Diseutery in the Western Division of the
Board Bengal, India, from a general
practitioner's point of view.

Thesis for M.D.

By

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India

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In the following pages I purpose giving a short digest of dispensary cases while I attended on five tea gardens during the months of June, July, August, and September, eighteen hundred and ninety-five.

To abstract any definite conclusions from such a limited number of cases and from the means I have had at my disposal in the treatment thereof would be illogical in the extreme; still even from such much valuable information may be obtained.

I am situated as doctor of a tea district in that portion of the Western Dooars, Bengal, which extends between the rivers Drina on the East; and Jaldacca on the West; the northern boundary being Bhutan; and the southern boundary being formed by the rivers Drina and Jaldacca respectively. The whole of the district lies on the slopes of the Himalayan mountains between thirty and forty miles from Darjeeling in a south-easterly direction. The annual rainfall varies between one hundred and seventy inches, and
and two hundred and twenty; by far the greater portion of which falls during the months under consideration.

The temperature during these months varies from seventy-eight to ninety-four degrees (Fahrenheit) in the shade; the average probably being about eighty-four.

The atmosphere is moist, clammy, and oppressive during this period, and the district is a very unhealthy one, especially for Europeans (four deaths out of a total of twenty-four in 1894). The soil is a heavy loam as a rule, but in some places it is light, sandy, and gravelly.

The jungle in the vicinity of the more northern gardens is heavy forest, but in the more southern parts it is grass jungle varying from fifteen to twenty-five feet high. Owing to the opening out of tea gardens of late years the soil has been much disturbed and broken up, and very probably this is largely responsible for the great prevalence of malaria that abounds in this district. The
sanitary arrangements are unsatisfactory in the largest use of the word. The villages are improperly situated, improperly drained, or rather not drained at all; and no arrangements exist for the disposal of effete products, with the result that the disease dejections are largely deposited among the tea bushes, and the stench I have often experienced when passing is past description.

There is no proper water supply; the coolies obtaining this requisite from the streams and ditches in the vicinity. There are no hospitals nor any other convenience for housing the sick; these having to be treated in their own houses in apartments barely large enough to admit a sufficient supply of air necessary for the breath of life, not taking disease into consideration.

Under these conditions you will easily understand what great disadvantages the practitioner has to face both regarding research and treatment of disease; for example one has no means of controlling the patient from
eating what he chooses; you cannot guar-
test he takes his medicine regularly; in-
deed I have been in the habit of
sending a man to see that the med-
icine prescribed was taken according
to directions; and again it is difficult
to make a country understand the
necessity of keeping himself warm,
and I have frequently found a patient
suffering from acute dysentery lying
on the ground outside his house with
no more clothing than the usual rag
around the loins; further it is quite
impossible to be certain that the stools
are properly disinfected.

I might con-
tinue stating difficulties—how some
absolutely refuse to control their appetites
how some won't allow the European
doctor to enter the house at all; and
the patient has to be dragged outside
in order to be seen—an ordeal suf-
ficient for a fatal termination in
many cases—how many of them don't
seek medical advice until advanced
in the last stages of disease. I won't
add more; I think I have stated
sufficient to convince you that in a medical practice such as this definite conclusions are impossible.

As the cases recorded occurred on five different gardens, I shall give a table of each garden separately, and afterwards consider the etiology under the heads of season, elevation, soil, rainfall, and age of garden.

**Bamanganga Tea Garden.**

**Sixteen hundred coolies on Garden**

<table>
<thead>
<tr>
<th>Months</th>
<th>Cases</th>
<th>Deaths</th>
<th>Rainfall</th>
<th>% of Cases</th>
<th>% of death</th>
</tr>
</thead>
<tbody>
<tr>
<td>June</td>
<td>23</td>
<td>1</td>
<td>9.00</td>
<td>1.43</td>
<td>4.34</td>
</tr>
<tr>
<td>July</td>
<td>40</td>
<td>2</td>
<td>40.99</td>
<td>2.5</td>
<td>5.9</td>
</tr>
<tr>
<td>August</td>
<td>24</td>
<td>1</td>
<td>33.46</td>
<td>1.68</td>
<td>3.9</td>
</tr>
<tr>
<td>September</td>
<td>13</td>
<td>0</td>
<td>19.33</td>
<td>0.81</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>103</strong></td>
<td><strong>6</strong></td>
<td><strong>192.78</strong></td>
<td><strong>1.6</strong></td>
<td><strong>3.26</strong></td>
</tr>
</tbody>
</table>

Average for the four months.

This garden is situated about six hundred feet above sea level, and was opened out about twenty years ago. The soil is a light loam of a sandy nature, and the land in its original state was covered with rank grass jungle. This table shows the
The highest percentage of cases and deaths in July, the month of the highest rainfall.

**London Tea Garden**

<table>
<thead>
<tr>
<th>Months</th>
<th>Cases</th>
<th>Deaths</th>
<th>Rainfall</th>
<th>% of Cases</th>
<th>% of Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>June</td>
<td>10</td>
<td>0</td>
<td>8.13</td>
<td>1.05</td>
<td>0</td>
</tr>
<tr>
<td>July</td>
<td>5</td>
<td>1</td>
<td>40.88</td>
<td>.52</td>
<td>20</td>
</tr>
<tr>
<td>August</td>
<td>9</td>
<td>0</td>
<td>36.19</td>
<td>.43</td>
<td>0</td>
</tr>
<tr>
<td>September</td>
<td>4</td>
<td>0</td>
<td>19.46</td>
<td>.42</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>26</td>
<td>1</td>
<td>102.59</td>
<td>.68</td>
<td>5</td>
</tr>
</tbody>
</table>

Average for four months

The elevation of this garden is nine hundred feet above sea level. It was opened out twenty years ago. Soil is of a light loamy consistence, and was originally clothed with grass jungle.

The percentage of cases is highest in June – percentage of deaths in July.

**Nagrapata Tea Garden**

<table>
<thead>
<tr>
<th>Months</th>
<th>Cases</th>
<th>Deaths</th>
<th>Rainfall</th>
<th>% of Cases</th>
<th>% of Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>June</td>
<td>9</td>
<td>4</td>
<td>24.14</td>
<td>1.12</td>
<td>44.4</td>
</tr>
<tr>
<td>July</td>
<td>4</td>
<td>0</td>
<td>54.64</td>
<td>.5</td>
<td>0</td>
</tr>
<tr>
<td>August</td>
<td>5</td>
<td>0</td>
<td>36.44</td>
<td>.62</td>
<td>0</td>
</tr>
<tr>
<td>September</td>
<td>4</td>
<td>1</td>
<td>23.51</td>
<td>.84</td>
<td>14.28</td>
</tr>
<tr>
<td>Total</td>
<td>25</td>
<td>5</td>
<td>139.39</td>
<td>.94</td>
<td>14.64</td>
</tr>
</tbody>
</table>

Average for four months
Hazaribag garden is fifteen hundred feet above sea-level, and was opened out fifteen years ago. The land is a heavy loam and in its natural state with covered with heavy forest. In this garden both the percentages of cases and deaths are highest in June.

**Killa Tea Garden**

<table>
<thead>
<tr>
<th>Months</th>
<th>Cases</th>
<th>Deaths</th>
<th>Rainfall</th>
<th>% of Cases</th>
<th>% of Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>June</td>
<td>19</td>
<td>3</td>
<td>26.11</td>
<td>2.6</td>
<td>15.79</td>
</tr>
<tr>
<td>July</td>
<td>17</td>
<td>2</td>
<td>37.49</td>
<td>2.26</td>
<td>11.46</td>
</tr>
<tr>
<td>August</td>
<td>6</td>
<td>1</td>
<td>49.59</td>
<td>1.8</td>
<td>16.66</td>
</tr>
<tr>
<td>September</td>
<td>8</td>
<td>0</td>
<td>24.49</td>
<td>1.06</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>50</strong></td>
<td><strong>6</strong></td>
<td><strong>155.68</strong></td>
<td><strong>1.68</strong></td>
<td><strong>11.05</strong></td>
</tr>
</tbody>
</table>

*average for four months*

This garden has an elevation of fifteen hundred feet, and was opened out three years ago (not yet completed). The land is of a heavy loam consistency and was originally covered with forest.

The percentage of cases is highest in June — the percentage of deaths highest in August.
Carron Tea Garden

Five hundred coolies on Garden

<table>
<thead>
<tr>
<th>Months</th>
<th>Cases</th>
<th>Deaths</th>
<th>Rainfall</th>
<th>% of Cases</th>
<th>% of deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>June</td>
<td>8</td>
<td>1</td>
<td>25-83</td>
<td>1-6</td>
<td>12-5</td>
</tr>
<tr>
<td>July</td>
<td>5</td>
<td>1</td>
<td>56-4</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>August</td>
<td>4</td>
<td>0</td>
<td>34-42</td>
<td>.8</td>
<td>0</td>
</tr>
<tr>
<td>Sept.</td>
<td>6</td>
<td>1</td>
<td>23-06</td>
<td>1-2</td>
<td>16-66</td>
</tr>
<tr>
<td>Total</td>
<td>23</td>
<td>3</td>
<td>142-71</td>
<td>1-15</td>
<td>12-29</td>
</tr>
</tbody>
</table>

Average for four months

This garden has an elevation of sixteen hundred feet, and was opened out seven years ago. The soil has a heavy loamy consistence and was originally clothed with forest. Percentages of cases and deaths are again highest in June.

Table

Showing percentage of cases of the different gardens in the respective months

<table>
<thead>
<tr>
<th></th>
<th>June</th>
<th>July</th>
<th>August</th>
<th>September</th>
<th>average for four months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remukanjua</td>
<td>1.43</td>
<td>2.5</td>
<td>1.68</td>
<td>.81</td>
<td>1.6</td>
</tr>
<tr>
<td>Tondoo</td>
<td>1.05</td>
<td>.52</td>
<td>.73</td>
<td>.42</td>
<td>.68</td>
</tr>
<tr>
<td>Nagpaita</td>
<td>1.12</td>
<td>.5</td>
<td>.62</td>
<td>.84</td>
<td>.88</td>
</tr>
<tr>
<td>Killa</td>
<td>2.6</td>
<td>2.32</td>
<td>.8</td>
<td>1.06</td>
<td>1.69</td>
</tr>
<tr>
<td>Carron</td>
<td>1.6</td>
<td>1.8</td>
<td>.8</td>
<td>1.2</td>
<td>1.15</td>
</tr>
<tr>
<td>Total</td>
<td>4.8</td>
<td>6.84</td>
<td>4.63</td>
<td>4.36</td>
<td></td>
</tr>
</tbody>
</table>
From the foregoing table it will be seen that diptheria is most frequent in June and then falls monthly thereafter. The explanation of this does not appear in relation to the rainfall as this is much higher in July than in June. Can any suggestion be given then why the disease ought to be more prevalent in June than in the other months? To attempt this let us take into consideration an annual rainfall here, and in doing so we shall consider the beginning of our year to commence in June.

The South West Monsoon bursts in this month and constitutes the rains of the district; in July the rainfall is highest and then falls steadily (monthly) until the end of October or in some cases November. About this time the rains cease and except an occasional slight shower we get cloudless skies until April when the showers become more frequent it is usually June however before the rivers become swollen to any
great extent. Now from October or November as the case may be the
soil, if a necessity becomes impregnated
with effete organic matter and its
products that will remain there
until the following rains when to a
large extent they will reach the
rivers either in a state of solution
or suspension, and as the coccyis
depend on the rivers and ditches
for their water supply it is not
remarkable that the disease should
be more prevalent now (when the rain
falls in sufficient quantity to sat-
urate the soil and at the same
time becomes saturated itself with
organic products which ultimately
reaches the rivers) than at other
seasons. As the season advances
the rainfall becomes greater and
in consequence the soil will at
least to a certain extent be puri-
fied, and the water less concen-
trated with the virus.

This statement
is of course in virtue of the assump-
tion that the disease is of bacterial
origin and that the bacteria in order to produce its virus must reach the soil.

I remember Sir Douglas Macalpine when lecturing on 'Summer Diarrhoea' remarked that it was most frequent in the month when the ground temperature was highest, and I am of opinion it would be interesting to observe what relation the ground temperature has to dysentery.

It is certain that the atmospheric temperature is highest here during the month of May and first half of June and probably the temperature of the soil is highest just before the South-West Monsoon breaks and this may have an important bearing on dysentery. I regret I have not had the means at my disposal requisite for such an observation, but research into this matter might give valuable results.

Elevation

See over please.
The table tends to show that elevation varying from six to sixteen hundred feet does not affect the prevalence of dysentery; true one of the gardens at the lowest elevation shows the lowest percentage of cases and one of the second highest shows the highest percentage; but if we take the average of the two gardens that lie on the same level, against the average of the three that are approximately the same elevation we find the two averages are nearly equal.

<table>
<thead>
<tr>
<th>Garden</th>
<th>Elevation</th>
<th>Average % of cases (4 months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bamandanga</td>
<td>600</td>
<td>1.6</td>
</tr>
<tr>
<td>Tondo</td>
<td>600</td>
<td>0.68</td>
</tr>
<tr>
<td>Nagrahakata</td>
<td>1500</td>
<td>0.44</td>
</tr>
<tr>
<td>Nilla</td>
<td>1500</td>
<td>1.69</td>
</tr>
<tr>
<td>Carron</td>
<td>1600</td>
<td>1.15</td>
</tr>
</tbody>
</table>

Bamandanga 1.6
Tondo 0.68
Average 1.14

Nagrahakata 0.44
Nilla 1.69
Average 1.2

Carron 1.15
Depository therefore (in this district) does not appear to have any marked selection for an elevation varying from six to sixteen hundred feet.

Soil

In regard to the soil the disease does not appear to have any marked selection.

The gardens of Ramandanga and Trudoo both consist of a light, heavy soil of a sandy nature; while the gardens of Nagraukata, Villa, and Carron consist of a heavy loam.

If we again take averages of the former two, and the latter three, we find the percentages fairly uniform.

The products of the soil before cultivation does not apparently make any marked difference either, as Ramandanga and Trudoo were originally clothed with grass jungle but the other three in their original state were covered with thick forest.

Rainfall

See over please
<table>
<thead>
<tr>
<th>Garden</th>
<th>Rainfall during 4 months</th>
<th>Average % of Cases (4 months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ramandanga</td>
<td>102.78</td>
<td>1.6</td>
</tr>
<tr>
<td>Tondoo</td>
<td>102.59</td>
<td>.68</td>
</tr>
<tr>
<td>Naqakata</td>
<td>137.39</td>
<td>.99</td>
</tr>
<tr>
<td>Shilla</td>
<td>155.68</td>
<td>1.69</td>
</tr>
<tr>
<td>Casson</td>
<td>142.91</td>
<td>1.15</td>
</tr>
</tbody>
</table>

This table shows that the average amount of cases is highest in the garden where the rainfall is highest, and lowest in the one where the rainfall is lowest, but if we again take into consideration the average of the rainfall on Ramandanga and Tondoo where the rainfall is practically equal, against the average of the three gardens where the rainfall is approximately the same, we find that the average percentage of cases is again almost uniform. The rainfall in this district does not therefore appear to affect the different gardens in proportion to its amount.

<table>
<thead>
<tr>
<th></th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ramandanga</td>
<td>1.6</td>
</tr>
<tr>
<td>Tondoo</td>
<td>0.68</td>
</tr>
<tr>
<td>Naqakata</td>
<td>0.99</td>
</tr>
<tr>
<td>Shilla</td>
<td>1.69</td>
</tr>
<tr>
<td>Casson</td>
<td>1.15</td>
</tr>
</tbody>
</table>

Average 1.14 1.24
<table>
<thead>
<tr>
<th>Garden</th>
<th>Years opened out</th>
<th>Average % of cases (40% b)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ramandanga</td>
<td>20</td>
<td>1.6</td>
</tr>
<tr>
<td>Tondoo</td>
<td>20</td>
<td>0.68</td>
</tr>
<tr>
<td>Nagarakata</td>
<td>15</td>
<td>0.44</td>
</tr>
<tr>
<td>Stilla</td>
<td>3</td>
<td>1.69</td>
</tr>
<tr>
<td>Caron</td>
<td>4</td>
<td>1.15</td>
</tr>
</tbody>
</table>

This table shows the highest percentage of cases in the youngest garden, but the second highest as well as the lowest in the gardens of equal ages. Taking into consideration the average of the three oldest gardens, and comparing it with the average of the two youngest gardens, we find the balance considerably in favor of the latter.

<table>
<thead>
<tr>
<th>Garden</th>
<th>Average</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ramandanga</td>
<td>1.6</td>
<td>1.01</td>
</tr>
<tr>
<td>Tondoo</td>
<td>0.68</td>
<td></td>
</tr>
<tr>
<td>Nagarakata</td>
<td>0.44</td>
<td></td>
</tr>
<tr>
<td>Stilla</td>
<td>1.69</td>
<td></td>
</tr>
<tr>
<td>Caron</td>
<td>1.15</td>
<td>1.42</td>
</tr>
</tbody>
</table>

Probably the reason why depatery should be more frequent on young gardens is due to the fact that malaria is much more prevalent...
there than on old gardens; and the
virus of the disease finds a more suit-
able nidus for its growth and devel-
oping, in those whose systems are
relaxed by malarial cachexia. It
is certain at least that many of
the cases on Hilla were complicated
with malarial symptoms, such as
high temperature, anaemia, and enlarged
spleen.

Abstracting our conclusions from the
foregoing, it does not appear
that dysentery here shows any marked
tendency of frequency in relation to
elevation and soil, and although we
have been under “reason” that the
rainfall seems to play an impor-
tant part in its genesis and preval-
ence, yet it is evident that the
disease is not more prevalent in the
gardens where the rainfall is a
hundred and forty eiches (approximately)
more than it is in those where the rainfall
is a hundred; (during the four months
under consideration) and if the disease
is inclined to be more frequent on
young than on old gardens probably
the explanation lies in predisposing rather than exciting causes.

Table showing frequency of sex affected and frequency of fatal cases in those affected.

<table>
<thead>
<tr>
<th>Garden</th>
<th>Cases</th>
<th>Total</th>
<th>Deaths</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Men</td>
<td>Women</td>
<td>Childs</td>
<td>Men</td>
</tr>
<tr>
<td>Bamar</td>
<td>45</td>
<td>41</td>
<td>14</td>
<td>103</td>
</tr>
<tr>
<td>Tondo</td>
<td>11</td>
<td>9</td>
<td>6</td>
<td>26</td>
</tr>
<tr>
<td>Ngapare</td>
<td>12</td>
<td>10</td>
<td>3</td>
<td>25</td>
</tr>
<tr>
<td>Soilla</td>
<td>25</td>
<td>22</td>
<td>3</td>
<td>50</td>
</tr>
<tr>
<td>Carson</td>
<td>9</td>
<td>8</td>
<td>6</td>
<td>23</td>
</tr>
<tr>
<td>F. Total</td>
<td>102</td>
<td>90</td>
<td>35</td>
<td>227</td>
</tr>
</tbody>
</table>

The above table shows that there is no sex or age free from the disease. It appears to attack adult males more than adult females. But why this should be so is difficult to determine. I am almost certain it cannot be due to mere fatigue or exhausting circumstances, because I am of opinion the women here are more exposed and work harder than the men. In June and July
the men are engaged hoeing the garden and usually begin work about five o'clock A.M. and finish between ten and eleven A.M.

The women during these two months are busy plucking "leaf" and begin work at six A.M. and work until five P.M. and although tiring is certainly more laborious work than plucking "leaf" it is questionable if five hours of it exhausts a man more than ten hours plucking "leaf" exhausts a woman. Again during this period in the early part of the day the atmosphere is often clear and cloudless; but about noon clouds appear and later in the afternoon the rain comes down in torrents to which the women are exposed but the men are secure in their houses; if rain does not fall and clouds do not gather then these the women are exposed to the hot Indian Post Meridiem sun which is probably more exhausting and harmful than rain.

In August and September both
men and women are engaged plucking leaf so that their labours and exposure are equal; but as "woman is the weaker vessel" in reality they are harder worked than the men and more exposed.

There is another point worthy of notice; those women who have young children carry them on their backs when at work, and if we add to this the fact that a good many of them are also pregnant, we find another exhausting cause relating to women which their male brethren are ignorant of. I do not pretend to know the number of women who labour under these two disadvantages but if the percentage of the two was taken it must be something considerable indeed.

The percentage of children (under twelve years?) in this table might have been better left out as it is difficult to know the number of such on the gardens. The coasties
who work here are nearly all emigrants and as a rule do not stay very long on the gardens, so that every year there is a large percentage of old coolies leaving the gardens, and a large percentage of new ones coming in. Many of them do not bring their children with them at all, but leave them with their relatives at home on the plains.

The number of men and women is nearly equal and almost accurately known, as a look through the garden books gives reliable statistics.

**Percentage of Deaths**

The percentage of deaths is highest in adult males. Why it should be so is a difficult problem to estimate, as we have seen that as regards fatigue and exposure the women are more exposed; they both are under the same sanitary conditions and partake of the same kind of food. Perhaps the explanation is that the male coolies on tea gardens are very intemperate...
in regard to alcoholic liquors and as their systems become saturated with alcohol probably the disease becomes more vulnerable.

We have seen in the foregoing pages that "season" appears to affect in a marked degree the frequency of dysentery, and the "age of the garden" to a slight degree, but as regards elevation, soil, and amount of rainfall the disease does not tend to show any marked tendency. Let us see what effect these conditions have upon the fatality.

Table showing percentage of deaths on the various gardens in the respective months with their averages for the four months.

<table>
<thead>
<tr>
<th>Garden</th>
<th>June</th>
<th>July</th>
<th>August</th>
<th>September</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bramauldea</td>
<td>4.34</td>
<td>5</td>
<td>3.4</td>
<td>0</td>
<td>3.26</td>
</tr>
<tr>
<td>London</td>
<td>0</td>
<td>20</td>
<td>0</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Nagaoka</td>
<td>4.44</td>
<td>0</td>
<td>0</td>
<td>14.28</td>
<td>14.67</td>
</tr>
<tr>
<td>Nilla</td>
<td>15.99</td>
<td>11.76</td>
<td>16.66</td>
<td>0</td>
<td>11.05</td>
</tr>
<tr>
<td>Carson</td>
<td>12.5</td>
<td>20</td>
<td>0</td>
<td>16.66</td>
<td>12.29</td>
</tr>
</tbody>
</table>

The above table shows at a glance...
that by far the highest death-rate occurs in June. This may be due to the poison being more virulent the longer it lies in the soil, as we have seen that for many months before the rainfall is either nil or insignificant and the poison must be collecting, or it might be due to the poison existing in much larger quantities than at other seasons; or as this month is a month of high temperature and probably the ground temperature is at its highest perhaps the poison is at its maximum of vitality at this period.

The averages for the four months are much less in the gardens of Painandanga and Loodoo than they are in the other three, and from this it appears that the heavy loamy soil, higher elevation, higher rainfall, and younger gardens are more favorable for the virulence of the disease if not for its prevalence.

The higher estimate might also be accounted for by the fact that the gardens of Stella and Carron are
still being extended and in consequence new soil is broken up yearly. This contributes to a larger amount of Malarial fever which in its turn from the fresh disturbance of the land, now it is generally admitted that people suffering from exhaustion and fatigue are much more liable to contract the disease, and this probably tends to explain why Influenza should be more frequent and fatal, among the residents of a garden that is being opened but, and who suffer more from Malaria than older gardens.

Nagarakata is an old garden but as it is in close proximity to Killa it is exposed to the Malarial influence from the fresh disturbance of the soil there.

General Symptoms observed

Alimentary System

The mouth is usually moist, the tongue covered with a thick fur of a yellowish white colour, and the teeth clean. The patient usually complains of thirst and loss of
Appetite, the digestion is impaired, and vomiting is present in many cases, but
in a moderate case of severity is not an urgent symptom. The abdomen on inspection appears normal
but is tender on palpation. The percussion note does not markedly differ from
the normal tympanitic note. The bowels early in the disease move four or five
times daily and the motions are
feculent and of a yellowish brown colour. Later the motions are much more frequent and all feculent
matter disappears so that the
stool entirely consists of blood, mucus, serum, mucus may be pus; and debitus
from the diseased mucous membrane.
This is usually the stage met with among cowies as the doctor is seldom
called in before this stage is reached.
The motions are scanty and very fre-
quent (may be forty or fifty in twenty-
four hours) and are passed with
much pain and straining. Sometimes
they appear to consist entirely of
pure blood. They have also a peculiar
tingering odour. The liver in the
great majority of cases appears normal on palpation and percussion, but it is often tender and slightly enlarged. In the latter cases vomiting is usually a constant symptom, and the skin, conjunctiva, and mucous membrane of the hard palate is often of a yellow hue or icteric tint. Respiration System.

The respiratory system is usually normal except in severe cases, and cases with high temperature then the respiration is increased. Basic edema also occurs in severe cases probably due to the deficiencies of the circulation. I have also on two or three occasions met with bronchitis, but whether this was purely accidental or may be sometimes a concomitant (as it is in catarrh fever) of the disease I cannot say.

I have never seen a pneumonia as a complication of typhus although it is stated to be met with by some authors. Circulatory System. The pulse is a mild.
case is generally normal but may be increased in frequency to a hundred beats per minute. In those cases that are complicated with malaria whether there be enlarged spleen, anaemia, or the general malarial cachexia the pulse is more rapid and varies between one hundred and twenty and one hundred and forty beats per minute.
In these cases the pulse is of large volume and low tension, and a typical aicrotic pulse is frequently met with. The heart on percussion and auscultation is normal.

Temperature

The temperature is normal in many cases at the commencement of the attack if seen early, but as the disease advances (third or fourth day) the temperature usually rises to a hundred or a hundred and one degree Fahrenheit. In malarial complications the temperature is often between one hundred and three and one hundred and five degrees. The fever in these cases as in ordinary malarial fever may be remittent or intermittent
and indeed it becomes the more urgent of the two diseases in some cases. Vomiting (often bilious) is also a very frequent symptom of this complication.

**Haemopoietic System**

This system in an uncomplicated case is normal; in the malarial complications the spleen may be normal from a physical examination or it may be slightly enlarged, or 'aque cæli' may be present. In many cases however where there is decided malarial complications the spleen is apt to grow.

**Integumentary System**

The skin is usually dry, but may be moist if the patient is examined after a painless defaecation. In some cases the skin is pallid in colour, and in others marked jaundice is present. Emaciation occurs rapidly in severe and fatal cases.

**Urinary System**

The urine is scanty, in amount and of high specific
gravity generally between 1023 and 1026.
I have not been able to test the amount of urea. The chlorides at last in some cases are diminished. Albumen is as a rule absent, but occasionally though rarely present. Sometimes there is decided pain on micturition. I have never seen strangury.

Nervous System
Except headache in the early stages the nervous system is otherwise normal.

Severe cases and cases pending a fatal termination.

In such cases the tongue is dry, and glazed of a brownish black colour, and the teeth are covered with sordes. Vomiting is often an urgent symptom, and the motions of feces have a dirty watery consistence or the pure blood. The liver is often very tender on palpation, and on percussion may be enlarged considerably but this is not constant. The patient may also be fevered. The pulse is feeble, fluttering and rapid, and the heart sounds weak; the extremities become
cold and muttering delirium is common. The passes may pass involuntary. Cama supervenes, the temperature becomes sub-normal and the patient dies in a state of collapse.

M มorted Anatomy

A European is not allowed to touch a native corpse (due to religious ideas I believe) and in consequence I have not been able to make any observations under this head.

Complications

Tenderness and enlargement of the liver is often a complication of the disease. I have not been able to satisfy myself thoroughly that I have seen cases where abscess was present; in many cases I have had grave doubts but by no means certain.

Chronic Cases

I have had no opportunity of studying such cases as a corrie after a severe illness as soon as he is able to go leaves the jarden thinking he is bewitched.

Malana I have already referred to this under the general symptoms. I cannot
give reliable statistics but there is no doubt that the disease presents a much more formidable type when complicated with malaria than simple cases. The three gardens on the higher elevation are certainly much more malarial than the two on the lower level and the death rate on the former is much higher.

Diagnosis

In many cases the only means of diagnosis is the characteristic dysenteric stools. This plus the straining and griping and burning sensation about the anus are often the only symptoms. Frequently there is also decided tormina and tenesmus and a diagnosis has to rest on the basis of examination of the stools only.

Prognosis

This in ordinary cases is favorable but where vomiting persists and where the liver is tender and enlarged; also in cases complicated with malaria a guarded prognosis must be given. The disease is especially fatal to habitual drunkards.
Treatment

The treatment recommended was rest in the recumbent position, injunctions to the patient to keep himself warm, and to limit his diet to boiled milk, sago, arrowroot, and other farinaceous food, chicken soup, and eggsswitched up in milk. Alcohol was seldom used except in those cases where a rapid, feeble pulse and symptoms tending to collapse were observed then a liberal supply was given. The Specacubana treatment was employed in all cases, from twenty to thirty grains being given in half an ounce of syrup of oranges and water at first, and afterwards ten grains right and morning until improvement set in.

In many cases vomiting ensued and the drug was promptly repeated; in these cases the preparation without emetic was given (after allowing the stomach to rest for two hours) and usually retained. I cannot guarantee that the rest, warmth, and diet treatment was properly carried out in a single case, but, without doubt, the Specacubana was taken in many cases. The first
improvement after using the drug appears to be a relief in the straining and tenesmus and in some cases this is observed after a single dose. The stools generally become more feculent and an improvement sets in after two, three, or four days.

In some cases where the griping and straining were severe and when the patient complained an enema of starch and laudanum was given. This appeared to be comforting to the patient.

In a few cases where the Speeacnhana treatment was not satisfactory an enema of castor oil (1 in 5) was given but I cannot say I observed any decided benefit from this.

In malarial complications the Speeacnhana was given alternately with twenty grains of quinine, fifteen minims of dilute hydrobromic acid, and half an ounce of water; this method of treatment apparently acted well and on two occasions where the Speeacnhana had been given and no improvement ensued I observed a decided improvement twenty four hours after the quinine mixture was given. Speeacnhana alternating with Fowler
Solution was tried in a few cases, but did not appear to give satisfactory results.

Remarks

Until the proprietors of tea estates see their way to improve the sanitary conditions at present existing, dysentery is likely to be a frequent disease of the gardens here, and until hospitals are erected where the patients can be made to rest, keep themselves warm, and control their appetites, and where the stools can be properly disinfected, general cleanliness observed, and drugs given regularly, it is likely to be a fatal one.

While looking over the tables in these pages and observing the death rate the wonder is not that it is so high, but why it is not much higher, and upon meditation I am inclined to believe that the type of the disease must have been of a milder character than what is often met with.

In concluding I only wish to state that I do not pretend to have given a statement of all the cases of dysentery on the gardens.
in these four months but only a synopsis of the cases where medical advice was asked.

I intended at one time to carry my observations from June to December (inclusive) but owing to two attacks of malarial fever, and having to leave the gardens for some time for other reasons I have been unable to carry this into effect. I take this opportunity of saying however that very few cases of dysentery have come under my notice during the months of December/95 and January/96.