer ill be available to investi-
gate this area again in a few years'
time, since re-investigation by the
same observer of alaesse of this
kind in the reaggnition of which the
personalityjae weal ts the squmen!
cunt for muon, is of decided.
greater value than any fresh
enquiry is likely to bel

4: You will no dout arran e

at entebbe for infomation. The Kept in formed of aumery

I have, etc..
funthen worke whist unayg
he un derläken aria visabt
? luir denpalsits
commedion wilh ougen's
Asernalioum now worst
6

性
*

Annuitant Director:

Secretary and Librarian: 8. L. Sheppard.
$\qquad$

Telephone No.
MUSEUM : 8326,

## BUREAU OF HYGIENE AND TROPICAL DISEASES

(formerly Tropical Disuses Burako),

23, Endsleital Gardens,
London, W.C.1.
23rd November, 1928 绊

Sir,
letters of August 8 and November $13(15306 / 28)$ on the subject
I have the honour to acknowledge the receipt of your of the Report of Dr. A.J. Enzer on the investigation of the sleeping sickness position on the Kenya shores of Lake Victoria, and to express regret for the late date of my reply. 2. I have looked up the past records of trypanosomiasis in this area from Dr. Christy's Reports of 1902 and 1903 onwards, with a view to seeing whether any conclusions could be usefully drawn as to the natural history of the disease in an ares in which, for various reasons, preventive measures have never been systematically applied; but partly for the reason given in the recommendations of the Tsetse Fly SubCommittee, and partly from the want of detail in the records one cannot come to any useful conclusion.
3. I hope Dr. Enzer will be available to investigate this area again in a few years' time, since reinvestigation by the: same observer of a disease of this kind, in the recognition
of which the personality as well as the acumen count for much is of decidedly greater value than any fresh enquiry is likely to $0=$.
4. I doubt, whether Dr. Euzer:will be able to furnish the it. comp a:412 statistics asked for, bustee no-ome, as far as I am aware, 'As systematically examined even a large propertron of the natives in this area, whereas his figures exceed 20c, orc. The value of his work in this respect is mode a. Pat.. than that of any of his predecessors.
I have the honour to be,

Sir,
Your obedient servant,

The Under secretary of State for the Qulonies, Colonial Office, S. 1.


the secretary.
Committee of Civil Reseaboh, '2, Whitehall gardens, s.w. 1 , and the following number quoted.
H./Go/12.

COMMITTEE OF CIVIL RESEARCH, 2, Whitehall Gardens, ${ }^{\text {a }}$

London, S.W.1.
and November 1928.

Sir,
I am directed by the committee of civil Research to request you to inform Mr. Secretary dupery that at their meeting held on October lIth, 1928, the Tsetse Fly subcommittee had before them your letter of August 8 th, The 4 1928, (15306/28) transmitting copies of correspondence with the Governor of Kenya in regard to a Report by Dr. A.J. Enzer, Medical Officer, on an investigation of the position as regards sleeping sickness on the shores of Lake Victoria.
2. After full discussion the Sub-Committee agreed to roudinute:-
(a) That the committee of Civil Research should inform the secretary of State for the colonies
(i) that they had received with interest Dr. Enter's valuable Report on the position in regard to sleeping sickness on the shores of Lake Vidotia;
(ii) that they considered that parts of this Report would have been of still greater value if at had been possible to obtain statistics more nearly comparable with those of previous observers;
(b) That ne committee of Civil Research should suggest to the secretary of state for the colonies that he should inquire from the Governor of Kenya whether it would be possible for the statistics in Dr. Enter ${ }^{2}$ s Report to be rewexamined from the point of view of recommendation (a)(ii) above.
3. Lord Balfour concurs in the recommendation of the Sub-committee, and I am to express his Lordship's hope that the Secretary of State Will communicate with the Governor of Kenya in regard to the point dealt with in recommendation (a) (ii) above of the Sub-committee.

I am, Sir, your obedient servant,
secretary,

Mr. Hestwoo $31 / g$ $M r$
$x .15306 / 28$ Kenya. Mr

Mr. Bottoniey
SH E. Harding.
Sis J. Shuckburgh.
Sir G. Grindle.
Sir C. Davis.
Sir S. Wilson.
My. Ormsby-Gore.
Lord Lovat.
Mr. Amer.

DRAFT.

## KANY直



Gov. GriEg.

A.

$\left\{\begin{array}{l}\text { v the portion an regards scepcits scctinoro }\end{array}\right.$ population on the shores of Lake Victoria Hempen $? \frac{2 \text { copies of }}{\text { Copies }}$ have been
would susferst that if
 not already been done. 4 a cory pour
the Institute of erymanosonfeas.

Eeseareh at Antebbe,
$+\stackrel{B}{6}$ h a ay ald (hat
4
3
Ih or a dod vader they refopt
(has)
WIth gregformerest, ande aoncur
In your vinemention thet Dr. Bnzer's
work deserves an expresetion of approbation.
Aleltan Aan leconsent ob in
which I have 日iccordingly ceused to
O) Enger hasheen so vformed à os be conreyed to $h$ thl
letter I hswo, obe.,
Awnich 2 an close a colue for $y$ on apounation.
(STgrad) : $\quad A^{\prime}$


I have the honour to transmit herewith, for information, a copy of a report furnished by Dr. J. Hazer on the conclusion of a survey of the population around the shore of the Victoria Nyanza for the purpose of making a census of cases of Sleeping Sickness and treating all such cases. 2. The report is of considerable interest and value. For the first time a correct appreciation can be made of the position with regard to Sleeping Sickness in the Colony.
3. In regard to the most seriously affected ares the measures advocated with regard to Kaniadoto have been put into force while attempts are being made to carry out the procedure indicated foe Seme and Uyoma. As opportunity occurs further inspections will take place.
4. I consider that Dr . Mazer has performed a
most creditable piece of work which, from the nature of the country, had to be carried out under conditions of considerable personal discomfort The results could only have been attained by the
exercise of considerable organizing capacity
combined with a faculty for dealing with natives and
obtaining their confidence. Due credit is given in
tine report to the assistance rendered by the
administrative officers in whose districts the work
was carried out.
5. I would suggest that Dr e Enzer's work
deserves an expression of approbation from yourself.

I have the honour to be, Sir
your most obedient, humble servant,

# REPORT ON A SLAKAPING SICKNESS INVESTIGATION IN KENYA. 

```
1926 - 1927
```



Object.
TO carry out a census of the lake shore and riparian population with a view to ascertaining the present position as regards sleeping sickness in the infected areas. The census was commenced in Julyl226 and completed in November 1927 and a total number of 209,528 examined. the following locations were visited and a census carried out:-

Central Kavirondo.
Samba
Kadimu
Sake
Uyoma
Asemba
Same
Alego (certain areas )
Kiblgori
Kano Plains
Nyakatch

## Worth Kavirondo.

Bunyori (certain areas) Population examined 2,934
'Trypanosomiasis

Kabwai
Kaniamoi (certain areas) )
$K_{\text {aniamkago }}$
Mohoru

Kadem
Sunu
Gwasai
Kas ogunga
Kaksingiri

Lrypanosmmiasis

## Methos of Carrying Out of Census.

At first each villege was written down with the total number of men, women and children, as ascertained by interrogation of the people thenselves" anid. as each individual came along to be examined his village was turned up in the list and marked off. This proved too laborious and uncertain as many of the people were not possessed of sufficient intelligence ko know the name of their own village.

The method eventually used was to make each mypara bring all his people on one day, together with a list of those left behind to guard villages and cattle or those away from the locations. By checking these figures with the adminietration's hut tax census remarkable ao. urate results were obtiined. A final discrepancy of $8.10 \%$ wa noticed, this being due to men engaged in work outside their location. Approximately 92\% of the population were examined.

## Methods of Investlgation.

Lhe people were drawn up in long lines and examined by neek palpation and in some lecstians axillary palpation, and any with endarged giends selected for microscopice examination irxespective as to whether the glands were thogetypicaloof tyypanosomfssis. Again any cases with typical facies or those complaining of *9. persistent headaches were selected.

At first thick films stained with a fresh mixture of Azur ii and Eosin were used but this method proved too laborious and uncertaine

Afterwards examination of fresh gland juice, followed by centrifuged citrated blood in negative cases and by lumbar puncture and subsequent examination of the cerebro spinal fluid wis found to be both rapid and accurcte.

In over $80 \%$ of positive cases trypanosomes were found in the fresh gland juice at the first examination, and in under ten minutes search.

The examination of centrifigged blood does sot appear very reliable as a method of investigation as compared with fresh gland juice. In many cases where trypanosomes were easily demonstrable in the gland juice they were not found in the centrifuged blood.

Palpation of exillary glands is labour in vain. In nearly every native paipable axillary, Glands are present as a result of injuries, scabies, eto., and in those natives in which trypanosomes were found in cervical glands, axiliary glands we e not islways palpable and in one were they pronounced or typical.

Cerebro spinal fluid cell counts were carried out for all cuses to ascertain the progress of the diserse anc -to entimate*
estimate the effects of treatment.
Cerebro spinal fluid cell counts of 200 or over hatre been regarded as diagnostic of sleeping sickness in a sleeping sickness area even where trypanosomes have not been demonstrated in blood or glands. Othër diseases producing a high cell count having been eliminated.

The following figures give some idea of the number of people examined microscopically as compared with the number of cases.


## The present position in the various locations as revealed by the Censua.

Samya. 50 cases found. These are acattered along the whole coast line. the infection is relatively unimportan except for its proximity to the Ugकnal border. Nothing can be done by bushclearing as the operation would entili an enormous amount of work and with so few cases not worth while.縣, census at intervals with subsequent treatment would appear the best way of dealing with the disease $h e r e$.

Kadimu. 13 cases found. This location can be disregarded as cases are $s \approx$ few and bush 80 sattered.

Sakwa. 11 eases found. The infection ia negligible. The few cases appearing to come from any and every part of the coast line and Yala River.

Wyomes 113 cases found. This is the most highl
post part recently infected and trie chlef atathe about one hundred people dre yearly fom-the disease. Muoh oan be done by cutting waterways, etc. A census should be taken at intervals followed by treatment of cases.

Asembo. 2 cases found. These apparently contracted the disease in Uyoma. Notning need be done here.

Seme. $\quad 38$ cases found. The infection in this location is confined to a very small area in which however the infeop tion is intense. $H_{2}$ lf the cases found were in an advanced stage and had had the infection to their knowledge from varying periods of 6 months to two years. The disesue appears to be mild in this location. Twenty petple are stated to die yearły. This appears an exaggeration.

The disease can be eliminated by bush clearing.

Alego. 19 euses found. These were contracted on the Yala River over a large area. Can be disregarded.

Kibigori. 4 cases found. Contracted on branch of the Nyando River. Negligible.

Kano Plaing. No cases found.
Nyakatch. 3 cases found. The natives state the disease has died out. On the pther oide of the Miriu giver a toticlly different opinion exists. Probably through the constant influx of experts sleeping sickness is so firmiy established in the native mind that nearly all diseases from scabies to pneumonia are regarded as being due to trypanosomiasis. Steps have already been taken to eradicate the disease by olearing the Mirin River. Aotive cultivation of the cleared areat is present.

Month Kpironder 1 case discovered. The cisease ba contracted at Same, Central Kawirondo.

完

## South Kavirondo.

Karachonya.
6 cases discovered. As the coast line in this location is over 40 miles in extent and bush exists for a very large part, with so few cases the location may be disregarded.

Kochia. $\quad 3$ cases discovered. All contracted in Aloach River. Of the three cases only one shewed trypanosores. The other two were doubtful, shewing clinical symptoms and an increased cerebro spinal cell count.

As only ten villages lie in close proximity to the river this location mag be ignored.

Kaniada. I case found. This patient came from Kaniadoto and contracted the disease there. Chief states no sleeping sickness since the epidemic.

Kaniadoto. $\quad 109$ cases found. these all came from Kanipkela, a subdivision of this a location with a total populacion seen of 845. In addition nearly all the other cases Round in South Kavirondo contracted the disease here tither by passing through on safari or by cutting timber in the bush.

This is the only location in South Kavirondo that merits attention. Bush clearing is impracticable owing to the enormous extent of the bush and to the scarcity of population.

Arrangements have been made with the Administration to evacuate the area.

The local mypara states that fifty people die

- yearly in his subdivision of sleping sickneas.
$?$ of the 109 coses found only 29 shellech any 0 variatit on nownal in the cerebro spinal fluid, thus sugcestipg they were recently infected and that the old cases are dying quickly.

Kabwoch. 2 cases found - both contracted the disease in $\mathrm{K}_{\mathrm{a}}$ niadoto.

Kabwai. 3 cases. Iounux Two contracted disease at Kaniadoto and I at Kasigunga.

Haniarma. 4 cases. All contracted at Kaniadoti.

Kaniamikago. No casea discovered. Cabe reported by Dro Hacuewick, Gendia miseion, said possibly to have contracted disease in this locstion. Case diagnesed on clinicel grounds.

Mohoru. No cases.
Kadin. No cases.
Sunu. No cases.
Ginassi. No cases.
Kasigunga. 6 cases disc由vered. Population so small. ana contact with fly soloose that no steps need be taken - ther than treating existing cases.

Kaksingiri. No cases.

From evidence obtained from the natives,
from reports of various Medical Officers in the pat, althou
records of exact mieroscopieal findings are unfortianately not availabie and from observations during the investigation, it is evident that sleeping sickness is becoming less
 native reserves.

Even now, provided a few elementary precautions. are taken an kept up, it may be regarded as a comparatively negligble factor and there seems no reason to doubt that in a few years time, if prophylactic measures are carried out, it will be a matter of considerable difficulty to find evel one case of sleeping sickness.

## Virulence of the Disease.

The type of disease met with in Kenya is undoubtedy mild. Generally speaking with the exception of cases et Eaniadoto the disease appears to persist for a year to eighteen montins before it invades the cerebro spincl system as shewn by the increased cell count and even wheif this has occurred another year elapses before the patients are uasble to fend for themselves.

The advanced cases linger on for months before death.

Treatmeni.
At first treatment was of a very haphazard order, due to two factors, an a ttempt to run treatment in one location concurrently with the census in another, and to the supplies of Bayer 205 and tryparsamide being irregular.

The line of treatment adopted was 1 gm Bayer 205 given intravenously on the first, eight and thirtieth days followed by three weekly injections of 2 gms tryparsamide,

Actuaily owing to irregular treatment many of the
patients received a far greater number of injections than this. Eventually on the completion of the census in Central $K_{\mathrm{a}}$ virondo a tour of treatment was made and all patients received the full course.

In South Kavirondo owing to lack of time the cases have so far only received a sterilising dose of Bayer 205. Arrangements have beel made to ensure their obtaining the full treatment.

With such a disease treatment in a hospital is impossible. The natives refuse to stay in for the two or three months necessary for cure as they in many cases feel perfectly well. It is essential to visit them in their locations.

Prophylaxis.
In most places in Kenya the recognised methods, i.e. bush clearing, cutting of waterways and evacuation of areas are not feasible propositions, as the disease is so scattered that it would mean clearing the whole coast line from the Uganda to the Tanganyika border and secondly tiue percentage of infection is so small that it would be mere waste of time and money.

In three places however these methods shoidd be adopted: -

At Seme where bush clearing would effectually eradicate the disease.

At Uyoma where the cutting of waterways would materially lessen the chances of infection, and

At Kanladoto where evacuation of the area conF oerned would stamp out the infection.

Apart, from these prophylactio measures a Hedieal

Officer should tour the infected locations every eighteen months and carry out a raptd cengus. Treatment of the $f$ ew casea found could easily be carried out by a trained dresser This שould establish a twofold object - dininish the risk of infection by eliminting the human carrier of the trypaisosome and prevent any possible recurrence of the epidemic by obtaining timely warning.

Sleeping sickness in Kenya does not merit the furl time work of a Medical officer. Iwo to three months every eighteen months would be ample time to devote to this disease.

## Administration.

Great assistance has been rendered by Ar. Charles Tomkinson, District Commiabioner, Central Kavirondo, and Mr. S.U.V.Hodge, District Commissioner, South Kavirondo, in the carryin out of the census.

## GeneraI Disease.

During the progress of the census general diseasel were traeted ina tent used as a dispensary. 52, 074 patients received treatment including 16,400 injections for yaws and oyphilis.

