Enteric Fever

a study of the disease as seen in the epidemic at Basingstoke during the autumn of 1905.
In order to fully understand the origin and outbreak of the epidemic a short description of the town, its population, water, and drainage systems is necessary.

The Borough of Basingstoke in Hampshire has an area of 14,194 acres; the population is 11,000, and there are 2,400 inhabited houses in the Borough.

It is an important railway junction the London and South Western Railway's main line passes through and the Reading Branch of the Great Western Railway runs to it.

The town is built entirely on chalk forination and is situated in the upper valley of the Loddon a stream which flows into the Thames.

The bottom of the valley has a level of 265 feet above Ordnance Datum. The water supply previous to the outbreak was derived from a chalk well in the north east quarter of the town.

This well is 30 feet deep the bottom being 298 feet above Ordnance Datum. From this well there is a heading which runs due North for 574 feet where it branches...
branches to the West for a distance of 45 feet and to the North East for 75 feet.

About 240 feet above A.D. a fissure running round the well and along the sides of the headings. The south of this well (well I) is a second well (well II) at a distance of 33 feet.

The bottom of well II is about four feet higher than that of well I and therefore above the level of the fissure in well I.

From well II a fissure runs due south for 15 feet.

In 1894 the supply from well II was shut off entirely by a brick wall three feet thick and faced with cement.

This was done because the supply from well II was constantly giving evidence of organic matter and was pronounced to be dangerous for a public supply.

During normal conditions the brick wall was sufficient to prevent water trickling from well II to well I. But after heavy rains water has been found trickling into well I from a fissure above the main fissure of supply.

It is very probable that water could be...
be cycled into well I owing to the greater output viz. 360,000 gallons per day from well I as against 80,000 gallons from well II for condensing purposes.
The Town supply was pumped to two reservoirs 366 feet above O.D. from whence it was distributed to the Town.

Drainage is a water carriage system in very fair condition. The sewage is pumped from a station at the lowest point of the London valley occupied by inhabited homes. It is pumped to a sewage farm almost a mile distant from the Borough. The main sewer of stoneware pipes is laid along the bottom of the valley in which the Town is built. During the Winter of 1904-5 there was a very heavy rainfall, and the amount of fluid to be pumped became enormous due to subsoil water finding its way into the sewer.

During the past year (1905) work has been carried on laying a new subsoil drain in place of the defective one at a depth of two feet below the main sewer and at the same time repairing the main sewer by replacing broken sections and repairing leaky joints. This work was commenced in April 1905 and is now completed.
The result has been a reduction of fluid to be pumped by one half the former amount, by the exclusion of the surface water from the sewer.

*House Sanitation* is good. In no case of typhoid could one obtain evidence of sewer gas infection such as certainly did occur in the Lincoln, Headstone and Wotton epidemics. In only eleven houses was there plural infection, and only in one house fecal infection. In the latter case there was evidently a family idiocracy for a fourth member of the same family was also attacked though he lived in another house. 164 cases occurred in 151 different houses.

The Nature and origin of the outbreak. The outbreak was sudden and widespread occurring in all classes of the borough and widely disseminated in all parts of the township. An explosive outbreak is hardly likely to arise from defective sanitary arrangements and would not be so widespread were it the cause. One bore in mind the "Drains, Drains, Drinking water, and dust of dried up Stool", and the solution had to be found. drains were put out of court by the reasons given above.

Dairies: The milk supplies obtained from
fifteen different parishes and it is hardly to be credited that the different dairies would be affected by an injection of the Typhoid bacillus synchronously. There were four cases of Inteibe where condensed milk was used, and three in which milk was never taken. Children also would have been more frequently attacked as they only numbered 23.1% of the total. These being under 15 years of age.

I shall next consider the cases of 'died of stock' or what is the same thing, exposed effluent which has been saturated with sewage. There was a very considerable amount of such effluent turned over and exposed from April 1905 onwards during the excavations on the sewer and effluent drains. That infection was due to excavations from this source cannot be entertained because: (a) The work had been in progress since April 1905, no case of Inteibe fever was notified before Sept. 18th 1905. (b) The first case notified occurred in the higher outskirts of the Town in one case I can vouch for he had never been down in the Valley for several weeks before he was attacked. (c) There were very few cases attacked along the line of excavation a very densely populated
District. A. None of the 60 odd workmen were attacked.

Drinking water and reasons for its infection. It has been previously stated that the main sewer was being relaid. On July 29th when testing a length of the new drain a plug was put in a tributary sewer in two different places in order to lessen the fumes while manipulating the test. One of these was overlooked and left in situ. This plug happened to be in a section of the sewage pipe not far from the well. On August 27th between 2 and 4 p.m. 1.01 inches of rain fell in Basingstoke. During this heavy fall of rain sewage was known to have risen in water pans in cellars above the seat of the plug and a row of houses backing on the town water supply had their sewage drained up to overflowing. This flowed and was washed down the storm water drains of these houses. This water collects in a Sump. Only 145 feet away from the town well and in all probability with in the depression cone caused by the daily pumping. This occurred on Aug 27th. The first case was notified on Sept 18th. There were 102 notifications between Sept 18th and 30th.
The chart attached on the blank page opposite will convey to the mind an impression of a sudden and flashing contamination of a universally consumed article, which ceased to bear disease almost as suddenly as it brought it.

In every case notified the public water supply was laid on, or where a patient was resident in a rural district he or she had been employed in work in the town, and had drawn the water supply of the town. In one case all water for domestic purposes had been periodically and systematically boiled with carbolic acid, since the beginning of the outbreak. On Oct 23rd a maid drew off a tumbler of water from the tap and drank it. On Oct 25th she went home to a neighbouring town. On November 1st she was notified there as a case of Paratyphoid fever.

At St Thomas's Hospital where the inmates have no access to the town two cases occurred. One case was reported to the Borough authority of a case in which, in passing through Shimbirntha, had ordered a luncheon basket in which the was lettuce. The passenger developed Paratyphoid fever. The lettuce had been washed in unboiled water. The above evidence together with the history of the plug incident will
will be sufficient to give exceedingly strong proof against the purity of the water supply, and to my mind is proof positive of water-borne infection. There was most probably a transient pollution of the water supply slight in amount mayhap, but nevertheless of extreme violence. chalk wells are liable to such infections from swallow holes and fissures in the chalk.

The Epidemic

follows the autumnal role of Typhus fever.

The attack rate according to the C. G. B. Infection report was 1.8 per cent on an estimated 11,000 population.

The death rate was 7.7 per cent counting all cases. In the Isolation Hospital the death rate was 9 per cent. The males were in excess of the females of the 100 cases for which I can vouch 58 were males, 42 were females. The youngest case was in a child of 7 years. the oldest case was that of a man aged 78 years.

The relation of age to the disease was as under:

1 - From 1 to 9 yrs. 6 cases; from 10 to 19 yrs. 33 cases;
from 20 to 29 yrs. 36 cases; from 30 to 39 yrs. 16 cases;
from 40 to 49 yrs. 7 cases; from 50 to 59 yrs. 3 cases.
and in private not counted in the 100 above cases one.
In the one hundred cases which I shall now confine the discussion there were 9 fatal cases. 9% is 1% more than the Maidstone epidemic and is 1.6% less than Professor Oller's quote in the Reports of the John Hopkins Hospital, though it is 1.9% higher than his death rate under the cold tuberculin treatment. When comparing statistics it is a bold thing for a meagre one hundred to compare itself with the many hundreds of other in larger fields and with many more years of experience.

The average length of typhoid is 23.9 days. In the fatal cases the average length of typhoid was 22 days.

None of the Staff were attacked, whereas in the Edinburgh Hospital in South Africa nine of the staff were attacked, of whom one died and in all of whom inoculation against Typhoid fever had been performed.

None of the Staff of the Isolation Hospital were inoculated against Typhoid excepting myself. It should have been stated above that the mortality per cent. in the Edinburgh Hospital was only 10.7 per cent. an exceedingly low mort.

And when most of the cases were young men of an age when Typhoid is more fatal
than at any other period of life viz. 30-40 yrs. and further that they were brought to us by bullock wagon and by sail and in many cases without treatment.
The incubation period was perhaps more easily and exactly gauged in this epidemic than in those of Sittingbourne Maidstone and Wrotham in all of which there were previous cases of diarrhoea; probably mild cases of enteric due to a slight pollution of the water, which became a stronger solution of colloid in which the later cases were infected.
There was no case of early diarrhoea in this epidemic. The date of pollution was August 27th. The first notification was sent in on Sept 18th, an intervening period of 22 days.
It is generally agreed that, allowing 7 or 11 days for the period of incubation—from actual infection to the appearance of symptoms—and a similar period for delay in diagnosis and notification, the time between actual infection and appearance at the Isolation Hospital was as a rule three weeks. The average length of the incubation period was 12 days. In one case the patient first felt ill on Sept 12th. I saw him on the 16th when he had a temperature of 104°.
on the 22nd spots had developed and the spleen was slightly enlarged. He had been at work from the 12th until the morning of the 16th, had been feeling weary in the evenings and had suffered from slight headache.

If the incubation period in this case be calculated from the first day the patient felt out of sorts till the day he took to bed, it will have lasted only four days. It always seems to me that the period of entrance of the bacillus to the time of first complaint on the part of the patient is very high impossible to judge correctly, depending as it probably does on the amount or violence of poison which has entered the system, ii whether infection has been taken at one time or on several times, iii on the resistance to or receptive capacity towards the bacillus on the part of the patient. The incubation period has however been calculated from the first complaint on the part of the patient to the time he or the first took to bed. The case described on page 7 shows without a doubt an incubation period of 11 days. Another case which I attended for the first time on 29th Sept had come home to Easingstoke on the 19th Sept. and had been complaining of
headache for five days previous to my first seeing her. She had typical acute stools on Sept. 29th. Spots developed on Oct. 2nd. She was admitted to the isolation hospital on Oct. 3rd. The period between the day of arrival in Basingstoke, and her first taking to bed was 10 days. If she had called via a doctor sooner she would in all probability have been sent to bed sooner, and her incubation period would have been greatly shortened.

It is as a rule absolutely impossible to make sure of the facts when considering incubation in acute fevers. The longest incubation period I could trace with any degree of certainty was 23 days. Could so many cases be infected at a definite known time the results I believe would increase the period of incubation which is stated as "eight to fourteen days sometimes twenty-three" to a period beginning earlier and ending later.

The onset as a general rule was gradual, the patient continuing her work for periods ranging from two days to three weeks. A feeling of weariness in the evening, headache, backache, one or two days of diarrhoea of a mild
Typho followed by constipation. In three cases there was vomiting in the early stage. Pains in legs and arms with shivering and chill were complained of in about one third of the cases. Epistaxis as an early symptom occurred in five cases two of which were children, one a boy the other a girl. It was slight in amount and in none of the cases was the attack severe.

In six cases there was deafness with severe headache over frontal and occipital regions and passing down the neck. The temperature in all these cases was high when first seen, there was also great lethargy and stupor.

In no case was jaundice an early symptom.

In children the onset was less distinct in its symptoms than in adults. There was a general malaise and chilled look about the child. The temperature was in no case which I saw in private for the first time above 101.3. There were spots in every case, and the splenic enlargement was felt in all at an early period of the fever. Headache was common and Epistaxis occurred more frequently than in the adult cases. Constipation occurred in every case during the first few days.
The Fever.

The temperature in the acute stage was taken every four hours in the axilla. In the mild cases, and after the acute stage had passed, the temperature was taken in the axilla at 6 am. and at 6 p.m. in the axilla. I have several times proved for myself in taking temperature in the axilla and in the mouth is this, that if the bulb of the thermometer is held in position well “home” into the very top of the axillary cleft and well up against the grimmum of the tongue, a higher temperature is registered, especially so in children. The difference is at times as much as 1½ to 2 degrees. It was a surprise the first time I found this out, but that there can be such a difference I have demonstrated repeatedly to nurses.

During the first week the temperature averaged from a maximum of 103.3° to a minimum of 99°; during the second week from a maximum of 102.6° to a minimum of 98.4°; during the third week from a maximum of 101.9° to a minimum of 98°. In 41 per cent of the cases there was fever in the fourth week, in 23% of the cases during the fifth week, and in
12 percent during the sixth week. During the seventh week 7 percent of the cases had pyrexia. During the first week the highest temperature attained was 106° by one patient only, and with a rigor. Eight cases reached 105° and over. None of these cases were fatal. In the second week the highest temperature was 107.6° in a fatal case, which died immediately after. Three cases including the above reached a temperature of 105°. One case had a temperature of 107° during the third week, two others reach 105°. In the fourth week one case reached 106° and the other 105.6°.

The cases over 104° were: during the first week 23; during the second week 13; during the third week 6; during the fourth week 4; during the fifth week 1; and in the sixth week 2, both were fatal. The average highest temperature in the fatal cases was 104.9°. The average duration of a temperature over 103° was 6.4 days, that is to say the average number of days on which the temperature was above 103°, not necessarily consecutive days. The longest sum of days with a temperature above 103° was 20 days. This case, recovered, was in a very toxicemic state.
had miscarried before being admitted to the Isolation Hospital. In every fatal case the temperature reached 104° and over.

In several cases the temperature reached normal by the end of the second week. The Fever as a whole was not remarkably high, and the fatal cases did not show such protracted or so severe a pyrexia as some of those in which recovery took place showing that the Pyrexia in itself is not of much value in forming a prognosis in a case of Suture.

One case is of interest in hinting that a case of Suture can be aborted by early treatment. The case was that of a young man of 19 years, who complained of being uneasy four days before I saw him. He had been at business the day before.

His temperature when first seen was 102°, he complained of headache, which was not severe his tongue was furred and slightly brown, the tip and edges were clean and moist. His breath was offensive, and very suggestive of Suture. He was put to bed. No spots were detected, no enlargement of the spleen. His pulse rate was 84. His respirations were 16 per minute. His temperature fell gradually to 99.8° on the fifth day of his illness. The pulse was perfectly normal and beat 75.
first seen, and on the third day Calomel 0.14 was given every four hours for eight hours after which no medicine was given till the third week when histidine grav was given each night for four nights with a view to rendering the urine and dejecta less infective. He was sponged whenever his temperature was over 102°. A soap and water enema was given every third day during the second and third weeks if necessary. Was this a case of an exceedingly small dose of poison, or if an unsuitable soil for the bacillus to thrive on, or a mixture of both? It is certainly a case to be classified among the Mild cases for other cases seen as early in the epidemic had a much more severe run of fever and the ultimate effect was much worse.

The Type of the Fever

Was very similar to that seen in South Africa and will bear the same division into:

1. The mild or abortive type.

2. The grave type (a) abdominal (b) toxæmia.

3. The Spinal.

The Mild type was met with fairly often. The above case is a very good example of a mild type. Others were even milder but as
a rule had been treated at home before being sent to the Isolation Hospital. Some cases very possibly were never seen by a doctor at all, though these I believe were very few. The type in the great majority of children was mild. The Grave Type showed two distinct classes: (a) that in which the abdominal symptoms predominated and (b) that in which the local symptoms were completely overshadowed by the nervous symptoms. I am not entirely satisfied by such a classification for in my experience here it has been forced upon me to recognise in the torsoemic variety the æreity of the local condition. Granted there are many cases which can be placed in either category and never shift in their places, yet I think we will all agree that very often one is apt to neglect the one by paying too much attention to the other and vice versa. However it is a convenient classification and extremely useful.

In the abdominal type there was excreting odour, breath and person, foul tongue and mouth, as a rule a moderate rash, food was very badly assimilated, was often refused. Symptom: it was frequent with distension of the abdomen.
In one such fatal case there was perforation of the bowel. Diarrhoea was more often met with then in the Toxaemic type of grave case.

In the Toxaemic variety this was as a rule a duller flush on the face, more of a leaden hue, there was delirium, stupor, great restlessness, rigors were more common, subcutaneous was frequent.

No case of Hemo-morhagic Intoxication was seen.

Most of the grave cases were cases of profound Toxaemia; some often had pneumonia as a complication. One very bad case was that of a girl with extreme Toxaemia who recovered.

The Appendicular type was met with in three cases.

Two of these had a typical rash, and enlarged spleens. One had a very fowl typical tongue.

The third case may possibly have been one of wrong diagnosis. She certainly had no symptoms of Intoxication.

No case of Pneumonic Typhoid was seen, and none of the children had signs of pneumonia at the onset and none looked so typical Typhoid Fever cases, as did a child with what developed into an apical pneumonia whom I saw on admission to the Sick Children's Hospital in Edinburgh. She was in a very
febrile condition. Temperature was 102.0. There was great drowsiness. The face would quite well have fitted a typhoid child. She had diarrhoea on admission. Three days after admission a lobar pneumonia at the right apex made itself evident. When first seen I doubt if any one would have been surprised if the tentative diagnosis of Typhoid Fever had proved correct.

Consideration of Various Systems.

The Alimentary System.

The tongue in every case was furred in a few about 10 per cent the furring was slight and at no period of the fever could it be called foul. This was in great contrast to the tongue and mouths in South African cases. In the Edinburgh Hospital the mouths were crowded with a collection of epithelial scales, sores, dried mucus, and food and gave the nurses inordinate more trouble, than did the nurses experience in this epidemic. The reason for this is at once appreciated when the circumstances are considered. In South Africa the men were brought in by bain, after a sojourn in a bullock wagon, exposed to dust, without sufficient clean drink, and with a minimum of nursing attention.
In the majority of cases there was a progressive purring of the tongue which became brown at the end of the first, or beginning of the second week, and in the severer cases became dry and inclined to crack in the third week or end of the second week. Only in three cases did the mouth approach a similar condition of foulness to that seen in the majority of cases in South Africa. All had diarrhœa at some time of the fever. Two were fatal one having haemorrhage, the other extreme pulmonary congestion. The third was a toxæmic case which recovered after a pyrexia of five weeks.

It has been my experience that the cases in which diarrhœa is severe have always dried more persistently four months than cases without diarrhœa or with slight diarrhœa, and even than cases in which constipation is troublesome. The mouths were kept clean with chlorine water, Boroglycide, Bicarbonate of Soda 3% to a tumbler in the severer cases was sufficient scrubbed on with a piece of lint on the finger or on a spoon handle. In a few of the more severe cases I used Peroxide of Hydrogen 10 vols. Griffith found the gums and tongue on a piece of wool or lint.
This was very efficacious in removing dried scales and cordon, and made the mouth very clean. Sanitas was also used in weak solution.

Carbonic acid in a one per cent solution was also employed in the fouler cases.

Herpes on the lips was seen in cases in which symptoms of Pulmonary mischief developed.

Condition of the Bowels.

Diarrhoea was extremely rare; it occurred in more than a half of the cases during the incubation period but only for one or two days at most and not severely. In no case was it persistent throughout. When it did occur it yielded to an astringent or opiate in almost every case. In only two cases was recourse had to a starch and opium enema.

Constipation on the other hand was almost universal, and was very difficult to combat. In several cases calomel was given in one half grain or one grain doses night and morning; in others Castor oil was given in one half tablespoonful or one tablespoonful doses. In the great majority of cases Soop and water enemas were given every second or third day. This was varied with rectal injection of olive oil.
in amounts of one or two ounces. Glycerine injections were also used. This entailed a great deal of work on the nurses and they welcomed any case in which diarrhoea was present. Only in eight cases did the bowels operate regularly without laxatives or enemas. One case had constipation in her primary attack, but during a relapse had diarrhoea. Possibly the boiled milk which formed the staple diet was in great measure to blame. Beef tea, chicken and mutton broths, bay leaf, were added to the diet in order to check the constipation but with little success.

Symptoms were evident very generally in a moderate degree at the end of the first week. It was seen in greater degree in those with diarrhoea. In a few cases during the incubation period and early febrile stage there was seen abdominal retraction. These cases were showing symptoms of a more toxic condition with marked mental stupor, constipation and headache, the abdominal symptoms not being largely in evidence. This condition in one or two cases suggested a possibility of meningitis. Several cases complained of a dull aching
over the Right Suboccipital.
Almost two fifths of the cases most of them
females complained of pain of a heavy
dull nature low down over the lower
ribs on the left side. This was not present
when first taken ill but developed during
the first week reaching a maximum about
the eighth or ninth day of the fever.
In quite three-fourths of these cases there was
definite Splenic enlargement at the beginning
of the second week. The cause was evident
of Splenic origin. None showed signs of
Gastric ulceration nor was the pain acute
enough, they took nourishment, were not
dick and their Temperatures were not affected
unduly. In two cases I had great difficulty
in percssing out the Splenic dulness with
any degree of satisfaction on account of the
pain caused thereby.

Shore correctly in five cases, four of which were
fatal. One of them had haemorrhoidal Hemorrhage,
the other Melena following by Hemorrhage. In three
cases the Haemorrhage was unaccompanied.

detailed description.
M. N., a housewife aged 36, her husband alive and with a family of four children.
She was admitted to Hospital on November 18th.

The date of infection in this case is almost beyond even approximate definiteness. On Oct 22nd the reservoirs and water mains, and service supplies were disinfected with chloride of lime. On October 30th one case was notified.

She had been complaining of headache for over a fortnight on the day of admission. The day after first feeling ill was probably on November 4th. Thirteen days after the mains were disinfected. She was most persistent in assuring us that she had most carefully boiled her household water since the first notice was sent out by the Medical Officer of Health on Sept 21st. There was a case of tertian in the adjoining house. These were in a row of workmen's houses and were all attached houses. She had never been indoors except door, nor had any of her tertian neighbours been in her house. The case next door was in a front room. The window was open as a rule. M. N. slept at the back of her house. The W.C. next door was outside the house at the top of the garden. M. N.'s W.C.
was at the foot of her garden in a corner adjacent to her neighbour's garden. I examined both the W.C.'s and found them in good condition. There could be no chance of B我家 infection here, unless there was infection from a leaky tap allowing sewer gas contaminated by the adjacent sewage to enter the privy in Mr. W's garden. The inspector of nuisances did not entertain this view, but suggested infection through a fault joint in the water supply pipe. This could hardly be the cause as the main came from the street on the opposite side from the gardens. The case must either be one of long incubation, or a case of infection from aerial borne Bacilli. All the urine and stools next door were disinfected with Jeyes' fluid.

She came into hospital very ill, she had been in bed for a week previous but had done her homework when necessary. There was no history of diarrhoea. She was a fairly well nourished woman of medium build.

Her face was anxious more so than the average. She had a short irritating cough. Her face was lividly dusky pale. Her lips were slightly cyanosed. The eyes were bright. She was heavy and dull but answered...
questions intelligently. The pulse rate was 110. The pulse quality, easily compressed, was regular. There was no evidence of Cardiac lesion. Respiration was 32 per minute and there was dulness at each base with moist rales extending up to the angle of the scapulae. No Crepitations were heard. The tongue was coated with a thick brownish fur. It was dry, as was the lips. The throat and pharynx were congested. The odour of the breath was very foul and offensive. The splenic dulness was increased and there was an extensive crop of typical spots on the abdomen and lower costal regions. She slept badly, but took nourishment well. Her bowels moved and the motion was formed but easy and very offensive.

Her temperature on admission was 102.4°. During the first week in hospital the temperature gradually rose reaching 103° on the 7th day. The cough persisted. The pulse was extreme thim and the wave diastolic. Cardiac sounds had become more farce and the rhythm now approached the foetal rhythm in type. Her motions were still formed, were past and offensive. There was increase in the hepatic dulness. She was much duller mentally and slept fitfully. She perspired greatly.
When her temperature rose over 103° she was given with a resulting drop of 13° to 1°. Brandy was given four
13.4
On the 26th she vomited after a fit of coughing. The
13.5
milk was diluted down to one part in three of water, alternated every three hours with albumen
13.6
water. Brandy was continued.
13.7
On the 27th her temperature went 104.6°
13.8
On the 28th her condition was worse her cough was
13.9
more severe and more troublesome. The were moist
13.10
sounds in the bronchi. She coughed up phlegm. The
13.11
heart sounds were very feeble. She lay semiconscious,
13.12
passing urine and stools in bed. The latter were
13.13
for the first time fluid and typically Pica Soup.
13.14
She perspired profusely, the temperature was 102.2°.
13.15
She was delirious and her motions in the evening
13.16
were slate coloured. Permined Salicylate was ordered to be given 4 hourly.
13.17
In the 29th she had passed a very restless night. Had been very delirious and had tried to sit
13.18
up in bed. Perspiration was profuse. The motions
13.19
were not so relaxed and were darker in colour.
13.20
There was great tremulousness on movement.
13.21
The face was leaden the lips cyanosed. There was
13.22
increased hepatic dulness. Abdomen was slightly
13.23
stuck. She vomited frequently after drink. The
13.24
vomit was bilious of sour odour and green colour.
Pulse rate was 128 and respirations were 36. At 5:40 a.m. she had a hemorrhage followed at 7:45 a.m. by a more serious one. The motion was profuse blood and fecal liquid mixed very offensive odor. A few clots were present. Estimated amount of blood was one and a half pints. Sulfate of morphia grain $\frac{1}{4}$ was given hypodermically. She had another hemorrhage at 10 a.m. very similar to that at 7:45 a.m. but less in amount. Again at 5:30 p.m. she passed some dark decomposed blood in fluid and in clots. The temperature dropped to normal. When awake she was much more sensible. Pulse rate dropped to 84. 11:30 a.m. She had slept better, was more sensible, but during the night had been troublesome in trying to get out of bed. Passed urine on four occasions, no vomiting, no hemorrhage. Morphia Sulfate $\frac{1}{2}$ was again given.

Dec 1st: Had a good night. No hemorrhage or sickness. Morphia $\frac{1}{2}$ given because of restlessness. 2nd: Stool given 4 ounces, no motion or vomit. Pulse 128. Of better tone.

Dec 3rd: Had a large dark motion which was formed. Temperature came down to 100. Morphia Sulfate $\frac{1}{4}$ was again given.
From this time on she had no return of Haemorrhage. On the 5th had a formed motion of good colour. Pulse was still diastolic, and cough troublesome. The temperature gradually rose and from 14th to 16th December was over 103°; she then had a profuse perspiration and the temperature gradually came down. The profuse perspirations were like the sweating stage of a rigor. There was however no shaking or initial rise of temperature as in a rigor and the clonic muscular contractions were absent. From this time she slowly improved and on December 28th the morning temperature first came to normal. The evening temperature was 102.4°. She approached convalescence with a big wave in the daily remission of temperature but on January 13th the evening temperature reached normal. The patient made an excellent:

• cut recovery. This was a severe case complicated with Haemorrhage and catarrhal fever:

•onia. The Haemorrhage seemed to impose the general condition. The extreme amount of diaphoresis was quite exceptional in my experience of Eutonic. Was it one of the special types described by Saccoud and mentioned by other in the John Spacius Reports?
The Scler.

The rash was seen in 77 per cent of the cases. The most usual form consisted of one or two rose-coloured spots, which were raised and papillary so, the rose colour under pressure by glass gave place to a white bloodless spot. These increased in number for a varying number of days in some cases, not more than two spots being seen, in others a very general distribution over the body on abdomen, chest and back and on the legs and arms. The rash was not distributed symmetrically. In one case there was an extensive rash of rose spots which became vesicular on arms, legs and body and in this case the temperature never rose above 99° and was as a rule sub-normal. The earliest day on which the rash was noticed was on the seventh day of fever. In every case (except the approximate one above mentioned) when the rash was profuse the symptoms were markedly toxic. In no fatal case was the rash profuse. In one case rash was detected. In one case which had a relapse the rash was confined to one or two spots in the primary attack, and in the relapse was profuse. In this case also the splenic dulness was not in:

'creased during the primary attack, tho'
definitely so though the general picture in the relapse.
In children the rash was much less in extent.
The spots showed up more brilliantly, but were of smaller size. In two children whose constipation
was marked, an eczema rash developed.
The 'tache centrale' was easily produced in the
severer cases. More easily in females in whom it appeared more quickly, though it lasted longer
in the males.
Diaphoresis occurred in most cases with high temperature, and chiefly in the third and following weeks when pyrexia was present.
It was mainly observed as a marked symptom in those cases with pulmonary complications
and especially in those in which there was de:n
<illegible>.
Peeling occurred in a few cases especially in those under 18 years. It occurred as a powdery desquamation and in some as a flaky shedding
of the Epithelium.
The palms of the hands showed a yellow tinge in a few cases, chiefly in the men and in those women whose hands were hardened with manual
tool.
The odour of the skin was quite evident in
many cases.
The hair fell out during convalescence in a few cases chiefly in children and in female cases young girls suffering most. In no case was there complete baldness.

Circulatory System.
The pulse rate as a rule was increased proportionately with the height of the temperature. In one case who had a temperature of 104.4 the pulse was 88 per min as maximum and 72 as minimum. As a rule during the first week in hospital the pulse rate exceeded 100 beats per minute. It was intermittent in three cases. One was fatal. In one case the intermittency was intermittent or rather irregular. The beats were difficult to count owing to the smallness of the impact, there were at times eight or nine beats, then a pause for a period equal to three beats, and then a progressive acceleration of the beats for several beats and a pause again. The pause varied in length of time from one beat to four beats and during a procession of cons:ecutive beats the first occupied more than twice the time occupied by the last beat. There was cardiac enlargement in this case and occasionally though not a
Constant systolic murmur at the apex. The patient was very delirious. He suffered from obstinate constipation during the first week. His highest temperature was 107°, when he had a rigor on his 15th day in hospital. During the second week his temperature was 105° on two occasions and 105.6° on one occasion when he had a rigor. He jabbered incessantly and sometimes sang, and slept very little. The injection of 1/4 of a grain of Morphia had a very beneficial effect on the pulse. When under the influence of Morphia the pulse became regular the beat full and the rate lessened. His temperature was over 103° for eleven days. He had a profuse crop of teeth. His highest pulse rate was 118 and his lowest was 70 beats per minute. Pyrexia lasted for 40 days in hospital. During his fourth week of convalescence his pulse was still intermittent. There was no systolic murmur and the region of Cardiac dulness was diminished.

He belonged to a neurotic family in which three others had cutanea. The highest pulse rate in a patient who recovered was 180 per minute. The average highest pulse rate of the fatal cases was 141.5 per minute. In 29 cases when recovery took place the pulse rate was over 110 beats per minute. In the fatal cases the
Maximum of range in the pulse rate was 148 and the minimum was 60. In only two of the fatal cases was the pulse rate ever known to be below 100 beats per minute. In one of these the pulse rate was never below 100 beats per minute after the first week, and remained at this rate till his death at the end of his eighth week in hospital. It will be seen from the foregoing that as far as the pulse rate is a basis for prognosis in enteric, the prognosis of the patient as a whole was serious.

Affection of the vessels occurred in 3 cases. Two were males and one a female in each case and the affection was phlebitis. In all the Phlebitis showed itself early in the third week, and with very similar symptoms though varying in degree as did the inflammatory process. There was pain and tenderness in the calf and up to the popliteal space, there was oedema of the leg and foot. The condition was least severe in the female case. In both male cases it persisted well into convalescence. In one case pain and tenderness lasted some three or four weeks after leaving hospital and he still has occasional oedema. In all three cases the left leg was affected.
Respiratory System.

Bronchitis was rare and only occurred during convalescence in three cases and in all in a very mild form. In no case did it occasion a rise of temperature and very little distress in any. Pneumonia occurred in six cases. Four of these were fatal. One was admitted in his third week of fever with a double Pneumonia and died before being a week in hospital. In the second it developed in the third week after a mild attack of enteric and death occurred on the seventh day of the pneumonia. In the third it developed in the fifth week was septic in character. Death occurred in the sixth week. In the fourth it occurred in the second week when death also took place.

There was no case of Pneumo-Typhus as described by Olex in the Johns Hopkins Reports. Lobar Pneumonia developed in one case which recovered. This case was admitted with Pericarditis and a history of Rheumatic Fever in youth. The sixth case of Pneumonia died in the fourth week. The case was severe Pnelebitis was a complication occurring in the third week. At the end of which there was a rise of temperature with increased respiration.
rate. In the beginning of the fourth week definite signs of pneumonia were detected. The breathing was shallow, 24 respirations per minute, with a respiratory grunting. There was extreme cyanosis of the lips and cheeks. The pulse was accelerated and became very feeble, and on the third day could not be counted. There was dulness at the left base and rales of breath. He sweated profusely at times. By the end of the fifth week the pneumonia cleared up and he made a good recovery.

In children Broncho Pneumonia was met with in three cases as a complication of enteritis. It occurred in one girl of 11 yrs at the end of the second week. It began in disseminated patchy areas over both lungs. There were areas of dulness, and of increased resonance. The breath sounds were abnormal. Moist crepitations and rales of breath occurred in patches and elsewhere there were signs of moist bronchial rales. The temperature was not so much affected as would have been supposed. By the end of the fourth week the temperature in the mornings was normal, and the pulmonary condition had then almost cleared up. A hypostatic congestion of the lungs without
definite signs of Pneumonia occurred in the severe cases generally at the end of the second week and the beginning of the third. Resonance was impaired, with absence or diminution of breath sounds and moist rales especially perceptible on deep inspiration.

Renal system.
Albumin was present in the urine in 40% of the cases. It was in small amount and transient. Tube casts were detected in 30 percent. In only one case was the albumen in large amount with blood cells and granular tube casts. The case was a mild one, and the condition entirely cleared up in the first week of convalescence.

Nervous System
Headache was a very common symptom during the onset. In many it was accompanied by pain in the neck or back and in a certain number by pains in the limbs.

The headache was described as a dull heavy oppressive pain and in three cases in which it was very severe it was accompanied by extreme deafness. In all of these the temperature at the onset was over 103°F. They were downy but none slept well. The Typhoid State
was only met with in two cases towards the end of their Fever and both were fatal. Delirium occurred in 24 cases. Five of these were fatal. One fatal case was never conscious. He had low muttering delirium. The eyes were open, the pupils contracted. There was slight head retraction with a moderate degree of cervical rigidity. He was extremely like a case of Meningitis. There was hiccough, no vomiting. The abdomen was firm. He had typical spots, and an enlarged spleen. His history was unsatisfactory. He was I believe of weak intellect previous to his attack.

No case developed Hemiplegia or Aphasia as was seen in a case in South Africa. The Fever was mild. His temperature was normal on the 12th day. On the 14th day he became suddenly dull, took no interest in his food or in that around him. He became aphatic but facial Paralysis on the right side and paralysis of the right arm and leg with complete aphasia. He could not interpret written language. Sensibility in the right arm and leg was unimpaired, and these limbs were colder than those on his left side. There was no pale or flushing. He rapidly recovered being able to speak in a slurring undistinct fashion.
Three weeks after his attack,
the case (a female) developed a mild maniacal
condition. She had mild fever but rather lightly,
lasting for five weeks, was very drowsy, and
suffered much from constipation. Nine weeks
after she left hospital I saw her in a maniacal
condition speaking incoherently, shouting, and
dragging, passing urine and feces in bed. She
was also suffering from an inflamed pile which I
examined. She became quite sane and did her
housework as usual. Two months later I saw her.
She had been to London on a visit, and came home
suddenly in a very lively degree of mania.
She was removed to an asylum and I heard
on April 14th that she had just died. She
was admitted to hospital on October 11th. She nurses
all held that she was peculiar on admission.
The husband a sensible man will not admit that
there was anything peculiar about her mental
condition prior to her attack of Insane Fever. She was
50 years of age.
Peripheral neuritis of a mild degree was parti-
icularly common in men. It occurred chiefly
with sensory manifestations. It unites and caus-
en in the feet and legs, and varying degree of
pain. It passed off in most cases in a week.
or fortnight. It came on when they began to
more about in convalescence. In a few days, there was
pain in the ankles and knees with slight swelling
of the ankles.

The case of W. J. B. is interesting.

I first saw him on September 24th. He had
been ill for a week, complaining of severe
headache, which was worse when in bed and his
head on the pillow. His temperature was 103.8
and pulse rate 86. His tongue was furred. His
mental condition was peculiar. He spoke in a quiet,
jerky manner, laughed occasionally, and com-
plained of seeing indefinite shaped forms
crossing his bed at night. He appeared to me
suspecting like a case of Suture complications by
Delirium Tremens. There was absolutely no ground
for the suspicion as far as his history goes obtained
from himself, his wife, and employer. He was
proved on being put to bed and dieted. On Sept 30th
he was admitted to the St. Thomas Hospital. His temperature
was then 103.1°. His case was a very average one.
The pulse rate was low throughout and very
constant. 88 was the maximum and 72 the
minimum. He was discharged on Nov 18th.

In December, I saw him and found him
complaining of pain in the back, chiefly
in the lower lumbar region. He was extremely nervous, especially when left alone, and at night when he would shake with fear. He also suffered from extremely violent attacks of palpitation which caused him dyspnea, and made him feel he was dying.

He had extreme pain on pressure on the hipbones and pains in both legs and arms. In the left leg there was swelling, and the foot at times was blue, cold, and clammy. The hands also were cold, and moist in the palms. He looked worn and thin. His bowels were quite regular. His tongue had a thick yellow fur, and the breath was very offensive. Both knee jerks were very exaggerated the left more than the right. The plantar reflex could not be obtained in the left foot, and no response was given by the leg. In the right foot the toes did not respond, but the whole leg went into clonic muscular spasms of a violent kind which caused him pain yet made him laugh in an hysterical fashion. He improved with rest in bed and tonic treatment, and in February was transferred from home to the College Hospital in order to allow of more easy access to level ground and regular supervision.

He can now walk fairly well. The left ankle is stiff and swollen, the foot is much improved
The knee jolt is still exaggerated but not nearly to such an extent as before. There is still no response in eliciting the Plantar reflex in the left foot. The attacks of palpitation have entirely gone. Sensation in both legs was never impaired. The tics, and opisthotonic jolt were also exaggerated. Paresthesia of the back did not cause pain, and there has been no sign of any lesion of the bony parts. Professor Miller describes in the John Hopkins reports three cases of what Dr. Gilbert of New York has termed "Epileptic Stain." and this case seems to fit the description.

I could not get any history of injury or jar in between the time he left hospital to that of my first visit after. On two occasions when he had an attack of palpitation his temperature has risen to 102° but has fallen in four to ten hours. When he began to walk about he complained of his back and when that was painful he suffered from slight dyspnea. There has been no wasting of the limbs. He has put on flesh. He complains of pain on pressure over the left shin, but there is no swelling, no discoloration of the skin. There is pain on moving the ankle joint. His ankle clonus has been elicited in either foot. He has sweated profusely at times without pressure.
Dr. Gibson ascribed the condition to an inflammation of the periosteum and fibrous structures holding the spinal column together. In all the cases described by Professor Osler and in this case the condition came on when convalescence was well advanced. Was the pain on pressure over the Xiphisternum due to Periostitis or Parichondritis. I hardly think so, there has been no secondary abscess formation, and there never was the slightest swelling of the skin over the Sternum. Respiratory movements were always free except when Dyspnoea was present. In fact either on pressure, or merely touching, and in one or two instances in seeming to touch him over the lower end of the Sternum he would gasp violently and cry out. This I think points rather to a neurosis. There is the fact that on two occasions during the height of the fever he passed his water in bed. He was conscious of the act but powerless to control it. This however did not continue with him, and occurred in a fair number of cases in a worse degree than in his. His gait is a little like a spastic paraplegic, but he does lift the foot and the stiffness and limitation of movement is due to the pain and stiffness of the ankle. So this a neuritis? There is no loss of
knee joint and the gait is not ataxic.

Is this a case of Sclerosis? He walks rather, does not complain of stiffness except in the left ankle. Certainly, the knee jerks are increased, but there is no ankle clonus. There is the condition of "mild Epilepsy" in the right foot. There is no history of Syphilis. I am inclined to look on it as a case of Post typhoid neurasthenia or "defective innervation from prolonged exhaustion of the nervous center" with phlebitis in the left leg.

Rigors were uncommon as a symptom of onset. During the fever, they occurred in 10 cases. In only one fatal case was a rigor met with, and that on the two days preceding his death. The temperature on the first occasion was 101.4°F and fell to 102°F after the rigor. In the second, it rose from 101.6°F to 102.8°F.

Rigors were most commonly met with in the typhemic cases especially in those with delirium.

In the case of a woman who had miscarried at her 6th month a week before admission, there were four rigors. She felt cold and shivered and the skin into profuse perspiration. On the first occasion the temperature rose to 107.8°F, then fell to 105°F. It dropped two degrees, then rose again to 105°F when there was another slight rigor. She was drowsy but conscious.
The significance of a rigor is the significance of its cause, and where the cause is not to be definitely made out the rigor need not as a rule be looked on as a grave symptom.

Bed sores occurred in these cases. Two of them were fatal. The third was a very anaemic girl who had a grave attack.

The Fatal Cases.

Death in Entame Fever is due as classified by Ferre to 1. Anemia, a result of poisonous toxin, or of severe diarrhoea.

II. To non-current affections usually caused by the invasion of other parasites, pneumocci, staphylococci.

III. To accidents of the heart—Noemochagia or Perforation.

Perhaps one is justified in maintaining that the boundary line between the first and second classes is somewhat arbitrary.

In most cases in which death is due to the invasion of parasites, that invasion is greatly aided by the degree of anemia.

The highest temperature in the fatal case was 107.6°, and death occurred at this point. There was no case of anemia proving fatal in the first week. The anemia was usually slowly progressive and ended with coma.
and delirium. In three cases there was
consciousness up to the end. The pulse in
every case was rapid and feeble. It was
usually above 110. In two cases it did not
rise above 140. In the others it did.
The average duration of fatal cases in hospital
was 17 days. The shortest was 5, the longest 43 days.
The following two cases are those with pro-
teumatico atonemia.

1. Admission in second week, great delirium
prostration, irregular temperature, exhaustion.
W.K. 21, male, of feeble intellect. Present ill-
ness began twelve days ago with headache
and fever. He diarrhoæa. On admission temp-
erature was 104°. He was unconscious,
had low muttering delirium. Tongue and
mouth very foul. Pulse 120 and diastolic.
Respirations 32. Temperature fell to 100.2°
on second day, to 99.4° on third day.
On fourth day rose to 103.8°, on the 5th day
he died. The temperature being 102.4°.
He was extremely comatose. Pulse was over
138 for the last two days very feeble.
He had no diarrhoæa. His mental
condition, and position of the head suggested
meningitis. Spleen was enlarged, Spots present.
Pneumonia at home. The temperature chart for a week before admission (during which time only it had been kept up) showed a range from 103.6° on the first day to normal on the fourth, then a rise to 102.4° on the 7th day. On admission he had a temperature of 100°. The pulse was very rapid, 144 per minute. Respiration was 28. He had signs of catarhal pneumonia at both bases. There was diarrhoea. His lowest pulse rate was 112 and the highest 150. For the first three days in hospital his temperature was irregular, swung from normal to 102.6°. Then it gradually rose, he grew weaker, and on the sixth day died. One the day on which he died there was distension of the bladder and a catheter was used.

Case IV. Admission in second week, high fever, rapid pulse, pneumonia, death.

J. M., 19 yrs female. Previous history bad, life irregular and loose. Was poorly nourished. On admission temperature 103.9° Pulse 132. Respiration 40. Pulse was diastic and intermittent. There was dulness at the left base, with moist expectoration. Breathing very shallow. Face flushed, extreme cyanosis of lips and cheeks. Profuse perspiration at times, at others skin was dry and hot. Diarrhoea was frequent.
It fell during the first week, and on the 7th day had reached 100°. He had been extremely constipated; an enema has been given on the fourth day. On the 6th day he had three profuse loose motions, very offensive. On the 7th day, he had hemorrhage which was very sudden and extensive.

The following day, while I happened to visit the hospital, he had a further hemorrhage. It was less in amount about one and a half pint compared with was a quart the day before. I examined it and was sceptical as to its being a true Enteric Hemorrhage. He was sponged and a large external Hemorrhoid was seen to be bleeding. He was extremely weak. A strong catgut ligature was passed round the base of the pile as far up as possible and tied up tight.

The hemorrhage immediately ceased and never occurred again save for a slight staining of the dressing from the sloughing edge of the pile. There was profuse hemorrhage from the bowel as well, but the blood was much less decomposed in appearance and odour than is usual in Hemorrhage from a Typhoid ulcer.

The hemorrhage ceased with the ligature of the pile. This may have caused him less discomfort and less reflex irritation to the bowel.
During the second week in hospital he was very weak. Pulse was diastolic ranging from 110 to 130. He passed urine in bed. His temperature rose gradually till in the third week it reached 105°F. On the 20th day in hospital the temperature fell suddenly to 100.8°F. He had three large semiformed motions. Next day it fell to normal. During the fourth week it ranged between 101° and 103°. He was very constipated, very drowsy, and at times comatose at other times delirious. Tiring him out of bed. He passed urine in:

Voluntarily at times at other times asked for the bottle but was too weak to use it. During the fifth week he had diarrhoea on the first two days after which he passed feces every day in a small formed stool. The tongue ranged between 100° and 103.4°. The pulse rate was now very rapid during the 5th and sixth weeks never under 130 beats per minute and over 140 almost every day. The wave was diastolic. During the fifth week the test:

Static congestion at his pulmonary base gave place to an inflammatory process. There were moist sounds with crepitation and here and there tubular breathing. The respiratory rate was over 40 per minute throughout.
the eighth week. He died on his 43rd day in hospital. In the two days previous he had a rigor each day. There was certain lethargy in the case. There was Haemorrhage, and there was this inflammatory Pneumonic condition in all probability of septic nature.

Case VI. Admitted at beginning of the second week. Fever mild. Pneumonia in 4th week. Death in 5th week.

A.S. aged 42 male, admitted 27th Sept. a big muscular man rich in adipose tissue. Fever was very mild, morning temp was normal on 5th day in hospital. During the third week he developed a lobar pneumonia on the left side which was not extensive. There was increase of temperature for six days. His temperature then fell for four days to 99, during which time the lung appeared to be clearing up. In his fifth week however another patch showed up, and he died at the end of the fifth week.

Cases due to accidents of the lesion.

Case VII.

Admission in first week. Brought Pyrexia.
Melena, Haemorrhage. Death.
M. B. 23 years. Female single. Tailor's, a deli;icate slim girl of neurotic disposition.
had a temperature of 101.8° on admission. For the first week it ranged from 100.4° to 103.6°.
For the second from 99° to 104°, from the third from 100.2° to 104.6°. In the fourth week she had melena on the 23rd day in hospital.
There was then a fall from 103° to 99.4°, followed by a rise to 103.4°. Next day she had a more extensive melena followed by a drop in her temperature to 95° where it remained for 18 hours.
The pulse was from 100 to 126 and good.
During this time she had a third melena. On the evening of the 26th day the temperature rose to 103.8°, fell to 99.6° on the morning of the 26th day, rose to 102.2° on the 27th day.
When she had melena at 2.6.9.11.30 a.m. and at 2.20 p.m. the temperature falling to 96° at 10 a.m.
The pulse was very rapid and jumpy. From this time the temperature touched normal on each day in the fifth week. The pulse remained very rapid, and she did not gain in strength. She had hemorrhage on the 34th and 35th days after which her temperature rose to 104.2° on the morning of her 36th day when death occurred.
Case VIII. Admitted in second week, diarrhoea, hemorrhage and death.
37 yrs. male. Temperature admission 104.2°, above 103° for first four days, gradually fell to 104° on the
fifth day in hospital. On the 6th, 7th, 8th day there was severe diarrhoea. The temperature on the 8th day was 102°. He passed blood in his motions from 10 a.m. to 8 p.m. The pulse was 118 and very feeble. He continued on the 9th day and died in the evening.


J. M., aged 34, female. A delicate girl. Had a temperature of 103.4° on admission, which rose above 103° every day for the first week, and during the whole fever was above 103° for 16 days. On her 26th day in hospital she had a slight haemorrhage when her temperature dropped from 103.4° to 99.6°. That evening she had another haemorrhage but of less amount. Her pulse was now 120 to 140 per minute and extremely feeble. She was restless and moaned. She complained of pain in the right side of the abdomen. Next day she had no haemorrhage but the day after she passed over two ounces of blood. Her pulse was then at its beat very rapid and almost imperceptible. The abdomen was distended. Palpation caused pain. Liver dulness was absent. She did not vomit. Two days later she died.
Her condition would not permit of operation.

The Relapse.

Only those cases are considered in which after a period of apyrexia there was a return to a pyrexial state lasting over a week and during which time some of the more pronounced symptoms of the disease showed evidence.

Such a condition occurred in five cases. In none of these was the relapse Grave in type.

Two cases were males. Three were females.

Their ages were: men 28 and 23 years; females 8, 21 and 26 years. The periods of Apyrexia were 14, 12, 10, 3 days, and in the last case in which there were two relapses the first period of Apyrexia was 18 days, the second was 12 days. This second period can hardly in fairness be called a period of Apyrexia, because though the morning temperature was normal the evening temperature was always at or above 100.

In both male cases constipation of a severe type was present during the primary attack.

In one the relapse was much severer in Apyrexia than the primary attack. In the other it was less severe. In the first it lasted 11 days, in the second for 12 days. The Spleen in both cases gave evidence of enlargement, and spote were seen.
though less intense than in the primary attack. In the first case had been added to his diet of milk, tea, custard, on the 12th day of apyrexia, his relapse began on the 15th. In the other case was given on the 12th day of apyrexia, the relapse began on the 18th.

In the female cases the relapse lasted 7 days and 22 days, In the case of double relapse 12 days on each occasion. The beginning of the relapse was counted from the first day the morning temperature rose above normal. In this case the first relapse was worse than the primary attack. Spots developed, the spleen was more enlarged and there was diarhoea and a foul tongue. In the second relapse there was a higher apyrexia, constipation, and very little general distress. She had never been allowed solid food. See chart.

Post Typhoid Apyrexia.

Of these there were seven, one a female. Their ages were: the female 27 years, the males 36, 36, 23, 27, 26, and 14 years. The female had apyrexia for 3 days, then apyrexia of an additional degree each day reaching 102.6° on the fourth day, then a gradual fall reaching normal on the 10th.
day. She did not show any signs of a true relapse.

The males.

(a) J.B. aged 36. a very mild case. Temperature was normal on the second week in hospital. In the 3rd week the evening temperature was over 100° on four occasions. There was mild dyspnoea for four weeks. The morning temperature was normal, reaching normal all the time, after this the evening temperature became normal.

(b) J.J. 36. came in with Pneumonia of rheumatic origin. With signs of Pericardial friction, a pulse of 80 per minute. Pain on the precordia and dyspnoea. His temperature was normal on the 12th day in hospital. On the 14th day he developed a Pneumonia. He had dyspnoea for 8 days.

(c) J.R. 36. Had a normal temperature for eleven days, was allowed bread soaked in beef tea on the 12th day his temperature rose to 101°. remained there for the next two days, then fell to normal.

(d) H.S. 27. Had a very mild attack. The temperature was normal for 30 days, then rose for 7 days reaching 103° on the 43rd day. This case may be worthy of classification with the above. His tongue became furrowed, but the spleen did not increase in dulness.
G. M. 26. Had pyrexia for 5 weeks in primary attack and over 103° for 16 days. After 3 days pyrexia his temperature rose to 102.4°. He was persistently constipated. He had 25 enemas of soap and water, which was usually followed by a very constipated motion. He had calomel in gr. 7 doses on 7 occasions. Castor oil in f. id. a similar number of times and glycerin rectalist. Nose during his stay in hospital. His secondary pyrexia lasted five days and caused him no distress.

J. H. W. 44. Primary attack mild. Temp reached normal for two days then swung up to between 100° and 101° for 10 days, rose to 102° on the 12th day, was normal on the 14th. Spots developed. Spleen was enlarged, tongue foul odour. Typhoidal. This case was not included in the relapses on account of the morning chill, extreme only reaching normal on two days, the evening temperature not coming down. It seems rather looks a typical relapse.

Diagnosis. Before the 5th day is extremely difficult. The essentials are a continued pyrexia, rose spots, enlarged spleen, lymph node, and bulbus rectus. Before these are available we must rely on the stiff like temperature, the headache its nature.
and locally, the tongue, the colour, Epistaxis and
the character of the motions. Constipation may be met
with. The tongue may be clean. There may be no headache.
and the temperature be fall to normal, and yet
subsequent events will diagnose Typhoid Fever for you.
The colour is in my opinion a very useful point
in early diagnosis. In this epidemic other cases were
occurring with similar symptoms, the first few in
the second decade of life, and Epistaxis Fever was
almost a certainty. Yet many put these cases in
that refuse pit of many undiagnosed cases namely,
Influenza. Even in cases where spots had developed,
where the tongue was favour and foul, when the
history was one of gradual weariness did Influenza
embrace them all. True Influenza may come on
in a very similar manner to Eutoni fever. There
is something in the aspect of an Eutone that is almost
pathognomonic. The "down" in the bed" look even in
the early fever. The dusky flush of the cheeks exists
socially in that between fair and dark. The extremes
of dark or fair have had in my experience a bright
flush. The eye bright but far from keen and a look
of abandonment to the disease. In Influenza the eye
is more alert, there is more of look of fight in the
countenance, and the nervous condition is one of
greater irritation. Even early in Eutoni Fever the
nervous tone is dulled.

Treatment.

was left very much to the nurses who were all trained and capable. During the first fortnight extra accommodation had to be found. Extra nurses had to be obtained, and the patients were in one or two cases kept in their homes longer than was desirable.

The diet consisted of milk as the staple food. Where the feces showed that this was not being digested properly, it was diluted, and albumin in water, white wine, whey, jelly of fruit were added in a few cases. When constipation was marked, vegetable broth strained were given and also meat broth strained. They had the effect of lessening the amount of fecal matter and causing less fermentation in the tract.

Bandy was given when ordered in tablet form, four hourly. I do not care for the regular use of alcohol in Victorians. In some cases with a weak rapid pulse and delirium alcohol seemed to increase the delirium and restlessness and when suspended the last stage was worse than the first.

In the older cases it did more good, and
in cases where food was badly taken was useful.
Antiseptics were not used to any great extent.
Calomel in small doses from 9 to 10 or 12 every
four hours or three times a day was given for
a few days in patients with very offensive stools.
It seemed to be of service. In one or two private
cases I found quinine very beneficial. In one
case in which quinine was given early, was the
attack severe. It was given in grs 1/4 to 1/2
doses four hourly. Sodum Salicylatum was also given
but more as a satisfier than as a necessity.
Liquid Paraffin, or powdered vegetable charcoal
as advised by Dr. Swain were not given.
For haemorrhage Mephistia was the drug most
used. Dr. T. Bond Caiger in his Botlhok
lecture speaks of intestinal antiseptics as being
of practically no value. He was in the habit of this
in cases of haemorrhage. This was not used here.
He also gave opium in some form or other
the highest position in cases of intestinal
haemorrhage. It at once gives peace not to
the restive patient alone, but to his intestines
causing peristalsis, dilating his arteries
and closing pressure at the seat of haemorrhage.
In severe diarrhoea Starch and opium were given.
Triodol was used first, as a sedative and
in many cases was extremely useful. In bad
Cases of delirium with an intermittent rapid pulse
I found an injection hypodermically of 1/2 of
morphine extremely beneficial. The pulse became
regular, and rest was obtained, the effect being
of some duration.

Bread was given boiled water with lemon. Tea
Coffee were given throughout in many cases.
Cold sponging was used freely in all cases over
103°. and with very beneficial results.
In no case was a bath given as so strongly
advised by Dr. Older, Caiger, and Sewat.

There was not the necessary equipment, and when
the medical officer of an isolation hospital in a
small country town is also a private practitioner,
the carrying out of the cold bath treatment is
an exceedingly uphill job. He is met with resist-
ances at every point. The town tries to safeguard
its expenses very naturally. I quite agree
with Dr. Childs in his suggestion, which occurred
most strongly to me when this epidemic broke out
and before I had read his article, that it would
be a great boon if we had a government
medical service—say a branch of the Local Govern-
ment Board in which there were skilled
officers, who had orders from headquar-

Which must be carried out in cases of epidemics. The amount of knowledge this would amass being free to investigate without local prejudice or ignorance standing in the way. She also would have time for pathological work on this occasion when the local men are overstressed with private work as well as the work of the local isolation hospital.

In only one private case was a burial done. The result was positive and the case of interest being a 78-year-old age who died of pneumonia.