Africa's small population
its cause and remedy.

Wm. Rogers
The great problem in the opening up of Africa is the procuring of sufficient native labour to cultivate the soil and capture the mineral wealth of the country. Africa has always been, and probably always will be, a black man's country — with the possible exception of British South Africa, excluding Rhodesia — a country where no white community can permanently settle and multiply. The Dutch, French, and British settlers in South Africa have so far flourished, but their colonies are as yet young, not more than 200 years old: whether they will continue to flourish in the future remains to be seen. Carthaginians, Greeks, Romans, and Carthage in the North, all flourished for a time and then died out. A misguided attempt at the colonization of Fernando Po, in the Gulf of Guinea, resulted in a few years in the total annihilation of the unfortunate colonists by malaria.

North of the Limpopo probably, North of the Zambezi, certainly, there can be no colonization in the true meaning of the word — a settling in districts where the colonists can marry and raise healthy offspring.
man is dependent upon the merits of his manual labour. It is often stated that this is due to the laziness of the white man, combined with an impression that it is degrading to his dignity, in a community of blacks, to do manual work. Possibly this is partly correct but not entirely so. Portuguese physical work, even in Cape Colony or the Transvaal is far more exhausting than it is at home. This is not surprising when it is remembered that the mid-day temperature in winter is higher than the summer temperature in Britain.

The vast wealth, mineral & vegetable, of this great continent has only been realised during the last two or three decades, yet already the railway runs through localities where 30 or 40 years ago no white man's foot had ever trodden. Gold, diamonds, iron, tin, copper, aluminium, rubber, cotton, palm oil, tobacco, mahogany, constitute but a portion of its wealth, the true extent of which can only be vaguely grasped yet. Year by year we hear of the discoveries of new fields of mineral wealth—gold in S.E. Africa and Katanga district of the Congo, tin in tinmines in Nigeria. The Transvaal claims that its supply of iron in the Fontoringburg district is sufficient—
to supply the world. Cotton grows wild in Nigeria and experiments made during the last few years have shown that under cultivation it can rival any in the market. There is no reason why in time our African possessions should not produce all the raw cotton we require, leaving us independent of the United States or the difficulties that would ensue in the event of that country being engaged in warfare. In five days marching through the finest savannahs of N. Rhodesia or any of our other African possessions teams of about 120 men would as little matter as the 위하여able vegetable wealth of these countries. This is almost realized by the European farmers, hence the struggle for possession that has ensued during the last ten to twenty years.

It has also been realized that to keep this valuable native labour is required. The old British East India Company imported Malays into the Cape. The modern Dutchman imports Indian Coolies. The Transvaal imports Chinese at enormous expense to work its gold mines—alas because the local supply of labour was insufficient. The Suid-Afrikaansche Railway, the Cape to Cairo Railway, the Lagos-Kano Railway, the Assouan Dam & in short every
other attempts at construction on a large scale have been hampered by the lack of local native labour. The same question that confronted Charon when he required labour to build his pyramids or dig his canals confronts us. How is labour to be procured? The Ancient sufferers these difficulties by adopting slavery, as did also the planters of the Southern States of America. A different solution is demanded of us. Slavery, in the ordinary acceptance of the word, is now abolished. The importation of Chinese was opposed to popular sentimental prejudice; and though it might have proved successful in the temperate bands of Africa where the Chinese suffer almost as much from material from as does the European. Even if slavery were permissible it would not solve the difficulty as we wish to exploit the only country from which slaves would be procurable, and now, and as in the past, the local supply of labour for any extensive enterprise has always proved insufficient. Africa is a vast continent continually fruitful with the exception of its great desert, the Sahara and Kalahari. Yet it is less thinly populated. So that
Over 310,000,000 according to latest census (March 1911)
population is estimated at 170,000,000, by far the
greater part of whom belong to various black races;
that are very irregularly distributed over half a
million square miles, giving an average of fifteen to
the square mile. Compare these figures with
those of India, which with an area of 1,560,000
square miles has a population of 294,000,000,
or over 180 to the square mile. There is no reason
why Africa should not become as rich a country
as India – to be as capable of supporting as large
a population per square mile. The negro is
passionately fond of children & multiplies
rapidly in favorable circumstances. Unlike
other uncivilized races such as the Red Indians
or the Polynesians he flourishes under white
rule, as witness the descendants of the
slaves of the United States or the native in
S. Africa. The former have multiplied so
rapidly that the negro question is already
causing great anxiety to the white population.
Ovambos, the Zulu Natives, left but a few
thousand natives in Natal Skulking among the
bushwhacks; since the country came under
British rule these have multiplied so
rapidly that their descendants number nearly
a million.

As the unenlightened African comes more and more under European influence, so do his necessities increase; his adaptability to great changes in all things which he has until now been unaccustomed to, become at last essential to everyday life. First, nakedness is changed for a longer-covered cloth. This is then for a coat and trousers; next, for a watch and chain and so on. The progress his is far from being behind-hand in appreciating the utility of European commodities. The ease with which the negro drops his old mode of living to pick up the white man's habits (including the bed), and takes advantage of the utility of his implements &c, is most startling. A white official may one year be a member of a punitive expedition against a cannibal tribe; two or three years later, on returning to the same town he finds a fair percentage of the former foe dressed more or less in European clothing.

European trade goods (generally German) having a brisk sale in the market, whilst the hum of the sewing machine is heard from many a hired wattle hut, where no negro is busy.
at work upon master negro garments, whilst
his negro, if he has completed his daily work, goes
out for a spin on his bicycle, or winds up
the family gramophone. And once having
acquired a taste for such luxuries they are
never given up: the negro would rather die
than return to his former mode of life; he
regards his dress or European possessions as
giving him a lift in the social scale &
looks down upon
regards his unsophisticated "wild" brother with
pity & contempt.

But all such luxuries have to be paid
for in hard cash, to acquire which he must
work. Sometimes, instead, he steals, which as
often as not ends likewise in worse, not better.
As the Company comes more and more under
European influence & the Canoes that in the
past have kept down the population are gradually
removed, a new generation will grow up, tried
to regard as the necessities of life things that
were unknown to its fathers. Then the negro will
be forced to work, necessarily giving a harder
斗争 than the slave driven with his whip.
The time is almost up when the black man
can lead a slave's life in this land but, whilst
Whilst the cultivation of a small plot of the rich soil (generally done by the wife) supplies all his needs. When the time is fully ripe, there will be no need to import Chinese or Malays.

The physique, health & diet of the negro.

Once childhood, with its accompanying dangers is left behind and he has become practically immune to the local type of malady from the negro grows up into a physically well developed, strong, healthy man. Puberty sets in early if he arrives at man's estate at an age when the ordinary European is still at school. Generally speaking, he is most temperate both as to food & drink: this is largely a matter of necessity as his diet does not invite other than moderation. Yams, palm oil, maize, plantains, bananas, dried fish, seasoned with peppers, chilies & other native condiments form his ordinary diet. Meat is to the average native in Tropical Africa a rarity, not because he does not care for it but because of his inability to procure it. When obtainable he will eat any kind of flesh with avidity, even poultry, dogs, carrion birds, mice, lizards, or even the flesh of his fellow man, are equally acceptable.
The ordinary domestic animals are chicken, goats, cattle, (dwarf) ducks and dog but of these the cavy
kabir lastest but rarely. His drink is water, of
the cleanliness of which he is far from particular.
Alcohol he prefers of when obtainable even though
forbidden by his religion as is the case with
most tribes converted to Islam. In my opinion
the outcry against the liquor traffic on the West-
Coast is quite unnecessary. The negro certainly
drinks when he has the chance but often to assess
but such opportunities are rare, except in the
case of headmen. On the coast itself the negro
spends the greater part of his time battling along
in the thick mangrove swamps and for five
months in the year he is wrapped in the almost-
continuously tropical dampness of the West African
rain forest followed by the so called dry with
its thick morning and evening mists and the
air rarely above dewpoint. The food is of
poor quality and often insufficient in quantity
and deficient in the stimulating properties of meat.
The desire for drink, given these conditions is
quite reasonable and when taken in moderation
as it usually is the case, anything but
deleterious. If European spirit cannot be
obtained from palm trees is drunk which is far worse than spirits, as its stimulating properties are slight: consequently enormous quantities are taken: the effects last for days, during which time the patient is practically useless. The same applies to "juka" or kaffer tea used by the natives in British South Africa. Everyone acquainted with its effects knows what an unmitigated nuisance the native drunk with it remains for days. Also the consumption of both leads very early to enfeebling weakness + death.

Yet, though generally moderate both as to food & drink as he is, he regains up physically most robust and performs feats of strength and endurance that would stagger an European. The average load of a carrier throughout British Africa is about 60 pounds & this load he will uncomplainingly carry on his head for 15 to 20 miles a day— as far as the ordinary white man cares to walk unencumbered— and even, instead of retiring for a good night's rest, he will remain up till the small hours of the morning at a sing-song, to repeat the performance next day. When necessary he will carry double the load.
In general he is quite as healthy as the European and lives to a fair age; for though he
suffers from many diseases from which the white-
man is exempt—such as malaria, dysentery,
generally he suffers less from other undoubted
common in Europe such as common colds,
measles & scarlet fever, pneumonia, typhus,
etc.

The negro menstruates early, generally commencing
about 10 yrs & ceases about 35 yrs, at which
age, what with constant childbirthing combined
with hard work both at home and in the
fields she is a prematurely old woman. When
the menstrual flow is fully established she is
considered marryingable & a husband sought
for her. Throughout Africa generally, marriage
is nearly a matter of purchase, though termed
now according to locality with innumerable
& often bewildering conditions. In certain
localities the custom of child marriage, as in
India obtainis. The wife's lot, whatever the
social position of her husband may be,
whether a headman or a domestic slave, is
generally a hard one, for in addition to
child-bearing in which she is most industrious,
Some causes of Africa's small population:

In populations where women are viewed as secondary to men, and often
dominate in the economy and society, the population may be smaller
due to lower birth rates. This is especially true in societies where
equality is not achieved.

Some parts of the world may be less fertile, leading to lower
growth rates. The climate or other factors may not be conducive
to population growth.

She has to perform her husband duties and the

Sedentary lifestyles, often associated with urbanization,
slow the growth rate of populations.

In developing countries, where health care is limited,
many women may not have access to modern contraceptive methods,
resulting in higher birth rates.

As mentioned earlier, African women often carry unfair burden,

Moreover, the stigma of having fewer children may discourage
women from having more children, affecting population growth.

The tradition of polygamy also plays a role in population size,
depending on the number of wives and children each husband may have.
writings of historians from Herodotus downwards.

Thus, the popular idea: mediately, did the same arise amongst Rhodesian peoples, keeping alive only the remnant of young men & women. The Fula now spread their conquest throughout the whole of the Western Sudan, putting to death all who stood in their path. The memory of the hero has always been that of the Joshua towards the Canaanite tribes—

Destruction or Slavery. The Spread of Islam throughout West & Coast Africa was effected by means of the sword, just as was the case nearly a thousand years ago. "Back to all Pagans: we will drop the Koran in the sea," cried the Mohammedan invaders as they made their way southward from Sudan. And they would have carried out their intention but for the fact that their cavalry was useless in the dense Tropical Vegetation of the Coast Belt.

In all districts where the rainfall is scanty as is the case in & on the borders of the great deserts, the inhabitants are necessarily pastoral & nomadic. In times of drought they migrate to more favored districts, their advance being naturally opposed by the occupants of those districts. Livingstone, in his travels in S. Africa
gives many an account of such migrations as
occurring among the tribes of the Rasthani.
Bruce does the same concerning Abyssinian tribes.
What were the wars of the Hebrew tribes but
incidents of similar occurrences, of a wandering
from oasis to oasis until sufficiently powerful to
attain possession of a well-watered land wherein
to settle?

In tropical Africa every native town has its
wall or palisade, eloquent evidence of the treacherous
depths of the inhabitants. The tribes and languages
are numerous and it is apparently rare that
alliances are formed. It has been a my lot to
accompany many an expedition in tropical Africa,
and I have always observed that the action of
a particular district cannot leap that district,
or if they did were drowned back by the
inhabitants of the invaded district, who probably
had an old feud with their neighbours.

Epidemic Diseases

Epidemics are necessarily frequent in countries
where there is an entire absence of sanitation.
Also, in the tropics, certain diseases are borne by
agents such as flies, peculiar to the tropics.
Africa has borne more than its share of such calamities,
such as leprosy, rickets, flag sickness among the castes, and sleeping sickness, yellow fever & malaria among human beings.

Malaria, a chronic form which has as a late & terminal complication known as sleeping sickness, is the latest of these visitations. The disease was first reported over a century ago by J. F. Huet, in 1823, as occurring among the negroes at Sena in the Gold Coast. It was early known to exist in two parts of West and Central Africa, in a slight extent in Senegambia & the district inland towards the upper reaches of the Niger, and to a much greater extent on the Congo spreading inland as far as Stanley Falls. With the opening up of the caravan routes across Africa the disease spread through the waterways dividing the Congo from the Nile basin and appeared in 1900 in epidemic form on the shores of the Victoria Nyanza. The epidemic increased so rapidly that at the end of 1901 it had estimated that 20,000 persons had died. (Report from an Expedition.)

The distribution of the fly Glossina Palpalis roughly coincides with that of the disease, Possibly other flies such as Haem. Morsitans may also...
Carry the infection, for during the last few years cases have been reported from districts where so far the Glosminia palpax has not been found. The disease is now widely distributed throughout tropical Africa from the upper reaches of the Nile to Northern Rhodesia and from the Atlantic to the Indian Oceans, having been carried by the great extension of hippie bats—has occurred during the last few years in these parts. If the disease can be carried by the hippie bats, there is no reason why it should not spread to other districts where the fly is prevalent—such as the Zambezi, Limpopo valleys and the east coast generally. Whether Trypanosomiasis normally ends in sleeping sickness is not yet known but evidence points in that direction. No case of sleeping sickness has yet been known to recover. No satisfactory remedy has yet been discovered though a course of arsenic and arsine compounds has greatly lengthened the course of the disease and in some cases caused the disappearance of the symptoms (the causative agent) from the circulation, with the coincident disappearance of the symptoms. Attempts at the stopping of its spread have been based upon the observation that the hippie is
Smallpox, from all accounts appears to have been very prevalent and disastrous in the past, white tribes having been decimated by it. At the present time however my impression is that though smallpox is very prevalent throughout tropical Africa, it is of a mild type and a low mortality. I have visited many districts in West and Bechuanaland Africa during epidemics but the cases were generally of low severity which seems to show that in former times it must have been very common and that the negro is now getting more or less immune. Moreover nowadays wherever the country is under European influence vaccination is generally carried out on a large scale.

Measles is common everywhere in the tropics, with a high death rate in some epidemics from pulmonary complications; also a common cause of death is locoemia, probably caused a combination of the poisons of measles and
 Scalars from the non-existent or not-recognised.

Typhoid fever is not a prevalent disease, certainly, not to the same extent as India. Climate conditions and the prevalence of diseases peculiar to such conditions, such as malaria, dysentery, filariasis, leprosy, etc. All these are endemic everywhere in Africa and cause a high mortality. They will be discussed later on under another heading.

The improvident character of some tribes who fail to look forward and make provision for days of adversity. This does not apply equally to all negroes; for tribes differ enormously in this respect. The Fulani and Haussas, for instance, are most industrious and raise crops far in excess of their immediate needs. But other tribes are most improvident. By a little manual labour, often assigned to the womenfolk, they grow sufficient for their immediate needs. The climate is genial and much clothing unnecessary.

To build a hut occupies but a few hours. He is happy and contented: then comes a bad season and his crop fails: he starves, whereas a little foresight and application would have
X c. of Hannu's Exposition
enabled him to ride over the evil days.

Slavery.

By this is meant the cruel clandestine transportation overseas of negroes to provide labour where there is a scarcity. It is difficult to give the exact date when the slavery of the African Negro first commenced. Sir Harry Johnston states somewhere that when Hanno and his Carthaginians first reached the western African coast it was the first glimpse that civilized man had of his savage brother, since they parted company in ancient times. Shortly after that date (about 400 B.C.) slaves were brought from the East African Coast to Egypt and hệlevant by the Phoenicians; the traffic has continued down to our own time, the Phoenicians being succeeded by the Arab who gradually extended his journeys into Africa until 50 years ago he had reached as far west as Stanley Falls or as far south as the Zambezi. The methods of collecting slaves and the enormous mortality involved are a matter of common knowledge.

The discovery of the New World resulted in the exploiting of West Africa for slaves, an enterprise in which our Englishmen took a prominent part; it first commenced by Hawkins in the days of Queen
The high death rate among children, especially infants under twelve months is in my opinion by far the most potent cause of the comparatively small population of Africa and it is with this subject that I will chiefly deal in the following pages. The conditions have referred to apply mainly to those as observed in Nigeria, though applying to a lesser extent to all low-lying, warm tropical Africa. The conditions do not obtain, except slightly, in the healthy, temperate climates of British South Africa South of the Limpopo where under British rule the native has attained to a certain standard of civilization & his infantile mortality rate is but little above that of the Europeans, with the result that the native population of S. Africa is rapidly increasing in which some foresee a grave cause of apprehension.
The death-rate, the proportion which the total deaths of a community bear to a thousand of the population in such a country is difficult of acquisition among the uncivilized negroes for the very obvious reason that no census has yet been taken except in the Europeanized towns and such useful things as registers of births and deaths are unknown. Generally throughout West Africa it is reckoned that the native death-rate is about 30 per 1000; from personal experience of small towns of fair size I know populations where every birth, illness, and death has been known and investigated. I should consider this figure to be approximately correct. This somewhat high death-rate compares very favorably with that of this country (viz., 15 per 1000) when one considers the state of civilization of the negro and the decidedly unhealthy climate in which he dwells. Fifty years ago the average death-rate of this country was 25 per 1000 which did not equal far short of the present death-rate of the negro. With advancing civilization and accompanying hygiene in 50 years time there can be no doubt that the negro death-rate will likewise fall.
The infantile mortality rate, the total number of deaths of infants under 12 months as compared with births, is exceptionally high: it varies in different localities and among different tribes, but throughout tropical Africa generally, probably 40 to 50% of all children born never see their first birthday. This child mortality remains high though lessening year by year until about the seventh year, when the child has become acclimatised to malaria which is not only a great cause of mortality per se but renders its subjects more liable to succumb to other illnesses. The reduction of this infantile mortality rate will go far towards solving the African labour question. Money spent with that object will bear the nation good fruit in the future. Half as many children born die before their first birthday: possibly two-thirds before they are seven years of age. Is it to be wondered at that the population of Africa keeps relatively low? Say roughly that 6,000,000 are born annually: this means the dead loss of 2½ million infants alone per annum.

The outlook on the whole however is
decidedly promising, for the reasons that—

1. The general death rate is undoubtedly falling, a favorable sign showing that fewer persons per thousand are dying within an annual period and more persons are living for a longer span of life. It does not necessarily mean that men are living a healthier physical life, though with the advancement of civilization and hygienic measures that too will follow.

The fall so far is due to cessation of such causes of mortality as intertribal warfare, human sacrifices, slavery overseas, punishment by death for alleged witchcraft etc.

2. The birth rate shows no signs of declining [quite the reverse exists in districts settled peacefully under European rule] unlike European communities in which we have a stationary infantile mortality rate & a falling birth rate.

The fatal diseases of the infant negro infants all over the world are more susceptible to certain diseases than adults, and hence there is a universal constant mortality rate from these particular diseases which are various. For obvious
Gives many an account of such impressions as
occurring among the tribes of the Kalabari.
But does the same concerning Abyssinian tribes?
reasons they are less diverse than those causing
death in adults. The influences surrounding the
life of an infant are less numerous and on the
whole less complex. Its environment is not only
smaller in compass and sphere but more
uniform throughout than that of the adult. It is
less exposed to weather, to heat and cold, to a
changing diet, to the dangers and exigencies of
occupation & so on. The most striking peculiarity
of childhood is a marked extensibility of the
nervous system, as illustrated in the case of
convulsions; in the adult it is usually the evidence
of some serious central lesion; in the infant it
may be induced by a lifting irritant. Another
peculiarity of early life which attracts attention is
the large share taken in infantile disorders by
mere disturbance of function & the nervous
consequences which may arise from disarrangement
as distinguished from disease. Infants quickly
part with their heat & are easily chilled.
They are therefore particularly prone to
colic & intestinal disorders & these if severe may produce
material interference of the organ affected. No doubt the susceptibility of the nervous system helps to increase the gravity of these derangements. Children differ from adults in yet another respect. In early life the defensive powers of the system against the invasion of morbid germs is always weak, hence their susceptibility to the special enclavation of many of the infectious germs. At this time too constitutional tendencies are especially active and still further reduce the resisting capacity of tissues already disposed to yield. In bad cases of hereditary syphilitic foci, or organs escape tuberculosis tends in them to assume the acute general form in which all the cavities of the body are affected at once.

In infancy the patient is so dependent upon a frequent supply of nourishment that an abrupt interference with the nutrition processes such as occurs in bowel complaints is an event of almost gravity. It is this sudden cutting off of the nutritive supply that constitutes the chief danger of acute disease in the child: in early life illness is often serious in exact proportion to the degree in which the alimentary canal takes part in the derangement.

But in addition to these universal causes of infantile derangement, or mortality there are particular...
particular local causes which of course vary in different parts of the world. In instance the principal cause of death which necessarily occurs during the first months of life is prematurity and immaturity. This cause remains fairly prominent in all parts of the Earth, among the Eskimos and the Yoruba alike. In Europe the next most common cause of death for the first year of life is due to any inflammatory condition of the bowels or intestines, whereas in tropical Africa, though the universal liability of infants to pulmonary and intestinal disorders holds true, reasons a high death rate from these diseases, yet here a local element, malaria comes in, supersedes the universal cause and makes as the Child seemed Zymotic diarrhoea, caused most probably by the toxins of putrefactive organisms in bovine milk [the boiling of which has destroyed the lactic acid producing bacteria which are innocuous to these putrefactive organisms] is a disease of civilized nations and is unknown in tropical Africa where milk is rarely used. By causing various other kinds of diarrhoea are known common enough. Malaria however precedes intestinal disorders in the tropics in causing death and often is their
In the place that zygotic diarrhoea does in this country.

For England and Wales during 1903 the Registrar General gives the following as the principal causes of death in their order, for infants under 12 months:

<table>
<thead>
<tr>
<th>Cause</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prematurity &amp; Congenital</td>
<td>13.1</td>
</tr>
<tr>
<td>Diarrhoea &amp; Enteritis</td>
<td>13.9</td>
</tr>
<tr>
<td>Asphyxia &amp; Dyspnea</td>
<td>13.2</td>
</tr>
<tr>
<td>Convulsions</td>
<td>10.7</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>5.7</td>
</tr>
<tr>
<td>Bronchitis</td>
<td>5.7</td>
</tr>
<tr>
<td>Tubercle</td>
<td>4.6</td>
</tr>
<tr>
<td>Whooping cough</td>
<td>3.8</td>
</tr>
<tr>
<td>Measles</td>
<td>1.4</td>
</tr>
<tr>
<td>All other causes</td>
<td>15.6</td>
</tr>
</tbody>
</table>

Prematurity and asphyxia, in this country, constitutes 32% of the total number of infant deaths. There being no reliable statistics, figures cannot be given but I am inclined to think that above that figure holds good in tropical Africa. Asphyxia & dyspnea are the groups with prematurity as belonging really to the same genus of diseases which with congenital defects forms a large group of conditions having in most cases an antecedent
origin. These children are simply born in such poor physical condition that they are unfit to live and find a few hours or days of extra-uterine life too much for them. They are not so much diseased as merely unfit and either not ready or not equipped for a separate existence.


diarrhea. Intestinal disease is exceedingly common in infants in the tropics though as stated above zymotic diarrhea seems unknown, it being as I believe due to contamination of milk in hot weather. Milk is as a rule rarely used for feeding infants in the hot malarial districts with which I am dealing, though employed by the Fula, Gallar, Somalis or other Hamitic tribes dwelling in sub-tropical climates but with whom I am informed, it is here the custom to feed the milk. Some raw milk produces inflaming diarrhea with cramps, green stools, or hot malarial symptoms with diarrhea of an acute summer nature. Othersatitis with all the classical symptoms of dysentery is very common both in children and adults; also being a variety of abdominal trouble due to dietary errors.

Complaints of Currant, dysentery a symptom rather than a disease. It is
Excessively common in the negro child, and considering the multifarious climatic and parasitic influences to which he is subjected it is often most difficult to determine to which particular element to assign the cause. Most commonly it is due to one of the following:

a) Malaria: unlike the adult, malaria in the child is heralded by a severe convulsion: they are common also in the course of the fever—frequently from the terminal phase.

b) Puerperal septicemia due to eclampsia, diphtheria, pneumonia, etc.

c) The onset of any of the acute fevers, small pox, measles, whooping cough etc.

d) Brain tumors, meningitis, epilepsy, etc.

**Pulmonary effects.** Contrary to what might be expected, lung troubles, though nothing like so prevalent as in Europe, are far from being a rare cause of death among infants in the tropics. It must be remembered that both of the equatorial zones November to February a dry wind blows from the Sahara, producing at night a very appreciable drop in the temperature. I have repeatedly noted a drop of from 40 to 50 degrees between mid-day and
and right. Consequently all the tropical and
paroxysmic fevers of our Northern Latitudes are
prevailing at that season, especially in infants.
Infancy is a time of very fine physical
susceptibility and no respect more so than in
brittle temperature

Whooping Cough: Occurs in Europeans

During South Africa I have had no experience of
this complaint: Here it is very prevalent.
Medical missionaries from various parts of Tropical
Africa have informed me that epidemics are
not uncommon & cause a fairly high death rate.

Measles: Epidemics of this disease are
common & cause a fairly high death rate, though
its pulmonary complications are not so frequent as
at times, except at the Hanoverian season.

Anti-racial Influences

Anti-racial influences at birth involve in the
first place the growth & development of the germ
cells of both father & mother; & this in turn includes
the personal health of both parents, both
before & after marriage, their ancestral stock,
their hereditary characters, & some partly all for
all we know, of their most serious diseases. Amongst
the last-named must be included syphilis, alcoholism,
or tuberculosis in either or both parents. The former
is exceedingly common everywhere in tropical Africa,
so is yaws which possibly is modified syphilis.
Alcoholism among the general run of natives is
part, though unproven. Again, alcohol, generally in
the form of these gin is on occasions drunk in
an enormous extent; this is the case even among
the Hindus and Jains though contrary to their
religion (Islam). Whilst tremors, peripheral
neuritis, cirrhosis of the liver are not uncommon,
especially in the case of native clergies. Tuberculosis
is not so common, though occasionally seen.

Here cases do not include by
any means all the factors that will play a part
in the future offspring. There is for instance the
whole question of fitness of selection in marriage.
Among the negroes the wife has very little choice
in the selection of a husband, marriage being
almost entirely a question of purchase. Any
man known physically unpro-, who can satisfy
the parents' demands, is accepted.

There is also the question of consanguinity. The degrees
of relationships allowed in marriage varies enormously among different tribes. Among some, up the Coss
River in the Bolatan district, the marriage of brothers
& sisters is permissible.

Next follows the germinal & foetal
periods—the periods of active growth during the
whole of which time the condition of the mother
is exerting influences direct & indirect upon the
foetus. Next follows the period of separation
existence the first few weeks of which are
occupied by the infant in an attempt to adapt
itself to its changed environment: this is
necessarily a crucial testing time as to physical
fitness or otherwise, for survival. Thousands of
infants fail to survive & is this not created
so large a part of infantile mortality? The child
may be born diseased or malformed: it may be
predetermined by anemia by conditions acting upon
it during the foetal existence: or it may be so
weak owing to similar conditions as to find
itself unable to cope with its new environment
of a new diet, new temperature & new medium
of respiration. Or lastly, it may be born before it
is fully equipped either for life, for growth or
development.
Certain infectious diseases affect the foetus in utero. The medical textbooks mention syphilis, smallpox, whooping cough, measles, scarlet fever, malaria, and various others. Of these in tropical Africa syphilis and smallpox are certainly frequent. During a syphilitic smallpox epidemic the pregnant woman generally aborted, and I saw several cases of smallpox in which the rash appeared in the child a day or two after birth. Syphilis is as common in utero as at home. The symptoms and signs are much the same on the whole, though isolated cases of far greater severity are seen. As in Europe, foetal syphilis is the most common cause of miscarriage or premature birth, owing to placental changes. Of fatal fatal malaria I know nothing. The earliest age at which I discovered the foetus—in the peripheral circulation—was 3 days.

Abortion, miscarriages, and premature births appear in the tropics to be somewhat more prevalent in the tropics than at home. This, when the malaria is considered, is not surprising. In addition to the ordinary causes of prematurity as known in this country, especially syphilis and the infectious diseases, the negro suffers from a host of diseases peculiar to the tropics, such as...
is, I am convinced a frequent cause of abortion and
formativity: even when pregnancy goes on to full time
the newly born take is nearly always in a feebly
wasted condition. I have seen many cases of this
this occur in frequent women with resulting abortion.
Malaria is in my experience, rare in negroes
brought up in the locality where they were born,
but common when they are removed to a distant
district though there may be no appreciable difference
in the climate. Possibly this is due to a
different mosquito acting as the intermediate host.
for instance Hindus suffer severely in Southern
Nigeria where Yorubas are free or vice versa.
African get malaria from when going down to the
Gambaga valley and so on. I have been
six months on end with a company of native
troops without seeing a single case of malaria
among them: yet on moving to a different
district 100 miles distant numerous cases
appeared within the first fortnight.
A severe attack of malaria in a pregnant woman
often results in a miscarriage or formatuity labour.
Lastly, the daily life of the
African woman must be taken into consideration.
Until up to her confinement she will work in
The clearings attending to the crops, or will travel long distances under a burning sun with a heavy load. Also I feel certain that the custom of sleeping huddled together in unventilated huts in which a fire is kept burning all night has a great influence in producing pneumonia later. Even on the hottest nights the native laws to keep a fire burning (probably to keep off mosquitoes). I have on several occasions visited native sleeping quarters at dead of night when the occupants were asleep; invariably was the air was extremely foul, being full of smoke and smelling most abominably of burning negro humanity. CO₂ is a well recognized cause of abortion. Certainly the negro has no lack of it during the sleeping hours; it is most probable that this plays a part in the production of pneumonia. Again, the diet of the negro is none too good. To produce a healthy offspring a good all round diet is required, which she does not get. Speaking generally, for there are marked exceptions, the woman has to be satisfied with what is kept over after her husband has satisfied his wants; often this is little or
nothing, especially in poor seasons. To note Pate's made feeding experiments upon guinea pigs and came to the conclusion that the size and health of the offspring depend upon the diet and nutrition of the mother during pregnancy. If that be so, it satisfactorily explains why such a large number of African babies are at birth so puny and wasted.

I am not in a position to give any information concerning the labour of African women in general, having attended but few cases. From conversations with medical missionaries, native clergymen and various parts I gather that as a rule they are fairly easy, complications and delayed labours being comparatively rare. This is generally attributed to the small size of the child, especially of the head (which is definitely smaller than that of the European) and also to the contracing attitude adopted by the mother. Possibly also the lack of sensibility to pain which is characteristic of the Negro, has something to do with the easy labour of the Negroes. In any case, what struck me, to which I was summoned not because they were in any way...
survive but—because of the prestige acquired by having a European doctor in attendance, the woman appeared in no way distressed: at most a low moan was uttered when the pain was at its worst. Whatever may be the reason, it is the general impression among medical men practicing in the Tropics that labor is speedy and easy, rarely resulting in injury to the child.

Obstetrical complications are known to occur or result in the mother’s death.

——

The destruction of abnormal children

When differing from the average either in appearance or under conditions mentioned below, the abortus is promptly put to death. European influence has to a slight extent mitigated this custom but it is nevertheless carried on among all over the coast. Even, there is strong reason for believing in the large towns themselves, such as Surat and Lagos, Coton. This custom involves the death of the infant in conditions such as the following:

1) Infections, such as ear, chest, hemophrosis, hydrocephalus, spine injury etc.
b) Multiple births:

The custom of putting multiple births to death is the most universal of all. Twins are regarded with the utmost dread and horror by the African, for some unknown reason; it leads to a frightful waste of life, for in addition to the mother and children being killed, it leads to the death of other people totally unconnected with the affair by the hands of the relatives of the sufferers on the suspicion of having caused the calamity by witchcraft. The negro is very reluctant when enquiries are made as to the reason for the custom. An educated class will only grimly say that it is the custom of the country, at the same time giving one the impression that he could give a much better account if he chose. Possibly the dislike is grounded on the idea that multiple births resemble the born animals. Whatever may be the explanation of the custom, it is a widespread one, as it is found not only on the West Coast but generally throughout Tropical Africa. The writer has come across it among the Angoni (in North Rhodesia) who are partly of Zulu descent, though it is not practised by the Zulus themselves.
The late Sir H. Stanley informed him that it was not uncommon anywhere in the Congo basin, though rarely, among certain tribes, only one of the twins was put to death. In West Africa both are destroyed, the method adopted generally consisting of the exposure of the children in the bush, which generally results in their death in a very short time by ants, hyenas, bush jags, vultures, or other of the fauna of the African jungle. I have seen human corpses in the bush, half eaten, within a mile of the seat of administration. As a rule the mother also is put to death, being regarded as an unclean thing in having given birth to monsters. If not killed she may be treed or confined to her hut for a certain period, the period varying according to the tribe.

c). The death of the mother during childbirth among certain tribes results in the killing of the child who is regarded as the cause of the death. This custom is found up the Cross River and possibly elsewhere.

d). Another common custom in the Niger basin is to put to death children who cut their upper teeth first, such children, time being regarded as unnatural, therefore to
be destroyed. In such cases the mother is not

not tested.

The above are the best known of native customs

practising the death of young males. There are

undoubtedly many others concerning which the

Europeans knows nothing little. In instance

human sacrifices are far from being uncommon

the victims nearly always being domestic slaves:

of these, firstborn male babies are often chosen.

Contrary to what one would expect

considering the negro's horror of the abnormal

abnormalities are common - it is somewhat startling

to the newcomer to come across natives who

possess all the typical physical particularities of

the negro but are almost pure white.

During the first fortnight of his life two

special dangers threaten to cut short the negro's

life. Both are due to infection through the

cord. This often brings to tears with flies, vegetable

fungus or anything that is environment, & diseases.

A dressing of leaves is generally applied, but it is

often omitted. The African is no lover of
cleanliness and consequently it is not surprising that septic troubles are frequent. It is a common sight to see a newborn infant lying on a filthy mat or cloth or even in the dust with the umbilical cord hanging uncovered.

**Submucous Membrane**

occurs within a few days of birth and is generally fatal: it is characterised by high fever, jaundice, a discharge from the umbilicus and occasionally an enlarged liver. The jaundice of a native is shown by a yellow of the skin whilst the European shows the yellow staining. This disease is fairly common but not nearly so common as

**Trenches Meningitis**

which causes a very high mortality among the newborn. It seems to be more common in certain districts than others of most of the cases that I observed were in the dry season. A medical missionary up the Limpopo informed me that one year an epidemic appeared in his town carrying off nearly half the new born children. The onset of the symptoms is generally on the 10th day but may appear at any time after the
Sir: death always results, often within a few hours.

Typhus Febrifuga appears to be common all over the tropics. Osler in his textbook "The Principles and Practice of Medicine" (6th ed., page 357) states that in certain of the West Indian Islands more than half the deaths of the negro children have been due to this disease. I have personally never seen such a high death rate from this cause, my highest observation being 10%, noted at the end of the dry season in the Southern Nigeria, in the dry season. In other districts the death rate was very low, not more than one or two per cent. As is the case with material from among the Europeans, there appears among negro infants to be in certain years great epidemic waves of typhus. I have not had my best opportunities to investigate such epidemic, but other medical men with whom I have spoken on the matter regard typhus as a most important cause of infantile mortality, falling not far short of malaria. Some would give it first place; firmly that it is so in certain districts but is certainly not true generally. Surely it is not very great throughout West Africa, 10% of children lasting four or five weeks would not be far out.
The feeding of the negro infant

I have never known an instance of hand feeding with milk from birth among pure negroes in tropical Africa except in the case of educated native climbers who had become acquainted with the properties of condensed milk. Cattle in the tropics are not common, but such as exist are not used for milking purposes except occasionally by Europeans. The same applies to goats which however are plentiful. The valuable properties of milk and its possibilities in infant feeding seems to be utterly unknown to the negroes of the coast belt. This does not apply to such higher races as the Fulanis whose chief wealth consists of their cattle. These are acquainted with milk and its properties in every form, even the modern form with datte being with them a very old established custom. Any knowledge of this is very limited, however, as I have been informed by officials resident in districts of Christianized Fulanis are numerous that failing the mother's breast, cow's milk is employed in infant feeding. Certainly no such custom exists in the Niger Delta, nor in our possessions North of the Gambia, as in Angola, where the natives are pastoral.
If, for any reason a war nurse cannot be present, the chills is fed with whatever is going, yam papa, melai papa to make into a porridge and eaten.
If for any reason the mother is unable to suckle the child, a wet nurse is sought for, generally not a very difficult task. In fact, the suckling of another woman's child is so common all over the Niger country that there are established tribal laws, which vary according to locality, in connection with the matter. Sometimes, if the mother of the child be a domestic slave, the child is suckled by a woman of another family. Then the child when it reaches a year of usefulness serves the headman of that family for a certain period. In other cases payment is made in cloth, gin, rice, etc.

The child is kept at the breast for 12 to 24 months or even longer. In the case of the uneducated at-home, partial hand feeding, with unsuitable material, is resorted to at quite an early age, and often, disastrous results. The staple food all over the tropical world are carbohydrates in some form or other; in West Africa it takes the form of yams, cassava, or Indian corn made into a pate. With this, the mother will often commence to feed the child when a few weeks old, the result being that intestinal
Disorders are very prevalent. It is an uncommon thing to see a baby’s abdomen blown out literally as tight as a drum: this combined with mismanagement of the cord during the first days of life results in the formation of umbilical hernia. Only one third of the natives of the district between the Niger and the Cross Rivers are the subjects of this complaint, the hernia being often of a tremendous size. Strangulation is not uncommon.

An uncommon feature of the negro baby is that no matter how ill it may be and how much suffering it vastly endures, I have often observed a baby suffering from a severe attack of dysentery with frequent vomiting and purging, without once uttering a moan.

The cutting of the first tooth is everywhere regarded with great solemnity, especially in the districts where the cutting of the upper incisors first endangers the child’s death. But apart from that—some medicine importance, probably of a religious nature, is attached to some details which I could never discover. In the cutting of the tooth, if the owners are Jews, there are great reparations in the family and vice versa.
I was one present at a festival given by a landlord on the occasion of the satisfactory ending of his year's work. The feast was one of great richness and magnificence. The jujube fruit was far beyond my comprehension. We were gone through, culminating in the administration of the bowl of a mixture which it seemed promptly rejected. This result was obviously highly satisfactory as it was hailed with great acclamation by the assembled company, who were promptly settled down comfortably to the consumption of similar fare.

The period of the ending of the frost is very much the same as with us, by June 6 or 7 months. Subsequently the child is more literally hard food than fruit, and digestive troubles continue very prevalent.

- Nature medicine & Surgery

For various disorders of infancy and adult life, various remedies are employed, some undoubtedly of service such as Castor oil and various vegetable linseed & diaphoretics; also something, tastes & message for chronic rheumatism which is uncommon among the races during the rainy season among the adults. But as a general
rule, native doctors consist, in the hands of the
people, who is both priest & physician, of winces
meantime, & feasting ceremonies in which blood
the entrails of animals play a prominent part.
Baking in illness seems unknown, and consequently
dropping of a very fatal disease: attempts by
European doctors to place a patient on a slop diet
is most strenuously objected to and is rarely
successful. In all stomach or intestinal complaints,
"feeding up" is the plan adopted, with as stated
deadly results.

There appears to be no special remedy for
malarial fever, which is so prevalent: in addition
to the inevitable incantation, fasting & abstinence
employed, certain vegetable concoctions are administered
which produce an appreciable effect on the illness, high
fever, vomiting & passing of the result. Though
quinine is now generally well known & easily
obtainable it is rarely resorted to by the educated
classes who has seen it good effect.

The European physician is not very successful in
practising among the negroes: his dispenser is
his superior, in that knowing the patient's point of
view he employs feet, & whilst administering the
arguing remedy, he so fits it in will understand.
Ceremonies that the patient knew were only to persuade not to take it but has confidence in his physician. In the same way, the dispense can persuade the patient to give a dose of quinine in a case of fever is quite unintelligible when the patient knows very well that what acts here is that his old enemy has twisted him. The native dispense proceeds to anoint him making the quinine administration a part of the ceremony.

Native medicine in the whole, from the little I have seen of it, seems harmless, though the juju priests have undoubtedly a knowledge of many powerful drugs unknown to the white man. These known are employed not for therapeutic purposes but for ceremonial and religious import. Though native medicine may be in the which harmless the same certainly cannot be said with regards to native surgery, which is most heroic. The negro operator is far more ready to “cut down” men his brother the European surgeon. I have seen a patient after laparotomy performed for a pain in the stomach caused by a surfeit of unripe plantains. An incision had been made in the middle line...
from the incision to the pubis of the abdominal cavity, searched for a crocodile or lizard supposed to have been placed there by witchcraft. The operation was successful in that a baby crocodile was taken to have been extricated by the Abakua Operator, in the presence of several witnesses. The edges of the wound were rather neatly drawn together by sharp, hot little shavings of hemp wood and then faced up with t'khe-tie (circular film). The wound was then covered over with plan-tain leaves and a bandage of native cloth wrapped round the abdomen. It need to say the patient died, as antiseptics or even ordinary cleanliness are unknown.

The above mentioned idea of being the host of a parasite such as a lizard it appears to be a very common one in the Negro delta, and it is universally accepted as a very satisfactory explanation for all the various ailments of the human body. It naturally leads to bloodshed as the relatives of the sufferer seek vengeance upon the supposed evil-doer responsible for the calamity.

On another occasion I was consulted by a headman who had a large lipoma of the neck which had been treated by a native practitioner. After unsuccessful attempts at its eradication by means of palm oil —
other remedies this worthy conceived the brilliant
action of turning it away. He partly succeeded
and no doubt would have fully done so had not
the sufferer object.
Fractures nearly always unite badly as splints are
objected to. Many a time have I found them
removed by the patient on the occasion of his
next visit. Compound fractures, especially of the
leg, often result in gangrene & death. They are
naturally regarded as serious, so the wound is
ever run until some surgical remedy & then
bandaged so tightly that I have seen the extremity
completely stripped of the limb gangrenous.

Elephantiasis of the scrotum is treated by
amputation of the whole tumor, with the result that
occasionally the patient recovers — an emaciated,
distorted, & left useless. The patient is
left with a useless limb for the rest of his days
which generally are few in number if he be a
domestic slave; for such a person, useless in this
life, serves very satisfactorily in carrying a message
into the next, which appears to be the nature of
human sacrifice so common in the country. The
same applies to all other useless cripples.
Malaria among the Nigros.

The Adult.

My belief is that provided he remain in the district where he was born and the negro becomes absolutely immune to the malarial fever of that district. But let him leave his own district and go to another where a different malaria-carrying mosquito is prevalent, then he becomes nearly as liable to the local malaria as the European, but becomes immune to it much sooner. Indians, Greeks, Egyptians who are common in tropical Africa suffer in the beginning as much as the northern races but become acclimatized much more quickly, for the reason that they have had malaria in childhood during an attack of fever antibodies appear to be formed which protect to a slight extent against infection carried by the whole sub-family of mosquitoes but chiefly against that carried by the species spreading the malaria parasite causing the fever.

My first statement that the negro is immune provided he remain in his own district is based upon experience and inquiry. I have never seen an adult negro, who has always
resided in his own district, suffering from
malarial fever. Investigation of a fever case, where
an examination of the blood has shown ring
forms, has always resulted in proving that the
patient had been away from that particular
district within the previous year or two or that
he had suffered from previous attacks of fever
since he had left the district. I have been
in the habit of questioning residents of different
districts concerning malarial attacks & the answer
was striking confirmation of this: almost
invariably the speaker remembers that the last
attack of fever occurred when he made a
journey to such or such a district some
distance away. Also I have noticed that
on familiar expeditions the carriers suffer
little or not at all when engaged in operations
in districts where they were bred, whereas fever
is frequent among them when they accompany
trains to another district, all this quite apart
from such conditions as increased hardships,
habit of soil, seasonal influence etc. in any
particular district.

A rise of temperature in the tropics
is of course common enough in the tropics, but
it does not necessarily follow that it is due to malaria, nor have I ever seen that it is due to a negro locally born to a negro in this district. When ring forms are found in the blood of an adult negro, the negro has been away from the district within the last year or two: when ring forms are not discovered the fever can always be satisfactorily explained by other causes such as pulmonary tuberculosis, smallpox, and leishmaniasis in the child.

The negro child suffers frequently and surely from malaria fever, which is a common cause of death among them, especially those born continually after. Marching in Egypt (Africa really means Ethiopia) sickness (diseases of warm countries) takes some forms are born with malaria, exhibiting at first an enlarged spleen, a pale cachectic complexion, and diarrhea of the feet. The presence of malaria parasites in the blood of the fetus of malaria mothers has been repeatedly confirmed (Beni & Rostand, E. Picard). Wassell reports that the child of a malaria parent suffers from daily convulsions from the day after birth.
The malarial nature of the attacks was confirmed by the discovery of the parasite in the blood which disappeared on the administration of quinine. According to Fehin, malaria may also be transmitted by the father, the mother remaining healthy meanwhile.

The last statement would require a bit of fudging; if true there must be some stage in the history of the parasite unknown to us at present quite unconnected with the cycles of Golgi or Ross. It certainly does not seem very probable from the view of our present knowledge of the disease.

Living native hum + village mosquitoes abound + many of them carry malaria + are infected. It is consequently a matter of certainty that within a few days, possibly within a few hours after birth, the infant's blood will contain the parasite which rapidly multiplies until sufficiently numerous to bring about a series of attacks of fever. Convulsions are common + common in all young infants from the hour of their birth. It is not surprising that the blood of a newborn negro infant, should show the malarial form. It does not necessarily follow, however,
U.S. within a few hours from truth
that the convulsions are due to the infection, though it is quite probable.

I have examined the blood of several hundred children at the earliest age at which I have observed the ring form (which seems to be the only form observable in the peripheral circulation) was three days, though the blood of many newborn infants was included. After the first fortnight the ring form is common, and after the first month it is usual to find it in living specimens examined by a sufficiently prolonged reach of blood. It continues to be common in the peripheral circulation until the 5th to 7th year after which age it is rare. The child is immune for that district. There does not appear to be any appreciable difference in the various parts of St. Vincent which is the only country where this test was regularly applied; none living child after the first month showed the ring form of parasites for diligently and patiently searched. As many as eight slides were necessary before the parasite was discovered; sometimes they were numerous in the first field of the first slide examined after the child was quite well. Consequently it would appear that all parts
of Southern Nigeria are equally unhealthy and this is borne out by experience of illness among the Europeans. The spleen that is not so valuable as a blood examination, in my opinion, for though enlarged spleens are fairly common I frequently failed to satisfy myself of any definite enlargement in cases where the ring forms were very numerous in the blood. The common distension of the negro child's abdomen often made a satisfactory examination of the spleen difficult. About 10% of the children showed definitely enlarged spleens; here again the condition was numerically the same all over the country; also, as with the blood test, there was no seasonal variation. But it is significant that, though after the first decade ring forms are practically never seen in the peripheral circulation yet the enlarged spleen remains common for a much longer time, up to 15 or 16 yrs of age in fact, and this quite apart from any recent attack of fever. An adult with an enlarged spleen is rare, though occasionally seen. Every native child suffers from attacks of fever sooner or later in a large number due to consequence. I have watched a
nabur child from the time of his birth for eight months. Its first attack of fever took place when it was about a month old and lasted about a week, during which time it had convulsions several times (she freely refused quinine). In fact convulsions in fever appear to be the rule during the first year of life in attacks of fever. The second attack took place at the age of three months, a third at four months, and a fourth at eight months. About six attacks during the first year appear to be the average, the first attack being always the most severe. The annual number lessens as the child grows older until about the second year they cease altogether. In the intervals between the attacks the parasite remains more or less easily detectable in the peripheral circulation, apparently without hemolysis, during the child in the breast. A single dose of quinine causes it to disappear for a time; e.g., 3 grains in the case of a child 2 years old caused its disappearance for over a week.

The death rate from malaria in infants is certainly high; it is of course impossible at present to give any reliable statistics, but in one small town where I was able to investigate all cases
of sickness I found that about one out of every five died from malaria during the first year of life. During the second and subsequent years there is a steady drop in the death rate from this cause. The terminal event is generally a convulsion in very young infants; in older children death is brought about by cachexia or diarrhoea. Haemorrhage of an enlarged spleen by injury occasionally occurs.

I was never able to convince myself that there was any seasonal variation in the number of fever attacks, although undoubtedly mosquitoes are much more prevalent at the termination of the rainy season when standing pools are everywhere common. Children always appeared to die to suffer equally all the year round, as did also the Europeans. But children seemed to pursue less attacks, owing to chills. The children of the soldiers, policemen, messengers and attached to official quarters on Celsius Street suffered much more than those in the native towns below. I have in mind a certain station in the Lagos hinterland where the European resident dwelt on a hill, about 1,000 feet above the native town. The air here was delightfully cool in the morning and evening all the year round. In the
The season, in fact, it was decidedly chilly, necessitating mule blankets at night—except for the morning. When a west wind blew. But malaria was here far more prevalent among the children than I had ever seen it elsewhere. The natives know by experience the danger of dwelling on such exposed spots and always build on the more sheltered valleys. I know of several such stations in Virginia and though they are generally free from mosquitoes yet malaria is most prevalent both among native children and Europeans.

These attacks of fever are brought out about the wettest due to chill, for newcomers going out straight from home to such stations remain free from fever, whilst the old native suffers severely. Young children react with especiality, seeming much better in my opinion than adults. The results are immediate, an attack ordinarily lasting a week being shortened to two or three days. Yet except in the case of native clergymen who have come much in contact with Europeans, the native parents are strangely access to its use, even though they have seen its beneficial effect. Possibly the influence of the native doctor is at work here.
Malariæ in Tropical Africa is the principal local
cause of infantile mortality, or takes second place in
the general or cosmopolitan mortality, prematurity and
immaturity taking first place as it does all the
world over. Though found chiefly in the Tropical
parts of Africa it is not unknown in the temperate
regions; in fact it is doubtful whether any part
is absolutely free from it. It is quite common in
South Natal & the Eastern provinces of the Cape.
I have seen typical cases of Longin tertian in
wanderlust Bushmen and (W. W. Cape Colony). Cases
occur periodically, in the vicinity of Pretoria. During
the South African war, an outbreak of malaria
occurred among the troops to which I was the
medical officer, during the second fortnight of a
month's encampment among a certain "vlei", in
which only ceased on removal of the camp to a
site some distance from the mosquito breeding ground
which was only a few miles outside Pretoria. The
fever there was of the irregular Tropical type.
The low veldt of the Transvaal is deadly, especially
the Limpopo Valley. It is found everywhere in
Rhodesia some parts of which are in my opinion
every bit as deadly as the W. W. coast; especially
the Western District. The East Coast from Durban
Back-up
West-Coast from

Northwards is a pocket of malaria, as is also the
Damaraland to Cape Verde. It is common also all
along the Mozambique coast. The relentless burning
of the Saharan alone are five, but in the cases it
is stated that malaria is most acute.

The great part of Africa certainly is cursed with
malaria. Putting it very mildly, less than 10% of all
the children born die within the first year from it,
and the birth rate is 30 per 1000, the total
population being 170,000,000. This gives us the
gross total of about half a million deaths per
annum from this disease alone; a pitiable waste
of human life from an entirely preventable cause.

But the results do not end

there for malaria so deteriorates the system that it
indirectly leads to death in the case of illnesses
that would otherwise be trivial. It is well known
to every tropial practitioner that malaria tends
its element to every febrile condition that
attacks the system. The characteristics of African
tropical fever, unquenchable by quinine is its
extreme irregularity: there is no periodicity about
it. Similarly with such an illness as pneumonia
the temperature takes a very irregular course; the
same with severe temperatures which, instead of
showing a highly reactive, show an inequality, heat -
is most pricking. The fever produced by our
soldiers in the low region of the Transvaal was
generally malignant-lytic but occasionally benign-
lytic; such of the latter as afterwards suffered
from typhoid often exhibited a marked periodicity
in their temperature chart; amenable to quinine.
All this simply means that the fresh illness so
downs the system that the shedding malarial
parasite has a fresh opportunity of multiplying,
in the weakened condition of the patient; that it appends
its own characteristics to the febrile condition from
which the patient is at the time suffering,
producings-type malarial, pneumo-malarial, etc. Under
the influence of quinine such fevers resume
their ordinary course.

Any attack of malaria, like the attack of any
other illness, leaves the patient with a lowered
resistance, hence the child negro often dies from
illnesses from which he would otherwise recover.
Anæmia is often coexistent, the red cells being
reduced to a quarter of their normal number.
A little patient with such blood is not likely to
recover from an attack of dysentery or pneumonia.
Such may be the general condition of the tissue.
That the slightest wound may take on a malignant turn. Bruised, deaf, loss of appetite, and all kinds of neuralgic and muscular pains are some of the hooties to which some of the subjects of malaria are liable, forming in short a vicious circle which can only be broken by clearing the system of the causative agent—i.e., haematozoa.
Intestinal disorders of the negro infant.

Small bodies part quickly with heat and are easily chilled, hence catarrhal inflammation are common especially those of the alimentary tract. This natural proneness to inflammation of the bowels is aggravated among the negroes by unsuitable food, inadequate clothing and the endemic malaria. The diet of the African is exceedingly monotonous, consisting mainly of carbohydrates in some form. Very early in life, in fact, as soon as the child can be induced to take it, it is fed by its mother from the family pot with the result that flatulence and diarrhea are produced. Rice is in the kitchen no substitute for the human breast milk. If the mother cannot for any reason suckle her child it is either given to another woman to feed or is hand fed with whatever is going. Milk forms no part of the diet of the negro. Starch convertting juice is scarce until the cutting of the first tooth, yet the child is given a crude form of starch at an age when it cannot possibly make use of it. It gradually dwindles away.
after a shorter or longer period dies with all the symptoms of starvation. The undigested food undergoes fermentation in the intestines forming an acid which irritates the delicate mucous membrane and increases the distension of the digestive organs. So great is the distension of the abdomen that sometimes the wall stands out almost at right angles to the thorax and the contrast between the wasted frame and the huge distended abdomen is most startling. The child is naturally restless and uncomfortable moaning and unable to sleep from the colicky pains in the belly. As is often the case with the European mother the nurse regards this as a sign of hunger and gives another supply of food which the child's craving for adequate nourishment induces it eagerly to swallow and this increases his discomfort and discomfort. The child, exhausting no nourishment, from this frequent meals, grows daily more and more feeble and senseless until worn out by purging, pain and want of sleep.

The scanty clothing of the infant undeniably predisposes it to intestinal disorders of the bowel. As a rule it wears
nothing at all & is carried in a fold of
the mother's dress. A sudden drop of temperature
is common in the tropics. In all seasons
towards the early morning the air becomes
damp & chilly whilst a passing thunder and
lightning will at any season cause the temperature to drop
20-30 degrees, often leaving in its wake
febrile attacks for the white man & angina
of the heart for the blacks (chiefly the children)
due to the sudden chilling of the body
unprotected by increased covering.

In an infant reduced to a
weakly state by a long course of unsuitable
food, any acute attack, known apparently
trigging it may be, will often prove fatal.
The infant's system always contains the
necessary exciting cause of the acute attack
in the form of the lurking malaria parasite.
Since the terminal event of a long course
of chills is an attack of fever with
anemiasions. It is impossible in such cases
to state with certainty the cause of death.
Is the terminal fever malaria or toxemia
such as is common in infantile brain
infections? The parasite is certainly present-
in the peripheral circulation, but it is nearly always there in infantile diarrhea.

Convulsions are, of course, a common cause of death in children, all the world over, suffering from intestinal disorders. Also convulsions are the common cause of death in malaria. Are the convulsions due to the malaria or the intestinal toxin?

With the exception of

zymotic diarrhoea the negro infant suffers from all the various forms of intestinal troubles known to us in Europe. It is little known to other forms peculiar to the climate. Among them the following are mentioned as common causes of death:

**Dysentery**

This disease is common among children, both in children and adults: in the former it is apt to take on a gangrenous form, the patient passing foul smelling, dark, liquid stools in which are seen sloughs, often of a large size.

The illness, in the child, is rarely of a long duration, the patient dying of dysentery in two or three days; which is not surprising, seeing that in some cases as many as 100
Stools are passed in 24 hours. I have had
but one opportunity of making a post-mortem
examination on an infant who had died of
ascen
ty. In this case the illness had been of
a comparatively long duration, over a week. All
the large intestine was involved. The peritoneal
surface was hyperemic throughout. What was
left of the mucous membrane was deeply
discolored and friable. The greater part had Disappeared
leaving a raw, granulating surface where
the sloughs had separated. The base of such
ulcers was formed of the submucous or muscular
layer. The small intestines were slightly involved,
showing a few ulcers in the lower part of
the ileum. The liver was enormously enlarged
& contained 1 shool say thousands of small
abscesses about the size of peas.

As is always the case with infantile disorders
the material changes relate into ascen
ty.
The temperature is eratic. The mortality is
extremely high. I have only seen one case
of infantile ascen
ty recovered. The child of a
nurse whose
aliments were heated with condensed milk & castor oil. To get an
ordinary action I adopt a system of diluting
is impossible & this is quite understandable from from this point of view which is that the illness is due to the malign influence of an enemy.

Finally, believing this as he does, to treat such an illness by dieting is an absurdity & shows the foolishness of the white man: and rightly so from his point of view.

In adult occasionally recovers, chiefly when he is in such a poor financial condition that he cannot afford the "feeding up" regime, generally employed in sickness, & the medications of the Various medicines.

Diabetes is common at all ages & at all seasons. The youngest patient I saw was about a month old. Throughout the dry season & at the height of the rains diabetes is comparatively scarce, but with the onset of the first rains it becomes very common, being due to the surface washings polluting the water supply.

Ascariasis

There is a form of ascariasis associated occasionally with bloody stools in this disease which is common in Nigeria & partly elsewhere: the Symphysis Symphysis are putty colored & very swollen & tender abdomen & anaemia of a
In the pregnant woman endotoxicemia is often the cause of death.
The disease is due to the presence of the Ankylostoma duodenale, as the one of the parasites are always discovered in the mouth of such cases. It is never the cause of death in the adult, so far as I am aware, but in infants it often proves fatal. In such cases it is associated with a high temperature, delirium, but here again it is impossible to say how far the intestinal

cicatrices enter. A good dose of Nitrofus or

duodenum acts like a charm, bringing away

diges or even thousands of worms, with resulting

cessation of all intestinal troubles for a time.

These cases I have always noticed are most


prominent in the rainy season.


A diarrhoea of a Senna type, characterized by

high fever, acute sthick & paresis is common in

children who suffer yearly & frequently from

malaria; it is the most common bilharziasis resultant

from of the Europeans. It is frequently fatal

though amenable to quinine when the patient

can be induced to administer


A type of diarrhoea, common on the west coast.
Coast is here mentioned which though seen itself fatal is probably by its weakening effect indirectly the cause of much mortality. It is seen in infants from the age of about 12 to 60 months and is characterized by nausea, loss of appetite, looseness of the bowels (from 4 to 8 motions a day) and ulceration. It is frequent in children after nursing and is due, in my opinion, which is such a popular article in nativity cooking on the coast. In one or two cases where I was able to persuade the mothers to discontinue the use of the oil the diarrhoea ceased immediately.

Pulmonary disorders of Negro infants

As previously remarked inflamations of mucous surfaces are common in children, as they are easily chilled, small bodies losing heat rapidly. Pulmonary affections are herefor common, but nothing like so prevalent as in Europe though equally as severe when they occur. As a cause of death they fall far short of affections of the alimentary canal. They are principally to be some of the same causes that act on this track,
Vigorous, inadequate clothing & the endemic malaria.

During the Harmattan season which lasts from November to February there is a great variation between the day & night temperatures, a drop of 40-50 degrees being often noted, so that in the early mornings one feels chilly, & is glad of cotton blankets. It is consequently at this season that the underdeveloped peas is most susceptible to affections of the respiratory system, & children especially suffer severely. During the wet season, June to October, the temperature is more equable, & the natives suffer less, although severe wettings are frequent.

Broncho-pneumonia, this ranks first among pulmonary affections as a cause of death in infants. It differs in no way from the condition as seen in Europe save that the temperature is apt to be more irregular due doubtless to malarial complications.

Lobar Pneumonia
This is not common either in children or adults.

Tuberculosis of the Lungs
Pulmonary phthisis is not nearly so common in tropical Africa as in temperate Europe, & the reason is not far to seek. For though all night the natives sleep huddled up in bed,
tubs, yet as all other times they are altogether in the open air. The well-known action of direct sunlight on the tubercle bacillus is also contributing towards keeping the disease in abeyance. Cases of typical phthisis are uncommon fairly frequently seen, both in children and adults. It generally terminates fatally. For the Negro, as with the uneducated at home, when sick, seek the shabby dark interior of his house seldom comes out into the open air. The course in children is particularly rapid. The little patient sinking from exhaustion in a month or two, the terminal cough, string of course often hastened by an attack of malaria. In an adult whom I had under observation the illness lasted from beginning to end six months: death resultant from uncontrollable haemorrhage.

Pulmonary tubercle in the tropics cause on the whole but a small percentage of the infantile mortality. The Registrar General for 1863, in England gives pneumonia, bronchitis and larynx as causing 22% of the deaths in infants under 1 year. In tropical Africa the figure is probably as low as 5%.
Countries such as Southern Natal, Rhodesia, see show that during the last two or three decades, tuberculosis has increased enormously among the natives and ranks high as a cause of death. I can certainly corroborate this as regards the half-caste Hottentots, Koyannas and Bushmen and the Cape Colony and the Southern Kalahari district. Tuberculosis of the lungs, bowls and serous membranes is exceedingly common both in children and adults.
Impure Africa, especially the West Coast, is notoriously unhealthy not only to the European but also to the native (chiefly in childhood); and yet taking it altogether it is an exceedingly rich country with a most fertile soil capable of supporting a vast population: it has good means of transport in its large rivers, a dependable and sufficient rainfall on the whole, fairly good harbours and the climate is not so very hot, certainly not nearly so hot as the plains of India. The West Coast of Africa has been in touch with European civilisation for a longer time than our Indian possessions and yet the country has as yet scarcely altered one vestige of its unhealthiness since the Portuguese built their trading stations along its shores over five hundred years ago. India a century ago was probably every bit as unhealthy for the white man as West Africa is today, and now India is almost as healthy as Europe in most parts. In India we are not so much to deal with strange unknown in West Africa, such as Cholera which in India decimates whole
regimens. Dysentery is far commoner in India than tropical Africa; so is tertian plague, only a few isolated cases of which have so far made their appearance and were promptly put down.

The country cannot develop without European supervision so far the European has died before he could get his work well in hand, there does not appear to be any great difference as regards heat, moisture & excessive vegetation between India & Africa, certainly not enough to produce such a difference in their healthiness; nothing in the climate itself particularly favourable to the spread of disease, but rather the cause appears to be in the brethren state of sanitary matters in the country. Where we little India in hand we began to sanitise: in Africa we let sanitary matters loose again themselves, with the result that West Africa is the worst unhealthy spot on earth for the European whilst India is one of the healthiest in the tropics. Yet our African conquerors are so worthy of attention as India. Nevertheless the housing for Europeans is wretched, even in the tropics. The food is bad (except in towns on the coast).
where fresh meat and vegetables are obtainable from the streams, the European lives mainly on tinned food (e.g., chicken); milk, butter, and vegetables are rarely procurable. There are no recreations, in the true sense of the word; owing to lack of exercise, amusement, society is often so unbearable that the unfortunate seek relief, often alcohol as a solace, or sometimes committing suicide. A large percentage of West Africans are decidedly queer in their manner.

Again, in West Africa there is no segregation of the Europeans who live indiscriminately among the natives who harbor the all important malaria parasite. In locations where the houses are surrounded by large quinquiesque infectiv malarious are not likely to be so common as in houses surrounded by a few and crowded native population. The Indian house with its spacious airy rooms and whitewashed walls and ceilings, and its large compound and distant servant's quarters, is the ideal to be always approached. Compare with this the damp wooden shanties of Senda Lemos in Lagos, crowded together and opening directly on the street, and we shall understand why these places have earned the reputation of being the
"White Man's Grave." If the necessary food supply is at hand, mosquitoes will not have far. Why should they? In an article read in an outbreak of malaria in Fort Sake it was shown that the infected cases lived in houses where there were unhealthy lands harbouring mosquitoes in all their development. The adjoining houses were absolutely immune, shining heat, having an abundant food supply at hand, mosquitoes and hot wander aphids.

Next let us take any tribe dwelling in the African bush. It may be said at once that sanitation as we know it is non-existent. Customs differ in different tribes but as a general rule the town has a head chief who has under him several inferior heads who have authority over certain quarters of the town. Each quarter is divided up into compounds of several families under a patriarchal head.

Somehere in the vicinity is the water supply so often as not, in the very centre of the town. But almost invariably it is so placed that it must necessarily receive the surface sewage of the town. Shortly after the first rains, when the long dry season is over, there is a great
increase in the number of dysentery cases, owing
to pollution of the water supply by the surface
washings.
Sometimes close to each campment is a latrine, a
hole dug in the soil, around the edges of which
the natives squat. Except towards the end of the
dry season the faecal matter is a semi-liquid
mass of maggots, greatly increased by the total ditches
which are always at hand. Needles to say, also,
flies of every description are in millions
in the hot season these ditches overflow and
a stinking trickle of sewage can be followed lasting
direct to the nearest stream which constitutes
the water supply. The native appears to be
absolutely indifferent as to the quality of his
drinking water. I have seen him drinking
from a muddy pool through which a company
of soldiers had passed in preference to clear
running water obtainable a few yards away.

Now let us visit a campment:
The whole is surrounded by a fence or mud
wall through which entrance is more or less
difficult obtainable in accordance with circumstances
of locality, fortunateness of neighbours etc. Inside is
a central open courtyard with dwelling houses
round about, not unlike the old Moorish houses in principle. This custom is useful for receiving all household rubbish which is allowed
to accumulate until, at rare intervals, it becomes too offensive even for the African affecting races, when it is taken away and deposited in a
common middens for that portion of the town, situated of course in the town itself.

The houses themselves differ
of course according to geographical position but
incidentally they are extremely badly ventilated —
badly lit, there being no windows or chimneys.
Yet for some reason a fire is always kept
burning even on the hottest day. In the night
one could understand that fire would be useful
in driving mosquitoes away by means of the
smoke but that does not hold in the daytime
when the nature is out in the open. Yet the
fire is invariably kept burning. It cannot
be for cooking purposes for that is done elsewhere,
generally in a sort of verandah under overarching
caves.

The walls of the houses are made of
mud and wattle as a rule, the roofs of leaves,
except among the most dreads tribes who simply
new leaf shelters. It useless to say the walls & roof
harbour snakes, lizards, tics &c. Generally the
roof is thatch made with the leaves of various palms
yet so neatly put together that even in the heaviest
storm the water will not a drop of water will
generate a wind made thatch roof. In the Goruma
country where the rainfall is uncertain there is a
funnel shaped depression in the roof for catching
the water which collects
in a tank in the
middle of the house.
As the house is made
simply of hardened
mud it invariably leaks, and the floor of
such houses are always damp. After heavy
rains the tanks sometimes overflow converting
the mud floor into a quagmire. The tank
itself invariably contains myriads of mosquitoes
larvae & jugs.

The dwellers in a Compound
form a self governed little community under the
headman; there may be one or many homes.
At night, all the occupants of the home occupy
the same chamber, separate recesses being reserved
for the married women & their particular wives.
The air inside the room of a large house is most oppressive, what with the smoke from, cigar, cigar air, the natural heat of the latitude, the smell of the tobacco, and the odor of the negro. I am inclined to attribute a large proportion of the miscarriages to this unpure air.

It would be most remiss to close the account of a native town without mention of the local swamp. I have seen yet seen a native town where I have had experience of many, either a swamp either in the town itself or in its close vicinity, within the town itself for preference. At first thought one puts it down to the fact that drinking water is obtainable all the year round, but that cannot always be the reason as town in places where good running water is permanently obtained the swamp is sure to be in evidence. I think the explanation lies to be found in the fact that the crocodile (or rather its peculiar Crocodile) or a certain fish, are connected in some way with the religious beliefs of the native.

An attempt at fishing in a certain marshy lake where some beautiful fish are abundant results in a great commotion among the local inhabitants, and a request from the chiefs to stop
The shooting of a crocodile in another town necessitates my speedy departure.

Such being the sanitary conditions in such towns how can they be otherwise than unhealthy? Mosquitoes are given every facility for multiplying, & the non-immune negro infants who harbour the malaria parasite are ever at hand. Mosquito borne diseases such as malaria & filariasis must necessarily be abundant. Also such diseases caused by the drinking of contaminated water such as dysentery, typhoid, guinea-worm disease &c. And it is among such surroundings as these that the white man is placed: The Government official quarters are often, for administrative convenience, in the centre of the town & not, as they should be, a mile or more away.

To remedy this condition of affairs means the expenditure of much hard cash, but the money spent would be repaid a hundredfold in a generation or two. There would be a stop to the present criminal & expensive loss of European life: there would be an increase in the native population resulting in greater development of the natural resources of the country with its consequent increased revenues.
Reduction of the Death rate

Certain of the causes that in the past have kept down the African population are now almost non-existent, such as unlimited warfare and slavery. As a remedy for the other causes of the high death rate, especially among children, many reforms are necessary. Among these two stand out prominently and are equally essential, viz. the education of the negro and sanitation.

Education of the Negro.

Until the negro is educated sufficiently to realize the value of the work done, the sanitation will have an uphill task. As stated several times previously the pagan negro looks on disease from a peculiar point of view, & while holding such views, which are based apparently upon his religious beliefs (whether he has active or implicit faith) his active cooperation in sanitation matters which he does not understand, can hardly be expected. These present religious views are responsible for such evils as human sacrifices (which I feel certain is practiced to a far greater extent than is generally suspected), the killing of twins & abnormal children, the
refused to adopt ruling European medicines in sickness etc. The great question in religious circles concerning the negro is whether Islam or Christianity is to prevail: everything at present seems to point in favour of Islam, which, especially in West Africa, is making enormous strides. It seems particularly suited to the African temperament than a hold upon which Christianity is quite incapable of doing. Judging it from a medical point of view it abolishes two pagan views on sickness, advocates personal cleanliness & prohibits the use of alcohol. He converts endeavors to read; he makes it possible the pilgrimage to Mecca: his mind broadens & on his return to his native town he is a poison for doing good; from a medical point of view. A Hadji in a certain district was my right hand man on a vaccination hut & without him I could have done little.

Once having adopted his native religion & acquired a fater, whether Christianity or Islam, the rest would be comparatively easy. The care is by no means a job and is extremely acceptable. There would be no trouble about the administration of drugs (chiefly quinine, which...
is almost the only one that would make any appreciable difference in the mortality statistics, about drinking or about sanitation in general. Public lectures could be adopted by the local authorities in towns [practically all negroes live in towns] to teach the importance of such subjects as infant feeding, the destruction of mosquitoes, the drainage of swamps, the methods by which diseases are spread etc.

Especially in infant feeding is reform needed, as at present there is no adequate substitute for the mother's milk. The negro seems entirely unaware of the valuable properties of the milk of the cow and goat in infant feeding. These animals, particularly the goat, are found everywhere but are not employed for their milk. I am not in a position to say how long it would take to develop a breed of milch cows or goats, as I know nothing about such matters; at present two or three men are required to hold a goat down in order to obtain about an ounce of milk, while attempts at milking a cow proved unsuccessful with a section of soldiers.

Condensed milk and artificial foods would I think from a great boon to the negro mother.
Milk is obtainable everywhere where the white man has penetrated and opened up trade; that is not almost in all parts: most infants do well on it; although it is not without its disadvantages, yet it would serve until such time as the child could like ordinary food and safely. The mortality from improper feeding is accordingly high; the employment of milk, either from the calf or from a tin would reduce it greatly.

A little education in cleanliness especially in the manner of dealing with the cord after labour would result in the abolition of infantile tetanus from such a high mortality among infantile infants in so many parts of the tropics.

Education too in the matter of adequate clothing, especially of infantile, would be of obvious value in the prevention of pulmonary and alimentary disorders.

No drinking water is safe in tropics. Affordable without boiling: it is too much to hope that the time will ever arrive when the native will voluntarily boil it or use fillets, but at least he can be taught the value of getting his water from a source unpolluted by sewage.
not from stagnant pools as he is so apt to do. Breeding, intestinal parasitic diseases and many other water born maladies would thus be avoided.

A knowledge of the evils caused by overcrowding and bad ventilation and of the advantages of sunlight and fresh air in his homes, would result in the building of better houses with an improving domestic hygiene which would have as salutary an effect in the tropics as in Europe, partly here so as the dark interiors of native houses harbour immeasurable fauna, some of which are the carriers of disease.

Sanitation

First the education of the Negro the house of the Sanitation would greatly facilitate as it would have his intelligent cooperation.

What first requires to done is to render healthy the large coastal towns which are the ports of the continent and the headquarters of the great commercial firms. Afterwards the upcountry towns and bush villages can be attended to. Since Lome, the last port of call on the homeward journey from West Africa is a disgrace to civilization and its smell seem to remain until the Canaries are reached, in
split of the trade winds
what requires to be done is:
1. To keep the shores clean and well drained, thereby avoiding ports of stagnant water.
2. To provide a good and efficient water supply.
3. To provide a proper system of disposal of sewage and refuse. There is no reason why the art of sewage disposal should not be adapted in the coconut areas at least; later on in the up-country towns as well.
4. To keep down as much as possible all weed vegetation. Large trees possibly do good by keeping the ground dry, but all other tropical vegetation with the exception of short lawn grass, such as Bahama grass, is to be avoided. Succulent tropical vegetation here will burn and first arrive in storms as the leaves often retain water for a long period. Moreover, there are always abundant insects in gardens.

The breeding of cattle has already been mentioned in connection with insect feeding. Nothing can be more useful in keeping down the rank grass than cattle. It is well known that malaria became much more prevalent in St. Thomas after the visitation of the midge-pest—
which killed off the greater part of the cattle of Turkestan, with the consequent increased growth of vegetation.

To provide immunity at cheap rates, or free, and to give prompt attention to all cases of fever, every case of fever should be treated as if it were an acute infectious disease and a source of danger to the community, as in fact it is. Until those become practically malaria-free (so there is no reason why they should not) I would recommend the compulsory administration of quinine to all infants, as they are the greatest source of danger from this disease. This work could be carried out by a staff of native doctors or dispensers.

Above all, to give attention to the drainage of swamps to keep the ground-water level low. Even the Romans were acquainted with the beneficial effects of swamp drainage in fighting and eradicating malaria. And yet in the twentieth century, practically being born in tropical Africa has in it, or in its vicinity, a most efficient mosquito breeding marsh. It is not from guano, as we have before us numerous examples of the good...
5.

results of marsh drainage: Isanlafia for instance.

An up-to-date sanitary department should be maintained provided with sufficient power & funds for the work. The Colonial Office maintains in this African Province an expensive medical service which in my opinion might almost be dispensed with for all the good it does. If the money spent on its upkeep were spent on sanitary work infinitely more good would result. Yet that I have any wish to run down the medical services but it is an undisputed fact that the medical officer of any particular district has practically no power to bring about the slightest reform in sanitary affairs. Request for the amendment of any sanitary defect means tedious official correspondence with the ultimate & inevitable answer that there are no funds available & that he must keep within the estimates. Or in the matter of his correspondence his term of service is completed the goes home on several months leave with his passage paid at Government expense. The cost of sanitation would be largely repaid in a few years by the saving of the annual leave which would then be unnecessary.
The writer has in mind a certain up-country
branch line in Nigeria where from the European
bungalow a stone could be thrown into a swamp
which separated it from the native quarters. Two
Europeans died from Blackwater Fever within 3
months & another was invalidated shortly afterwards.
The whole neighborhood swarmed with mosquitoes
especially after the stopping of the rains.
Estimated cost of draining filling the swamp
£200. Answer, no funds! And yet the cost-
of these two lives & the invaliding of the
third & together with their replacing, cost the
Government infinitely more than £200, quite
apart from the sorrow brought among their relatives.
In the preceding pages brief mention only has been made of some of the principal diseases, &
incidents that bring up the death rate among
the negroes to the present high standard. Many
other causes might have been included, but I
have confined myself to those that apparently
affect the mortality rate: no mention has been
made of Bilharziosis, filariasis, true access,
snorches, leprosy, bite from, or bite from wild
animals such as snakes, leopards, crocodile, feline,
or, or of cannibalism, all of which are
common, but these diseases & dangers, all put
 together, do not, I suppose, constitute more than
1 or 2 per cent. of the total deaths.

No mention has been made of polygamy as
a cause of the comparatively small population of
Africa, because in my opinion it is not such
but rather a conserving agency, the result
of circumstances. In the first, the African has
been in a constant state of warfare & as
the result the female greatly exceeds the male
numerically: polygamy follows as a matter of cause.
I might indeed with reason
have included starvation as a joint cause
of mortality, especially among the tribes occupying
district, where the rainfall is scanty, such as
the Kalahari along the borders of which certain
tribes are in a constant state of semi-starvation
of some, such as the Bushmen, have in the struggle
for existence been practically driven out of
existence as a race.

The spread of trypanosomiasis has
not, in my remarks, received anything like the
attention that it merits. This disease, of late
years has come to occupy a prominent place as
a cause of death, & its ravages continue to
are spreading in area. It is common in the
upper part of the Nile valley & threatens to move
down the river and invade the Egyptian Sudan:
it has already appeared in Northern Rhodesia. It
is a very serious problem for tropical Africa as
there is no knowing how far it will extend its
area. There is even a possibility of it appearing
in our Asiatic possessions.

Bowe (13.10.10, Sept. 24, 1910) states that the
following proposition was held good with regard
to trypanosomiasis:
1. Trypanosomes of the West African habitat
of none of East Africa are identical
2. Trypanosome fever is the first stage of sleeping
sickness
3) Unless the native nor the European is immune.

4) There is no absolute proof that a single person has ever recovered from sleeping sickness.

5) It is more than probable that wild game will be found to act as a reservoir.

6) G. palpalis is the only known cause in nature.

7) Mosquitos and A. pallidipes are only under suspicion.

8) Mechanism, transmission takes place only of the flies are transmitted instantaneously from the sick to the healthy (interrupted feeding).

Normally however the hypnozoites multiply in the gut of G. pallpalis when fed on infected blood, these new forms infections 34 days later.

8) The most successful method of combating the disease is evacuation of the sleeping sickness area.

As the disease is so deadly that it kills off all human beings infected 10-12 days from the bite, and in Clause 5 supra, there must be some other source from which the G. palpalis obtains the hypnozoites. Human hypnozoitis resembles the common fly sickness, so deadly is nearly all domestic animals in many districts in Africa.

Bruce has shown that the cause of death is a hypnozoite (t. Brucei), very similar to that of human hypnozoitis. The biting fly, acting as
An intermediate carries the Trypanosome from one mammal to another. Being so deadly to domestic animals there are consequently none in the endemic areas but domestic animals entering those areas sicken and die. Where do the Glossina get their Trypanosome from? Their source Bruce has shown to be the wild game of the country, antelopes, etc., etc. These animals somehow, although not immune from trypanosome infection are proof against the pathogenic properties of the parasite and so live on with the parasite in their blood, a permanent source of infection to each other and every other mammal entering the fly district very frequent. This has been proved experimentally. The results of experiments are corroborated by the well-known fact that when by European occupation of the fly district the wild game of the country has been driven back or eliminated fly disease no longer occurs among domestic animals.

Similarly with Trypanosomiasis there must be some other source from which the G. Palliati, or the parasite, the source almost necessarily being wild game. Finding the discovery of this agent or of a remedy, all that can be done at present is to remove the whole population of the
Summary of Thesis

Africa is a vast and fertile continent, capable of supporting at least twice times its present population. Its area is 11½ million square miles with a population of 170,000,000. Contrast these figures with those of India which has an area of 1,570,000 square miles supporting a population of 294,000,000.

There is nothing in the climate itself of Africa to account for the relatively small population; it is not more favorable to disease than that of India. The African is very prolific and multiplies rapidly, given favorable circumstances yet the population remains comparatively low. The causes are many & complex: Among them the following are the most important:

1. Africa is & has been from time immemorial subject to plagues affecting both man & beast. The latest of these is sleeping sickness which has during the last two or three decades caused a tremendous mortality of heretofore, unless checked, to depopulate the most fertile, because the best-watered, parts of tropical Africa.

2. Substantial warfare has in the past been a
most frequent cause of maintaining a low population.

There has in the whole history of Africa, indeed, Egypt or the white colonies, never existed a great
united nation, but instead a vast collection of
small tribes differing in language and custom,
constantly at war with each other, the outcome
of each side being the extermination of the other.

Some about the fourth century B.C. onward,
Africa has been the haunt of the slave traders;
until a decade or two ago this ravages annually
accounted for the loss of many thousands of natives.

A study of the methods of the white man on
the west coast of the continent in the east coast
tractics was impossible. It was for the natives, an
insatiable state of the country, to multiply

There are many other causes, some of which
have been discussed but by far the most
important is the high infantile mortality, due to
the primitive state of civilization of the negro.
Nearly half the children born die within the
first year of their lives, whereas in Europe
only one out of six die during that period.

Lacking out of the question immediately. Permanently
malaria accounts directly or indirectly for the
largest percentage of these deaths. Ignorance...
lack of cleanliness accounts for a large
percentage of deaths from Tetanus & Delirium
Meningitidis. When the mother's breast fails
there are no adequate means of feeding the
infant, as animal milk is rarely used for
infant feeding except among some of the higher
races of Hamitic or Semitic extraction, such as the
Julians, Galats, Wahumas &c. Milk is not used
among the pure negroes, who are only found from
Cape Verde to Rio del Rey &c only a slight-
centage among the Bantus, or these constitute the
greater part of the races with which I am
dealing. Also, when the infant is breast-fed
the negro mother gives it in addition most-
appropriately of all at an age when
it cannot possibly digest them. Unsuitable feeding
with resultant digestive disorders accounts for a
great infanticile mortality.

A certain percentage of deaths is due to the
distribution of children in accordance with African Customs.

Learnt the latter out of the question, Malana
lends its element to all the other causes, so
that it is sometimes impossible to say in how
far death results from a certain disease,
or from the super added Malana.
Malaria attacks all infants soon after birth. There is no such thing as congenital immunity, but about or shortly after the 7th year the child has acquired immunity to the malaria contracted in the district where he was born. But if the move to other districts he is liable to severe attacks of fever, to which he becomes immune sooner than the European. This, I am inclined to think, but am not in a position at present to prove, as having made a close study of mosquitoes, is due to a different mosquito sucking up the parasite.

The spleen list for endemic malarias proved unsatisfactory in my hands, but the blood list of persons in certain rice farms in the blood of all infants up to the age of five: after some they were rarely seen but New Endemic spleen, which I found in about 10% of all children remains as common up to the age of 15 or 16, although no parasites were found in the blood.

The adult negro is a strong healthy man, quite as healthy as the average European, so this is a fairly old age: the unhealthiness of the climate affects only the young.
The remedy for the high mortality is:

1) Education of the negro, to obtain his cooperation with the Sanitarians. Education will teach cleanliness, will cause the abolition of inhuman native customs, will cause the disappearance of the influence of the native medicine man, and the object of European medicines, particularly quinine, which is of such inestimable advantage in the tropics. I recommend the encouragement of goat & cattle breeding for milking purposes for the use of infants, a not very onerous montes task, also the employment of condensed milks & infant foods, for in spite of their disadvantages they are infinitely superior to the present articles employed in feeding infants.

2) Sanitation: this is most essential: at present it is almost non-existent except in a few of the large towns. With efficient sanitation the full meaning of many other diseases will disappear: the birth rate will rise & the death rate fall. With the increase of population more land will be cultivated & the natural resources of the country exploited. Trade will increase & with it the needs of the natives who will no longer content to live on the bare necessaries of existence. To obtain the new necessary resources the negro will have to work & now the labor difficulty will become a thing of the past.
Africa's Small Population

Its Cause & Unlikely

L. Rogers