Thesis
for the degree of M.D.
on
Typhoid Fever

by

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Adelaide
South Australia

1886.
References:


Reyns - Australasian Medical Gazette. September 1883. p 258.


Much has been, and probably much more will be, written about the fever which I have the honour of bringing before the faculty. Since my residence in this city I have seen and attended many cases of typhoid fever in various stages of progress and different degrees of intensity. This fever is met with during the whole of the year but is more prevalent during certain months of the year, viz. from about March to August.

Before proceeding further with my subject it may be as well to give a short description of our situation and climate, my observations being limited to this city and its suburbs. Adelaide, population 50,610 according to the census of 1881, latitude 34° 35' 33" S, longitude 138° 36' E, the capital of South Australia (population 80,480 according to the census of 1881) situated on a plain some eight miles from the Gulf of St. Vincent, which is itself shut out from the sea by Kangaroo Island, which no doubt has a tendency to keep up a high temperature during the summer months. The atmosphere is peculiarly dry and we can bear a very high degree of heat. The weather is very changeable and it is a frequent occurrence to see a sudden fall of from 25° to 30° in the temperature accompanied by a change of wind to the chilling south...
The winter the last few years has become much colder and more protracted than in former years.

This disease has received so much attention from all countries that it is not surprising to find a multitude of names for this fever. In Great Britain it is generally known as typhoid or enteric, and either of these is the name employed in Australia to designate this disease. The late Dr. Burnet gave it the name of typhoid fever; his idea being that it originated spontaneously in connection with ordinary sewer emanations and putrefying animal matter, and he believed that even in the specific stools the poison is always a product of decomposition. This name is never used in Australia. In Germany it is known as typhus abdominalis and in France as Bichnerie. Various names have been introduced, but those I need not mention. In Australia the older practitioners spoke of a Colonial fever and low or slow fever, but what I have seen of these fevers I am inclined to think the former which we know as simple continued fever and typhoid or enteric fever are the same as those called by them Colonial fever.

A description of a disease which produces such a high mortality, comes on so insidiously, and attacks so many of our population, often in some cases rendering them unfit for their former occupation, either from exhaustion consequent on such an attack or leaving sequelae which sooner or later terminate fatally, must if necessary be a difficult undertaking, and this I have recognized from
the very onset of my investigations, in fact, these very circumstances and difficulties gave me an impulse to endeavour to find out the peculiarities of this disease, and although I may not be able to bring forward anything that is at all striking I shall at least express my own opinion regarding the etiology of this disease, my investigations having been confined chiefly to this. At the same time I will add several clinical cases which occurred in my own practice.

In writing on the etiology I have necessarily made extracts from authors as well as from articles appearing in periodicals both at home and in Australia, so as to bring forward views in accordance with my own, and at the same time not ignoring such as think differently from me. All references will be quoted.

The frequency of typhoid fever in Australia.

Typhoid fever exists endemic in Australia as in other countries, occasionally there are severe epidemics, at other times a few isolated cases. Although Adelaide is not in a less healthy condition than in former years still typhoid fever is largely on the increase. In the Adelaide Hospital Statistics for the three years 1881, 1882, 1883, are as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Cases</th>
<th>Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>1881</td>
<td>71</td>
<td>25.1%</td>
</tr>
<tr>
<td>1882</td>
<td>159</td>
<td>18.1%</td>
</tr>
<tr>
<td>1883</td>
<td>208</td>
<td>14.9%</td>
</tr>
</tbody>
</table>

These are the statistics as officially given, they speak for themselves.

(3)
and show a gratifying result as regards the decrease in mortality, on the other hand they show an alarming increase of the fever itself.

The mortality for the province of South Australia in 1883 with an estimated population of 304,876 was 135.

In 1884 with estimated population of 314,293 the mortality due to typhoid fever was 134.

In the Australasian Medical Gazette for September 1883, page 258 there is an Analysis of 100 cases of typhoid fever discharged from the Prince Alfred Hospital, Sydney, between the months of October, 1882 and June 1883 - by Dr. Regane.

Admissions 11 from Sydney 89 from suburbs and county.

Deaths 16, but of these 6 occurred during the first 3 days some being brought in a dying condition, only living a few hours so that can say mortality was 10%. The duration of cases in the hospital was from four to thirteen weeks, average being from five to six weeks.

Dr. Winnett in the Australasian Gaz. for October 1883 page 12 publishes an Analysis of 300 cases of typhoid fever admitted into the Sydney Hospital for 18 months ending June 1883.

<table>
<thead>
<tr>
<th></th>
<th>1882</th>
<th>1883 (6 months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cases</td>
<td>145</td>
<td>125</td>
</tr>
<tr>
<td>Mortality</td>
<td>3%</td>
<td>14</td>
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<table>
<thead>
<tr>
<th>Year</th>
<th>Population</th>
<th>Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>1864</td>
<td>60,299</td>
<td>45</td>
</tr>
<tr>
<td>1865</td>
<td>62,841</td>
<td>35</td>
</tr>
<tr>
<td>1866</td>
<td>65,580</td>
<td>73</td>
</tr>
<tr>
<td>1867</td>
<td>68,584</td>
<td>71</td>
</tr>
<tr>
<td>1868</td>
<td>71,310</td>
<td>73</td>
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<td>1869</td>
<td>74,310</td>
<td>72</td>
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<td>1870</td>
<td>77,131</td>
<td>50</td>
</tr>
<tr>
<td>1871</td>
<td>79,540</td>
<td>16</td>
</tr>
<tr>
<td>1872</td>
<td>79,540</td>
<td>36</td>
</tr>
<tr>
<td>1873</td>
<td>79,540</td>
<td>61</td>
</tr>
<tr>
<td>1874</td>
<td>86,213</td>
<td>39</td>
</tr>
<tr>
<td>1875</td>
<td>86,213</td>
<td>75</td>
</tr>
<tr>
<td>1876</td>
<td>86,213</td>
<td>77</td>
</tr>
<tr>
<td>1878</td>
<td>102,056</td>
<td>103</td>
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<table>
<thead>
<tr>
<th>Suburb</th>
<th>Country</th>
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<tbody>
<tr>
<td>80,833</td>
<td>49,242</td>
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1879

<table>
<thead>
<tr>
<th>City</th>
<th>Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>77</td>
<td>38</td>
</tr>
<tr>
<td>150</td>
<td></td>
</tr>
</tbody>
</table>

1880

<table>
<thead>
<tr>
<th>City</th>
<th>Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>54</td>
<td>240</td>
</tr>
<tr>
<td>149</td>
<td></td>
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</table>
In the Queen Med. Gazette for Sept 1883 page 261 there is a paper entitled "Abstract of 453 cases of typhoid fever treated from 1870-1882 inclusive by Dr. Rowley Late Medical Officer Mudgee Hospital N.S.W."

<table>
<thead>
<tr>
<th>Year</th>
<th>Cases</th>
<th>Deaths</th>
<th>Rainfall</th>
</tr>
</thead>
<tbody>
<tr>
<td>1870</td>
<td>34</td>
<td>2</td>
<td>15.26</td>
</tr>
<tr>
<td>1871</td>
<td>30</td>
<td>2</td>
<td>21.10</td>
</tr>
<tr>
<td>1872</td>
<td>66</td>
<td>1</td>
<td>32.82</td>
</tr>
<tr>
<td>1873</td>
<td>31</td>
<td>1</td>
<td>23.63</td>
</tr>
<tr>
<td>1874</td>
<td>15</td>
<td>1</td>
<td>34.49</td>
</tr>
<tr>
<td>1875</td>
<td>19</td>
<td>0</td>
<td>24.10</td>
</tr>
<tr>
<td>1876</td>
<td>24</td>
<td>2</td>
<td>21.39</td>
</tr>
<tr>
<td>1877</td>
<td>24</td>
<td>3</td>
<td>16.30</td>
</tr>
<tr>
<td>1878</td>
<td>71</td>
<td>4</td>
<td>37.83</td>
</tr>
<tr>
<td>1879</td>
<td>39</td>
<td>0</td>
<td>19.18</td>
</tr>
<tr>
<td>1880</td>
<td>39</td>
<td>0</td>
<td>19.18</td>
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<tr>
<td>1881</td>
<td>37</td>
<td>1</td>
<td>18.24</td>
</tr>
<tr>
<td>1882</td>
<td>24</td>
<td>2</td>
<td>21.48</td>
</tr>
<tr>
<td>Total</td>
<td>453</td>
<td>21</td>
<td></td>
</tr>
</tbody>
</table>

Average per annum 37.75 Deaths to cases 4.61.
Hospital cases 157 or 34.66% Deaths 12 or 7.64%.
Private cases 296 or 65.34% Deaths 9 or 3.04%.
Duration of cases from 15 to 93 days.
Age of patients affected with typhoid fever. Although a person at any age may contract typhoid still it is found that at certain ages typhoid seems more rampant. In South Australia the ages most liable to typhoid are from 20 - 30 years. In Dr. Hurst's paper of 300 cases treated in the Sydney Hospital with a total mortality of 51 2/4 occurred between the age of 20 - 30 i.e. nearly 50% cent.

Recurrents in the Zeitschrift Encyclopaedia vol. 1 page 43 states that in the hospital at Basle out of all the typhoid cases as regards age the following percentage:

16 - 20 years 19%; 21 - 30 years 58%; 31 - 40 years 16%; 41 - 50% 5%; 51 - 60 years 2%; 61 - 70 years 0.6%; 71 and over 0.06%.

Murchison's experience 15 - 25 years 52%.

City Hospital Dresden 81% age from 16 - 30 years.

Dr. R. M. Tracer in a paper published in the British Medical Journal for March 3, 1883 page 404 on "link on the relative liability to enteric fever at different ages" concludes his investigations thus: It shows clearly that the liability to attack from disease diminishes very rapidly after the age of 20, that is to say, that after the age of 20 there are comparatively few susceptible to the disease, probably because there are comparatively few over that age who have not already suffered from that fever. His observations were made from statistics during the years 1871 - 1880 admissions into the London Fever and Homerton Hospitals.
In the London, Stockwell and Thirskton Fever Hospitals the percentage is as follows:

0-5 years 2.75%; 5-9 years 11.6%; 10-14 years 22.6%; 15-19 years 25%; 20-24 years 26.8%; 25-29 years 9.75%; 30-34 years 4.6%; 35-39 years 3.5%; 40-44 years 2%; 45-49 years 1.75%.

As regards sex, females seem to be more affected with typhoid fever than males. This does not hold good in all the following statistics, but the majority shows a greater disposition on the part of females in contracting this disease.

In South Australia, for the ten years from 1875-6 to 1884 (Report of Registrar General of Births, Deaths and Marriages) the mortality from typhoid fever as regards males and females was as follows:

1875. 53 males 41 females.
1876. 60 males 32 females.
1877. 35 males 49 females.
1878. 63 males 43 females.
1879. 48 males 53 females.
1880. 36 males 33 females.
1881. 47 males 38 females.
1882. 86 males 60 females.
1883. 58 males 44 females.
1884. 74 males 60 females.

Total for ten years 354 males 486 females.

In 100 cases recorded by Dr. Bryce as occurring at the Prince Alfred Hospital, Sydney, the percentage was 64 males 36 females.

Dr. Hume lists 300 cases at the Sydney Hospital: the following percentage 234 male 66 females.

Mortality 14 male 37 females.

105 cases occurring at the Bond Hospital, Sydney, 68 males 37 females.
Liebemeister (Ziemsen's Encyclopædia) page 140 says, in the years 1865-1870 inclusive there were treated in the hospital at Basel 999 men of whom 120 died = 12 per cent and 444 women of whom 110 died = 14.8 per cent. In the London fever hospital the mortality from typhoid fever during 10 years was 17.9% for men and 18.9% for women.

The months of the year

In Australia typhoid fever is most prevalent from about March to July. It often occurs that the mortality from this disease is great in other months, but the months mentioned are as a rule the time when most cases occur.

In South Australia the mortality in 1883 according to months was

January  9
February 10
March  14
April  22
May  20
June  26
July  4
August 6
September 6
October 1
November 5
December 9

1884 thus:

January 16
February 15
March  20
April  21
May  18
June  16
July  3
August  3
September  4
October  7
November  2
December  1

The Registrar General in his report for 1883 says:— "In a retrospect of ten years it is found of invariable occurrence that deaths from typhoid fever greatly increase and prevail in the months from March to June and that the fatality before and after that period is comparatively insignificant."

Without multiplying statistics I find those of other colonies, have much the same experience.

Dr. Unswett in his paper (loc. cit.) says: "It is generally held that"
the epidemic is more severe in the autumn when the preceding 
summer has been warm and dry, and this assertion is fully borne 
out in comparing the last two epidemics; for the summer 1881-1882 
was remarkably hot, whilst last summer (1882-1883) was characterised 
by an excessive rainfall.

An interesting feature in this respect is to compare the prevalence 
of typhoid fever in the northern hemisphere. Just as our seasons 
are the opposite of those in the northern portion of the earth, so 
we find that typhoid is most prevalent in the same seasons 
although in different months of the year. I quote from 
Kleber's paper p. 63: "Among the conditions which exert 
an influence on the periodic distribution of a locality, the 
seasons are of especial importance. Epidemics of typhoid 
fever usually occur in the last half of the year. In places 
where typhoid is endemic we usually find the disease least 
frequent from February to April, increasing after June, most 
frequent from August to November, and again decreasing 
in December."

Kleber's paper compares the frequency of typhoid fever during 
the year, taking Berlin, Basel, and London. The maximum 
intensity in Berlin falls in September and October. The minimum 
in all three cities is in February and April (in Berlin a little later). 
The maximum is in September and October (Berlin maximum in 
October). Kleber's paper comparing the typhoid curve with the
Temperature curve page 65. The minimum of temperature falls in January, that of typhoid in February and April; the maximum falls in July, that of typhoid in September and October. It appears, therefore, that the development and spread of typhoid fever is favoured by the high summer temperature and checked by the low winter temperature.

Etiology.

Typhoid fever is held by some to be a distinct contagious disease, whereas others hold it is not. As far as my experience goes, I have never been able to trace a direct contagion from person to person, consequently I cannot say that such contagion does occur. I have, however, observed that patients who were recovering from debilitating diseases have been attacked by this fever, but in no case do I remember this having occurred in the same family, but where several cases occurred in the same house. I have traced the cause to source of infection, one of such cases I will relate:

On May the 10th, 1883, I was called to see Dr. B. who had with his family arrived only three weeks before from England. They were immigrants, having been brought from England by the S.A. Government, had had a good voyage and all enjoyed good health on arrival. Shortly after their arrival in this colony Dr. B. and his family moved to a three-roomed house in one of the main thoroughfares of one of the leading suburbs of Adelaide. They had only resided at this house two or three days when Dr. B. (53 years of age) complained of not feeling well. I was not sent for until about 3 weeks...
after his arrival When examined Mr. B. suffering from a very bad form of typhoid's fever - He was complaining of great headache, sleeplessness, loss of appetite, Bowels were moved frequently, stools loose and yellowish in color. Several rose colored spots over the abdomen - slight fulness right iliac fossa. With all these symptoms he had a very low temperature, although called at 10:30 pm. I saw him, his temperature then only was 99.2 Above 88. Respiration normal. Although his feverish symptoms had been greatly relieved by medicines his wife had given him (at least I have only his statement that he was very bad for a short time) still his temperature very low, almost in a state of collapse. When I saw him, he also complained of a slight headache, somewhat distressing cough and a sore throat. He was under my care for about a month. He improved slowly, but his chief distress was a sore throat; there was nothing visible in the throat further than a slight redness of the tonsils and back of pharynx, no pharyngeal visible - He recovered gradually, and it was a long time before he was able to look about for work. Two daughters aged 20 and 22 complained of diarrhœa for a few days and sore throat but not sufficient to keep them from work - Three little girls ages ranging from 6 to 10 all complained of diarrhœa for a week. Three days after seeing Mr. B. his son was asked to see Dr. B. June 18 years old. He was suffering from headache, lassitude, sleeplessness and loss of appetite -
He, however, suffered from constipation the whole time. I attended him about a fortnight, sore throat coming on about a week after first seeing him. The mother also had become the whole family kept up all the time although she suffered from violent diarrhoea for two or three days besides other minor symptoms. On examining the premises I found two attached three story houses (one my patient resided in, the other unoccupied) with a common cesspit for both places, although two closets. The cesspit was full of feces, and a disagreeable odour so much so that the stench was unbearable; on further enquiring I ascertained that a child had died of typhoid fever in the other attached house and that the feces had been thrown in the same cesspit as that used by my patients - The people next door had left the premises about a week after my patients took up their abode in the house under consideration. They were exceedingly careful as on my enquiring it turned out they had thrown the feces passed by the child (which ultimately died of typhoid fever) into the cesspit without any disinfectant being used. The cesspit was emptied and thoroughly disinfected and as soon as the patients were well enough they removed to another place and have been well since. I found also, which I regard as a clue, the preponderance of throat symptoms in these cases. Neatly removing furniture into the house and being there they applied their nostrums to the top and quenched their thirst thus. This house having been uninhabited for some
months the water must have been in the pipes a considerable time and I am inclined to think this stagnant water in the pipe was sufficient cause to account for our threats.

In confirmation of this opinion of cases occurring in infected houses not due to contagion from one person to another but fault, damage I quote Liebermeister (Ziemssen’s Encyclopaedia) page 147 where he says, “In the hospital of Baeck... during a period of 6 years (1865–1871) 445 cases originated in the hospital. Besides these, slight febrile affections occurred among the attending physicians and nurses, which were in part due to slight infection of the 45 cases some were nurses or attendants who were in contact with typhoid patients; others were patients lying in the same ward. But some of the cases were in persons who had no direct or indirect communication with the typhoid patients. For example a patient who had gone through an attack of small-pox in the isolated wards devoted to that disease was attacked immediately after his discharge with fatal typhoid fever. Another patient was attacked in the syphilitic wards which are also isolated and that too at the end of a vigorous course of treatment with calomel. In the surgical wards some patients were attacked. The apothecary also, the engineers, washerwomen and kitchen maids, none of whom ever entered the wards were attacked in the same way. Such cases show evidently that typhoid infection within a hospital does not depend upon direct contagion from person to person. On the other hand many
other circumstances pointed to the fact that foci of infection had been established in the hospital. Thus, for example, the cases of the disease among the attendants and patients were especially numerous in two rooms, which were situated one over the other on different floors. A wooden pipe, which extended from the main sewer to the roof, ran by both these rooms. At that point the sewer was of faulty construction and was turned at a right angle so that refuse matters accumulated there. Since the source of infection was made known, repeated cleanings, washings, and disinfections have been followed by satisfactory improvement. The same authority, further on (page 42), states: "These observations show plainly that hospital infection is not to be explained by contagion from person to person. In a hospital which is as tolerably clean it makes no difference whether the typhoid patients are isolated or placed in the same ward with the other. Hospital infections do not depend upon direct contagion, but indicate that foci of infection exist within the hospital."

We meet with similar experiences in private practice. There are indeed often enough cases in which one could suppose a direct contagion; but a closer observation shows that the assumption of another way of infection is not only possible but usually more probable. In addition, there are numerous cases in which the possibility of infection by direct contact can be safely excluded.

I know this is not by far the general opinion, but from observations in hospitals, work in Germany, and private practice here, it is the same.
opinion I hold viz. that typhoid fever is not contagious but that in most cases it can be traced from some source of infection. (I say in most cases because I hope to show that other influences must come into play where no infection is possible to be traced). To resume,

I think my case relates more than conclusively that in this house there was a focus of infection and people coming into this house, health and strong, just off the ship after a long voyage, in a climate differing in many respects from the one which they had been used to, were just the proper victims for this fever. For as far as my observations go, the strong and healthy are far more susceptible to the typhoid poison than weak and debilitated persons.

In this direction Liebermeister (Zeitmagen Encyclopedia) p. 197 says: "It is a fact which can everywhere be demonstrated that typhoid in contrast with many other diseases and especially with cholera attacks by preference strong and healthy persons, while it avoids those already suffering with chronic ailments. Pregnant and postnatus women also and those who are nursing infants are seldom attacked with typhoid."

In opposition to this view that typhoid fever can be transmitted from person to person Dr. Seton in the British Medical Journal of January 6, 1883 page 19 in a review on a pamphlet written by Mr. Thorne, P.A.S. of Melbourne, Victoria. I have not seen the pamphlet referred to therefore I must take my information from the review. In this he seeks to prove that typhoid fever is a contagious disease, to give
the extract would take up too much space, but he therein endeavours to show that typhoid fever was brought to a certain house, and that several of the family were taken with typhoid, and that several relatives living in different houses, within a radius of 3 miles from the first infected house, had taken the fever subsequently; but on reading further, one cannot help coming to the conclusion, so did the medical officer of health for that district, that the outbreak was due to the unsanitary condition of the premises occupied by these families. Dr. Thomson himself states: "Mrs. B.'s (the first infected house) cottage has a small shaft or kind of well-tank roughly lined with bricks, which catches the rainfall from the iron roof of an adjoining disused old schoolhouse. This tank is quite close to the cottage door and is unprotected from the inflow of surface drainage, so that refuse water containing contagious germs from the washing of linens or clothing thrown out on the yard would easily reach the tank and pollute the drinking water used by the family. Besides this possible and very probable source of contamination, the W.C. is of the vilest kind of arrangement, having no receptacle whatever."

Trousseau looked upon typhoid fever as a contagious disease and in support of his views brings forward several epidemics occurring in various departments of France. pp. 371-374 Vol. III. Lectures on Clinical Medicine - by Sydney Smith Society.

I will quote page 371 one of his epidemics: "At Mayence in the department of Lot according to the report of Dr. Mayence that arrive
about the end of November 1856 a soldier discharged from the army
of Africa; a month afterwards he died of typhoid fever. Towards the
close of his illness, a woman, a neighbour who had attended upon
him with the most careful attention, took the same disease and
died. A brother of the soldier aged sixteen also died of it on the
16th March. Two of his sisters in the same month contracted the
disease, succumbing and recovered after tedious convalescence.
The female neighbour, whom I have mentioned, communicated
the disease to a son aged seventeen who died on the 22nd May.
In a short time after this the fever struck down so many people
that it became impossible to follow its progress.

After relating various epidemics, he states: "From the examples I
have now given the contagious nature of typhoid fever is incontestable.
When in opposition to these positive facts, negative facts are adduced and
an exaggerated importance is assigned to them; when we are asked
to explain why it is so rare to see persons contract the disease in
hospital wards from the patients who have it; when we are referred for
example to the statement that of 439 cases observed at the Hotel Dieu
by Cleaveland and Lancis that 10 began in the hospital — we mention
among other probable explanations that the individuals who thus
escaped may at some former time have had the disease. An explanation

of a more general character consists in the admission which must
perhaps be made that the etiology of the contagion is less when
cases are only occurring sporadically than when typhoid fever
"as prevailing as an epidemic."

And it is frequently impossible notwithstanding the most painstaking researches, to discover the origin of the contagion, and as it is known that typhoid fever at some time or another had a beginning, we cannot refuse to admit the possibility of its arising spontaneously, although we hold that it is a contagious disease. Let us see therefore under what conditions it is developed. Some of the conditions must be sought in the individual himself and others external to him. The first are the exciting causes, the chief of which is contagion, the second are the predisposing causes. Both classes of causes are difficult of recognition. Were I to discuss the influence of an atmosphere vitiated by putrid emanations, the influence of spoiled articles of food and contaminated drinks, I should be occupying your time with trivialities, because these are nothing more than hypothetical causes."

I do not think that Jennerian had he lived at the present time, would have held the same opinion as that expressed in the foregoing. I have quoted him at length as he has always been looked upon as an authority, and all through his works one cannot come to any other conclusion but that he was a keen observer and a rare clinical investigator. I cannot, however, agree with him as regarded his opinion regarding the contagiousness of typhoid fever and in his concluding remarks quoted above he seems to waver and be uncertain and some of the causes he is pleased to cause trivialities, at the
present day are looked upon as important factors in the causation
of this disease. Polluted water supply, contaminated milk, deficient
drainage are certain etiological and pathological causes.
Riebermeister page 51 (Zeitschrift Encyclopaedie) says, "We must
therefore recognize on the one hand that typhoid fever is never
contagious from person to person and on the other hand that it never
originates spontaneously but by a continuous transmission of the
poison. The disease is not contagious in the proper
sense of the word, for it is never transmitted by direct contact.
It is not purely mechanical for external conditions alone are not
sufficient to produce it. The presence of a person suffering from this
disease or substance derived from such a person is necessary. The
poison is propagated continuously. It travels from the diseased
individual to the locality which are favorable for its growth and
multiplication and from these localities again into the human body."
Riebermeister page 50 mentions the theory of an autochthonous origin
as given by Briesinger speaking of the epidemic which occurred in
Andelfingen in the canton of Zurich in 1839 when more than 500
persons were attacked with typhoid fever. (3) In consequence of this
foetid meat—Riebermeister does not believe it to have been an
epidemic of typhoid but as first attributed it to typhovirus, although
the afterwards admitted he could not discover any virulence in the
tissues submitted to him for examination, and he is of opinion
that it was a particular disease produced by meat poisoning.
I have had several isolated cases under my care since I cured my 
first case of typhoid fever with certain foods. One family of four, 
the parents and two children had partaken of both which afterwards 
was found to be diseased. When first seen they all showed 
symptoms of commencing typhoid fever, but a day or two under 
treatment soon demonstrated to me that something else to deal 
with, dysentery, that came on beside other symptoms. They 
recovered in about a week. The wife who was the worst, ran well 
for some time after. I aminclined to think that bad 
meat sets up a gastro-intestinal cataract, premeditating typhoid 
fever in many respects. When no doubt atresia or even 
ulceration of the intestinal mucous membrane is produced, the 
same as one sees in the case of some irritant poisons, and I 
cannot come to any other conclusion but that the epidemic 
related by Greisinger, as occurring at Heidelberg, was a 
severe form of gastro-intestinal cataract with no doubt deep 
ulceration of the intestinal mucous membrane.

I have frequently heard it expressed that typhoid fever can be 
produced by the presence of putrid material or decomposing organic 
substances, but I do not see how this is possible unless the specific 
germ of typhoid fever be present. I cannot do better than 
give Richerme's opinion in this matter in his report page 50. In fact, 
my observations are sufficient to show that decomposition of 
organic substances and of its constituent substances is used of
itself sufficient to produce typhoid fever. There are innumerable
houses in which the effluvia of the privies can be smelt through
all the rooms, and in which the inhabitants are constantly inhaling
sewer gases; and neither the temporary nor permanent residents
are attacked with typhoid fever. Cities with defective sewerage are
not by any means always visited with typhoid. It can be
readily seen also that there is no relative proportion between the
frequency of typhoid fever and the want of cleanliness in different
cities; the dirtiest cities may be exempt and the cleanest attacked.
There are villages and there are certain quarters in cities where,
both within and without the dwellings, decomposition of organic
and aperceivable substances is constantly going on; but only
in some of these situations does typhoid fever occur. While in others
it has never been observed within the memory of man. But in
such places the introduction of a single case of typhoid will often
give rise to a severe epidemic. We are therefore forced to the
conclusion that besides external conditions favorable to the
development of the typhoid poison something else is necessary.
Numerous facts render it more than probable that that something
necessary is the specific poison itself. In other words the poison
of typhoid fever does not originate in decomposing substances but
finds in them a favourable ground for its growth and multiplication.
The most convincing experiences show that typhoid fever never
originates in any unusual amount of decomposing matter nor
from any circumstances favourable to decomposition, but is always preceded by the introduction of a case of the same disease.

Whilst agreeing with Professor Liebermeister in the foregoing quotation, I cannot quite accept the concluding paragraph viz. that typhoid fever is always preceded by the introduction of a case of the same disease. My reason is differing in this opinion being that I have seen typhoid occurring where no possible case of typhoid fever could ever have been. It was not until I read up the subject of typhoid fever did I know that other observers had had the same experience, and I found most useful help in pursuing the articles on the subject appearing from time to time in the medical journals. I do not think that the typhoid specific germ is always necessary to set up an epidemic of typhoid, but that a disease, which is not typhoid fever, resembles it so closely symptomatically and pathologically as not to be distinguishable from it. This form of the disease to which I refer I am opinion must have a material origin, if not, I cannot give any other than that it is due to atmospheric and climatic influences, a very vague term I admit. My own opinion is that both the atmosphere and the climate have a great influence in the production of this fever. I believe that the germs of typhoid fever or a fever similar to typhoid, are everywhere to be found on the face of the earth, and that these so-called germs lie dormant, it may be for generations, may be for a few years, that an influence which we can ascribe
as being due to the climate is brought to bear on these so-called
dormant germs, I mean that the atmosphere contains, when
this climatic influence is active, a something which is necessary
forcing these dormant germs to life; that a sort of impregnation
occurs, and after the whole force of this influence has been
expend on these germs returns to their dormant condition. The
next argument I came to after minutely searching for a
cause in several epidemics I have been witness to. I could find
none of the usual recognized causes after the most careful and
searching examination, consequently I had to formulate a
thesis to endeavours to explain the cause of typhoid fever in some
of our epidemics. I thought here was a possible cause why
new comers to any country were often the first to be attacked;
that in new countries where typhoid fever had never been known
before, should suddenly spring up without any possible intro-
duction by man. Another consideration which must not be left
out in this matter is the amount of rainfall. From statistics
of the amount of rainfall I have observed that we can always
expect an epidemic of typhoid when a heavy downpour succeed
a very dry and hot occurrence.

When reading up the subject of typhoid fever I came with many
interesting papers some of which I have taken the liberty to quote
at length from and I need apologize for doing so but this portion
of my subject has so much interest for me that I hope the
quotations will not be thought too lengthy.
In a paper on "Indian typhoid fever" Dr. Quill brings forward some interesting facts as regards the etiology of typhoid fever in India. The paper is in the British Medical Journal for Jan 20th, page 102 where he states that two opinions are held by practitioners in that country. He says "On the one side it is held with much confidence that the entrance into the human system of fecal impurity (though not necessarily of a specific character) is undoubtedly the cause of enteric fever in India in just the same way as such a cause produces that fever at home; while an opposite sect of thinkers (and whose numbers, I would say, seems to be yearly increasing) hold that the great majority of cases of enteric fever in India are due to what they call "climatic influences" a very loose term it must be confessed, but one which for the present does not seem capable of being made more exact. It is very desirable to decide which of these beliefs is deserving of credence. Those who hold that every case of enteric fever in India owes its origin to some fecal infection of the blood must as a natural consequence admit that the disease is then one which can be effectually guarded against by the exercise of sanitary vigilance; and further the introduction of additional and more perfect sanitary precautions, as time goes on, it may be eliminated almost completely from the diseases with which the soldiers serving in India is subject. This it must be acknowledged is a very satisfactory and pleasant belief.
But, on the other hand, if it be clearly proved that the most painstaking inquiry fails to connect the occurrence of cases of enteric fever in India with any local impurity, and, moreover, that strong grounds exist for believing that the cause of this fever lies in the climate of India, then we must confess that the utmost perfection in the sanitary condition of a cantonment furnishes no guarantee against the presence in it of that which is capable of producing enteric fever. One thing, however, is very plain; and that is that the giving of our adherence to the theory of the climatic origin of enteric fever in India in no way absolves us from paying the most thorough and anxious attention to the sanitary condition of any station in which we may be.

Mr. D'Arcy, who is stationed at Assaigars, Bombay Presidency, then goes on to say, that he examined the sick returns of Assaigars between the years 1875 and 1881, and not one case of enteric fever is entered. And then to this statement I add that the great majority of the soldiers at Assaigars during the years I have named were under twenty-five years of age and had a service in India of less than three years. I think it will be acknowledged that the whole tells with considerable significance against those who look to climatic influences as being the principal cause of enteric fever in India; and from his observations he comes to the conclusion that enteric fever is a local disease in India as elsewhere. He adds, notwithstanding the evidence I submit, I have adduced in favour of enteric fever being a local disease in India as elsewhere I would say, that personally
I am by no means convinced that a focal impurity must exist before cases of enteric fever can occur in India. I have seen many outbreaks of typhoid fever between which, and a focal impurity, it was not possible to trace any connection; and where, on the contrary, many things favoured the view of some eliminative influence being the focus of origin -

Dr. Rutherford Ryley relates a very interesting experience, which goes a long way to bring prominently forward the view of eliminative influence held by a number of practitioners in the colonies. His paper is to be found in the Australasian Medical Gazette for November 1882, pages 34-39. In this paper he gives cases with post-mortem examinations, the latter showing the exact lesions which are to be found in true typhoid in the old country. As it would take up too much space to give the whole paper I shall only quote from page 37 where Dr. Ryley, after describing his experience in Westland, New Zealand, gives it as his opinion regarding the etiology of that disease in New Zealand in the following words: "The persons attacked were chiefly the miners and new arrivals prospecting in the bush or working in their claims, and came not from any one part of the district but from a circuit of fifty miles or more around. Very few indeed comparative came from the townships or centres of population, nearly all attacked being miners or others working in the bush. The cause could not be contagion as the country was newly peopled, and
the soil & origin one. The cases occurred sporadically all over
the district simultaneously or in immediate succession without
any intercommunication not from any centre or centers of
infection. It could scarcely be from experimental or other
animal matters in a state of fermentative putrefaction as
the cases especially in the early days occurred amongst troops
shifting their camps daily or oftener. If the source of the
fever had been a specific poison which multiplies itself
indefinitely in the system and is ultimately discharged
from the bowels or through other excrecentary organs the
disease would have been communicated from person to person
through the drinking water or otherwise and could be traced
easily to its origin but from first to last there was not the
slightest evidence that the fever was contagious. In the very early
days when patients were treated in a temporary hospital and the
accommodation fell far short of the demands made upon it—the
patients were crowded together without classification and in defiance
of the rules as to cubic space and with little or no attention to
sanitary measures, such as the use of disinfectants &c and as to the
true site. Left fever cases were distributed among the other
patients of a general hospital, using the same night chairs
(I had to give up the use of patent earth cloths obtained from
Melbourne as it was found to get the patients and servants
to attend to their proper management) and communications.

yet no patient or nurse or officer of the institution was attacked with the disease in the hospital; but one of the officers, the house steward, after residing in the hospital with impunity for two years went up country, caught the fever and came back to the hospital to die. But to put the contagiousness of the fever out of the question, I need only add that for the last two years I held the office of surgeon to the hospital. I caused the excreta from the night-chairs and privies (which however had been converted, though imperfectly, into excrementary earth closets) to be used as manure by the gardeners in the hospital garden, close to the institution, an order which made me very unpopular with these officers, but without doing any harm to any one. If not contagious, what then was the etiology of this fever? The only answer that can be given under the circumstances to this question is this: the cause of the fever was malaria. And other observers have since under similar circumstances in India, South Africa, and Afghanistan during the late wars, found beyond the possibility of doubt, that the malarial poison is capable of producing a fever differing in no essential particulars from typhoid fever as it occurs in England and other temperate climates. and the fact must now be admitted that the malarial and typhoid poisons are nearly related, if not identical.

Dr. Riley then gives the following facts in support of his argument: -

1. The absence of any contagion or specific poison, or poison produces
by prevalent or other animal matter, the country being occupied by Europeans for the first time.

2. The presence of the material poisons as evidenced by the presence of diseases universally acknowledged to be of material origin.

3. The remarkable prevalence of this disease exhibited by recent arrivals.

4. The occurrence of the fever all over the district and not from any centre or centre of infection, and especially after hot weather followed by rain.

5. The occurrence of the fever where the soil was exposed to solar and atmospheric influences by the cutting down of jungle, as well as the uprising of virgin soil composed almost entirely of decaying vegetable matter.

6. The appearance of this fever on nearly every new goldfield such as Forbes, Greenfield, Eulogy, etc., where virgin soil was turned up, and as in Westland, not so much among the inhabitants of the town as amongst the mining population working in and camps on the Claim. The fact was observed also during the late Zulu and Afghan campaigns, as well as during the American civil war.

7. The disappearance of the disease under the influence of decolonisation and settlement, rather than from improved sanitary conditions.

8. The well-known fact that some material soils, noxious during hot and dry weather, become dangerous after a shower of rain. Any old Australian gold digger will tell you that he can "smell fever poison" under such circumstances.
9. Last, not least, the enlargement and softening of the spleen observed after death in every case of death in typhus that occurred in Westland. When I made this observation — indeed, during the whole of my investigation — I did not imagine for a moment that the fever had a malarial origin. As the typhus poison was admitted to have an origin de novo by such eminent authorities as Virchow and others from faeculent and other animal matters in a state of decay, I did not think it very far fetched to go a step farther, and attribute the fever, as I did, to evacuations from a soil composed almost entirely of decaying vegetable matter under the influence, after denudation of rank jungle, of solar and atmospheric influences, as well as to the drinking of water as brown as tea from the presence of decaying vegetable matter, in the absence of the recognized cause of the disease. In the whole of my large experience I never saw an instance of this fever spreading by contagion, and I much doubt whether there can be produced a single well authenticated case of such a mode of propagation in these colonies.

At the risk of being a little too bold in giving extracts from other writers rather than my own production I will give a brief and a few extracts from a paper by Dr. C. H. D. on the Epidemics of enteric fever in the Transvaal, Zululand, and Egyptian troops compared, which was published on page 4 in the Bot. Mag. volume for
July 4, 1883. He says, "Tropical heat in some way, unexplained at present, must have a powerful influence on this disease, for, so where we will - India, China, Egypt, or South Africa - all produce their typhoid fever among recent arrivals in the country, especially when campaigning is commenced in the hot months; for, strange to say, it does not accompany the troops for ever. We had no more enteric fever in the Transvaal after the epidemic had once expended its energy, even after a few weeks' rest, when we again set out on the march to Sekukuni's country, under as adverse circumstances as could well be conceived, as far as ravines and tents were concerned." Further on he says: "Relapses are said to occur in about 8% of enteric cases. Both in South Africa and in Egypt, relapses were the rule instead of the exception, and yet the cases under observation certainly did not come within the category of relapsing fever as noticed by Freiesiger in Cairo in the year 1859, in connection with the bilious typhoid and typhus then raging. They were simple relapses, accompanied by the usual gastric disturbances; and yet we were supposed to be dealing with plain, unwarned enteric fever." On page 5, referring to South Africa, Dr. Nash says, "We arrived at Pretoria on May 4th. In the 14th of the same month there were nine cases of enteric fever in the hospital, and two officers down with it, and this in a force of 1,000 men all told. That it was enteric fever I will answer for.
with a small bush knife; and the truth of the diagnosis was demonstrated by the condition of the small inmates, which were suddenly attacked by the characteristic symptoms. It was a sudden outbreak, and as suddenly ceased, but the cases were numerous enough in proportion to warrant the term of epidemic to it. Some positively affirmed that for the production of enteric fever a specific agent must be present, and that common fecal matter may produce diarrhoea even of a febrile character, but not enteric fever. If this be correct, where was the specific agent come in this case? The Frawang had only been inhabited by Boers for a quarter of a century, and, as far as I know, enteric fever was unknown among them. It comes to this, then, either there was a specific germ carried with the troops from one knows not where, awaiting certain favorable circumstances for its growth, in which case this germ would be virtually everlasting, indestructible, capable of retaining vitality under almost any and every circumstance in air, water, etc.; capable of surviving any distance and in any climate; or, there is no specific germ producing enteric fever, but producing varied forms of fever with enteric complications, which fevers can be produced without specific agents, provided certain elements are in force dependent upon, and inseparable from, campaigning in tropical zones, or under somewhat similar states when an individual, from a home to a tropical climate, we will now look at the enteric fever which accompanied the Zulu War.
It must be remembered that the men forming this force (25,000 strong) came out straight from England. Operations were carried on in a comparatively young country, so far as European residents were concerned and a persistence of the fever was not ascertained. Where did the specific germ come from in this case? The large force was divided into several columns, one at Ruwer Tegel, one at Helfta, another at Utrecht. In all these columns acute fever showed itself; yet they were totally separate from one another and the little communication between them that did exist was of the most indirect and roundabout form. Again cases occurred at Maritzburg; men were left behind just after landing, before the poison, if it had been absorbed in the country, could have had time to develop. Others again were attacked after a lengthened life in tents when they came back into the towns and took up their residence. How is this accounted for, if the specific agent theory be correct, or amenable to modern views? Rather was it not, as has been suggested by others, that the altered circumstances under which the men lived led to an excessive physiological action showing itself primarily on the intestines, and overstepping the bounds of health, became pathological, exceeding its force in the form of a fever with the above manifestations? The water in this case could hardly be blamed, for it was practically pure. True, the streams before reaching us had to pass through a few native villages, yet it follows that they must live near the campsites as well as other people; still, I venture to repeat that they are as clean.
in their habits and as refined in their tastes according to their
lights, as the most refined citizen of the day. Contamination
therefore was unlikely from them, even supposing for the sake of
argument that fecal matter could produce enteric fever. In my
notes on this fever made at the time I found my impression then
was that the epidemic was caused by drinking stagnant water.
Subsequent experience has led me to doubt this impression, for it
is very doubtful if much stagnant water was used by the men,
even if it could have produced true enteric fever. It comes to this;
either the genus, if this theory be entertained, were carried from afar,
or it is not necessary to have the presence of a specific poison to
produce a fever under special circumstances manifesting
industrial complications. Here was an epidemic of enteric fever
with pure water and fairly good sanitation. In Egypt we also get it
with impure water but with other conditions similar. One thing was
common to both: disease under canvas in a tropical or subtropical
climate under altered conditions from those in force in the native
country of the men employed. Has the water so much to answers for?
Are there not other and important factors at work producing
similar results and with equal fatal force? I offer no opinion
but ask others to make their own deduction.
I think in the last three extracts we have abundant proof that
a climatic influence must exist. In all these there is no possibility
of an explanation on ordinary grounds, such as due to infectious
(35)
with or water, nor is it capable of demonstration that there has
any existence of the specific typhoid germs. I would fain dwell
on this portion of my subject and bring any proof of a climate
influence, at best it is my theory, but these brought forward
sufficient evidence to show that a something must exist in
an climate, as well in that of those countries named in
the extract of papers quoted, to produce a fever so identical with
the typhoid fever as ordinarily known as to be indistinguishable
from it. What that something is, is difficult to ascertain,
science may yet discover it, but at present our knowledge
of it is a complete blank.
Two preventible (at least I look upon them in a great measure
as preventible) cause, I must touch on, seeing so many epidemics
have been caused by the one or other of them. Refers to contaminated
water supply and infected milk.

Contaminated water supply as a source of typhoid fever.
That the water supply of a city can be contaminated with sewage
matter has been abundantly proved. Still, I think, it must be
necessary to have the presence of the specific germ of typhoid
fever in the sewage deposit to bring about an epidemic disease.
I have often seen polluted waters as the regular beverage supplied
to country districts and with no bad effects, and why should such
water not produce an epidemics of typhoid seeing that it contained
abundant organic matter, were it not that the presence of the
specific germ was all that was required. Epidemics due to this cause are recorded in the British Medical Journal for October 1884 page 649 occurring at Kedermiski and October 1884 page 484 a record of one occurring at Newark. In an epidemic at Barboldswick near Skipton recorded in the same Journal for May 26 1883 page 1013 Dr. Allinson traced it to a polluted water supply. The water was highly charged with organic matter yielding free Ammonia 0.2 part per million, Allinnitrate Ammonia 0.16 part per million. The disease invaded 17 families and attacked 148 persons, 8 of whom died.

Infected milk as a cause of typhoid fever.

This too, has brought about many epidemics; we are constantly seeing in our journals record of epidemics due to this cause. Dr. Wilson page 1136 June 9 1883 Brit. Med. Journ. reports on an epidemic. A dealer of milk contracted the disease and died of it. At his residence there was a high polluted well, which was used to wash the cows if lost to dilute the milk. The pump handle was removed and the well supply checked. There were 12 cases in all, one proving fatal. The further spread of this fever was at once checked. It was found leakage from cesspool polluted the well water. This contaminated water no doubt was the cause of the milk dealer's illness in the first instance, for had the disease once being originated in the premises, the well water became specifically poisoned with typhoid poison.

Another epidemic occurs at St. Pancras, London, reported by

Other epidemics at Glasgow 1884 - The Royal, Western and Bellahouston Infirmary received milk from one contractor, the infected milk was ultimately traced to one farm at Forresmlill, Argyll, which supplied the contractor. Same Journal Oct. 11, 1884, p. 724.


How long does the typhoid poison remain active?

This question has often been asked. I have never seen a satisfactory answer given to this question, nor do I think it possible to give one, seeing that the vitality of the specific poison may continue for many months. At least, from the following extract, one would be inclined to think that even several years might intervene and still the poison remain active. - Reberweiler (Ziehrer's Encyclopaedia) page 56 says, "A very instructive case is related by S. Eich which shows at the same time the long vitality of the typhoid poison. A villager who had contracted typhoid fever at Ulm returned to his native village a place where typhoid had not existed for many years. The excreta of this person were thrown on the dunghill. Several weeks later five persons were employed to remove this dunghill. Of these five, four were attacked with typhoid fever, and one with..."
gastrectomy symptoms and swelling of the spleen. The accounts of these five persons were buried deep in the dumpbell. Nine months later two more persons were employed in completely removing the dumpbell, one of them was attacked with typhoid fever and died of it.

Evidence in my concluding remarks to bring forward some clinical cases, simple and complicated, to give, however, the cases at full length would take up too much space. I will content myself with giving one complete case and mentioning points of interest in others. Notes from my notebook.

Case 1. Ordinary case, no complications, perforation and death.

W.M., a little girl 12 years of age. I was called to see her on April 12, 1882. Patient has not been well for a fortnight. Appetite poor. Tongue very much coated, small triangle at tip clean. Has had considerable abdominal pain, less today. Last 3 or 4 days bowels relaxed. Face yellowish brown color, liquid, fairly large on the top, bad smelling. Distinct gurgling in the right iliac region. Four rose colored spots over the abdomen. Otherwise no symptoms to record. Temp 104.2, pulse 120. R 18.

April 13, 11:15 a.m. Temp 103.6, pulse 110. Tongue very much coated. Very thin. Several more spots over the abdomen. Hardly any pain to speak of. Slept fairly well. Motions normal every half hour.

April 15, 11:30 a.m. Temp 103.6, pulse 110. Tongue brownish coat. A few more spots this morning. No pain. Motions less in number, still bad smell. Slept badly, traveling very much.
April 16, 12:30 p.m. Temp 102.8 Pulse 100. Tongue came - 6 motions in 24 hours. Stools characterless - no blood.

April 17, 11:15 a.m. Temp 102.2 Pulse 108. Tongue brown and hard. Has been delicious near all night. This morning looks a little queer. Stools same character - spots same.

April 18, 11:15 a.m. Temp 101.4 Pulse 102. Tongue wet so brown, red and dry. Not so delicious. Halitosis, tendency to firmness in consistency. Spots more numerous, several of older fading.

April 19, 11:20 a.m. Temp 101.5 Pulse 104. Tongue still hard and dry. Much more delicious during the night. 6 stools since yesterday. Still bad smelling.

April 20, 5:30 p.m. Temp 100.6 Pulse 124. Tongue little less hard. Not so delicious during the night. 4 stools, firmer and small in quantity. Spots fading.

April 21, 1:00 p.m. Temp 100.6 Pulse 107. Tongue very red and fragile. Not so seedy - slight delirium, slept better. 3 stools. 2 or 3 new spots, others fading.

April 22, 1:00 p.m. Temp 99.6 Pulse 100. Tongue coated. Flat areas. Little monotone anteriorly. Delirium less. 3 stools.

April 23, 12:45 p.m. Temp 98.4 Pulse 96. Tongue came. Slept better. 3 stools.

11:30 a.m. Thursday called to see patient who complained of pain in the abdomen, somewhat colicky in nature. Temp normal. Pulse 100. Resp normal. Three ineffective attempts at stool. (Suspicion of perforation.)


1:30 p.m., same condition. Flattening pulse occasionally felt at wrist.
Hands same condition - conscious - Resp. increased to 48 - 6:30 p.m. no change - Pulse occasionally felt - Hyper-resonant sound over whole chest and abdomen - Abdomen distended, tender to touch - complains of pain across the stomach - Respi: 60 - no cough, no dilated cardiac and hepatic areas - Hyper-resonant - Heart sounds faintly heard - Bowels not moved - Bowel sound hard - no accompaniments - all the spots gone - 9 p.m. died

In this case I have a suspicion that solid food has given contrary orders, although on taxing relatives with it, it was denied.

**Temperature Chart**

<table>
<thead>
<tr>
<th>Day</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
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<tr>
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<td>104</td>
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<td>105</td>
<td>102</td>
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<td>105</td>
<td>104</td>
<td>104</td>
<td>102</td>
<td>102</td>
</tr>
</tbody>
</table>

Pulse | 120 | 110 | 110 | 104 | 100 | 102 | 124 | 184 | 100 | 96 | 100 |

Respir | 36 | 42-46 |

Breath | Full | Full | Full | Full | Full | Full | Full |

I have commenced the chart on the 8th day as I think patient has been ill as long as that if not longer. The case speaks for itself, I need no comment.

**Case 2.** Ordinary case - no complications - quick recovery.

FT, aged 6 years - living about 50 yards from Case 1, occurring same time - Ill about 3 weeks - remarkable for the number of spots, successive crops.
being visible from day to day. She made a good recovery - although very bad for a week.


W. G. R. 21 years old - Mason's Labourer. Saw him first on the 26th Dec. 1882 - was then suffering from well-marked typhoid - had been ailing for about 4 weeks. He felt languid and unfit for work - had been suffering from diarrhoea - Temp 99.6, Pulse 85. His temperature never went above 100 all the time I attended him. Brains and all through his illness. On January 6, 1883, complained of not passing any water. January 7, he had not passed any water, I passed a catheter, but found bladder empty. Endeavoured by means of baths and remedies to restore action of kidneys, but without avail. He died next day (January 8) of suppressing urine. He had an uraemia convolution, but died calmly, retaining his faculties to the last. In this case the patient lived 4 miles from home, I was not able to see him as often as I should have liked. I ascertained afterward, that being a dry youth, he did not like house a commode, but always went to the water closet, although this mother nursed him throughout his illness.

Case 4. Haemorrhage from bowel - Death.

J. B. 50 years old - Labourer. First saw him Dec. 31, 1882. Had then been suffering from headache, lassitude and no inclination for work for the past week. Otherwise no symptoms. On January 3, 1883, symptoms of typhoid fever first developed themselves, nothing
remarkable in this case and was doing very well. On January 19, was hurried called to see Mr. B. This was said to be passing large quantities of blood by the bowel. On arrival found my patient dead. Large clots of blood the size of a child's head having been passed by the bowel, death to hemorrhage. This patient showed as bad symptoms all through and there was no suspicion to cause one to think that hemorrhage was so near. This is the only case of hemorrhage I have lost. I have had several others but they all recovered after hard convalescence.

One of the most important complications in typhoid fever is pneumonia, both single and double. I have had severe bad double pneumonias and hoping to see they all recovered.

In Dr. Neill's paper he classifies the causes of death of those patients who died in the hospital. Mention of this paper was made at the beginning of this essay.


It will be seen that pneumonia forms an important factor in these statistics.

An important point I wish to touch upon in regard to typhoid fever in Australia, and that is the number of cases in which one meets with constipation as a prominent symptom. I have had cases...
in which the bowels have not been moved for a week or 14 days, and all made good recoveries, notwithstanding the high temperature which continued for days. In fact, in these cases it assists me very much in forming a prognosis, for these constipations are a marked symptom one can safely predict a recovery. I have yet to learn a fatal case occurring in this form of the fever, no matter how high the temperature and how serious or prolonged the case.

I have now come to the end of my investigations, but thinking it might be interesting to give a report of an epidemic occurring in Australia I append portions of a report by Dr. Whitell, the President of the Central Board of Health for South Australia. To show that we in South Australia are as careful in investigating epidemics of disease as the arise as in the Old Country. That we endeavour to carry all the principles instilled into us by our various Alma Mater, to leave no stone unturned in the advancement of science, and to follow in the footsteps, when practicable, of our illustrious medical predecessors, will be seen from Dr. Whitell's report-

I say no claim to anything in this report. But merely give it as an epidemic which occurred in South Australia, and which, from his official position, the President of the Central Board of Health had every opportunity of investigating.

Dr. Whitell was sent by the Government to report on a serious outbreak of yellow fever which occurred at Carriston, South Australia. Carriston is a small township situated about 200 miles north...
of Adelaide. It is formed by some four or five streets placed at right angles, in which about thirty houses have been erected. The population is reckoned at about 120. It is well situated amidst picturesque surroundings, on a slope which affords surface drainage towards Yangeeneree Creek, usually dry, at the westward bound. The soil is porous, and, taking the sides of the wells as indications, consists of a conglomerate of earth mixed with pebbles, which extends several feet below the surface. Underneath this is solid stone, soft when brought to the surface, but hardening on exposure to the air. The houses vary in size; but most of them appear to be well built and convenient. I heard complaints that some of them, owing to the insufficiency of house accommodation, are overcrowded, two families being obliged to live in a house where there is room only for one. For the same reason, or from motives of economy, some families live in tents erected on some of the railway's vacant allotments in the town. At several of these homes, and of course at the tents, there is no provision of proper accommodation. The household slops appear to be thrown about anywhere that is most convenient. All the rubbish is similarly disposed of, and in parts where the houses are more thickly placed, there are close to the premises large accumulations of fields, old bricks, old clothes, household refuse, and immense quantities of bones—some white from long exposure, and others with flesh on them, not yet thoroughly decomposed. All over the place pigs and goats
were to be seen running loose, and I was told by one of the resident
in answer to my remonstrance that the accumulation of bones, etc.,
could not be prevented because, although the bones and other offal
were sent away to some distance, the pigs brought them back
and scattered them about in all directions. There is no provision
whatever for scavenging the town, and the privy cesspools are never
emptied. I was told by the proprietor of the largest hotel that he had
occupied the house for about three years and a half, that the
cesspool had not been emptied in his time, and that it is so
large that it is not yet anything like full. I was further assured
that no resident could obtain the services of a labourer, even at
good wages, to cart away and dispose of household rubbish.

I have therefore to report that in my opinion the
spread of the epidemic was not due to contamination of the chief
sources of the water-supply. I further turned my attention to the milk
supply as a probable source of infection, but I found no reason for
suspicion. I saw one fever patient ill at a dairy. His case was a
recent one, and I had taken means several days before went to the
township to stop the sale of the milk. I learned that previous to the
shut-down of the sale only five families were being supplied, and no
case of fever had occurred in any of them. Having excluded the
two more common sources of danger, I come now to the consideration
of the probability of infections from direct exposure to the evacuations
from infected excreta. The disposal of excretory and of all household

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rubbish presents greater difficulties in new townships than would at first be imagined. There are no facilities for removal, no casual labourers who will undertake the work, and the farmers place no value on them for manure; and the occupants of houses provided with privy cesspools having no means for getting them emptied, the contents of the pools are left year after year until they nearly reach the surface of the ground, when they are simply covered with earth and abandoned. As already noted, a number of the houses at Barrieon have no closets of any kind, and when I enquired how families could occupy such houses I got but little information. The general answer was "Oh, the best way they can. Some go to their neighbours' some to closets at a distance, and some use the land." At one tent just outside the township, where I found a man suffering from typhoid fever, I was told they used a secluded part of a dry creek and cut off, and when the rain comes all is washed away. This same family depended for their water on what they called a dam. I saw some water that had been taken from this dam, it was dirty and unfit for use. I also paid a visit to "the dam" and found it to be a hole scooped out of the ground so as to allow surface water to run into it. It was nearly empty, and there was a quantity of cow dung at the sides and in the centre of the excavation. I was told that when the water is very bad a little line is put into it, and that makes it pure. Occasionally a little water for drinking purposes was obtained from the townships. Looking at the fact that all sorts of household rubbish is scattered...
about heedlessly in all parts of the town, it is not difficult to understand that the readiest mode of disposal would be adopted, and that so long as offensive matters could be put out of sight, no further care would be thought necessary. We have only further to bear in mind the difficulty, even with best appliances, of dealing with the discharges from typhoid cases during the diarrhoeal stage of the fever, to understand how easily a fever may become dangerous to a community, if it happen to occur in a house where no kind of provision exists, and where the attendants have no idea of the risk of infection from the discharges from the patient. A significant illustration of this is recorded in my notes of a patient who was removed from Carrickon during the second or third week of an attack of fever. The patient lived in a house where there is no closet. While her husband removed her to a distant town a substitute had to take charge of the house and premises. The man came from Coonatta, and lived at the house in Carrickon eight or nine days. After this he returned home, and between a week and a fortnight afterwards he began to complain of feeling unwell as if he had a cold. He became worse, typhoid fever developed, and he died during the third of his illness. His employer, who supplied me with these facts, said that no other person at Coonatta became infected from this case, the precautions having been taken to bury all discharges. The danger of spreading typhoid is now, however, confined to houses without closets. It is a well recognized fact that if the discharge from (what) patients be poured into a privy closet there is great danger
for those who afterwards are such prizors. I ascertained that previous to the distribution of the printed sheet of instructions issued by the Board it was the common practice to pour all the discharges from patients into the closets without any attempt to destroy their infective qualities. In this way every closet on premises where a case of fever occurred became a source of risk to whole households. I believe this affords the clue to the mystery that in a superior and well-kept house like the Barricolo Hotel, case after case presented itself amongst the household and boarders. After a careful consideration of all the facts brought to light under this head, I am of opinion that the cause of the spread of the fever in Barricolo was the exposure of the residents to direct infection from the excreta of patients which were not improperly put away, amongst the refuse of the house, or were forced without disinfection into the prior cesspools. The facts I have laid before the Board point to the remedy. It is in the power of the residents of Barricolo to stop the progress of the plague that is amongst them with the same certainty as they could extinguish fire with water. Cleanliness is the one thing needed. I do not mean simply cleanliness in persons and internal household arrangement, for in these respects I saw nothing to complain of. The evil lies in the want of external sanitary arrangements. It is too much the fashion to suppose that dirt can from the house or put out of sight is sufficiently disposed of. Better closet arrangements, smaller pits, frequent removal of excreta, disinfection, and burial of typhoid excreta, the casting away of household.
rubbish, and systematic scavenging are the chief requirements. I believe it is not so much the will that is needed as the means. The Board has already done something in the required direction, but some duly recognised local authority is necessary, whose function it shall be to do work for the inhabitants collectively, which it is difficult for a single household to do for itself. This opens up a broad question, for it is probable that the sanitary condition of Barrington is only a reflex of what is found in most northern townships where there is no local control. A mere accident may at any time bring about similar results in any one of these townships. In the face of this terrible hold typhoid fever is reported to have gained in the older Australian Colonies, the subject is worthy of serious consideration.

This report appeared in the daily papers, but we hope residents in new townships and country districts may profit by the instruction given.

W. N. [Signature]