Some experiences of, and remarks on, sanitation in inland villages, small towns, and camps in Cape Colony.

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Some experiences of our engineers on Sanitation in inland villages, small towns, and camps in South Africa.

In his evidence before the Royal Commission on the war in South Africa, Surgeon General J. Cameron, M.D., said, that the great lesson to learn from the Boer war, as far as the Medical Department is concerned, is Sanitation, and he added: "If Sanitation had been understood, not alone by our own officers, but by the rank and file, and the medical officers, commanding officers, I think it would have saved thousands of lives." Other witnesses before the Commission testified to the want of attention to Sanitation during the war, and the consequences resulting therefrom.

Our knowledge of disease is being rapidly increased, and as more is known of the causes of disease, so more can be attempted to prevent disease. Bad Sanitation is known to cause the spread of many diseases. It is therefore important in this connection.
that the public be educated in health matters.
Nor am I am glad to read in the medical press, is being done in Great Britain in medical press, of them. Though, our knowledge of sanitation, in its wide sense, is being greatly added to and
then is proved, which has long been proved to be
of great value, which is most understood
by the public, or if understood not considered
of sufficient importance to be much atten-
tion to. During my 18 years' experience in
South Africa, I have been struck by the small
importance attached to sanitation, and
I feel sure, if the public would only bring
out even the older and well understood rules
in sanitary matters, Cape Colony would be
one of the healthiest countries in the world.
At present the death rate is high. Infant
mortality is great, owing to inadequate care
feeding of infants. Sanitation, domestic
(e.g. ventilation and air circulating on floors) and
public (e.g. disposal of sewage) is bad.
The South African people have been
described as a dirty people. From my
experience amongst them, I can say
that very frequently both disease are
not
not considered by them to be due to fault, but are believed by them, like the Plague of Egypt, to be sent by the Almighty as a Punishment for sins, other than transgressions of the Law of Health. For many years I have been trying to teach them, what I know of Domestic and Public Sanitation, and have met with some small success.

As my subject is such a large one, I shall chiefly limit my remarks to the following divisions—(1) Disposal of Excreta, (2) Purification of Drinking Water, (3) Native Races as a cause of the spread of Intestinal Fever, (4) General remarks and suggestions. I shall not, however, strictly adhere to this scheme, as these divisions are so intimately connected. Intestinal Fever, of which I have had much experience, being a disease spread by bad sanitation, I shall frequently refer to it in this connection.

Disposal of Excreta. In most rural villages and towns in Cape Colony, the population chiefly consists of Dutch people, few in Cape Colony, and natives. Besides
these many Dutch people visit the town to
attend church, &c. and often, at these times,
remain in town 2 or 3 days. Of the Dutch, many
have been brought on farms and are
either the families of retired farmers or
from white. On the farms, the Dutch seldom
have a privy. Men, women, and children
defecate on the spot. When these people
come to live in a village or small town, their
habits, in this respect, are not easily changed.
And many, if they have a privy, continue to
use the old method, seeing any inconvenience
for the purpose. Many seem to object to
sitting on the seat of a privy, and stand
on it when relieving their bowels there.
The natives always defecate in the open.
Thus a very common method for the
disposal of feces is to leave it to Natural
Agencies. This I shall call the Natural
System. The cause may be cited of
the disposal of urine. It is only at the
more progressive Dutch farmers that
women provide a chamber inside the
bedroom, or, their farms, set apart
for their guests. In and around a small
town.
town or village, it is therefore very common
in all human excreta, lying in all sorts
of places, and to smell unpleasant odours.

Other methods for the disposal of
excreta are the cesspool and Pail System.
I knew of no small town or village where
other systems are employed.

In the village of Budaoddin,
(Population c. 1890 about 600) of which District
I was District Surgeon from 2 years,
(Dec 1870 to March 1873) I observed that
natural agencies chiefly directed to
human excrement service.

In the town of Burghersdorp,
(Population about 2000) the chief town in
the District of Albert, of which District
I was Acting District Surgeon, and
for 18 months, until I left the district,
District Surgeon, attention was previous
to my beginning practice there, being
paid to the disposal of excreta. The Pail
system was introduced a few months
after my arrival there in April 1873,
and replaced the Cesspools which had
been in use for several years. Under
the
The new and old systems, the natural system had a large place amongst the whites, whilst the natives adopted one another.

The water supply was obtained from wells, chiefly excels through a thick surface layer of clay, but the cesspools did not penetrate this layer of clay. They were often in close proximity to wells, but discrepancies of water from one of these were more than once declared by the Government Analyst to be pure and of excellent quality. There was at that time no reason to suppose that any well was contaminated, though water from all wells had not been examined.

Chills of fever were seen mostly in or near the seaports of the towns occupied by the Inner classes, who preferred the natural system, and especially in a locality where the layer of clay is not joined. The local medical men called the fever by various names, such as smallpox, malaria, typhus. During 75 years previous experience in the colony.
I had seen only 2 or 3 cases of enteric fever. From observation of cases coming under my care in Berghedale, after some experience, I considered that though this local fever differed often in many respects from enteric fever as described in texts books, yet it was more or less than enteric fever.

When the cellars were closed in 1893, and the sail systen introduced, a charge was made each time the sail was emptied, and it was left to the headholder to determine when his sail should be emptied. This, as I pointed out in the District Surgeon’s Annual Report for 1893, tended to the adoption of the natural system to a greater extent than before as the charge made was a great disincentive to many people. After a few months trial, the system was altered first by reducing the charge made and finally by laying a rate to land if the sails so that nobody was saved by those using the natural system. The sails however were satisfactory and once a week. Cases of fever became fewer for a time.
Very little attention was given to the disposal of bedroom effluents. By the Municipal Regulations, households were required to have their effluents collected outside the town at places set apart for this purpose. The town is compactly built together, and only small yards are attached to houses. To save expense, many people distributed their effluents by night in the street near their houses, and sometimes as far as was done to see by their neighbours. Despite this, the town remained healthy. It was very seldom that any one was convicted for contravening the Municipal Regulations.

This system had been in use for many years and the town was considered to be in a healthy condition by the inhabitants.

A severe outbreak of distemper fever occurred late in the autumn or early winter months of 1876, and a less severe one at the beginning of 1878. The second outbreak led to some improvements in sanitation. Progress was slow, probably as regards sanitation, an example to many towns in Cape Colony, though this is by no means perfect.
perfect. The wells are closed, and an endless
range water annually is led into towns by jinns.
From wells springs arising about 3 miles
away. Attention was in 1898 also directed
in the removal of ashes but it is only within
the last 8 weeks that these are being
removed by the authorities. latrines
have been erected for natives but this
was done by order of the military authorities
towards the close of the war. Peasants
in Burghead have taken a great interest in
municipal affairs and it was hard to
persuade the majority that this was
indeed in a portion of the town was
due to filth. This was in part due I
think, to the difference of opinion amongst
the medical men as to its nature. The
epidemic of 1898 however aroused
more interest in sanitation. Without the
cooperation of the Dutch people little could
have been done to improve matters as they
were the majority of the culprits also. The
head of the the Reformed Church, generally
called the Dopper Church, which has its
Theological College in Burghead, is a
man
man of great intelligence, is greatly respected by the inhabitants, and has much influence amongst the Dutch people in the town & district. He used this influence to persuade them that more attention should be given to Sanitation and they yielded. As Dutch Ministers have great influence with their people in matters pertaining to Education so their cooperation in educating them in Sanitation is of prime importance.

In November, 1878 I began practice in Somerset East (Population about 2,000) the chief town in the District of Somerset East. Many houses in this town have gardens attached, but many have only kurrajong yards. The paid system was in force but a charge was made each time the paid was, by the request of the Householder, supplied. Inturius Practice did not exist. Cases were attended in the gardens by those who had them, but with other circumstances were mostly shipped on the streets. Cases of diphtheria were occasionally but towards the end of 1900 and early in 1901 there was a considerable number. This alarmed some people, and
few of the leading inhabitants were called together to discuss the situation. The medical men of the town were specially invited and 3 out of 6 attended. The Mayor, who presided in his opening remarks said that he could not believe that bad sanitation was the cause of the outbreak as the sanitation had been greatly improved several years before and was now quite up to date. After the Mayor had spoken, doctor asked to address the meeting. I pointed out that the sanitation was very bad and antiquated, that good sanitation is an excellent investment, and especially emphasized the desirability of laying a rate to have the soil regularly fertilized, to remove toilets, and to provide latrines for nurses. The water supply of this town is good. It is led into town by pipers from springs on the mountains at the foot of which the town is built. There was no reason to believe that the enteric occurring was due to contaminated water or milk or turkey. The Town Council shortly after this framed new sanitary regulations, and
and proposed to levy a rate so as to introduce an improved rail system, but made no provision for the removal of filth from latrines for natives. Such neglect required the sanction of the Governor in Council before becoming law. And when I left Somer-
set East (Aug. 2, 1902) they were not in force. There was a delay of many months in getting the required sanction from head-
quarters through repeated urgent requests I sent to Cape Town.

In May, 1901, a few months after Martin
Low had been declared a plague area, a vacancy occurred in the Town Council. On being asked to stand as a candidate for the office of Town Councilor I consented was elected after pleading. The Council listened approvingly to my suggestions for sanitary reform, but did nothing to provide latrines for natives or to remove sties. For example, they
adopted my proposal that payment should be made to any one proving that he had destroyed a rat or a mouse at the time Bubonic Plague was known to exist in Port Elizabeth. Through their
Port our duties of imported stuffs were obtained & with which place we were in daily communication. Provisions at this time in Somerset were believed to have been introduced in large boxes of goods brought in from Port Elizabeth. Shortly after I left Somerset that this resolution was rescinded on the motion of a new Councillor on the ground that public money was being wasted. Plague was not certified out in Port Elizabeth but new case had appeared in Somerset. The public were however advised to continue to destroy these vermin. The Commandant of the District associated me in my efforts to procure catines for natives & inform them of the situation. Under Martial Law he ordered the Council to provide catines for natives. Places were made and tenders asked for. Fortunately of the administration of Martial Law shortly after this passed from the Control of the Superior Authorities to that of the Colonial Government and no catines were needed since I left Somerset. I have tried, by writing to the local press to arouse public
Public opinion to the necessity of these
But, as yet, with no success.

On January 2, 1902, I left Somerset East to

instruct to Mogokking Boktorer. The refugee camps

having accepted an appointment offered me

by the Imperial Government. Mogokking is

in Kaffrarian Land, Cape Colony, but near the

Transvaal Border. The administration of the

lands was under the Imperial Government. The

occupants of the camp were chiefly women

and children from the Transvaal. There were also

Medical Officers, including a lady doctor, and a large staff

of nursing sisters, probationers. The sanitation of the camp had at first been bad,

because of the camp's isolation and the medical

arrangements inadequate. The

population of the camp when I joined it was

nearly 5000. In October 1901 there were 406

deaths—275 from measles, 141 certified as
due to Intestinal Fever, and 15 from Dysentery. In

November 231 deaths were registered—103

from measles, 27 from Intercic, and 10 from

Dysentery. In December out of a total

of 90 deaths, 23 were due to Sepsis from

Measles.
Measles, 18 to Septem, 8 to October, +19 to
Diamboca. In January 1902 there were 38
deaths, 12 of which were due to Senterice. From
the end of July losses on the sick list at
the Camp, on March 2d, + did leave + did
not return to it. I have now no access to
the figures for July but there was a total of
about 20 deaths, and during March the
total was very small from 3 to 5. I take
these figures to show that Senterice was
slowly stamped out by this time. My
predecessor in office had retired on the
ground of ill health, after being 3 months
in the Camp. He told me that the key he
joined the Camp there were 35 deaths A
man of assistance, joined in the management
of a Camp where 35 prisoners of war were
confined, he had three months during
his tenure of office as S. M. O. in the Ref-
serving Camp. To promote good sanitation
on my arrival I was gratified to see what
was being done to attain this. The sanitation
of cleanliness of tents or received great attention.
Arrangements were being made to boil
the drinking water which was obtained.
From wells, the rail system was to be introduced instead of the system used. The water supplied was not of very good quality, owing perhaps to percolation of water from the Mokopo River, which ran through the Camp, the wells being from 25 to 100 yards from the river. Before reaching the Camp, the river ran through a 动 village of Magalies, about 1 mile higher up, and was greatly polluted in consequence.

I observed here as elsewhere, that many Boers preferred to defecate in the open instead of using the accommodation provided, but when the rail system was introduced, they did so as often as 20. This system was introduced during my tenure of office, the rails being fixedly nailed and with an anti-siphonic collection.

On April 19, 1902, after the expiry of my sick leave, I was sent to the Boer Refugee Camp at Vryburg, and remained there until the Camp was abolished in December 1902. Vryburg is in Boshuamlad, Cape Colony, near the Transvaal Border. The Camp contained chiefly families from the Transvaal.
Jervoiseal & Bethunealand, the letter being
the families of rebels. The population was
about 2000 and the Administration under the
Infernal Government. The Sanitary affairs
of this Camp were similar to those at the
Mafeking Camp. The drinking water was from
wells sunk in the Camp, but it was boiled
before use; the hand system was used, the piles
being flushed nightly & a daily return collec-
tion made to wash them out.

The Camp was within 1000 yards
of Vryburg. the headquarters, during the
latter part of the war, of the Western Trans-
vaal Command. The Sanitation of Vryburg
was like that of other small towns in Cape
Colony, not good. The Q.M.O. of the Com-
mand once asked me, as I had some
experience of Sanitary matters in Cape
Colony, what steps I advised him to take
in order the Municipal Authorities
to clean the town. My reply was that,
unless they were compelled to do it, you
would be required to educate them to do
through voluntary; and I advised
him to have it done under the Peace
which
which Mental laws could give him.

Sanitary orders were thereafter issued by the Military authorities. The chief cause of pestilence at Vryburg was covered, a fence provided and a guard set over it as long as the Military were in possession of the town.

Although fault could readily be found with the sanitation at Vryburg & Vryburg Camps, still I think it was an object lesson to Cape Colonists, had a very good effect in educating the Transvaal settlers in sanitary methods.

Thus far in describing some of my experience by the disposal of sickness, have mostly dealt with their collection. I shall now briefly describe how I have controlled renewed and further treated at the places mentioned above. These need not be written about unless when the natural system was adopted.

I have no experience of what was done when a cesspool was considered to be sufficient by itself, but only knew that it was filled up with earth & aloe, one made. When the cesspools were established at Barloga, they
They were filled up with earth.

When the sail system was employed at Buckingham, the sails were carefully raised at night out of the vellet, & emptied into deep trenches made in the bank. The matter deposited being covered over with a layer of earth. As it was difficult to get any one to do this work, the sails were often emptied on the vellet, close to the village, and the deposit not covered. At Buckingham the sails were removed at night, placed on a specially constructed wagon, the contents emptied into a trench near from the town. Earth thrown over the last deposit. Finally, as I found out one day to my surprise, they were washed in the Stromberg Spruit which runs near the town. This Spruit is a watercourse often without running water, but when heavy a long continued rain falls it carries a considerable body of water to the Orange River. When the sails were removed a clean one was put in its place at once. At Stromerdt the sails were taken by night to the
struck where an of wagon was halted, embled into a tank on the wagon, washed in and his
lakes on his wagon and brack into place. The contents of the tanks were finelly
sifted into large reed bags and put in the vault. The earth was thrown into
these until they were nearly full. But on my suggestion, a layer of earth
was placed over the previous night's deposit. The vault was the property of
the household and he had only one.

At Meafaring the tanks were emptied by night into a pipe. Sanitary cart and
washed out with a dump cart loaded by an
accompanying vehicle. The contents taken
a long way from dales, embled into deep
mud, trenches and covered over with a thick layer
of earth shortly after being deposed. At
Meafaring much the same arrangement
was used as at Meafaring, but a few
months before the vault was closed, the
tanks were buried in dillllustrated
about 1 1/2 road, the layer of earth covering them being reached off doors.
It was intended to grow a crop,
After a little, on these trenches, but this had not been done as long as the camp existed. These trenches were in earth, though at some distance from tents, etc.

No dry earth or other material was, as a rule, used at Birkwood, Birtley, or Somerset East, but at Wethering and Wrexham a disinfectant powder could be freely used at the privies set about for members of the staff, though it was not used in the earth latrines.

At Birkwood, a regulation now exists that ash, dry earth, or other disinfectant must be used in the toilets; the powder is used in the earth latrines. The sanitary toilets are cleansed once a week. At Somerset there is a regulation: "That dry earth or disinfectant be kept in each closet, but it is not enforced, it being notorious that it is the exception rather than the rule for householders to comply." Sanitary pails are emptied once a week the excreta being disposed of in the general district. Householders requiring service are provided by the contractor till the service is still in operation.
by the householder two latrines yet open in the attics."

At Bredasdorp, Beaufort West, and Worcester the filth system as carried on is offensive both to those using a privy and to those in the streets when the pans are being removed. The system used at Meiningen and Vryburg Camps was much less objectionable. In those sanitary pans unemptied for a privy, which as a rule are badly constructed and managed, in a week or longer in this climate is highly undesirable at any time. But in the winter time, when this system gets abroad, it is a privy in its most disgusting and distasteful.
so that there was no need to dip water from
the Gurus. Stock of all sorts had access to
it. It ran on fairly level ground but
particles of fecal and other matter could
be blown into it. I have seen steps which
looked as if it had been used for sanitary
purposes lying in it.

A Village Management Board
was not in existence on my arrival in this
village. But steps were being taken to
have one
formed. There was no control for member-
ship. It was difficult to get people to
join it, as it was thought that it would
be given to making people by those instit-
ating reforms in the Management of the
village, so that to be a member was
undesirable for business and other reasons.

The 3 members elected, including my-
selv, were unwilling to be in a position that
no harm could be done to them if they
attempted to improve the condition of
the village. I was elected Chairman of
the Board. As soon as possible we took
steps to have the Gurus fenced, even
trying to get funds to construct the fence.
in适合 from its course when I left the
District

The village of Napier (Population
in 1840 about 600) is situated about 10 miles
from Bredasdorp. There is an abundant
supply of quality of flowing water here. The
village is built on a slope. The water

drains in an open surfaced trench
along the foot of the slope and first
reached the part of the village where
many of the former people resided. As a
consequence this water was very much
jouled. All sorts of impurities were washed
into it by rain, matter was carried into
it by the wind. In one of my Annual
Reports to Government as District Surgeon,
I reported the state of affairs and also
mentioned that a resident of the village
had told me that he had seen women
washing chamber utensils in the drain,
and masses of faecal matter floating
down it. There was then no Management
Board in the village but not long after
I left the District one was formed probably
sanitation is receiving more attention.

Fr.
For reasons already stated I believe the drinking water at Burgersdorp, though mostly derived from wells was generally fairly pure. Early in 1898 a paragraph appeared in the local newspaper describing the precarious condition in which a certain family had been found when attacked by Fiebri. The father, mother and 5 children were ill. This paragraph was read by the authorities at Cape Town and as District Surgeon I was requested to investigate the cause of the outbreak. I had close cases of Fiebri in the part of the town where this family resided. From time to time, in about 5 years previous to 1898, I had attended a short time previous to the publication of the paragraph, a family living in the neighborhood in which the father & 5 children were attacked. The Municipal Authorities were aware of the state of matters in this part of the town, but though they had introduced an improved water system they had not yet been awakened to the necessity of good sanitation in general. My investigation pointed
pointed to a well as the source of the out.
break, and I was requested to send a sample
of water from the well to Cape Town for anal-
ysis. There were privies in the line of the
different families in the neighborhood,
but I found that there were ground near
of around the well. The following is my
report when forwarding the sample for analysis
on March 18th 1898.

Description of Sample of Water Sent for Analysis:

(1) The sample was obtained on March 17th 1898
in a quarter of a glass of a dark brown bottle.

(2) Source of Sample: From a well in a garden behind
the house of Nicholas Grobler, Bergkampdorp.

This man, together with 5 members of his
family, lately suffered from Typhoid Fever. Another
family living near by have also lost their Typhoid.
Both families tell their water is not from this
well.

(a) The well is shallow. (b) The soil and soil are
alluvial and it is believed the well goes
down to a very large partly in a bed of shale.

(c) It measures 24-6" to the bottom is
2'-8" in diameter. It contains about 74
of water. (d) It is distant about 2
yards
yards from the back window of a house from which
it was brought, 26 yards from a spring, 34
yards from an old house and 27 yards from
a cattle tank. (c) It passes through moist
vine stratum (3) The sides are wooden with
light slit in uncovered.

The analyst reported that the well
was quite useful for human consumption
but the well was closed.

I have attended to the washing of
Sanitary facts in the Stramberg Street by the
Municipal Authority of Burgrecht. This
stream a water course flows through the dis-
crt. of Albert and after passing Burgrecht,
has a course of many miles. I do not know
that people use it for water as their sole affability
source of rainfall, but it is added many
times by people crossing the stream and
by those living near its banks. I pointed
out the soil effects which might occur in
from washing the falls in the stream but
the practice has been continued up to the
present time.

There is no reason to suppose that
the water supply at Somerset East was failed
at
At Mafuling and Vryburg Camps precautious were taken to prevent the water in the wells from being contaminated. The wells were covered, good pumps erected, and heads built, and water allowed to flow back into the wells at Mafuling Camp. When cases there, most cases of sickness came from one part of the Camp, where the analyses of the water & other circumstances observed that the water used was not the probable cause of infection. Boiler water was not used at any part of the Camp, except the Hospital, but I had not found out any satisfactory cause. In this state of affairs when I left the Camp, at Vryburg Camp. In 2023 minutes after I joined it case of Intoxication were seen. On investigating the cause I discovered that some people affected had drunk water from 2 sources outside the Camp. These sources were prohibited and guarded after this, no more cases occurred, ref. to the closing the Camp.

Some time after the military occupation of Vryburg ceased, I noticed that the deficiency of water, actually, viz. a spring, was increased & people defiled buckets into it to obtain water. I pointed out to the Free Church that this...
was a dangerous practice, but I said that the quality of the water was excellent. This had been the method used before the war.

Native Races as a great cause of the spread of Intestinal Fever. In August 1895 at Bungesindro, I made a Post Mortem Examination of the body of a native whom I had seen in life 2 days previously, and who came to me to be suffering from the disease called locally Intestinal Fever or. I refused to give a certificate without examining the body. (Registration of births and deaths was nearly 2 years before the enactment.) Accompanied by a local medical friend I examined the body and found it in its Smuts lesions typical of Intestinal Fever. This, as far as I could ascertain, was the first Post Mortem Examination made at Bungesindro, in a case where a person had died of a Fever believed to be the same as that called locally Intestinal Fever or. This native did not contract the disease locally. In January of February 1896 I examined the bodies of
I wrote soluble with contracted his bowels locally and who, without doubt, had died of Dijon Fever for which I had treated them. One body, that of a prisoner, I, had examined, by very urgent desire, I, presence, by a friend who had practiced many years in the town. They would not believe that our local Fever was Dijon. He had had considerable experience of Dijon in England several years previously. Those Post Mortem examinations relieved me from a very uncomfortable position. I differed from my medical brethren about the nature of a Fever which did not present the classical symptoms of Dijon as described in textbooks. But which, for reasons I need not now state, was in my opinion, Dijon. I had also been visited by several members of the public on account of their cases I had been unable to treat. Making these assertions I was in cadet of my opinion, I, while I could not be defied. From District Surgeon's reports made at this time and later it seems that generally, medical men...
in the colony had a difficulty in recognizing their fever as febrile.

In April 1846 there had been no epidemics in progress, and though it had been incidence in certain parts of the town. In December 1845 it was brought to my notice that sick natives, in large numbers, were arriving at the station through Burghersdorp by train. The trains conveying the natives arrived from the north at night, at first in several trains at Burghersdorp Station. The natives were frequently seen to debark in the dark near the station, through corduroys were provided for them by the railway authorities.

On Dec 23 1845 I was asked by the President Magistrate to examine the case of 2 natives found dead in the train which had arrived at Burghersdorp that morning. The Magistrate accompanied me to the station and found many sick natives in the train. The Magistrate estimated the number at between 40 and 50. Many were very sick and on examining some I thought they were suffering from sultice fever. Two died.
days later I was asked to examine 2 other Ortho group under similar circumstances, and saw a large number of natives in the town who were apparently suffering from Intox. The examination of these I found revealed that these natives had doses of Intox - 2 had perforation of the bowel. Reported the matter to, and warned, the Government against the danger of allowing native sick of Intox to leave by rail or road. The native, when he gets sick away from home, has a strong desire to return to his home. The Eastern Railway Line which passes through Benareseshtruck, is the chief route by which natives proceed to and from the Northern State. These sick natives, and some others, came chiefly from Benareseshtruck.

No notice was taken of my warning by the Government and sick natives continued to pass through the town by train. Some got off the train at Benareseshtruck, to proceed to their homes. But most remained on. Some allowed to leave power to 32, then many were three long place at my district in which to
To test them. From time to time dead bodies were found in the trains at the Station, or on the roads near Burghersdorp, up to the time I left the town (October 1898).

I had warned the Government of the danger of Interic becoming epidemic in Burghersdorp elsewhere, by allowing these sick natives to travel about the country, but I did not imagine the disease would be of the dimensions it assumed when it came.

Cases of scurvy, smallpox, and other illnesses, were scattered all over the town. There could not be traced to any particular course of water, milk, or other edible. I too contracted the disease, and was laid aside from work for 3 months.

Numerous cases also occurred in other towns in the Eastern Province. The only satisfactory cause for the widespread outbreak, which took place in the late autumn and early winter months of 1898, appeared to me to be that the wind had blown the infective elements of the sick natives, passing through, and depositing in the open at the Station into the town, and these had contaminated the water, chair, milk, and other food articles,
or from the plates on which the fluid was stored. This was not the reason for flies.

Dr. Turner, the Medical Officer of Health for
the Colony, was sent in August and September to in-vestigate the cause of the outbreak. Many cases had occurred in the district around Berpineschl. I told Dr. Turner that, in my opinion, the sick
destines arriving at the Station was the cause of the outbreak. Operations not to have also that of
the cases in the country which I knew, must
had occurred amongst those who had occasion
to cross the Stromberg during on their way to
from the town, or amongst those living near
its banks. The water passed close to the Station.
Not outside the town, the natives used its banks
as well as other places nearby, as convenient
planks to defecate. The Municipal pumps were
also washed in it lower down. Before Dr.
Turk had completed his investigations I had
left Berpineschl on holiday and I have
not met or communicated with him since
then. Word of this outbreak has never been pub-
lished contrary to the usual custom. I have
tried, without success, to obtain a manuscript
clipping of it through one of the members of the
Medical
Medical Council (Dr. J. Hewat M.L.A.). In the authority of the Town Clerk of Benchawan, I state that Dr. Turner informed the council that he attributed the outbreak to infected dust blown from the station, gaining access by some openings in the tents to the wells. With dust, no badly putrid cows or animals, which are common in indoor houses in Lake Colony, with 2 other articles of food could easily be infected by this dust. Water collected from the 200 dead or sick in tents could also be infected. Cases of enteric came under my observation in 1877. When I visited the hospital, bread only and tank water, and I considered then that the tank water was more through no other than from one of the wells. Dr. Turner is now M.D. 14.

In the Transvaal colony. Since the war, I have read a speech by Mr. P. published in one of the medical journals, in which, it seems to me, he states that in his opinion that has the great influence in spreading enteric in this country, unless it gains access to water. He wrote that he was further investigating the matter and published his results when his investigations were

[Signature]
Finished. I have not seen these.

In January 1898, as has already been stated, Benphowna was visited by another epidemic of cholera but it was not as severe as that of 1896, probably because so many people were immune. Several patients were ill in lower 45 at the station. I could not trace the cause of this epidemic to any one source, but, as it was the season for this, it was suggested that flies might carry infection. Instructions were therefore issued that all sets of privies should have a well-fitting cover. I pointed out that the privies were so badly constructed that flies would not prevent light of flies gaining access to the inside of the hole. What was required was a cover for the hole or a better-constructed privy. Nothing was done to provide either of these, so perhaps their importance was not appreciated.

The influence of flies in spreading infection was not as clearly proved to me as the influence of wind, but that they had some could not be denied. It seemed to me that wind carries infection further than flies.

Some months after the epidemic of 1896 my friend Dr. Caiger settled in Benphowna.
Borreschdorf, as Railway Medical Officer, he
discovered the probable cause of the cutaneous
infection, but he would not agree with me in thinking that
the wind had any influence in spreading infection.
He reasoned that the wind stream dried the excreta and destroyed the germs, and that dried
excreta through affectionable otherwise were
harmless. He reasoned that excreta need
not be dry to be blown by the wind, but
just as a rapidly moving stream carries
heavy stones a certain distance, so a high
wind, especially in the form of the whistling
or "devoi", may transport moist and infectious
heavily particle of diseased matter a consid-
erable distance, that everything during
the epidemic pointed to an unknown
source of infection, that there we had all
the conditions necessary to show that
wind blowen infection may have been the
cause. An experiment on a large scale had
been made. The railway station was on an
exposed site outside the town of about 500
yards from its center, infections matter was
deposited there in abundance, high winds,
which we could see raised much dust,
blew from that quarter I could show infection on water itself and the town, wells, tanks, milk, and other articles of food could be infected; the sources of water supply were numerous and were situated all over the town, then were several sources of death likely, many people affected did not use milk, fruit, water, or the like in its vicinity; all classes were affected. The evidence had appeared suddenly in all parts of the town; death had been sudden in a part of the town for some years previous, had not carried infection far, beside this had not become more at the time of the epidemic. From these considerations I thought I could exclude all probable causes of infection. The evidence of dust infection from removal carried by the wind. The water from the public and a few other wells was during the epidemic chemically and bacteriologically sound not declared unsafe. This removed the need to exclude the presence of either enteric germs.

Much evidence has accumulated since 1898 in support of the idea that death of human cause is the cause of the epidemic of enteric fever in South Africa.
Africa. I have read what has appeared in
The British Medical Journal on this subject, but
d things before I had read anything there either.
When I was convinced by my own observation
that infection carried by dust and flies could
explain the spread of enteric when other causes
could not be proved, and that patients de-
siring from this disease, travelling by rail or
road, or at their own homes, were numerous
free from which it could be spread.

What I saw of enteric during the
mild epidemic in Somerset last fall led me to
think that the chief free of infection were
the secret of infected patients. Patients
returned to Somerset from the war. I
believe some of them started the epidemic.
It was mainly next places where such patients
were found that new cases occurred. The
patients lived in the location of other
parts of the town all at a lower general
distress than most of the town. It was
curious to notice how limited the
glass areas were. The location was a
short distance, with no open space inter-
vening, from part of the town where severe
cases
...occurred. I lived here my wife was attacked at other points cases occurred where sick native lay sick. They died and all entries not kept were supplied to them by the authorities through notification of cases was compulsory. The water weekly was examined found to be pure, there was no common pool in the cells. From my observations I concluded that infected meal, blown from the location to the heart of the town past it near the chief cause why cases occurred there, and that this may also have carried infection in other areas and that dust may carry infection further than this.

My friend Mr. Cairns has published with some interesting facts regarding the native as a distributor of disease. They should narrate a few of them. When the Reinforcement Column was established along the South side of the Orange River, all nations coming south from the transvaal chiefly were detached and shipped at various points where the railway crosses the Orange River. A record was kept of all the prisoners disinfected between 21st 1846 and March 13, 1847. At Kimberley.
In the District of Albert, 14426 were admitted. No record was kept of the number of those who appeared to be sick, but the Surgeon-in-Charge of the Dispersing Station, who remains a very intelligent young Colonist, informed Dr. Caiger that he estimated the proportion of sick at never less than any batch than 5% and sometimes as high as 20%, and that most of the sick appeared to have been suffering from Enteric Fever. Subsequently, says Dr. Caiger, that 10% were sick, that there were Enteric Cases, then in 6 months 1080 cases of Enteric passed over the Bullah Bridge into the Colony. Dr. Caiger also states that, from inquiries made, he estimated that 1000 sick Maties arrived at Burphenshaw Station from the Transvaal during May 1898. He also has sub-
mitted one with some details of 4 cases of Enteric which returned amongst the Rail-
way engineers at Burphenshaw during the 19 months ending December 1898. The
patients were men on night duty, the time
before the native trains arrived in Burphenshaw,
only from the Transvaal. There were the
only
Only cases during this time amongst the railway "dabbages", and no one living at the same boarding house or at any railway "dabble" was at this time affected. I think clearly shows that these men were infected, either on duty, by eating boiled railway tickets of infected natives. He suspects that the men Jingers became infected by handling the tickets, or that they on taking their midnight meal or when washing their Jingers before me, the "leaves of a letter" think been infected at Alcide Hotel. We state 3 men who collected "dabbages tickets" sick of "dabbages fever" about the same time as the men in "Broughton's" were sick, whilst there were only 3 cases of "dabbages" none being Jinger, amongst the many the Railway "dabbages" at Alcide Hotel during this time.

Any one knowing the habits of the natives will understand what a grave danger to the community they may be when suffering from infectious diseases, but more especially from "dabbages" fever.

**General Remarks and Suggestions.**

The present Public Health Act in Cape Colony
Colony was promulgated on January 1st, 1897, it is called The Public Health Amendment Act 1897. Previous to this there was an act which was more imperfect than the present one. Under this the notifiable diseases were very few in number 6 included Cholera, Yellow Fever, diseases which, if ever seen at the coast, are never seen in inland towns. The notifiable diseases under the present Act are: Smallpox, Typhus, Cholera, Diphtheria, the disease known as Scarlet Fever, and the fever known by any of the following names: Typhus, Intestinal Typhoid, Relapsing Fever, and others.

There is a Medical Officer of Health in the Colony, and, since Plague has been introduced into the Colony, there are several Health Officers under him. Plague is feared, but, in general, little is done to prevent the spread of Intestinal Fever, Typhus Fever, Cholera, and other diseases.

The Act of 1897 gave power to the Colonial Government to appoint...
A Medical Officer of Health, when the local government fails to do so. District Surgeons are not Health Officers, but in the strict sense of the term. They are called upon to write a yearly report of the Public Health of their district as far as this may come under their notice, but are engaged principally as general practitioners of medicine. Should any question affecting the Public Health of their district arise, they, when requested by the Government, investigate and report. But they have no direct relation to the Municipal or other local authority. The Municipal Council of Great Britain, a town large than any I have visited in, a few years ago appointed a Medical Officer of Health, but he soon resigned as there were no funds available to carry out the reforms he suggested.

I quote from a daily newspaper, the Attorney General's reply to a question asked in the Legislative Council during the session of 1903. This will show the opinion of which a member of the late Ministry held of the present Public Health Act. — "The Hon. T. L. Graham said that the existing Public Health..."
Health Act was extremely weak, and increased powers to the Central Government were urgently needed, in order to enable it to exercise close control over sanitary and health matters. Practically, the Government had but little power over local authorities in these matters, the only power being that conferred by Section 7 of the Public Health Amendment Act, which required regulations on one or two simple health matters to be framed and adopted by urban local authorities, and in event of such regulations not being acted upon by the local authority, the Minister had the power to step in and cause the work to be carried out. But in doing so, he could not exceed a sum greater than one quarter of the previous year's income of the local authority, and in any case, such expenditure must not exceed £100 in any one year. With regard, however, to the main and most important matters of sanitation, the Government had no powers whatsover. The present Act, as originally drafted, contained a number of stringent provisions, which had unfortunately been...
enough. It would be impossible to introduce additional legislation this session, but it is hoped that such would be done next year.

A new Ministry has been formed since then with an able Medical officer as Premier and another doctor in an important office; the Governor's Speech has been read, but there is no mention of any intention to introduce the Public Health Act. Infections and Contagious Diseases in Animals. However, are to be dealt with as Agricultural interests are to receive much consideration from this Ministry.

In the Cape Parliament several medical officers have seats. Medical officers, however, will have more influence as sanitary reformers as members of municipal councils where "high politics" do not receive much consideration. If sanitation is to be greatly improved in the Colony, Ministers of religion, medical men, and all who have any influence with the people must engage in a "sanitary crusade." That doctors should engage in this work is suggested by the public to be a new departure. It was said in...
Amhurst East when I attempted to point out
sanitarySans that it was surprising
that a general practitioner of medicine should
advocate improvements, as it was against
his interests that these should be carried
out.

From what I have written it will
be concluded that there is room for many im-
provements in the methods generally adopted
for the collection, removal, & further disposal
of excreta in villages & small towns in Cape
dory. The best method of doing these is to
vary with local circumstances, "the water
closed & covered system of Europe" could not
be advantageously adopted in any small
inland town or village with which I am ac-
quainted, because either water is not good
sufficiently plentiful or other conditions are
not favourable. The cesspool & tank systems
are those which must generally be adopted.
The cesspool as I have seen in is a cleaner
method for collecting excreta than the tank
system, still under certain circumstances I prefer
it. If cesspools be made so that they can
root by any chance foul water, be protected
from...
from the influence of rain water and flood water, the varying levels of subsoil water. I have no objection to them. At present I am living in a village where I have a cesspool in my garden. I find it is not as disgusting as it is when the hole system is used. When the cesspool is sufficient can be filled up with earth as it is when the hole system is used. The cesspool is sufficient can be filled up with earth. Others are made, the content of the old one can in time be placed on the soil. There is no danger of it fouling any water course. Under my present circumstances, I consider the cesspool is the best system I can use. Under other circumstances, the method advocated by Professor Einstein (Brit. Med. Journ. Dec. 19, 1903) may be adopted. He recommends a fixed system with numerous small drains dished at convenient distances over different parts of the town where the cesspool and the from cesspools can be installed immediately, covered by pipes to the outlet where it is to be treated. Each district drain may be considered to be a large water tank which instead of serving one house serves a group of houses in its neighborhood.
In general adoption in reduced time, small
villages in Cape Colony I advocate the hole
system. The privy should be properly con-
donstructed & kept clean; if possible, dry non-
sterilized earth should be used in the hole
and these frequently replaced & cleaned before
being put back in place. The contents should
be taken away in properly constructed sanitary
carts or buried in shallow trenches in the
ground where they are deposited, in the same
fence, cultivated. At Vryburg Camp this
method of locally disposing of excreta was
adopted, but the use of antisepicites in-
stead of dry non-sterilized earth would prob-
ably prevent a good bath being raised.

Other methods may be used. First,
for cleanliness, it is necessary in the first
instance to have a properly constructed
privy. There has not yet been one through
which water has been designed. In a
privy this should not gain access to what
is deposited there; the receptacle should be
ventilated by a pipe carried up outside the
privy. To keep out flies when such parts are
used as well as to prevent urine being
passed.
placed in front of the seat. I have thought at
the following plan. The seat should be
placed on a platform moved by a lever at the
back of the privy, or by other suitable mechan-
ism, so that the seat can be raised on the
platform to allow its toe to come in contact
with the under surface of the seat, thickened
if necessary by a ring of wood. If a cover is
the seat be now used a closed chamber
is formed to which the excrement can be
thrown when the privy is uncovered. If these
arrangement be used and also dry non-adhesive
earth, a very good privy is obtained.
People however must be advised to replace the loose
earth before leaving, or a cover which acts automatical-
ly is desirable. I think this object can be obtained by the following plan. The
platform for raising lowering the seat
being as before, the toe of the seat should
now come in contact with the under surface
of a layer of wood perforated on a frame made
for this purpose. The layer of wood has an abrupt
reminiscent to that usually made in the seat of
a privy. Above this layer of wood a light
sheet iron hinged plates over the seat
and
and with its interior form a closed chamber. Above the flaps the seat is placed. But this is in 2 layers the lower one fixed (this part is not absolutely necessary), the upper one hinged at the back edge. The flaps (one on each side meeting in the middle line when closed) are opened by anyone sitting or pressing on the seat, and are closed by springs. The following mechanism will move the flap of its own side. A vertical metal rod, engaging a rack with a few teeth, is placed under the seat near a free corner, its lower end fits into a socket at the bottom which is a spring sufficiently strong to raise the front edge of the hinged seat about 2 1/2 inches. To close the flap, by means of suitable gearing. The upper end of the vertical rod is joined to another rod, the upper end of this connecting rod comes in contact with a suitable acceptable fixed on the under surface of the hinged seat near a free corner. Through this connecting rod the rack is moved vertically downwards when
The seat is forced down vertically downwards by the spring in the cistern. A gear engages into the rack by means of chucks and friction wheels. The flake is turned or shut according as the rack is moved vertically downward or upwards. Portions of flake are almost required in the gearing, as the flake requires to be moved through a little less than a right angle to completely remove the sail.

The same mechanism of inging seat or cylinder could be used to automatically discharge a fixed quantity of dry earth or other suitable material over the last addition to the sail.

I am not in a position to have a privy constructed on these lines at present. I think one constructed to obtain the object I have in view would be welcomed by the members of the public who consider that a privy should be as clean a place as it is possible to make it.

I append a diagram drawn to scale (40 inches = 1 foot) to show that there is room in a privy of the ordinary size for
the arrangement I suggest. The gearing I have designed is substantial— all teeth being \( \frac{3}{4} \) in. diameter at the pitch line + the pitch \( \frac{3}{4} \) in. teeth \( \frac{2}{3} \). I have shown what I call an intermediate shaft. This is required if the rack is placed in front of the horizontal shaft (as drawn) and in this case it requires to cause the flake to move in the horizon direction when the rack is moved entrance.

A simple method of having an automatic cover is to have a single beat which does not reach the heartbeat. It can then be opened, but so it would rest on the back of a person using the fire, it would tend to in convenience the stench and would close with a slam when not lowered by them.

Richard Lee

Ss. Peter & Paul

Cape Colony

March 28th 1904