On Some Cases of Typhus and Enteric Fever.

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In this paper I do not propose to enter at any length into a comparison of the general features of typhus and typhoid fever. The two diseases are compared and contrasted in any ordinary handbook of medicine, and the distinction between a typical case of typhus and a typical case of typhoid is now clearly brought before the mind of all, who have the opportunity of watching this course at the bedside.

In the former we are generally able to fix a given date, as the exact time of the onset of the fever with its chills or slight rigors, its lassitude, headache and loss of appetite. We find the patient suddenly prostrated with general malaise, vertigo, nausea, thirst, pains in the back & limbs and feverishness. A more minute examination during the first day or two may reveal hepatic tenderness, a flush on the face or even on the general surface of the body, along with a somewhat

accelerated pulse and respiration. The stupid expression of the face is in keeping with the commencing mental confusion, while restlessness, uneasy slumber with scanty and dark-coloured urine all point to a rapidly progressing fever; and if our suspicion is excited as in a case, where we know that exposure to infection by typhus has been possible, we will watch carefully for the eruption about the 5th day of the illness. The rash with its numerous spots of various sizes on a mottled background, the spots being at first of a dirty pink colour, slightly elevated and disappearing on pressure with the finger, will soon present the characteristic appearance of darker, reddish-brown spots level with the neighbouring surface & not disappearing under pressure. Dr J.W. Allan of the Glasgow Fever Hospital has repeatedly drawn my attention to the importance of observing the backs of the hands and feet, and after

his large experience he looks upon the presence of the rash here as one of the most satisfactory means at our disposal for distinguishing in many cases between this and other fevers. Speaking from a comparatively limited experience I can quite endorse his opinion, more especially as in many of the patients admitted to hospital a most misleading appearance is presented by the furred tongue of the body being covered with vermin-bites, which resemble typhus spots very closely, a dirty condition of the skin adding another difficulty to the diagnosis. During the second week the general condition becomes rapidly worse, the headache is replaced by delirium, which may assume either an acute and noisy form or be of a low muttering character, the prostration, the stupor, the sleeplessness, the flush on the face all become more marked, and if constipation has not been previously observed, it may now

dyspnoea. The tongue becomes dry and covered with a brown fur, and sordes accumulates about the teeth, while the pulse becomes more rapid and more weak. The eruption is darker in colour, and in some parts may have become petechial, and we may now observe the quite indescribable "odour of typhus"
From this stage the patient passes into one of the most extreme prostration; he lies helpless and motionless; excitement has given place to great depression and stupor, and intelligence is entirely gone. The tongue is dry and covered with a hard brown or blackish crust. The Sphincters may be relaxed, and urine & faeces may be passed in bed; or the bladder may fail to empty itself, and the use of the catheter be called for. The pulse, which is very rapid and weak, may be intermittent or irregular, while the first Cardiac sound is diminished or absent.
From this stage there may be a change

in one of two directions, either towards death or towards recovery. Either the stupor may deepen into Coma and this terminate in death, there may be a comparatively sudden hypostatic engorgement of the lungs leading to death also. There may be collapse and a fatal issue, or about the 14th day a crisis may occur. The temperature suddenly falls, the pulse becomes less rapid, the tongue begins to moisten, delirium ceases, and consciousness be regained, the appetite returns, and the patient starting on the satisfactory course of rapid convalescence.

An acute illness such as this, running as a rule a definite course, and having almost always a characteristic eruption and run of temperature, is easily distinguished from a typical case of Enteric Fever, for in the onset of the latter we see the march of a subtle and treacherous foe, and in the

progress of the disease so many varieties present themselves that the epithet, "protean" applied to it by Murchison is peculiarly appropriate.

A well marked case runs a course somewhat as follows;-

After a period of time varying in length, during which the patient experiences some general discomfort, lassitude comes on, as evidenced by chills loss of appetite, pains in the back & limbs, headache, giddiness, and sometimes vomiting. The pulse is quickened, the ~~not~~ nights are spent in restlessness, and there is a feeling of weakness and languor. Diarrhoea usually accompanies these symptoms; and, if during the first week of an illness we can discover no physical signs of disease to account for the pyrexia, which is present, and if there is an evening temperature of 103- 104° F. accompanied by prostration and diarrhoea, or even mainly by a feeling of indefinable "seediness," we

is prone to run an attack of Enteric
Fever with all its dangers & uncertainties.
At the commencement of the second
week the temperature chart will enable
us to note morning remissions and
evening exacerbations, while the general
signs of fever are more marked, and
thirst is usually much complained
of. The stools are loose and yellow,
and the abdomen is often tympanitic,
there being sometimes gurgling on
pressure in the Right Iliac region and
the Spleen being enlarged. The mind
remains clear however, and the expression
of the face is rather one of anxiety.
About the 7th day a few isolated, rose-
coloured, circular spots, slightly elevated &
disappearing on pressure with the finger,
make their appearance, and enable
the diagnosis to be made with certainty.
These spots appear in successive crops
throughout the subsequent course of the
disease, and the fever continues; but
the headache and pains in the limbs

disappear. Sleep may be interrupted by delirium; but the mind finally remains clear. The tongue becomes dry and brown, or red and glazed and traversed by fissures, diarrhoea being often noticed at this stage. Great loss of flesh and strength can be observed, and there is a risk of bed sores forming. The patient may pass into the so-called "typhoid" state of prostration with dry brown tongue, sordes, feeble pulse low muttering delirium, or stupor, muscular tremors subsultus and possibly involuntary evacuations. From this he may pass into Coma ending in death, or death may occur from any of the risks, to which this form exposes him, such as a Pulmonary complication, Perforation of the Intestinal wall, profuse & exhausting Diarrhoea or Haemorrhage from the bowel. Should however the disease proceed to a favourable termination, about the end of the third or the beginning of the fourth week a remission of the

pyrexia can be observed, and a lysis occurs, the patient gradually improving, and finally entering upon the tedious convalescence, which follows an attack of Enteric Fever.

A contrast between these typical cases of the two diseases is easily instituted; but I propose to limit myself to the clinical aspects of some of the more peculiar cases which have come under my observation, deriving my material from the opportunity which I enjoyed, of studying fevers while residing in the wards of Hospital Fever Hospital, Belvidere, as assistant Physician from October 1880 to October 1881. Four points will be more especially considered

I Diarrhoea & Constipation

II Intestinal Haemorrhage

III Affections of the Ears & Throat

In addition some remarks will be made on the Epidemic nature of typhus & the period of Incubation in that disease.

Epidemic of Typhus in Ruthuphus -

An admirable example of the epidemic nature of typhus fever may be found in the following sketch of an outbreak of that disease, which took place in Rutherglen in the winter of 1880/81. The particulars of the history were derived mainly from the statements of the patients themselves.

At 103 Crown St. Rutherglen, on one landing of the common stair there are four doors. In the house entered from one of these doors lived a family of the name of Peak, then being three members, viz:- Mrs Peak and her two sons Patrick & John. In another of the houses lived nine persons, viz.- Mr & Mrs Gilligan, their two sons Patrick & John, their son-in-law Patrick Love & his wife, a niece Ellen Cosgrove her name, another relation called Charles McGhie as well as a lodger Hugh Flannigan. In another of the houses lived a family of O'Connors, related to the Gilligans & numbering four persons, viz.- Mrs Jas

O'Connor, her son James and her two daughters Mary Ann & Bridget.

Some of them thought that the fever, from which, as will be seen further on, they all suffered, had been derived from a family of the name of Lunt, who came to live in the house immediately below the Gilligans some months before Mrs Gilligan sickened. One of the Lunts, Emily, act 21, was said to have been and was admitted to Fever Hospital on September 23rd, 1880; but, on reference to the Journals of hospital, I found that she passed through an attack of Enteric Fever, and was discharged "well" on Nov 10th. This could not therefore have been the source of infection.

About the middle of September 1880 a family came to live in the fourth house on the above mentioned landing, the mother having died shortly before, and the father and one young daughter being "badly" at the time. It was

not known from what disease they were suffering.

Mrs O'Connor removed to 64 Parliamentary Road about the end of October.

Mrs Gilligan, aet 53, died on November 12th, and a wake was held on the nights of Nov 13 & 14th. At the wake about 18 persons were present, including Mr Gilligan, Patrick & John Gilligan, Patrick Rowe and his wife, who was pregnant, Charles McGhie, Ellen Corcoran, Hugh Flanigan, Jas, Mary Anne & Bridget O'Connor. Mrs Gilligan's death was certified by Dr McConnachie to be from typhus, and the house was inspected by the Sanitary Authorities, who had it disinfected, although the Gilligans denied that the disease had been present in spite of the medical certificate. The doctor informed the Sanitary inspector that he had seen the woman twice, and that on the second visit he had told the family that it was a case of typhus, and that they must report it to the

Sanitary authorities, and have the patient removed to Belvidere. The burial society, to which the Gilligans had subscribed, required a certificate and the application for this was the first intimation that the doctor received of the fact, that his instructions had not been carried out, and that the woman had been allowed to remain, and die at home without further medical attendance (See Dr W.B. Rumble's fortnightly report on the health of Glasgow of January 10th 1881).

Mrs Jas O'Connor, who had been suffering from Bronchitis, visited the house of the Gilligans the day after the wake in order to lay the body of Mrs Gilligan. Shortly afterwards she "got worse," and she died in a week, i.e. about Nov 19th;

Mr Gilligan next sickened, and died on Dec. 9th. Another doctor, who was called in, said that Mr Gilligan had no more fever than his (the doctor's) umbrella; that he had got cold,

when over-worked, and the death was certified to be from Congestion of the lungs. A wake was held on the nights of Dec. 11th & 12th, about 18 people being present, including Patrick & John Gilligan, Patrick Love and his wife, Charles McGhie, Ellen Cosgrove, Hugh Flannigan, James Mannion & Bridget O'Connor. The wake began as usual about 8 p.m. and those who had "known the body" or any of "the boys," who might be about the place, and heard that there was to be a wake, were welcome to attend. The wake ended about 6 a.m., when people of the working-class have to resume work, and the time was spent in talking, smoking and a "drop liquor" being the only refreshments.

The Gilligans removed to 50 Crown St. about a week after Mr Gilligan's death, ie. about December 15th, and there they all sickened except Patrick Gilligan, who was removed to the Reception House, while 50 Crown St was being disinfected, &

who sickened then.

The Peaks remained on in 103 Crown St, they did not know any of the Gilligans sat, they had no communication with them, and none of them were present at either of the wakes; but they all sickened with Typhus, and were removed to Belvidere, the source of infection has since doubtless the focus which had its seat in the Gilligans' house. The following table shows the dates on which the different members of this house sickened, & were admitted to hospital;-

1.	Mary Ann Connors,	6 Parks Road	sickened about	Dec 12/97	adm. Dec 17
2	Bridget	"	"	on " 24	" Jan 3
3.	James	"	"	" 28	" " "
4.	Chas McGhie	50 Crown St	"	" 19	" Dec 31
5.	Hugh Flannigan	"	"	" 22	" Jan 3
6.	Patrick Lowe	"	"	" 25	" " "
7.	Ellen Gorman	"	"	" 28	" " 4
8.	John Gilligan	"	"	" 31	" " 5
9	Patrick "	Quarantine Home	"	Jan 1	" " 8
10	Mrs Peake	103 Crown St	"	Dec 28	" " 4
11	John "	"	"	" 30	" " "
12.	Patrick "	"	"	!	" " "

Of these, Mary Ann O'Connor was under the care of Dr McCallan, Superintendent Physician of the Harpur Fever Hospital, and the rest were admitted to the wards under my charge. Of the four remaining persons who were present at the wakes, including the wife of Patrick Lowe, none seem to have been attacked. The history of the epidemic affords an excellent example of the spread of the disease, starting from the case of Mrs Gilligan, who died in 103 Crown St on Nov 12th, then attacking Mrs James O'Connor, who died in 64 Parliamentary Road on Nov 19th, then affecting Mr Gilligan, who died in 103 Crown St on Dec 9th; and subsequently involving the groups of relations and friends, as tabulated above, it having been carried from 103 Crown St to 50 Crown St by the removal of the Gilligans after the death of Mr Gilligan.

It is interesting to note that a Mrs Michael O'Connor, 134 Ruthven Road, nursed the body of Mrs Gilligan, and afterwards

sickened, but was treated at home. It could not be ascertained from what disease she had suffered; but Son Michael O'Connor, aet 16 sickened about Dec 14th, and was admitted to Belvidere on Dec 24th, when he passed through an attack of Enteric Fever, which lasted for 29 days, the highest pulse rate being 120, and the highest morning temperature being 103·6; the tongue reached the stage of brown crust with transverse cracks, and the characteristic Enteric Spots were present on the skin; tympanites required treatment; but the action of the bowels was normal throughout. Mrs Michael O'Connor was quite well again at the time of Mrs Gilligan's death, and drained his body also, but was not infected by doing so. Sufficient information as to her illness after draining the body of Mrs Gilligan could not be obtained to afford any ground for supposing that it had been an attack of Typhus or Enteric Fever.

It will be seen that 15 persons were involved in this small epidemic, of whom 3 died in their homes, while 12 were removed to the Town Hospital. Of the latter one died, viz. Ellen Cosgrove.

There can be little doubt that the timely removal to hospital of the patients and the disinfection of the houses were of enormous service in limiting the ravages of the epidemic, and there is no reason to suppose that, if the notification, whether by the householder or by the medical man, of the infectious character of the illness in the first case had been compulsory, the range of the disease might have been further materially reduced in extent. Patrick Gilligan assured me that, even if they had known that they would have been struck down with the disease, this knowledge would not have prevented them from paying their last tribute of respect to the memory of their parents by holding a wake, and that an acquaintance with the

danger involved would not have prevented their relations and friends attending it also. Fortunately it would not have been in their power to expose themselves to the danger, had the case been reported, and the patient removed to hospital. The history of the epidemic is one more proof of the absolute necessity of isolating typhus patients.

The chief clinical features of each case are given in the following abstract of the notes made at the bedside; & these will afford the ground for some details on the special aspects of the disease, mentioned on a previous page.

Bridget O'Connor, aet 7. Sickened on Dec 24th; crisis occurred on Jan 12th, giving a duration of 20 days; highest pulse rate 140; highest morning temperature 104·6 F; the eruption was pale in colour but abundant; and the tongue, when the fever was at its height, was covered with a yellowish fur.

James O'Connor, aet 10, sickened on Dec 28th; Crisis occurred on Jan 11th, giving a duration of 15 days; highest pulse rate 152; highest evening temperature 104·8°F; the eruption & other signs were well marked; acute delirium was observed from Jan 9th to Jan 11th; and the tongue became covered with a thick brown fur.

Charles McGhie, aet 22, sickened on Dec 19th; Crisis occurred about Jan 8th; highest pulse-rate 100; highest evening temperature 103°F; the eruption was distinct; delirium occurred from Jan 3rd to 6th; the tongue became red & glazed, & the patient required stimulants owing to the feebleness of the heart's action.

Hugh Flannigan, aet 36/40, sickened on Dec 22nd; highest pulse-rate 140; temperature reached 103·8°F; the eruption was petechial in character; low delirium supervened; the tongue became covered with a dry, hard, brown crust, and stimulants were called for. His case is more fully considered in another place

in connection with an affection of the ear, from which he suffered.

Patrick Love; aet 23, sickened on Dec 25th; Crisis occured on Jan 6th, giving a duration of 13 days. After admission to hospital his pulse never rose above 92 per minute, and the highest temperature was 103 4/5°. The eruption was only seen in the fading stages; but he suffered from acute delirium. The tongue was only slightly furred.

Ellen Cosgrove; aet 16, sickened on Dec 28th with vomiting, retching, and pains all over her body. Admitted on Jan 4th; she was found to be greatly troubled with retching; but she slept well at nights.

On Jan 6th; she was pale and anaemic; the eyes were suffused; but the pupils were normal; rash well marked; characteristic odour; Sordes; tongue with dry, hard, brown crust; lips parched; respirations 44 per minute, great amount of expectoration; pulse

could not be counted owing to fulness and irregular intermittent character; Cardiac sounds feeble, beats 140 per minute. Her head was shaved & stimulants were ordered.

On Jan 9th; pulse counted 108 per minute, feeble, and with very frequent intermittions. On Jan 10th; pulse was uncountable, and could hardly be counted; Heart sounds gave 128 beats per minute, quite regular. Patient not having slept for two nights and the stomach being unable to tolerate Chloral, Morphia was given subcutaneously, and she slept well last night. She had been very restless previously, getting out of bed frequently. Today the tongue was scarcely put out, and resembled a hard dry ball.

Jan 11th; Temperature was normal in the morning; but she was restless and constantly trying to get out of bed, being affected with a low form of delirium; pulse was 104, very irregular

and intermittent; patient had about an hour and a half of sleep last night; but during the rest of the night she was restless and talked a great deal. On Jan 12th; she was still restless, sleepless and talkative. Tongue hard, dry, pearly protruded, tremulous. Pulse very weak & dicrotic.

Jan 13th; Chloral was given last night; but did not procure any sleep, and at the morning visit she was somewhat comatose and cold, pulseless at the wrists and the heart acting tumultuously. Physical examination had previously given negative results as to local disease, & in spite of active treatment with restoratives and increased stimulants both alcoholic and medicinal patient sank and died at 5 am.

Temperatures were; -

		morning	evening
Jan 4	= 8th day	—	104
5	9th "	103·2	103·4
6	10th "	102·2	103·4
7	11th "	102	102
8	12th "	102·2	102·2
9	13th "	100·8	102·4
10	14th "	101·2	100·8
11	15th "	98·4	102·8
12	16th "	100	—

John Gilligan; aet 18, sickened on Dec 31st; Crisis occurred on Jan 14th, giving duration of 15 days; highest pulse rate 112; highest morning temperature 104·6; rash distinct; tongue became coated with yellow fur.

Patrick Gilligan; aet 29; sickened on Jan 1st; Crisis occurred on Jan 14th; giving duration of 14 days; highest pulse rate 104; highest morning temperature 105·2; rash was only seen when fading; tongue coated with yellowish fur; The chief features in this case were sleeplessness and diarrhoea

Mrs Peak, aet 37, sickened on Dec 28th; Crisis occurred on Jan 15th; giving duration of 19 days; highest pulse rate 128; highest morning temperature 104·8; eruption copious; tongue coated with yellowish fur. The most interesting feature in this case was that Chronic Bronchitis, from which she had suffered for years, seemed to pass off as the fever left her; and, when she left hospital, she was free

from all Bronchitic symptoms for the first time for many a day; physical examination showed the presence of some Emphysema.

John Peak, aet 4, sickened on Dec 30th; Crisis occurred on Jan 9th; giving duration of 11 days; highest pulse-rate 156; highest morning temperature 102·4°F; rash present. The course of the illness was a very favorable one, as it so often is in children.

Patrick Peak; aet 18; sickened on some date which could not be fixed. On admission to hospital patient was found to be suffering from a very severe attack of typhus. He lay in a state of stupor, moaning, and muttering slightly; face pale; eyes normal; expression stupid; breathing rather noisy, nostrils dilated; respirations 28 per minute; pulse 116 feeble; Subsultus & Floccitatio; tongue very foul, & covered with thick brown fur; much Sordes about teeth. His head was shaved, & Brandy was administered. The stupor increased until Jan 10th; but

the pulse gradually recovered some strength. On the 11th the morning temperature was normal, and the patient had passed into the deep sleep of beginning convalescence. Ultimately he was dismissed strong and well.

Incubation of Typhus.

There are some points which call for remark in connection with the above cases, and we will first consider the subject of the period of Incubation in Typhus Fever. It was impossible to make this out with accuracy in any of the above cases. Mrs Gilligan died on November 12th, Mrs O'Connor died on Nov 19th, Mr Gilligan died on December 9th, and the first of the subsequent sufferers to sicken was Mary Ann O'Connor, whose illness began between December 12th & 14th, while the commencement of the illness of the others took place at different dates between December 19th and January 1st, although they had all been exposed to the risk involved in the presence of the first case.

Altogether 120 cases of Typhus fever were admitted to the wards entrusted to me while in Belvidere Hospital, and in only one instance could I arrive at any conclusion in regard to the period of Incubation. This was the case of James M'Crinn, aet 13, admitted to hospital

x Is it not possible, at least, that he got infected in hosp?

on January 12th 1881, and the following are the necessary notes.

About November 1879 patient was sent away from home to live with some friends, because Typhus broke out in the house where his family was living, the four other members of the family living at that time admitted to Belvidere with that fever. The boy returned home on Jan. 1st 1881, and on Jany 3rd he sickened with shivering and vomiting. Thirst and constipation followed, and he was admitted to hospital on Jan. 12th with a well-marked attack of typhus. The crisis occurred on the 17th day, and the boy recovered. From in this case it is impossible to absolutely exclude other sources of infection; but no one, with whom he had come in contact had had anything to do with any infected person, until he returned home, where possibly some taint of the disease may have lingered in spite of the means taken to eradicate it. No one in the place, where he had been

living previous to his return home, was in any way affected with the disease.

"Murchison's statistics show how little is definitely known of the period of incubation in typhus, his own cases ranging from "a few hours up to 21 days"; but the above case seems to be one, in which the period was limited to 3 days.

Diarhoea in Typhus.

Diarrhoea was a prominent symptom in the case of Patrick Gilligan, and I have gone through my journal reports to see what light this shed upon this point as one of the distinguishing features between typhus and Enteric.

In 120 cases of typhus; -

marked diarrhoea occurred in 13 or about 11%,
marked constipation occurred in 3 or about 2½%.

In all the other cases the bowels acted normally or a motion was passed every second day.

The statistics of course, refer to a somewhat limited number of cases; but my experience was that diarrhoea called for interference more frequently than constipation.

In one case, that of James Noble, admitted Feb 18th, the diarrhoea was accompanied on one occasion by slight haemorrhage from the bowel; but perhaps this could hardly be included among such cases as those to which Murchison refers, (In continued fevers of Great Britain, edit. 1873) when he says,

"Intestinal haemorrhage is an exceedingly rare and very fatal complication of typhus. I have met with it six times in about 7000 cases: all six died." Dr J.B. Rund (See Glasgow Medical Journal, May 1869) observed intestinal haemorrhage in three out of 3000 cases all of whom died. In the case of Mrs. Noble, mentioned in the following list, Pil. Plumbi e Opio at once stopped both diarrhoea and haemorrhage.

Two cases of diarrhoea were not examples of the diarrhoea, which occurs not unfrequently as one of the accompaniments of the crisis, for, as will be seen from the following notes, the looseness of the bowels occured at different periods of the attack, and there was an interval between the occurrence of the diarrhoea and the crisis of the disease, when the latter could be determined exactly; —

Cases of Diarrhoea in Typhus; —

1. Mrs Lough, aet. 35. admitted Nov 4th. history doubtful.
2. Mrs Hart, " 24, " " 10th
Diarrhoea occurred between 9th & 12th day.
Patient passed through Enteric in October
3. Mary McKenzie, aet. 25. admitted Nov 26th.
Diarrhoea on 12th & 13th day.
Acute delirium present.
Crisis on 19th day.
4. Pat. Gilligan, aet 29, admitted Jan 8th.
Notes given above.
5. Mrs Latto, aet 30. admitted Jan 8th
Moderate diarrhoea throughout till 11th day.
Crisis 20th day.
Temps. from 105 to 103.8 F. from 8-14th day.
6. Agnes McLauchlan aet 19, admitted Jan 27th
Diarrhoea on 12th & 13th days.
Crisis on 15th day.
Low delirium present.
Temp. 105.4 to 106 between 7th & 10th day.
7. Mr Graham, aet 30, admitted July 2nd.
Diarrhoea between 4th & 7th day.
Same case; died on 7th day.
P.M. showed intestine congested (see below)

8. Jas Anson aet 20, admitted May 7th;
See notes in connection with Diarrhoea further on.

9. Mary McDonald aet 12 admitted May 3rd
Mild case.

10. Francis Coffield aet 22, admitted May 26th
Diarrhoea between 16th & 18th days
Typis about 23rd day.

11. Cath. Connor, aet 15, admitted June 13th
Moderate diarrhoea for 2 or 3 days.
Crisis on 17th day.

12. Mary Noble, aet 35, admitted July 18th.
Diarrhoea between 9th & 11th days.
Haemorrhage, about 2oz bright red blood,
on 11th day. No Haemorrhoids.

13. Cath. Malarky, aet 18, admitted July 20th
Profuse diarrhoea between 8th &
15th days.
Symptoms lost.

The case of Wm Graham calls for a fuller account, as it was possible from post mortem examination to verify the fact that the diarrhoea had been owing to

catarrh of the intestines, as evidenced by the condition of these organs; –

Wm Graham aet 30;

On January 31st patient went to work feeling quite well, in the evening, however, he felt out of sorts, being "knocked up" as he expressed it, with headache and shivering.

On Feby 2nd he was admitted to Belvidere, and the journal reports give the following particulars.

Feby 3rd Patients mind is confused, and his memory is somewhat impaired; the expression is stupid; face slightly flushed; eyes normal. The tongue is moisty coated with a dry thin fur, the edges having a white moist fur, and shallow transverse fissures being present about the centre. The pulse is strong and counts 88 per minute. There is no abdominal tenderness nor tympanites; but two loose fæcal motions were passed last night. On the back of the trunk there are some spots which resemble typhus; but one or two others have the characters of an Erythematic eruption.

July 4th; Patient had only about half an hours sleep last night; this morning there is some low muttering delirium; tongue is flabby and coated with a thin white fur; pulse 96 weaker; bowels were moved twice yesterday, the motions being loose; this morning there is lumping in the right iliac fossa. The rash maintains the characters noted yesterday; but the typhus odour can now be observed.
July 4th Evening; Patient is constantly picking the bed-clothes, and he is restless and talkative. Pulse is rather weaker
July 5th; Patient had good sleep last night after the administration of 40 grains of Chloral Hydrate; the fur on the tongue is thicker and more moist; pulse cannot be counted at left wrist, and at right wrist it is very much weaker, counting 92-96 per minute. Four loose motions were passed yesterday, and Pil. Plumbi c Opio was ordered. The low muttering delirium still continues. The typhus rash is now well marked.
July 6th; Only one pill was given yesterday,

and patient lay for most of the time in a state of stupor, there being occasionally short periods of muttering delirium and restlessness. This morning the most striking feature is violent and almost constant tumbling of the hands, combined with Subsultus. Pulse cannot be counted at either wrist; Stethoscope over heart's apex enables the rate to be counted, and shows 128 beats per minute; the first Cardiac Sound is diminished. When patient is moved, the expression of his face is that of one suffering great bodily pain. Typhus rash has spread all over the body.

7th Evening; Patient sank, and died this evening. Stimulants had been from first admission

Temperatures were as follows;-

		morning	evening
July	2nd	—	103
"	3rd	103	104
"	4th	101	102.4
"	5th	100	103
"	6th	101	—

A post mortem examination made on Feb 7th gave the following results; -

No marked bowel lesion. Peyers Patches not being elevated; but the greater part of both Small and Large Intestine was marked with great vascular injection.

Ileo Mesenteric gland was slightly enlarged.

Liver congested and friable.

Spleen somewhat large and friable.

Kidneys congested; in the right kidney there was a small cyst, containing putty-like caseous matter.

Heart; muscular fibres rather brown in colour

Lungs; somewhat edematous; had nodules at the apex of the right, one of them with caseous contents

Two old Pleuritic adhesions

Brain, normal.

Portions of all the tissues were hardened in Chromic Acid Solution and Methylated Spirits; then they were frozen, and sections cut in the usual way and mounted in Glycerine. Microscopical examination of these specimens

showed that the hepatic cells were more than usually granular, while some collections of "round cells" were found in the connective tissue about the interlobular blood-vessels.
The tissue of the spleen was normal.
The capillaries of the kidneys were filled throughout with blood-corpuscles; the wall of the cyst in the right kidney was made up of connective tissue fibres, interspersed with round cells and some fat globules; there were round cells in the interstitial tissue of the surrounding portion of kidney substance.
The muscular fibres of the heart had the accumulations of particles near the nuclei, which indicate pseudo-mucous degeneration.
Nothing abnormal could be found in the lungs except cicatricial tissue forming the nodules mentioned above, with caseous matter in the centre of one of them.
The Medulla Oblongata was quite normal.

Constipation in Typhus

As to the three cases of Constipation, they may be noted as under :-

1. Thos. Murray ; aet 24 admitted July 26th ;
Illness began on July 18th with shivering, headache, and pain in back. He was admitted on the 26th, and vomited once during the night. On the 27th he was found to be suffering from slight delirium, and presented the typical appearance of a typhus patient at the beginning of the second week of the illness with a stupid expression, confused mind, eyes nearly closed, Conjunctivae injected, face flushed, tongue with thin dry brown crust, Sordes, pulse 100 - 104 rm soft, Copious typhus rash on abdomen, arms, & backs of hands. He tried now and then to rise from bed, but was easily persuaded to remain lying, and his only complaint was of the great dryness of his throat. An occasional spoonful of Ice cream seemed to afford some relief from this ; otherwise he was

treated in the usual way with fluid food and Acid Mixture. The bowels were found to be constipated, and on Mar 1st Ol. Ricini was administered but it did not act Satisfactorily. On Mar 4th an Enema of Soap & Water was given, and the bowels were moved Twice after this. Vomiting had troubled him once or twice after admission; but this ceased after the Enema had been given. On Mar 6th he passed Urine and feces in bed; but the temperature fell on the previous day, and he very rapidly passed into a State of convalescence, during which, however, the use of Laxatives was required.

The temperatures were;

	morning	evening
July 26th	–	104·6 °F
" 27th	103·6	104·4
" 28th	103·4	104·2
Mar 1st	103·2	104·6
" 2nd	103·4	104
" 3rd	102·8	103·6
" 4th	102·6	102·4
" 5th	101·4	101·8
" 6th	99·4	99·8
" 7th	98·6	99

2. John Baalim, aet 30. admitted Mar 15th.
No history could be obtained in this case, patient having no friends.
Mar 19th; Face was flushed, eyes suffused, pupils contracted. Respirations 36 per minute, Pulse 132 feeble. Copious hydrus rash on trunk, limbs, backs of hands & feet. During the night, after admission, there was acute delirium; but this morning, though some stupor was present. he understood, when asked to put out his tongue, which was dry and coated with a hard brown crust. The head was shaved, and stimulants ordered.
Patient prayed in a loud voice almost continuously for twelve hours after admission.
Mar 20th; Patient was very sleepless, and could hardly be persuaded to take Brandy or any other food.
Mar 21st; Forty grains of Chloral Hydrate was administered last night, and he slept well, though at times he was restless, and kept muttering. This morning stupor was present, pulse was 128 per

minute & weak, patient was passing
urine and feces in bed, and there
was a strong sulphur odour about
the bed.
Mar 25th Patient died.
Throughout this case the bowels were
very much of themselves
The temperature chart was as follows; -

	morning	evening
Mar 18	-	106 F.
" 19	102·6	103·4
" 20	101	102
" 21	100·4	102·6
" 22	99·6	101
" 23	99·6	100·2
" 24	103·2	99·4
" 25	100	105·2, ½ an hour before death.

3. Hugh McDonald, aet 4, admitted May 3rd

Patients illness began on April 23rd, and the crisis occurred on May 10th giving a duration of 18 days. The highest pulse-rate was 128, and the highest evening temperature was 104.2°. The tongue became covered with with a slight white fur, and the attack ran a very mild course, constipation being present throughout

Diarrhoea in Enteric.

Comparing this with the statistics of the 73 cases of Enteric Fever, which came under my care, a striking difference will be observed.

In 27 cases, or 37%, diarrhœa was present, and among these the diarrhœa was

slight in 9 cases
moderate " 16 "
considerable " 2 "

This division is somewhat arbitrary; but its significance will be evident when it is mentioned that if there were not more than three or four motions per day, and if these were not large in quantity, I considered the case to be one of "moderate" diarrhœa.

In 4 other cases, or 5½%, moderate diarrhœa was present at one period of the disease and constipation at another period.

In 19 other cases, or 26%, diarrhœa and constipation were alike absent, the bowels acting almost normally.

In 22 other cases, or 30%, constipation was present

In one case profuse haemorrhage occurred without previous diarrhoea & constipation, and as this case was of peculiar interest from the death of the patient at a very early period of the illness, the report of the attack is given below along with the result of the post mortem examination. See the case of Ellen Colburn, admitted Sept 5th. It will be there seen that there was loss of blood by Haematemesis & Epistaxis as well as by Intestinal Haemorrhage, and that the patient died on the 3rd day of the illness apparently. The Intestinal lesion pointed to a rapid course of the disease, and corresponded rather with the statement of Bristowe, who says that ulceration begins on the 7th to 10th day, whereas Murchison's doctrine is that the ulceration begins from the 12th to 14th day. Of course in a disease, which assumes so many clinical aspects it is not remarkable that an exceptional case like the one in question should be observed.

Case:

Ellen Colburn, aet 14; admitted Sept. 5th. Careful enquiry elicited from the relations that up to September 2nd patient had felt quite well, and went about her work as usual. On that date, however, she complained of feeling rather sick, and she was troubled with headache. This state of malaise continued until Sept. 5th, when she had an attack of bleeding from the nose, and also vomited some blood. On September 6th she was admitted to Belvidere, having vomited some blood in the Town van while being conveyed to hospital. On admission patient was highly pyrexial, there was a discharge of blood going on from the nose, and she vomited some dark treacly blood. Delirium was considerable; tongue dirty & furred; pulse weak and rather irregular. Lungs were normal except for the presence of a few small moist râles at the bases. There was no abdominal tenderness, and no eruption could be seen. Under treatment the

Epistaxis was controlled; but the vomiting of blood recurred several times. Stimulants were administered.

In the morning he got worse, and about 12 p.m. a profuse discharge of black treacly-looking matter took place from the bowel, the patient dying immediately afterwards.

On September 8th a post mortem examination was made with the following results; -

Heart normal

Lungs; Hypostatic Congestion present in both. About 2 oz. of serous fluid in the right Pleural cavity.

Peritoneal cavity contained about 2 oz of serous fluid tinged with blood.

Liver soft

Spleen rather soft & friable, slightly enlarged.

Kidneys normal

Stomach; Mucous membrane had many dark stains, no erosions; and it contained about 6 oz of dark fluid blood.

Small Intestine; Great congestion of the

lower half, which was dark in colour, the arborescent ramifications of the blood vessels being well marked on the bile stained mucous membrane for one or two feet further up.

Peyers Patches and the solitary Glands were affected throughout the lower five feet or so of the intestine; they were greatly enlarged especially near the Ileo-cæcal valve, where they were very prominent, standing about 1/8 inch above the surrounding surface, and being covered with a slough, which was easily detached in some parts.

No bleeding point could be detected.

Large Intestine; The solitary Glands were somewhat enlarged.

Mesenteric Glands;- Many of these were very considerably enlarged & hard.

Vaginal mucous membrane was dark in colour.

Uterus contained a small quantity of blood.

It is usually accepted that persistent and urgent diarrhoea indicates a grave case of Enteric Fever, Murchison's teaching being that "diarrhoea is unfavourable in proportion to its quantity & duration." It will be well therefore to enter a little more fully into the relation seen in the above cases between the diarrhoea and the severity of the attack, and from the facts given below in connection with the individual cases it will be seen that while there may be grave cases with slight diarrhoea, considerable diarrhoea was always accompanied by severity of the other symptoms, while moderate diarrhoea occurred in cases of all kinds of severity from mild to fatal. Of the four deaths in cases, where moderate diarrhoea was present, one was due to Hydro pneumothorax, another was due to the intensity of the attack of fever, another patient passed through a very prolonged bout of illness & ultimately succumbed, while in the fourth the fever was acute, & accompanied by haemorrhagic symptoms, there being bleeding from nose mouth, bladder, & bowel. Unfortunately no Post Mortem could be obtained.

Enteric Fever;

A. Slight Diarrhoea, 9 cases; -

John Drumm, aet 9, mild attack

George Gibson, aet 8. Duration of 4 weeks. Even. temp. 105° F. on 12th day. Necrosis of Rt. Sup. Max. bone as sequela.

Jas. Greenfield, aet 7, Duration 3 weeks mild attack.

Jas. Lamb aet 21, Duration 2½ weeks. mild attack. Followed by relapse with considerable diarrhoea.

Sam. McHendry, aet 18. Duration 3 weeks. mild case.

Dan. Smith, aet 20, Duration about 42 days. Even. temp 105° F on 13th day subsequently controlled by Sodae Salicyl.

Robt. Craig, aet 26. Duration 4 weeks. Ev. temp 105 F on 12th day. Intest. haemorr. on 25/26th day.

Cath. O'Hara, aet 5; mild attack
Mary Gibson aet 14 Duration 3 weeks
mild case.

B. Moderate Diarrhoea 16 cases;-

John O'Hara aet 36. Duration 5 weeks,
admitted on 11th day.
Haemorrhage occurred before
admission & till 14th day.

John Logan aet 4. Duration 3 weeks.
mild attack

Robt. Hutton aet 14 Duration 4 weeks, ending
in death.
Acute delirium
Stupor case with Haemor-
rhagic character.
(See notes in connection
with Haemorrhage)

And McMillan aet 18 Mild case so far as
Enteric symptoms were
concerned; but Pneumonia
complicated the attack

Sam. Brown, aet 20 Duration about 50 days.
Lungs attacked by pneumo-
thorax supervened & ended
in death.

Israel Rosenthal. aet 14. Duration 4 weeks
Symptoms mild

Francis Higgins. aet 9. Duration 5 weeks
Symptoms mild

Hugh Graham aet 9, Duration 4 weeks.
Evening temp. 105°F on 18th
day. Sod. Salicyl. seemed
to benefit in this case.

Neil McGregor. aet 18. died about 15/17th day
Very severe case. Acute delirium
and Evg temp.s of 105.4°F between
12/15th days

Mary Wallace. aet 16, Duration about 33 days.
Very severe case
Phlegmasia Dolens as sequelle.

Bridget Gallacher, aet 19, Duration under 3 weeks.
Symptoms mild

Mary A. Lonnen, aet 19. died about 53rd day
Very severe case; Much delirium,
Evg temp. repeatedly 105.2°F
" 105.4°F on 29th day.
Sod. Salicyl. apparently had no
influence

Janet Mills, aet 11, died about 27th day
Acute delirium
Haemorrhage on 25th day

Agnes Lunn aet 22 Duration over 4 weeks
Symptoms mild.
5th month of Pregnancy.

Ann Doran, aet 14, Duration 3 weeks
Severe case
Considerable delirium
Temp. 105·6 °F on 9th day.

Mary Connor, aet 13, Duration 4 weeks.
Severe case
Considerable delirium
Temp. 105·2 °F on 19th day.

C. Considerable Diarrhoea, 2 cases;

Jas. Lamb, aet 21, Relapse lasting 5 weeks.
Evd temp. 105·2 °F 3rd/11th days
" 105·4 °F on 4th day
Redness of feet as regards

Ann Grumfield, aet 9, Duration 3 weeks.
Evd temp. 105 °F on 12th day.
Haemorrhage from bowels on
11th day.

The above particulars are sufficient to show that-

(1) Of the 9 cases with Slight Diarrhoea
6 cases were mild
3 " " Severe

(2) Of the 16 cases with Moderate Diarrhoea
6 cases were mild
4 " " Severe
2 " " very Severe
4 " ended in death.

(3) Of the 2 cases with Considerable Diarrhoea
both were fatal cases.

Of the 4 cases, when both diarrhoea and Constipation were observed

1 was mild

1 was severe

1 died from Perforation of the intestine

1 passed through a very prolonged attack of the fever, both recrudescence and a relapse taking place.

Of the 19 cases, when the bowels acted normally throughout

10 were mild

6 " severe

3 " very severe

Of the 22 cases, when Constipation was present throughout

13 were mild

7 " severe

2 " very severe

These figures are on the whole, in keeping with the statement that the intensity of the diarrhoea is an index of the intensity of the severity of the illness; but they also show that very severe cases occur, when diarrhoea is absent

or when severe constipation is observed.

Intestinal Hamorrhage

Typhus

Enteric

Refering to the subject of Intestinal Haemorrhage as seen in Enteric and typhus fever, it has been already mentioned that among the 120 cases of typhus, which came under my observation only one case of haemorrhage occurred, and that the amount of blood lost by the patient was small.

Among the 73 cases of Enteric, haemorrhage occured in 4, of whom 4 died. All of the cases were of course, severe cases, and it is interesting to note that the haemorrhage was preceded by diarhoea, in only one case (that of Jane Downie, who died of perforation as confirmed by post mortem examination) was constipation also present. In the illness which was a very prolonged one diarhoea was present at first, to this succeeded an interval of constipation, 20th to 43rd day, followed by a period, when the bowels acted regularly once a day, 44th to 54th day; then came the haemorrhage, and during the last two or three days of her life diarhoea again.

supervened.
The case of Ellen Colburn has been already given at length.
The experience therefore has been that Haemorrhage is usually preceded by diarrhoea.
The cases may be summarised thus, short notes from the journal reports being given in addition regarding John O'Hara and Ann Crumfield;-

John O'Hara, aet 36; illness lasted for 5 weeks. Haemorrhage occurred during 2nd week, and was both preceded & succeeded by diarrhoea.
(See case given at greater length below.)

Robt Neilson, aet 14; patient died on the 27th day. Haemorrhage occurred about the 24th day, and was preceded by diarrhoea. The other haemorrhagic symptoms in this case have been already mentioned.

Robt Craig, aet 26; illness lasted for 4 weeks. Haemorrhage occurred about the 23rd day, and was preceded by slight diarrhoea.

Sam Downie, aet 26; Death took place on the 57th day of illness.
Haemorrhage occured about the 53rd or 55th day; it was immediately preceded by normal action of the bowels, which had succeeded a period of constipation, diarhoea having been stopped at an earlier part of the illness.

Wm Turnfield, aet 9; Illness lasted for 3 weeks.
Haemorrhage occured about the 12th day, and was preceded & succeeded by diarhoea.
(See case given below)

Ellen Colburn, aet 14; Death occured on the 5th day, immediately after profuse haemorrhage.
(See case already given above)

Janet Miller, aet 11, Death took place on the 27th day.
Haemorrhage occurred on the 25th day, and was preceded by moderate diarhoea.

Case of John O'Hara, aet 36, admitted Oct. 12th.

The history of the illness up to the time of admission showed that it had lasted for 10 days, patient having suffered from shivering and headache at first, and afterwards from abdominal pain, and diarrhoea. Miliaria had occurred to a considerable extent.

On admission he was found to be feverish, and shortly after admission he passed about 16 oz of tarry-looking blood from the bowel. Enteric spots were present, and the abdomen was distended and somewhat tympanitic. The tongue was covered with a white fur. Ergot was administered, and the haemorrhage stopped. The diarrhoea was controlled by Pil. Plumbi c Opio.

On Oct 10th the tongue was moist and red, there being a little fur on the posterior part. The pulse counted 116 per minute. More spots had made their appearance. The abdomen was painful, and he was troubled with hiccough. Last night the

haemorrhage returned; but it was controlled by Ergot and Laudanum, and patient obtained a fair amount of sleep.
Oct 17th; Tongue dry, coated with brown crust; pulse 80; slight vomiting; diarhoea. Pil. Plumbi c Opio was ordered.
Oct 18th; Tongue coated with moist fur; Vomiting stopped; diarhoea continues, six motions being passed in 24 hours. Catechu was ordered.
Oct. 19th; Tongue again dry, with brown fur; pulse 88 pr minute; 5 motions in 24 hours.
Oct 20th; Tongue as yesterday; pulse 76; Diarhoea now slight.
Oct 21st; Tongue moist, with brownish fur; Pulse 80; patient feels much better; the abdominal pain & tenderness are completely gone; he sleeps well during the day, and is restless at night.
Oct 25th; Patient was delirious last night. He got Pil. Opii yesterday evening. Yesterday 4 motions were passed.
Oct 26th; Patient got Pil. Opii at 1 am., and had a much quieter night; he felt much

obtained by repeated sponging. Pulse is 112. Tongue was slight vomiting yesterday, Oct 29th; Patient was restless last night, and got out of bed himself. This morning he lies muttering, with his eyes half closed. Tongue is dry & covered with slight brown fur. Pulse 96 rather stronger. Heart cannot be heard owing to moist râles, which are present on both sides of the chest, being more abundant on the right side. There is a little faecal evacuation, but a fair quantity of Urine is being passed. The chest was actively treated Oct. 30th; Last night the pulse somewhat suddenly failed in strength, and was found to be weak & compressible. Under stimulants it regained some strength, and this morning it is still stronger, and counts 104 per minute. The cardiac sounds are faint. Tongue has moist yellowish fur over it.

Nov 3rd Last night patient slept well after Chloral was given; but this morning he

is wandering somewhat. Tongue is dry and brown; pulse 100 very compressible.
Nov 4th; Patient was better during the day yesterday; but as he is usually sleepless at night, he got Chloral in the evening. Tongue is now clean.
Nov 15th. Patient has been getting stronger daily. He was troubled with deafness during the latter part of his illness; but this is now almost gone. Pulse is 68 and fairly strong. He got up yesterday for the first time.
On Dec 4th he was dismissed "well."
The temperatures were;

	morning	evening
Oct 12	-	102·4 "F
" 13	99·4	102·2
" 14	101	102
" 15	102	101·8
" 16	101·6	99
" 17	99·8	98·8
" 18	98	101
" 19	101·4	101·2
" 20	100	101·6
" 21	100	100·4

	morning	evening
Oct 22	101	102
" 23	101·4	102·4
" 24	100·4	103
" 25	102	103·8
" 26	101	103
" 27	101·2	102
" 28	102·8	103
" 29	102·2	102·2
" 30	101·4	103·2
" 31	101	101·4
Nov 1	98·2	101
" 2	99	99·2
" 3	99	98·6
" 4	98	98·2
" 5	99	98·4
" 6	98·2	99
" 7	99·4	99·4
" 8	100·4	99
" 9	98	98·4
" 10	98	98
" 11	97·4	98·2
" 12	97·8	98
" 13	97·6	98
" 14	97·8	98

Case of Ann Grunfield, act 9, admitted Dec 13th.
On Dec. 7th patient complained of headache, which was very severe; and since that date there have been vomiting, constipation, feverishness, restlessness and crying at nights. Dec. 14th; Patient had no sleep last night, but has been talking and crying. This morning she is very feverish and restless. Memory seems fairly clear, though at times she is rather stupid. Pulse is 136 regular but somewhat feeble. The tongue is covered with a thick brown fur, divided up into several small separate patches. The abdomen seems normal, but patient cries out, when pressure is made in the Right Iliac region. There is one Eruptive spot on the chest. The cheeks have a circumscribed flush; the eyes are normal; the lips are parched, and patient complains of pain in the sides on coughing. She got a cough mixture, & chloral was ordered for the evening. Physical examination detected nothing

worms in the chest.

Dec. 17th; Cough is worse. Tongue is less furred. Pulse is 128 per minute and weak. Some more Entinic spots have appeared, and there is fine desquamation at some parts of the body. Diarrhoea has commenced.

Dec. 18th; Yesterday about ½ oz of blood was passed from the bowel on three separate occasions, and subsequently there was a motion partly formed & striped with blood. Patient got 3i of Liq. Ext. Ergotae repeated five times at intervals of an hour, and there has been no more haemorrhage.

Dec 19th; Yesterday morning the temperature was 105 °F, and she got

10 pm. Quinine Sulph at 8 pm. Temp. at 8:30 was 103·8 °F.
10 . . . . 10 . . . 10:30 . 104·4 .
10 . . . . 12 . . . 12:30 . 107·8 .

This morning the temperature is 97·8 °F.

Dec. 20th; Patient complained of pain in her left knee; but one rubbing with Laudanum "cured" this. She now

complains of pain over the left trochanter, and the skin there is red. (Camphorated spirits was used, and no bed-sore formed) As the diarrhoea continued, tincture of Catechu and Wine was ordered.

Dec. 21st. Catechu caused vomiting, and it was therefore stopped, Plumbi Acetat. being substituted. Pulse is dicrotic, and counts 140 per minute. There is now no abdominal tenderness.

Dec. 22nd. Diarrhoea continues. Pulse 116. Tongue has thin white fur all over it. Patient feels much better. Temperature is 98.8°F this morning.

Dec. 25th; Diarrhoea has ceased; and the morning temperature is satisfactory.

Dec. 29th; Patient was allowed to rise for the first time today.

The subsequent[illegible] passed through a somewhat tedious convalescence, and her mind was a little impaired for a considerable time; She undressed & redressed herself over and over again or going to bed; and her step-mother

assured me that previously she had been a bright sharp child with a good memory.

The temperatures were as under, and the bowels were moved as noted;.

	morning	evening	Bowels moved
Dec 13	-	103·6	one
" 14	102	103·4	twice
" 15	102·6	103·4	twice
" 16	103	103·4	5 times
" 17	102·8	101·2	3 "
" 18	101·8	105	3 "
" 19	97·8	96·8	7 "
" 20	101·4	103·4	5 "
" 21	103	104·8	3 "
" 22	98·8	104	5 "
" 23	98·8	103 8	3 "
" 24	101	98	2 "
" 25	97·4	97·2	1 time
" 26	97	96·4	-
" 27	96·4	96·4	1 "
" 28	96·6	96·8	1 "
" 29.	96·8	96·4	-

Deafness in Typhus & Enteric

It is an old observation that deafness may accompany or follow an attack of typhus or Enteric Fever; but beyond the record of the clinical fact that this was observed in a given number of cases I have no material which throws any light on this obscure subject. I had no opportunity of making a post mortem examination in any case where this was a well-marked symptom; and I cannot refer any data affording a solution of the problem why deafness should occur. It has been described as a "nervous deafness"; but, as Nöltsch, making a parody of the well-known definition of "nervous" blindness, says, "Für die nervöse Taubheit lässt sich indessen noch anwenden, indem diese diejenige heißen ist, bei dem der Kranke nichts hört und der Arzt nichts sieht." Hoffmann (Arch. f. Ohrenheilk. IV. S. 272) could find no anatomical changes in many cases, and believed the affection to be purely nervous. According to Nöltsch, (Lehrbuch der Ohrenheilkunde 1881), Politzer found in two typhus-leichen

Ekchymosen im Verlaufe eitriger katarrhalischen Veränderungen im Mittelohre; Schwartze in einem Falle von typhus starke Hyperämie in der Schnecke; Moos mehrmals lymphoide Infiltration im häutigen Labyrinthe."

Schwartze (Deutsche Klinik 1861) says that, "Den beim typhus vorkommenden Gehörstörungen insbesondere drei Processe zu Grunde liegen, zwischen denen nicht selten Combinationen vorkommen können. Es sind dies (1) die eitrige Entzündung der Paukenhöhle mit ihren Ausgängen und Folgen (2) Katarrh des Pharynx mit Verschluss der Rachenmündung der Tuba, und (3) central bedingte Gehörstörungen wobei insbesondere an die eigenthümliche Einwirkung des typhösen Blutes auf das Gehirn zu denken wäre."

Politzer remarks, "Die Trockenheit des Mundes und Rachens, wie sie im typhus meistens vorhanden ist, begünstigt das Entstehen von Tubenabschluss durch zähen und vertrockneten Schleim.

Before proceeding to the consideration of the first of the three processes, mentioned

by Schwartze, it will be well to record the frequency with which deafness, unattained by physical examination occurred in the asylums and Entrie patients, who came under my care. Only those cases will be given, in which the symptom was well marked and formed an obstacle to communication with those around, without including the cases of Tinnitus, which will be considered further on.

Deafness occurred in my cases out of 120 of asylums, or in about 6%. The cases were;-

Rebecca McGinnis aet 20. Ill 18 days. Pulse reached 128. Temp 105·8
Mrs Duff " 23 " 13 " " - " 104
Wilmina Walsh " 27 " 13 " " 132 " 105
Mrs Derby " 40 " 20 " " 108 " 103·4
Margt Duncan (after visit) 17 " 14 " " 120 " 104
Margt Dunn " 21 " 19 " " 120 " 104·8
Chas Dillon " 10 " 14 " " - " 104

and it occurred in 3 instances out of 73 Entrie cases, or about 4%, viz.-

Jas. Elliot aet 26 Ill 36 days. Highest pulse 124 Highest Temp 103·4
Robt. Cairns " 26 " 28 " " 112 " 105
Cath. Byrne " 37 " 77 " " 128 " 104

Diarrhoea in Typhus and Enteric

Passing now to the consideration of Acute Suppurative Otitis Media, it may be remarked at the outset that not much seems to be known about this affection of the ear in Typhus and Enteric. Voltolini writes; -

"Wir beobachten den acuten eitrigen Katarrh
"des Mittelohres als Haupt- und Folge erkrankung
"bei den acuten Exanthemen, Masern, Scharlach,
"und Blattern, bei Typhus, bei Diphtheritis
"und bei Lungen Tuberculose; bei allen diesen
"Krankheiten kann das Ohr, aber auch in
"minderem Grade, durch eine einfache
"Katarrhalische Entzündung, sich betheiligen"
(Lehrbuch der Ohrenheilkunde 1881)

Hoffman (Arch. f. Ohrenheilk. IV S272) found that the purulent inflammation of the middle ear in Typhus arose not infrequently from the intimate affection of the Pharynx, especially from diphtheritic inflammation of the Mucous Membrane.

Politzer as already mentioned, found in two bodies of patients who had died of Typhus, small Ecchymoses in the Vestibule besides Catarrhal changes in the middle ear.

Stomatorrhoea was observed in the case of Joseph Flannigan mentioned at the beginning of this paper, and the following are the particulars of the clinical aspect of the case; -

Joseph Flannigan, aet 30/40. Said to have sickened on Dec. 22nd, was admitted to Belvidere hospital on Jan. 5th.

Jan 6th; Patient slept well last night. He is very much prostrated; face is flushed; the eyes are suffused, pupils normal; tongue is covered with a thick brown crust, in which are longitudinal and transverse fissures, it is protruded with difficulty; gums are covered with sordes; pulse 140 and feeble; breath rank copious and putrichial in character; stools of thin odour; involuntary passage. His head was shaved, & he was put upon a liberal supply of stimulant.

Jan 7th; Patient is more stupid; but he can be roused, and then says he feels better; the tongue is very dirty; pulse before patient was raised counted 132 per

minute, after he was roused it counted 92 per minute, & was very feeble and irregular. Much twitching present and also subsultus.

Jan 9th; Pulse 96, stronger and more regular great restlessness; subsultus; patient has moaning and has passed urine and faeces in bed twice within the last 2 days.

Jan 10th. Pulse 84 with character of yesterday. Low muttering delirium is present.

Jan 11th; Pulse 44 with dicrotic wave of about half the height of the first wave. Second Cardiac sound is double and the ventricular systole seems therefore to consist almost of 3 sounds. Pupils are low muttering delirium restlessness, subsultus and great Loquacitas.

Jan 12th, Pulse 120 was much stronger, regular. Condition otherwise much as yesterday.

Jan 16th; For the last two days there has been some swelling in the Left Parotid region, and this is now hard and a little tender; patient complains of pain below the left lower Jaw, when moving

the joint; nothing can be felt from the inside of the mouth; but there is a diffused red blush about the left tonsil. The mouth was repeatedly washed out. Pus came from the region of the left tonsil; but I was never able to define the exact spot from which it flowed. Breathing easy; tongue moist, clean, can be protruded. Patient lies quietly and is now quite conscious. Pulse 116, full. Hot fomentations and iron, and poultices were applied to the cheek. There was a slight discharge of blood from the left ear, and the external meatus was syringed out.

Jan 18th. Swelling of the left parotid is very hard and the skin over it is red; there is a tender spot in front of the meatus; the swelling has extended downwards & backwards, and a purulent discharge tinged with blood has begun from the left ear. Tongue red & dry; pulse 108, fairly strong; respirations 28 per minute,

deep and raw. There is a rather foetid odour about the face. The ear was syringed with tepid water and Condy's Fluid Jan 20th; A slight cough troubles patient today; but physical examination shows chest to be normal. Pulse 104 stronger and regular; tongue has thicker fur. Parotid swelling is large, and there is slight fluctuation behind left ear. A very copious discharge is coming from the left ear, and patient puts a considerable quantity of purulent material tinged with blood.

Jan 21st; The purulent sputum is less tinged with blood. The fluctuating spot behind the left ear was incised this morning and about ½ oz of pus was evacuated; no bone bare nor undermined skin.

Jan 23rd Patient looks easier. The side of the face is less swollen, and the jaw can be moved with less pain. Less pus is expectorated, and the discharge from the left ear has almost stopped. Pulse

124; tongue clean; patient sleeps well, & has a good appetite; he sat up yesterday for the first time; slight left facial paralysis is present.

Jan 24th; Parotid swelling is small; and the discharge from the left ear has almost entirely ceased, but it still keeps the Meatus moist. The Facial paralysis is less marked. The tongue has a dry white fur; the pulse is 116 per minute, and strong.

Jan 26th; Patient is free from pain and feels only some stiffness behind the left jaw; the swelling is gone and the opening behind the ear is healing satisfactorily.

With the left ear patient cannot hear even a loud voice, nor is the ticking of a watch heard even when the watch is placed in contact with any part of the left side of the head.

With the right ear the watch is heard, when placed against the Auricle or immediately in front of the Meatus, or

when held 1 inch from the ear; when the watch is placed on the Vertex or between the teeth no sound can be distinguished. Examination with the Aural Speculum shows that there is a large perforation in the left tympanic Membrane, and the handle of the Malleus is fractured, a little of the matter comes away, when the ear is syringed. The tongue is clean, the appetite good, and the pulse 112 & strong.

Jan 29th; Discharge from the ear entirely stopped yesterday. Patient is slightly troubled with cough.

Jan 31st; The evening temperature keeps up; but patient complains of nothing except his cough. There are no physical signs of Catarrh in the chest except a few fine râles posteriorly. Pulse is 120 and strong. - Poultices were applied and a cough-mixture given.]

Feb 3rd Patient feels much better; but the cough continues.

Feb 4th; Edema of the feet was

retired yesterday, and Iron is being administered. Cough is improving.
Feby 14th; Cough is quite gone. Patient complains of "weakness" in left shoulder.
Feby 22nd Examination shows right tympanic membrane to be normal; but the left has a perforation at the lower and posterior part. With the left ear the watch is heard, when placed against the auricle or in front of it, or when held ½ an inch from the head, but no where else. On the right side the watch is heard when touching the ear, or when held at a distance of 1 inch from it.
On Feby 26th he was dismissed "well," and recommended to go to an Ear Dispensary.
On March 24th; Dr Wharton Marfie, Aural Surgeon to the Harrow Royal Infirmary, wrote me as follows;-

> "Hugh Flannigan came to the Ear Dispensary for the first time about a fortnight ago, and I found Con

the notes taken then;-

March 5th, aet 36, complaining of deafness and tinnitus. History of syphilis. He left the Fever Hospital on the 20th ultimo. While in hospital the left Ear began to discharge. The discharge stopped about four weeks ago; but it has been heard with since. Abscess below Auricle incised while in hospital. This has healed. Improved after Politzer Air Douche. 26th March; Hearing distance

Watch; Right 60

Left on Gentle contact.

Left Memb. tym. somewhat thickened but lustre good, drawn in, cicatrix towards posterior margin. P. M. also thickened, but in addition it is muddy looking, not so much drawn in as the other. Tinnitus and appearance of both Memb. somewhat improved after Politzer. Ordered Pot. Iod. and Inf. Gentian."

This report shows that the perforation

The left tympanic Membrane had closed in the usual way after the patient had left hospital.

The temperatures while he was under my observation were as follows;—

	morning	evening
Jan 3	-	103·8
" 4	103	103·2
" 5	103	102
" 6	103·4	102
" 7	102	101
" 8	102·6	101·6
" 9	101·6	100·2
" 10	100·6	100
" 11	101	99
" 12	100·6	98·4
" 13	100	99
" 14	99	100
" 15	99	99 4
" 16	98·6	99
" 17	99	98·6
" 18	98·4	98·4
" 19	98·6	99
" 20	100	100·4

	morning	evening
Jan 21	100	100·2
" 22	99·2	100
" 23	100	100
" 24	98·4	100
" 25	98·4	101
" 26	98	100·2
" 27	98	100·6
" 28	99	99
" 29	98·4	99
" 30	99	101
" 31	99	101·4
July 1	99	101
" 2	99	99
" 3	-	100
" 4	99	100
" 5	98·4	98
" 6	98	98·4
" 7	98	99·2
" 8	98	99·2

Only one other instance of Diarrhoea came under my notice among the typhus patients. Murchison, speaking of "deafness" during convalescence, says, "In other cases I have known rigors, high fever, intense headache and delirium, & even convulsions occur during convalescence; but cease at once on the appearance of discharge from the ear. Dr Gd. Kennedy also relates instances where Diarrhoea was preceded by profound coma, dilated insensible pupils and involuntary stools, and similar observations are recorded by Dr W.T. Gairdner." As this case was one where profound coma was present, I give it in full; -

James Heron; aet 20. admitted Mar 7th.

All the history that could be obtained, of the illness was that on Feb 27th he had, as he himself "got cold," that he suffered from shivering and pain all over the body; vomiting being present from the first and continuing to recur for some days. Mar 8th; Patient complains of pain all

own, of thirst, and of hunger. Bowels were loose last night, and he was restless. The face is flushed, eyes suffused, pupils normal. There is a copious pinkish syphus rash all over the trunk and limbs, and at some parts it is "measly" in appearance. There is the odour of syphus. The tongue is dry and covered with a thin fur. Pulse is 132 and weak. Considerable Subsultus is present, and also deafness

Mar 9th; Patient got a little sleep last night, and this morning he is less restless; but his appetite remains good, and he took porridge to breakfast. The tongue has a thick white fur; pulse is 120 and small. The rash is darker [He was ordered Chloral at night & Brandy]

Mar 10th; Very little sleep last night; pulse 132 small and weak. Tongue covered with dry brown fur. Deafness more marked.

Mar 12th; Patient is passing urine & feces in bed. Pulse is 120, weak & dicrotic. Tongue has a moist white fur. Subsultus continues.
Mar 13th; Pulse 128 weak. Diarrhoea is present in this case, stimulants being given on an average two motions daily. Patient slept well last night.
Mar 14th; Patient had little sleep last night. Tongue is dry and cannot be protruded. Pulse 132, weak. Patient is restless, and moans a good deal.
Mar 15th; Patient got some sleep last night. There is less subsultus. Pulse is weak and counts 128 per minute. Tongue is dry and hard. Appetite continues good; but patient lies moaning and coughing loudly, while in a state of semi stupor.
Mar 21st; Temperature is normal; but great somnolence has begun.
Mar 24th; For the last 2 days patient has been lying with his head off the pillow, and completely covered with

the bed-clothes. He was too stupid to explain anything; but the nurse thought that he suffered pain, when the auricles were touched, some time, however, no redness nor swelling of them. This morning a profuse discharge has begun from the Right ear. Patient is more intelligent, and says that he is free from pain; but that yesterday he had pain in his "bars". The tongue is still foul; pulse 100-104, weak; the temperature continues satisfactory.

Mar 25th; Stupor remains; but patient declares himself to be free from pain, when roused. Pulse is 84; tongue almost clean; pupils continue, as before quite equal and sensible to light.

Mar 28th; Stupor continues, and deafness is a very prominent symptom. Pulse is good; tongue slightly furred; bowels are bore.

Mar 29th; Patient is more intelligent,

He complains of pains in his hands, and the fingers are all fixed in a position of flexion. Pulse 92, good.
April 4th; Discharge from Ear stopped two days ago, and hearing is now better. He has no pain, and the tongue is clean.
April 14th; Hearing is all right.
April 30th; Dismissed in good health.
The temperatures were,

		morning	evening
Mar	7	–	105 0/7
"	8	104	104.6
"	9	104	105.2
"	10	103.2	104.4
"	11	103.6	104.2
"	12	102.8	104.6
"	13	103 6	104.8
"	14	103.4	104.4
"	15	102.8	104.4
"	16	103	100.2
"	17	101.8	102
"	18	100	101
"	19	100	99
"	20	99	98.4
"	21	98	99.4
"	22	98	99
"	23	98.4	99.6
"	24	98.4	99

Speaking of Enteric Fever Murchison says that, "Diarrhoea is not an uncommon complication or sequela, particularly in children." Among 73 cases I met with it only once, and the particulars of the case are given below, as I regard it as one of Enteric, the temperatures pointing to that disease, although constipation was present throughout; and physical examination suggested only Peritonitis as an alternative; -

Margaret Early, aet 17; -

On June 12th, patient bathed in a burn, feeling in good health. On returning home, she thought she had caught a bad cold from the bathing, as there was a sudden onset of headache and nausea with a general feeling of malaise.

On June 21st she was admitted to Belvidere.

June 22nd; Patient lies in a "typhoid" state, unable to speak; eyes half closed, pupils dilated; face stupid, flush on each cheek; mouth kept

open; sordes; tongue not protruded, covered with dry brown crust; pulse 132 weak; respirations 42 in the minute, shallow.
On pressing the abdomen at any part patient cried out as if in pain; slight jumping in right iliac fossa; spleen not enlarged.
Some six or seven spots with "lenticular" appearance and fading on pressure; but patient has such a dark and vermin-bitten skin that it is impossible to say anything definite about the rash.
June 23rd; slightly more intelligent; there seems to be abdominal tenderness, and patient complains of pain "here all over." tongue can be protruded.
June 24th; speech is now thick; considerable noisy delirium; patient lies with mouth somewhat open & eyes partly closed; she shouts loudly when moved. Bowels are constipated.

Pulse 108 um weak; Respirations 56, shallow. I cannot find an eruption.
June 20th; Patient slept fairly well last night; stupor this morning; face flushed; pulse 112; respirations 44.
June 27th-28th; Slight rigor this morning; Pulse 112 stronger; respirations 44.
June 30th; Patient is restless at night; temperature not so satisfactory; fine râles at bases of both lungs. Pulse 120; respirations 48.
July 1st; Pulse 120 weak; Râles abundant and large all over lungs.
July 3rd Under treatment the râles have almost entirely disappeared.
July 4th; A serous discharge has begun this morning from the Right ear. Patient complains of abdominal tenderness, confined to the Right Iliac region. Pulse 128. Heart sounds feeble. No spots can be detected.
July 5th; Complaint of abdominal tenderness is more urgent; bowels

patients statements as to the locality of the tenderness may exceedingly. tongue has dry brown crust on it. There is some little discharge from the Ear.

July 8th; There is a troublesome cough, along with small mucous râles on the left side, and subcrepitant râles on the right side. Respirations 44 in the minute; pulse 132, very weak.

July 10th; Some little discharge from the right ear continues. There an stupor and some low delirium.

July 18th Discharge from the Ear was seen today for the last time. Patients general condition has improved gradually and the temperature has fallen. Stupor continues.

July 20th; Patient has continued to improve steadily; but the temperature rose this morning. She is still very stupid; but pays the pulse well. Tongue has slight brownish fur; pulse 124 soft. Patient

There is some tenderness in the abdomen. This morning a discharge, muco-purulent in character has begun from the left ear. Patient has been quite sensible at intervals for the last day or two.
Constipation has required treatment throughout the illness
Aug 5th; Discharge has ceased from the left ear. Tongue has still a dry appearance. Pulse 100, gaining strength.
Aug 13th; Patient was allowed to rise today for the first time.
The bowels were moved regularly by Enema, and the following are the temperatures;

		Morning.	Evening.
July	21	-	104.6 °F
"	22	104	103
"	23	102.4	103.4
"	24	103	103.8
"	25	103.4	103.6
"	26	102.4	103.4
"	27	103.8	103.6
"	28	103	104.8
"	29	100.2	100.6
"	30	104.2	104.8

&c.

	morning	evening
July 1	104.6	107.2
" 2	107.4	103.4
" 3	103.8	104.4
" 4	104.6	104.2
" 5	102	103.4
" 6	102	102.2
" 7	99.6	103
" 8	99	107.6
" 9	98.4	102
" 10	98.8	102.6
" 11	98.8	107.2
" 12	98.4	107
" 13	98	98.6
" 14	98.2	98.8
" 15	97.8	98.6
" 16	97.8	99.4
" 17	99	99
" 18	98.8	99.2
" 19	98.4	98.6
" 20	99	99.6
" 21	97.8	99.2
" 22	98.4	98.6
" 23	98.4	98.4
July 24	98	98.4
" 25	98.2	99
" 26	102.2	103
" 27	107.2	102
" 28	99.4	99.6
" 29	99	99.4
" 30	98.4	98.4
" 31	98	98.4
Aug 1	98.2	98
" 2	98.4	98.4
" 3	98	98
" 4	98	99
" 5	98	98
" 6	97.8	97.8
" 7	99	98.4
" 8	97.8	98
" 9	98	98
" 10	97.8	98
" 11	97.8	98.4
" 12	97	98
" 13	97.4	98.4

Otorhoea in Scarlet Fever and Measles

Comparing these numbers with the 242 cases of Scarlet Fever and 108 cases of Measles, which passed through my wards, I find that 12 cases of Otorrhoea occurred among the Scarlet Fever patients, giving a percentage of about 5%, and seven cases among the Measles patients giving a percentage of about 6½%.

These cases may be summarised thus; with the dates on which the Otorrhoea began, and although it is always stated that the inflammatory process spreads from the pharynx by the Eustachian Tube to the Mucous Membrane lining the middle ear, judging from the dates at which some of the patients became affected with the Otorrhoea, I should rather regard the affection as one of the sequelae of the fever, the latter having apparently acted as a predisposing cause; —

Scarlet Fever; —

Eliza Conway,	aet 6;	Left	Otorrhoea	began on 18th day.	{Rickets. Died 27th day
Mary A. McNab.	" 6;	Right	"	" 37th "	
Joseph "	" 2½;	{Left	"	" 15th "	Rickets
		Right	"	" 29th "	
Eliza Andrews;	" 5.	Double	"	21st day after admission. History not known. Scrofulous parent. Patient died.	
Christina Wilson	" 2	Double	"	began on 15th day	Rickets.
Ellen Scott	" 3	"	"	" 22nd "	
George Green	" 3	"	"	" 7th "	
John Roy	" 4	Left	"	" 29th "	
Jamie "	" 2	"	"	" 9th "	
Thos. Neale	" 8	Right	"	" 44th "	
Ben. D Paton	" 6	"	"	" 24th day after admission	
Robt. McLennan	" 5	"	"	" 22nd day	

Measles; —

Chas Lang	aet 6 years	Double	Otorrhoea	began on 14th day
Grace Sanderson	" 6 "	Right	"	" about [illegible] "
Wm Young	" 7 "	Double	"	" on 10th "
John Mulholland	" 13 mos	"	"	" " 4th "
Wm French	" 5 "	Left	"	" " 27th "
Ann Perry	" 11 "	Right	"	" " 16th "
Eliza Bryan	" 3 years	Double	"	" " 14th "

From this we see that Otitis Media ending in Perforation of the Membrana Tympani may be a complication or sequela of any of these four Exanthemata, and that it was seen in the following proportion of the cases; -

Typhus Fever	1.6 %
Enteric Fever	1.3 %
Scarlet Fever	5 %
Measles	6.4 %

Conclusion

The points to which prominence has been given in this thesis are;-

I. That the infectious and epidemic nature of typhus fever demands the careful isolation of those, who are suffering from it, in order to prevent the spread of the disease.

II. That Diarrhoea may occur in typhus; but that it is much more common in Enteric Fever, when it may be taken as an index of the severity of the attack.

III. That intestinal haemorrhage in Enteric Fever is frequently preceded by Diarrhoea

IV. That otitis Media, leading to otorrhoea, may occur in, or follow an attack of typhus or Enteric; but that it is more often observed in scarlet Fever or Measles.