# A Thesis

(For the degree of M. D.)

On

# Typhus and Enteric Fever

By

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# Contents.

b.

Case VI (p. 31.) Typhus with delirium ferox. Subsultus, diarrhoea & Vomiting. Death on 13th. day.

" VII (p. 72.) Typhus. Crisis on 20th. day.

" VIII (p. 82.) Typhus complicated with Intestinal Haemorrhage. Recovery.

## Analysis of principal Symptoms:

Physiognomy (34.). Eruption. (34.) Taches Bleuâtres. (37.) Sudamina (35.) Temperature (38.) Moisture (39.) Odour from skin (39.) Pulse. (41.) Heart's Action (44.) Respiratory movements (44.) Hypostatic Congestion of lungs (44.) Expired air (47.) The Tongue. (47.) Sordes (49.) Loss of Appetite & Thirst. (49.) Dysphagia (50.) Meteorism (50.) Constipation (51.) Urinary symptoms (51.) Headache, Vertigo, pains. (53.) Delirium (54.) Wakefulness, Somnolence, Coma Vigil & Coma (62.) Loss of muscular strength & Decubitus (65.) Paralysis (66.) Meteorism & Muscular Agitation (67.) Hoccitatio (68.) Convulsions (69.) Affections of organs of Special Sense. (69.)

The Crisis (p.p. 18, 38, 70.)

Complications & Sequelæ:
Bronchitis (75.) Pneumonia (71.) Multiple Abscesses & Pleurisy (77.) Oedema & Buboes (78.) Abscesses & Bedsores (79.) Gangrene (80.) Erysipelas & Intestinal haemorrhage (81.)

Mortality: Circumstances that influence the rate of (90.)
Prognosis. (94.)
Treatment (96.) Diet & Stimulation (101.)
For relief of distressing symptoms (107.)

## Tables.

d.

9. (p. 93.) Rate of Mortality of Typhus at quinquennial periods of age.

10. (p. 94.) Death rate of Typhus amongst males and females.

## Diagrams.

I, II, III, IV, V, (p. 38.) Temperatures in cases of Typhus.

VI. (p. 42.) Sphygmographic tracings in health and in Typhus.

# Enteric Fever

Definition. (111.)

Aetiology: Predisposing Causes: Sex. (113.) Age (114.) Mode of prevalence (114.) Months & Seasons (116.) Overcrowding and deficient Ventilation. (117.) Exciting Causes (117.)

Symptoms. (130.) Analysis of (149.) Physiognomy (149.) Eruption (149.) Difference between Eruption of Typhus and Enteric (151.) Hyperaemia of skin (153.) Sudamina (153.) Desquamation (154.) Temperature (154.) Pulse (157.) Respiratory Movements (160.) Tongue (160.) Lips and teeth (161.) Loss of appetite & thirst (161.) Meteorism (162.) Gurgling, Abdominal pain, Diarrhoea (162.) Characters of the stool (163.) Haemorrhage. (164.) Headache, &c. (165.) Delirium (166.) Wakefulness, &c. & prostration. (167.) Decubitus, Muscular paralysis & Agitation (168.)

Stages & Duration. (169.)

Relapses. (170.)

f.



## Tables.

## Diagrams.

# Introductory.

Whether from a medical or a sanitary point of view, few subjects possess more interest and importance than the Specific Fevers. For the medical profession, their study possesses interests which almost no other disease presents; and for the people in general, they possess a very peculiar interest indeed: They are a constant source of terror to them; their propagation is to them so mysterious; and the ravages which they have from time to time committed — on a scale so large as in some places to decimate the population — have caused them to call loudly for such measures as may diminish the frequency of visitation, and perhaps ultimately stamp them out altogether. Huge strides have already been made in this direction, and in Glasgow alone, the stamping-out system has been, of late, vigorously pursued — as is evidenced by the pulling down of fever dens, and the erection of houses in their stead, on something like sanitary principles.

It is not, however, the sanitary side of the question that I intend to take up, but I will devote myself entirely to the medical aspect; and, as perhaps, the history, course, and treatment of the two fevers, called

Typhus and Enteric, may not be so generally known as the case of the other fevers, I will confine myself to these two; and only in so far as I myself know them from a experience of them of twelve months duration in The City of Glasgow Fever Hospital at Belvidere.

The name Typhus is pretty generally accepted by the medical profession. It is not so with the term Enteric. Indeed, the more common name for this latter is Typhoid Fever. It would, however, be of benefit to call it by one name alone; for great confusion is created in the public mind by the use of various terms to describe one disease. Thus, in a family, one person may be seized with an illness which the Doctor calls Enteric Fever. Some time after, another member falls ill of the same disease; a new Doctor is called in and he calls it Typhoid Fever; A third member, months or years after, suffers from the same complaint, and a third Physician designates it Gastric Fever. And now that family believes that each of those members has had a different disease. It would, therefore, be much better to use only one of these terms — and that term should be Enteric, as it implies something definite and something that is peculiar to the disease going under that name. We know that in this particular fever, there is

always a lesion of the bowel; and it is but reasonable to think that the name given to the fever should be connected with an invariable character of that disease. The word "Entric" has this connection — being derived from the Greek word, ἔντερον, meaning a bowel. The term "Typhoid" designates a series of symptoms that are not peculiar to this or any one disease; and the word "Gastric" has evidently no right to be used at all in connection with this fever.

Before going on to speak of these two fevers separately, I must mention that I believe in their non-identity; and I hope that in the remarks which follow, I shall be able to show that this view is correct; though a few of the older members of the profession still uphold the doctrine of identity, and refuse to be convinced of the contrary.

shall

# Typhus.

## Predisposing Causes.

From a strict inquiry into the occupation and abode of all the Typhus patients that came under my charge, I am quite satisfied that it is a comparatively rare disease amongst the upper and middle classes;

that when it comes amongst them, it is not in an Epidemic form; and that those attacked have been mostly visitors amongst the poor, such as missionaries and medical gentlemen. There were, however, one or two of the so-called better class, in whom not the slightest clue as to the origin of the attack could be traced. In almost every instance, the patients were poor, and lived in the worst part of Glasgow. As showing that Typhus attacked the poor by preference, the Dorcas Society distributed far more clothing to patients, on dismissal, who had suffered from Typhus than from Enteric. Further, while we were frequently receiving cases of fever from Country districts round about Glasgow, hardly a single case was diagnosed as Typhus.

That Typhus fever, then, as we know it here in Glasgow is encouraged by poverty, and takes deepest root in the most crowded localities, there can be no doubt, and that what may be called its numerical severity is regulated by climatic influences, will be seen by glancing at the following table of Monthly admissions to the Belvidere Fever Hospital in the years 1875-76 and 1876-77:

# Table I.

Monthly Admissions of Typhus to Belvidere Hospital - 1875-1877.

| | | | | | |
|---|---|---|---|---|---|
| 1875. | May | 20 | 1876. | May | 34 |
| | June | 25 | | June | 30 |
| | July | 10 | | July | 14 |
| | Aug. | 18 | | Aug. | 11 |
| | Sept. | 12 | | Sept. | 15 |
| | Oct. | 37 | | Oct. | 11 |
| | Nov. | 85 | | Nov. | 32 |
| | Dec. | 109 | | Dec. | 35 |
| 1876. | Jany. | 43 | 1877. | Jany. | 40 |
| | Feby. | 34 | | Feby. | 21 |
| | Mar. | 38 | | Mar. | 69 |
| | Apr. | 15 | | Apr. | 40 |
| Total. | | 460 | Total. | | 352 |

From this table it will be seen that Typhus is more prevalent in the winter months than at any other time, that it begins to rise about October and diminish decidedly as spring comes on. I may remark that, in my opinion, this decided prevalence in the winter months may be due in part to some atmospheric influence, but is more particularly due to crowding of poor human beings, whom the cold drives together for shelter and warmth.

Besides these two predisposing causes, viz. Poverty, and Low temperature, we must include everything that

tends to lower or weaken the vital energies.

Sex does not seem to have any influence in predisposing to Typhus. In the following table, we have the number of Males and Females admitted to Belvidere Hospital during several years

Table II.

| Year. | Male. | Female. | Total. |
|---|---|---|---|
| 1871 to 72 | 226 | 278 | 504 |
| 1872 to 73 | 144 | 153 | 297 |
| 1873 to 74 | 116 | 112 | 228 |
| 1874 to 75 | 229 | 228 | 457 |
| 1875 to 76 | 247 | 265 | 512 |
| 1876 to 77. | 169 | 183 | 352 |
| Totals. | 1131 | 1219 | 2350 |

Age:

Typhus attacks adults by preference, though no age is exempt from it; and the greater the age the less chance is there of recovery. See the table on the following page, in which the yearly admissions at quinquennial periods of age are given, as also the death rate per cent. at each quinquennial period:

# Table III.

| | 1871-72. | | 1872-73 | | 1873-74 | | 1874-75 | | 1875-76 | |
|---|---|---|---|---|---|---|---|---|---|---|
| Age. | Adm. | Deaths per cent. | Adm. | Deaths per cent. | Adm. | Deaths per cent. | Adm. | Deaths per cent. | Adm. | Deaths per cent. |
| 0-4 | 27 | 3.70 | 20 | 5.0 | 10 | 0 | 22 | 0 | 44 | 6.8 |
| 5-9 | 65 | 0 | 41 | 0 | 30 | 0 | 54 | 0 | 88 | 2.2 |
| 10-14 | 78 | 5.12 | 49 | 0 | 47 | 0 | 92 | 1.08 | 88 | 2.2 |
| 15-19 | 85 | 3.52 | 47 | 6.3 | 42 | 16.6 | 80 | 5.06 | 73 | 6.8 |
| 20-24 | 77 | 8.97 | 39 | 10.2 | 21 | 9.5 | 60 | 15.0 | 64 | 17.1 |
| 25-29 | 33 | 9.09 | 25 | 8.0 | 19 | 21.0 | 37 | 11.43 | 49 | 32.6 |
| 30-34 | 38 | 26.31 | 18 | 22.2 | 23 | 21.7 | 35 | 15.15 | 44 | 13.6 |
| 35-39 | 31 | 16.12 | 22 | 40.9 | 15 | 40.0 | 23 | 17.39 | 20 | 20.0 |
| 40-44 | 33 | 27.27 | 16 | 43.7 | 9 | 55.5 | 24 | 33.33 | 19 | 10.5 |
| 45-49 | 15 | 33.33 | 5 | 40.0 | 7 | 28.6 | 16 | 45.45 | 10 | 60.0 |
| 50-54 | 8 | 12.5 | 9 | 0 | 3 | 33.3 | 9 | 33.33 | 15 | 20.0 |
| 55-59 | 3 | 66.66 | 5 | 0 | 3 | 100. | 5 | 60.0 | 3 | 33.3 |
| 60-64 | 7 | 57.14 | 0 | 0 | 1 | 0 | 4 | 75.0 | 1 | 100.0 |
| 65-69 | 3 | 33.33 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 70-74 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 75-79 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

It is quite probable that a larger number of the children here certified as having Typhus, were only admitted along with their parents; or were slightly unwell when some member of the family had Typhus.

## Exciting Cause.

The exciting cause of Typhus is, of course, a specific poison, given off from the body of a person infected with this fever; or as Murchison says (p. 79, Ed. II.) it may be generated de novo. That Typhus is very easily contracted by contagion there can be no doubt — my own seizure having been thus acquired; and Murchison gives the following reasons for the belief that Typhus is contagious: *

" 1. When Typhus commences in a house or district, it often spreads with great rapidity.

" 2. The prevalence of Typhus in single houses or in circumscribed districts, is in direct proportion to the degree of intercourse between the healthy and the sick.

" 3. Persons in comfortable circumstances, and living in localities where the disease is unknown, are attacked on visiting infected persons at a distance.

" 4. Typhus is often imported by infected persons into localities previously free from it.

" 5. The contagious nature of typhus is indicated by the success attending the measures taken

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* Murchison on the Continued fevers. Ed. II. p. 80. London. Longmans, Green, & Co. 1873.

to prevent its propagation, more especially the early removal of the sick."

A person, having received the Typhus fever poison then (Either by direct Contact or by inhaling the exhalations from skin or lungs of an infected person) goes about for a longer or shorter time, without any of the manifestations of Typhus showing themselves. This, which is the period of Incubation, has been differently fixed by different writers. The most recent observations, however, go to show that this period is seldom longer than 11 or 12 days, at the end of which time the symptoms set in. In one case, namely that of my nurse, I can definitely fix the period of incubation as within 17 days; for it was exactly 17 days after she began to come in contact with me during my illness that her symptoms set in. Though she may have received the poison on the first day, it is quite probable that it was not for several days after. (In passing, I may add that this was the second time that this nurse had suffered from Typhus Fever.)

Before giving an account of the symptoms as experienced by myself, and as witnessed in others, I would add that the period during which a Typhous patient is most infectious, seems to be during convalescence. Sometimes it happened that a Typhous patient was put into an Enteric Ward by mistake, & was too weak to be removed with safety. So long as the fever was on him & so long as he was kept in bed, we considered that the Enteric patients about him, were in no danger; but no sooner was convalescence fairly established than he was removed to the proper ward.

## Symptoms of Typhus.

The onset of an attack of Typhus, unlike that of Enteric Fever, is usually sudden; though, for the first two or three days after seizure, the patient can, in most cases, follow his employment. Nearly every patient has his own story to tell of the cause of his illness; & some of these are rather startling and ludicrous: One blames it on a cold; another on a wetting; a third on a ~~wetting~~ fall, & so on.

The first noticed that the person may have of

his being ill is most likely a dislike to some article of diet, of which a few days before, he was particularly fond; and if he is a smoker, a few whiffs satisfy him. Most commonly, however, the patient dates his illness from a shivering, and a desire to be always near the fire. With this comes a feeling of languor, and in the great majority of cases, a slight headache; and very likely the patient may tell you that he has often had the same feelings before when his stomach or liver was disordered, and that if he had a smart purge, he believes he would be all right. But very soon, he finds it otherwise. The feelings, already mentioned, become aggravated, the headache & pain in back increase – the latter not being removed by any alteration in position. The sleep becomes disturbed, or the person believes he does not sleep at all, and complains greatly of darting pains in his limbs. The tongue becomes coated with a slightish fur, and the mouth acquires a nauseous taste. Appetite for food fails entirely, but this is replaced by a great desire for water or some other liquid. The bowels are constipated, & the urine is scanty and high coloured. For the first two or three days, the pulse will be about 100, and the temperature a degree or two above normal. The conjunctivæ become suffused,

the eyelids tumefied, and the eyes water. The face becomes flushed & dusky: The flush is a deep one, and bears the same resemblance to the flush of Enteric, that the colour of a deep crimson rose bears to a pale pink one. At first, the face has rather a wearied expression, but very soon, it becomes dull and expressionless. Sleep is unrefreshing and is disturbed by painful dreams. When awake patient is quite conscious, though memory may be failing, and he answers questions somewhat incoherently; but in his dozing moments he mutters, and perhaps repeats again and again some inscription he has lately seen. With these symptoms there is rapidly increasing prostration; the gait becomes tottering, the hands shake, and the tongue may be tremulous. Generally, between the third and fourth days, the weakness is such, that the patient is compelled to keep to his bed.

Up to this point, the diagnosis of Typhus cannot be certain; but most commonly on the fifth day (though there may be variations of a day) there appears the characteristic eruption over the body, which is the definite guide. This rash consists of small red spots, not raised above the level of the skin, or only almost imperceptibly

raised. These spots vary in ~~the~~ size from a pin point to 3 or 4 lines in diameter; and, on their first appearance, are removable by pressure. They may be isolated, or grouped together, in irregular patches; and if the eruption is very copious, it very much resembles that of measles. Hence the name, morbilliform or measley rash sometimes applied to it. I have said that this eruption appears over the body, but the best position to look for it is about the shoulders, especially in the hollow in front of the head of the humerus. It is also usually very well seen on the arms and legs, and backs of hands and feet. Should, however, the case be a very sharp one, the typical spots can be easily recognised over all the body, except perhaps on the face; and even there it is sometimes seen; but that more especially in children, in whom, if a large dose of the poison has been imbibed, the eruption takes on a very measley character; indeed, in some cases, it is difficult to differentiate the two.

The spots do not come out in crops as in Enteric; but all appear at once, or follow on one another; and very frequently, their appearance is preceded by a deep blush on the skin, especially on chest and abdomen, which, in some cases, very much resembles the redness of scarlet fever. Several

cases have come under my notice which have been sent to the hospital with this hyperaemic condition of the skin, under the belief that the patient was really suffering from Scarlet fever.

As was before remarked, the spots, unlike those of Enteric, are very little if at all raised above the skin; but like them, are at the beginning light in shade and are removed by pressure. At this stage, if care is not taken, they may even be mistaken for the rose spots of Enteric Fever. After the first day or two, however, they are not influenced by pressure; and become darker in colour, till at last they acquire a purple hue. The more severe the case, the deeper is this hue, and the longer do the spots remain visible. They usually persist throughout the course of the fever; but, about the 10th., or 11th. day they begin to be less distinct, and to shade off into the skin, which in Typhus, is universally dark & dirty-looking; thus presenting a strong contrast to the cutaneous surface of the patient with Enteric fever, in which it is always of a very characteristic paleness.

Though it is necessary, before saying that a case of fever is Typhus, to see the eruption, it is not always easy to do so; for, there may be only a very few spots, or they may be only

very faint, and appear as if hidden away deep beneath the skin. (To this ~~last~~ latter appearance, the term "subcuticular" has been given, and those very pale spots are usually more or less mixed with the darker spots, which in the later stages, resemble brown stains.

About the eighth day, if any headache has been complained of, it disappears; and delirium, varying in intensity, supervenes. The conjunctivæ become more deeply congested; the face more dusky and the expression more dull and stupid; the tongue becomes dry, brown, and rough down the centre. The teeth and lips are covered with sordes, which are often difficult to remove. The mouth becomes exceedingly foul, and there is more or less pain in the pharynx complained of when swallowing. The prostration becomes extreme, and the nervous excitement increases, being most marked during the night; as a consequence the prostration is greatest in the morning. The tongue becomes more and more tremulous, and is with difficulty protruded; when out, it remains – the patient evidently forgetting to draw it back. In severe cases, there is subsultus or muscular contractions. The pulse rises to about 120, and though very often full & soft, is often

weak and compressible. At this stage, the temperature may be 104° Fah. or higher in the evening, and 102° in the morning. The breath is exceedingly foetid and the skin exhales an offensive odour, which is quite characteristic & is that for which fever nurses have a great failing for resting their diagnosis on. The skin is cooler and has not the dry, harsh, feeling of the first week. Constipation continues; but the delirium, which was most probably at the beginning of an acute nature, becomes quieter; and the patient falls into a muttering state.

After about four days more; that is, about the twelfth day, the nervous excitement diminishes, and is succeeded by a state of nervous depression, which is the most anxious-making part of the whole course of the fever; for, at this point, the depression, unless counteracted, may fall into a state of collapse. The patient is exceedingly weak: He lies on his back moaning and has a tendency to sink to the foot of the bed. He does not think of drinks, & takes no notice of surrounding objects. The eyes remain closed, and the pupils more or less contracted. Subsultus in-

increases. and the fingers may ceaselessly pick the bed clothes. Deafness is usually present; & the patient evacuations take place, unknown to himself, in bed. When spoken to in a loud voice, he will stare vacantly, and seem to rouse himself; and this is a sign of returning consciousness. During all this time, though he may be quiet, his brain is Active, and he conjures up the most horrible fancies: He believes those about him, nurses and doctors alike, are his enemies, and may cry aloud to be removed from their torturing influence. The tongue is dry, hard, and contracted. It can, with difficulty, if at all, be protruded. The teeth and lips are encrusted with sordes, and there may be difficulty in swallowing. The pulse is very compressible, and the respiration rapid – 25 or 30 in the minute. The abdomen is usually flaccid, though sometimes tympanitic. Gradually the urine becomes more copious, paler, and of low specific gravity, and the alvine evacuations become more frequent. The skin is cooler and moister; and the spots, of a petechial character, become more numerous. At this time, bed sores are apt to form on the parts exposed to pressure & the pulse becomes

very weak, compressible, and it may be, irregular. The nervous depression may sink into profound Coma; or hypostatic Congestion of the lungs supervenes; the breathing becomes depressed, mucus collects in the bronchi and cannot be expelled; or, finally, the heart's action fails. The pulse becomes imperceptible, the skin cold and clammy, and life, as it were, simply goes out.

But when there is a favourable termination, the crisis usually takes place on or about the twelfth day — when I say twelfth, I mean in my experience, for, I am well aware that the 14th day is generally stated to be the day of crisis. This may be accompanied or ushered in by profuse perspiration and a deposit of lithates in the urine. The patient falls into a sound sleep for several hours, and awakes to a consciousness of his great debility. At first, he seems surprised but by and by, recognises faces and objects. His temperature makes a sudden fall, and his pulse rapidly drops in frequency, And may even descend below its normal. The thirst gradually leaves, and the appetite

for food returns. If the patient has been at all vigorous previous to his attack, the health is rapidly regained; and at the end of a fortnight or three weeks convalescence is usually perfectly established.

The foregoing history is of a sharp case of Typhus, but there are all grades from this. Sometimes, the tongue may be almost normal in appearance throughout; the pulse may not rise about 100, and the temperature may be not much above normal. The rash may be almost imperceptible; and then we are only convinced of the true nature of the case by a study of the history, and by knowing whether Typhus is epidemic at the time or whether other members of the household have it.

# Illustrative Cases.

## Case I.

Typhus Fever of Moderate Severity. Convalescence on 15th day: Lawrence L— aet. 14, Adm. to Belvidere Hospital, July 25th 1876. Two days previous to admission, had first felt unwell, with severe headache. There was

typhus fever in the same house.
Conjunctivæ are suffused; pupils normal; face dusky; tongue covered with thin white fur; no eruption; bowels costive. Ordered tepid sponging, beef tea and milk.
July 26th (3rd day.) Pulse 96. Slept well. To get Castor oil. (Evening). Very quiet, doesn't drink much. Conjunctivæ more suffused & face deller. Pupils dilated. Pulse 96. Temp. 103°.6 F. Hot pack for half an hour. (July 27th (4th day): Bowels opened once. Tongue becoming dry. Pulse 104. Temp. 102°.7. (Evening): Pulse 104. Temp. 104°.6. Rash just appearing in the form of almost imperceptible points about shoulders. July 28th (5th day.): Pulse 96. Temp. 103°. Bowels opened once during the night & temp. seemed to come down a little after that. Rash very distinctly marked to-day on chest and arms, and consisting of small red spots, still disappearing on pressure. Strong smell from body. July 29th (6th day). Rash still more evident. Pulse 108. Temp. 103°.6. (Evening): Slightly delirious. Head to be shaved & tepid sponging continued. July 30th (7th day.) Pulse 108 & wiry. Temp. 103°. Almost constantly sleeping. Tongue very dry, & furred at sides. Conjunctivæ much injected. Pupils dilated. Very

strong typhous smell. Hot pack for three-quarters of an hour and cold affusion to head. Temp. before hot pack 104°.2. After it 103°.2. Pulse immediately after 116; ten minutes after 108. Not so drowsy after affusion. Rash does not disappear on pressure. July 31st. (8th day): Mutters a good deal & is partly comatose. Requires to be roused to take drinks. Packed in cold wet sheet for ¾ of an hour. Livelier after it. Before cold pack, temp. & pulse 104°. & 120; after 102°.4, & 100. Rash becoming less distinct. Ordered a little hot wine. Aug. 3rd. (11th day.): Very restless during the night and with difficulty kept in bed. Breathing heavy. Very deaf. Temp. 104°.6 & pulse 116. To get hot pack & cold cloths to head. Aug. 4th. (12th day.): Not now delirious. Slept well since hot pack. Temp. 102°.4. Pulse 104. Tongue moistening.

Continued to improve from this date. Was put on diet, and allowed to get out of bed on August 16th. Dismissed well on 24th. September 1876

The following are the morning and evening temperatures in axilla, and pulsation at wrist, in this case:

## Table IV.

| Day of Fever. | Temp. M. | Temp. E. | Pulse. M. | Pulse. E. | Day of Fever | Temp. M. | Temp. E. | Pulse. M. | Pulse. E. |
|---|---|---|---|---|---|---|---|---|---|
| 3 | | 103°.6 | 96 | 96 | 12 | 102°.4 | 103°.6 | 104 | 108 |
| 4 | 102°.7 | 104°.6 | 104 | 104 | 13 | 102° | 104°.3 | 100 | 100 |
| 5 | 103° | 104°.4 | 96 | 104 | 14 | 99°.8 | 103°.9 | 88 | 104 |
| 6 | 103°.6 | 104°.6 | 108 | 112 | 15 | 98° | 99°.1 | 84 | 92 |
| 7 | 103° | 104°.6 | 108 | 116 | 16 | 98°.4 | 100°.1 | 84 | 96 |
| 8 | 103°.8 | 104°.4 | 116 | 124 | 17 | 97°.1 | 98° | 64 | 68 |
| 9 | 103°.1 | 104°.6 | 116 | 125 | 18 | 96°.4 | 97°.6 | 60 | 68 |
| 10 | 103°.6 | 105°.2 | 112 | 124 | 19 | 97°.8 | 98°.4 | 80 | 72 |
| 11 | 103°.6 | 104°.6 | 108 | 116 | | | | | |

## Case II.

Mild Case of Typhus Fever.

Thomas Mc. W. — æt. 25. Adm. 21st. June, 1846. Took ill 10 days before admission, with pains in back & head, and shivering. History of contagion. At present complains of pain throughout body. Countenance markedly dusky. Conjunctivæ deeply injected, & pupils dilated. Tongue covered with thin white fur, but moist. Typhus spots well marked on chest and arms - not disappearing on pressure. Pulse 122, pretty full, though a little soft. Bowels regular. Ordered hot

pack, milk & beef tea. June 22nd (11th day.) Seemed easier after the pack. Slept at intervals during the night. Pulse 104, Good. Tongue moist. Not drinking much. June 24th (13th day.) Sleeps well. Pulse 108. Complains of being sick. To get 3ij Spt. Chlorof. & 6 oz. Wine. June 25th (14th day). Pulse only 100. Tongue beginning to clean at tip. Skin very hot. To be sponged every hour. Forward evening, pulse was still cleaner & rash gone. June 26th (15th day.) Pulse 92 & good. As skin hot, however, to get hot pack. While in it, perspired freely. Bowels costive. One ounce of Castor oil. June 27th (16th day.) Doing well. Pulse 88. For four days, his pulse has been coming down four pulsations in the minute each day. Was permitted to get out of bed on 2nd July; & dismissed 22nd July, 1876.

## Case III.

Typhus Fever of Moderate Severity. Collapse on 15th day. Recovery. Alex: Mc G. — act. 10. Adm. 6th June, 1876. Three days before admission, patient first felt ill with "a dizziness in his head". The whole family are in Hospital with Typhus, & the father died two days previously from it.

Appearance of face not abnormal; tongue has only a very thin coating of yellowish fur; no definite eruption; slight diarrhoea. Pulse 124 & of fair strength. Skin pungent. Ordered milk, beef tea and frequent tepid spongings.

June 7th. (4th day.): An eruption has begun to appear on breast and arms, consisting of minute red spots disappearing on pressure. Scattered here and there over the body are blue marks, some of which closely resemble Taches Bleuâtres. Others are evidently caused by blows or pinches. Slept well during the night. Pulse 100. White fur on tongue. Had one motion, loose, but healthy looking.

June 8th. (5th day.) Didn't sleep well & was slightly delirious. Has a sensation of dizziness and pain in head & feels as if he would like to sleep. Tongue red at tip. Pulse 128, full and bounding. Head to be shaved, & evaporating lotion applied. Frequent sponging of body. To be kept on milk and beef tea. No spirituous stimulants. (Evening) Slept after shaving of head. Slight subsultus in hands. To get 2 oz. Wine. June 9th. (6th day): Sleeps well. Pulse 120 & weak. Rash all over body, but some places not disappearing on pressure. Temp. about 104°F. 4 oz. Wine & eggs. June 11th. (8th day): Pulse 128. Skin very hot & dry. Ordered 2 drams Liq. Ammon.

[Ac

June 13th. (10th day.) : Tongue a little cleaner. There is a decided diminution in the heat of the skin, which has not the same harsh feeling. Pulse 116. June 15th. (12th day.) Sleeps well. Tongue cleaning nicely. Pulse 112. Takes nourishment well. Bowels confined. 3ß. Castor oil. Temp. falling. June 18th. (15th day.) : Was called early to see patient. He had fallen into a somnolent state & dozed continually. Extremities cold & pulse flagging. Face clammy and eyes sunken. Wine stopped, & brandy (hot) given instead. Warm bottles to feet. Large sinapism to chest and abdomen. Friction of limbs. (Evening): Much better. Pulse firmer 96; he is more lively & speaks readily. June 19th. (16th day.) Decidedly better this morning. Quite lively. Tongue a little foul, however. Skin cool but not cold.

Patient continued to improve; was out of bed on 22nd. June, and dismissed 29th July, 1876.

## Case IV.

Typhus Fever. Severe delirium. Subsultus. Coma Vigil. Death 13th day.

James C. — æt. 22. Adm. 11th May, 1876. Had taken suddenly ill 7 days before, with severe frontal headache, which, however, soon left; but next day he had a violent "shaking", and pains all over.

Face is extremely dusky, dull, and expressionless. Conjunctivæ deeply suffused. Pupils normal.

Tongue has brown coating of fur and is dry. Sordes on teeth. There is slight but decided mottling over the whole body - in some places being petechial. Pulse full, 100. Temp. 102°.3. Ordered milk & beef tea and frequent spongings.

Had a slight motion during the day; at night, became very restless and mildly delirious. Called loudly for some food & complained of hunger. Pulse 100. Temp. 104°.2. Head to be shaved. May 13th. (9th day.). Passed a very restless night and did not sleep. Dry brown line down centre of tongue. Rash has become very petechial & whole body exceedingly dusky; from which, also a nauseous odour arises. Bowels moved. Pulse 100. Temp. 103°. May 14th. (10th day.) Slept only a very little and was more delirious. Bowels loose. Pulse 88. Temp. 102°. Tongue very foul and brown. Thirst great. Eyes deeply injected. Ordered Eggs & 4 oz. Brandy, hot pack and evaporating lotion to head. May 15th (11th day) Didn't sleep at all during the night. Muttered all the time. Sees "imps" on the walls, and picks the bed clothes. Tongue dry, brown and baked, and with difficulty protruded. Teeth covered with sordes. Eyes bloodshot. Pulse 84 Temp. 101°.6. Very thirsty. Urine

drawn off by Catheter. May 16th. (12th day.) Has very noisy and restless last night. Had to be confined both by sheet and jacket. Got 20 grs. Chloral Hydrate 10 grs. Potassii Bromidi, but without Effect. Whole body tremulous + subsultus very prominent. Legs and arms jerk. Pulse 100 - Weak + wiry. Changed 4 oz. Brandy for 8 oz. Wine, and to get 20 grs. Pot. Bromid. every 4 hrs. This had no effect, and in the Evening, he was as restless as ever. Then got Chloral. Hyd. grs. 30 + Pot. Bromid. grs. 20. Did not sleep even with this; the same repeated but still no Result. Pulse became very weak. Continued constantly awake and muttering. Was unable to put out tongue. Subsultus Continued till death on 17th May, 1876.

## Case V.

Typhus Fever with severe Cerebral symptoms, and Lung Complication. Death on 16th day. Autopsy:

Alex. R. — aet. 20, Adm. Aug. 17th, 1876. Had been ill 8 days before admission. Couldn't speak well, the was so weak that it was deemed inadviseable to question him much. Conjunctivae much injected. Typhous eruption well marked.

Tongue dry and covered with yellow fur. Pulse feeble & 124. Very strong typhous smell. Bowels relaxed; motions dark coloured & foul-smelling. Slightly delirious. Ordered to have head shaved & cold cloths applied to head; hot pack & 6 oz. Wine. Aug. 18 (9th day.) Was called early in the morning to see patient as he had turned suddenly worse. Found him breathing heavily, and with mucous rales in throat and chest. Ordered mustard poultice to chest and the administration of a stimulating expectorant and brandy. Shoulders raised. On returning at 11 A.M., found him a little revived and breathing freer. He speaks freer. Pulse 140. Tongue very foul. Rash very marked & petechial on hands. Stench from body very bad. Passes urine freely. Had 1 motion during the night. No muttering. Eyes much suffused. Ordered Mustard poultice to back; to be followed during the day by linseed poultices, alternately on back & breast. To get 8 oz. Brandy and eggs. Aug 19. (10th day.) Didn't sleep at all during the night. Is delirious again. Tongue thickly covered with dark fur & teeth with sordes. Swallows well. Passes water in bed, and moans a great deal. The

smell that arises from body is sickening). Pulse 132. Temp. 104°.1. To be put in hot pack for ¼ of an hour. Aug. 20. (11th day.) Patient is very wild, and one of the nurses can't go near him, as he tries to strike her. Keeps constantly muttering. Smell very bad. Pulse fair. Tongue very foul. Not so feverish. Passes urine & motions in bed. Drinks well. Wheezing begun to-day again. Poultices to be applied and stimulating expectorant given every hour. Requires to be confined by sheet. Aug. 21. (12th day.) As wild as ever. Swears, kicks, strikes. Tongue moist, but very foul & tremulous. Pulse 120. Eyes clearer. Mucous rales in chest. Another poultice to back. Aug. 22. (13th day.) Not so well this morning. Slept none all night. Had one motion, and passes water freely. Breathing long and noisy. Sleeping in morning. Pulse good & 140. Skin pungent. Ordered hot pack. Aug. 23. (14th day.) Copious deposit of lithates in urine, and evident abatement of severe symptoms. Tongue still dirty but moist. Eyes clearer & more intelligent. Aug. 24 (15th.) Towards evening patient seemed to get worse, and didn't sleep at all during the night. Raving a deal, but breathing moderately fair,

As is also his pulse, which is 112. Aug. 25 (16th.) Had a terrible night. Was very delirious and restless. Tongue & mouth foul. Breathing much impeded; his pulse is so weak that it can hardly be felt. Shoulders were elevated; poultices applied; got Expectorant Mixture and frequent doses of brandy; but all in vain & he died at 1.5, A.M.

**Autopsy**: (48 hours after death).
Rigor mortis complete. Purple discolouration on posterior parts of body. Pleurae adherent at right apex. Thick layer of lymph along posterior surface of left lung and corresponding part of parietal pleura. Hypostatic Congestion at bases of both lungs, which are also studded throughout with small collections of pus. Pericardium contains about 6 drams of clear fluid. Blood fluid & black. Stomach distended with air. All the internal organs are more or less congested, especially the liver, kidneys, spleen, membranes of brain & lower portion of bowel. Gall bladder full, and upper portion of bowel tinged with bile.

# Case VI.

Typhus Fever with Delirium Ferox, subsultus, Diarrhœa, and vomiting. Death on 13th day.

John Mc. D. — æt. 23, Adm. 19th May, 1876. Patient took ill 7 days before admission while at work, with "a rumbling in his bowels, and a buzzing in his head." He went to bed that night and has kept it ever since. For three days, his bowels were very loose, & the Stools (patient himself says) were of the colour of pea soup. He became gradually weaker, and on admission, could hardly stand on his feet. At present his chief complaint is of pain in his head, but he has no pain in his abdomen. There is a very distinct eruption on breast & abdomen — the spots being petechial and dark coloured. Tongue coated with white fur. Very thirsty. No appetite. Face dusky, and anxious and eyes suffused. Body cold. Pulse 96. Temp. 103°.8. Ordered hot bottles and warm drinks, milk & beef tea. (Evening.) Was called hurriedly to see patient and found him in great agony with Cramp in Stomach, and vomiting. Mustard poultice at once applied to Epigastrium & brandy

and lemonade (in the absence of sodawater) given internally. Pain soon left, but he continued to vomit more or less all night - the vomited matter consisting nearly of pure bile. Bowels costive & to get R. Pulv. Calomel, P. Scammon., Pulv. Sodae. Bicarb. aa 5 grs. May 20, (8th day.) The Typhus rash is very distinct and petechiæ to-day, and there are three very plainly marked blue patches of Taches Bleuatres on chest. Pulse 120. May 21. (9th.) Patient did not sleep well during the night, and when he did it was disturbed. Moaned a great deal. After the powder he got yesterday, the vomiting ceased, pain left, and he had 4 motions. He felt much relieved. To-day, the rash is very distinct and decided - in fact, uncommonly so, & the Taches Bleuatres persist. Pulse very weak. 6 oz. Whisky instead of 4 oz. Brandy. Eggs also given. Eyes very much suffused & delirium beginning. Head shaved. May 22, (10th day.) Vomits nearly everything he takes. Eggs to be stopped. When he does not vomit, diarrhoea commences. Pulse 120. May 23, (11th day.) Patient has been rather

delirious & very difficult to please. She coolly wrapped his head in a blanket and broke a pane of glass. (Evening) Patient has been extremely delirious all day, and getting out of bed. Had one large motion (Coloured with bile). Vomited twice. Eyes bloodshot. Pulse 148 & weak. Evaporating lotion to head. Confined by sheet, & to get 20 gr. Chloral Hydrate & 30 gr. Potassii Bromidi.

May 24th. (12th). Did not sleep after the draught last night, tho' he was quieter. He has subsultus tendinum. Can't protrude tongue. He is delirious and talking a deal. Pulse weak. To get 30 m. Tr. Opii & 15 M. Spt. Ammon. Aromat. every two hours if no sleeping. (Evening) Slept for at least 3 hours during the day, and is at present sleeping. She did not rally, however, but gradually sank and died early in the morning of May 25, (13th day). A post mortem Examination was denied.

The following are the Temperatures in this case:

Table V.

| Day. | Morning | Evening. |
|---|---|---|
| 7th | | 103°.8 |
| 8th | 102°.4 | 103°.2 |
| 9 | 102°.4 | 103°.2 |
| 10 | 102°.2 | 102°.4 |
| 11 | 100°.4 | 104°.2 |
| 12 | 102°.4 | |

# Analysis of Principal Symptoms.

## a. Physiognomy:

The appearance of the face in typhus is decidedly characteristic. The skin is of a deep, dull, dusky, brown colour, something like that which one has seen in an old highlander, living in a smoky hut. It is often more or less flushed too — when it has a bronzish look. In very severe cases, it may be livid. The minute vessels of the conjunctivæ are deeply injected; the pupils usually contracted; and the whole eye is dull, dead, and expressionless. In delirium ferox, however, the eye may be glaring and defiant like that of an intoxicated man. In the later stages the lower jaw droops, & the eyelids remain half open; and if to this be added the dry, brown tongue, and the sordid ~~teeth~~ and lips, we have the typical face of a typhus patient. The more severe the case, the more marked are those appearances.

## b. Appearances presented by the Skin.

1. Typhus eruption: Usually about the fifth day of the fever, this makes its appearance,

and consists of small darkred elevations, from one to four or five lines in diameter. They are darker than those of Enteric, not raised so high above the surface of the skin, and, like those of Enteric, they disappear on pressure, but that only for the first day or two. Usually at the end of the second day of their existence, they are only partially removed by pressure. Later on, they are not removable at all, are not above the level of the skin, and are much deeper in colour; they become livid in fact, or of the appearance of the discolorations seen on the dependent parts of a body after death. The eruption may consist of only a few of those spots, isolated, or, numbers of them may be run together into patches of larger or smaller size. Along with it, and between those deeper patches are others of a fainter tint, appearing as if deep in the tissues: Hence called "subcuticular". It does not follow that those different stages are always seen; for, from the beginning, the eruption may be quite petechial; or, in mild cases, they may be pale pink all through.

The spots on the dependent parts of the body are always darkest; so that, in doubtful cases, the back should always be examined. The

darker and more plentiful the eruption, the more severe the fever usually is.

Along with the true eruption, in the early stage, there is very frequently, a hyperaemic state of the whole skin – the redness disappearing under pressure of the hand, but reappearing immediately; and sometimes this hyperaemia is so great, that it resembles very much the rash of Scarlet Fever, as previously mentioned. I have seen two such cases, which were actually sent into the Hospital as suffering from Scarlet Fever.

The eruption is usually most abundant on the chest, about the shoulders, and in the Epigastrium. The best position to look for it is the anterior fold of the axilla. The arms and legs, and backs of hands and feet, should also be examined. It is not common on the face, except perhaps in very severe cases, and in children. When the subcuticular mottling dies down, the eruption becomes more spotted.

The spots do not come out in crops, as in Enteric, to quickly die away and give place to others; but as they come out, they remain, are visible for from 7 to 10 days;

and die down with the fever. In one of my cases, however, where the spots were very petechial, they remained for some days after the temperature was quite normal.

The eruption of Typhus is very rarely absent, and we are not justified, in my opinion, in diagnosing a case of fever to be Typhus, without the eruption, unless there are other members of the same family or household, who have it in an undoubted form, or, unless we can trace direct contagion.

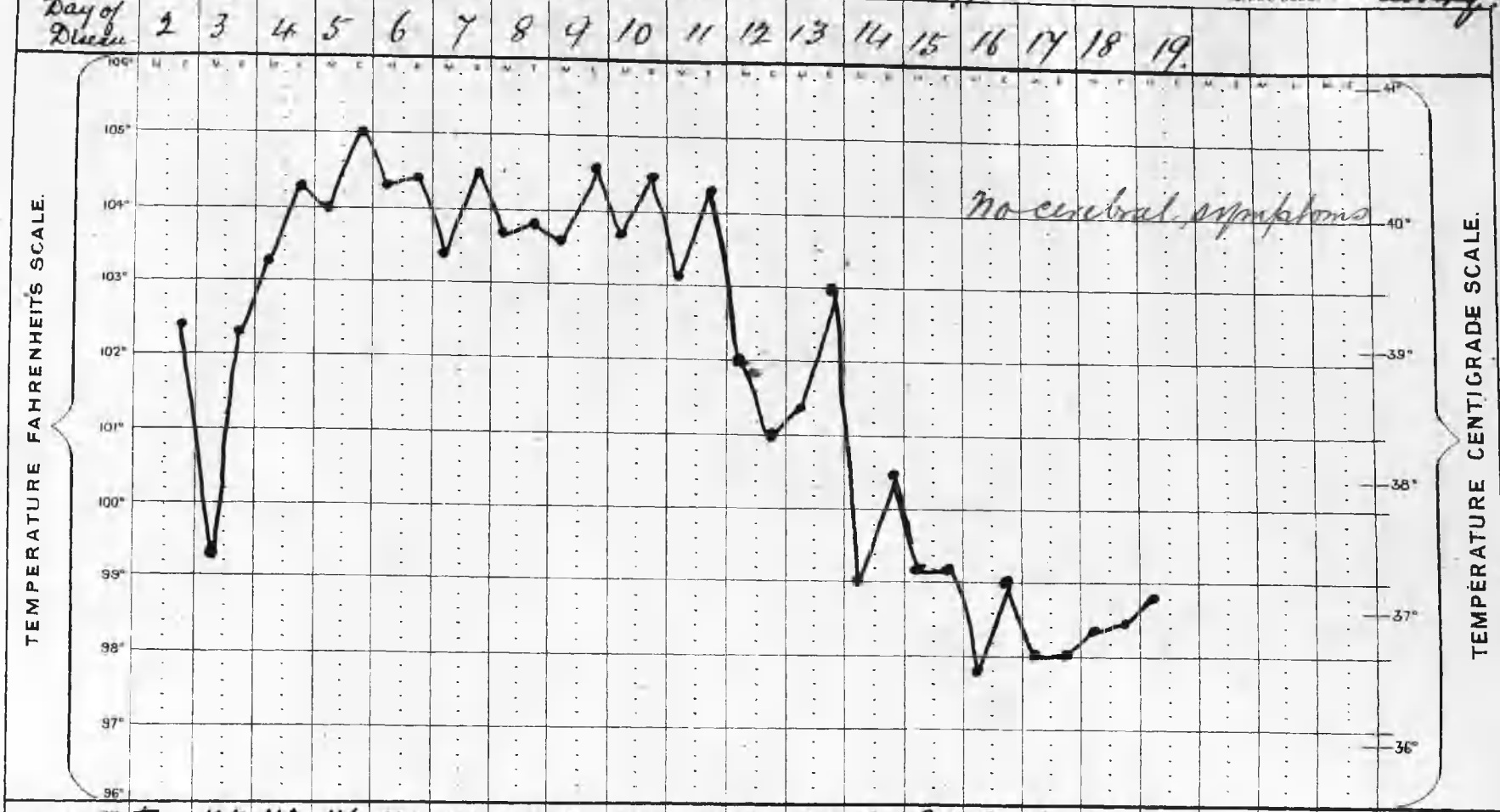
2. Taches Bleuâtres: These are light or dark blue discolourations on the skin, varying from the size of a sixpence to a fifth of that size. Though they are said to be more common in Enteric Fever, I have seen them thrice in Typhus. In one Case (Case VI., page 31.), there were only three patches on the right breast; in another they were very numerous, and were scattered all on the anterior part of chest & abdomen. Two of the cases died. The appearance they present is as if the finger point had been dipped in light blue paint & then placed on the skin.

3. Sudamina are also to be seen, but they are not so common as in Enteric. They occur on the chest and abdomen and are chiefly found in young adults. They are usually associated with perspiration. In two cases, did those vesicles become pustular, and in one of the patients, they covered the whole body and very much resembled those of small pox. The man died.

4. The Temperature in Typhus rises suddenly, and attains its maximum, usually about the fourth or fifth day, or when the eruption is appearing. The maximum temperature is about 104° F. or 105° F, and before defervescence, the difference between the morning and evening temperature is about a degree or a degree-and-a-half. After attaining its maximum, there is little difference for three or four days, but about the 7th there is usually a remission, and the temperature gradually falls until about the 12th or 14th day, when it speedily drops to normal. This complete subsidence about the 12th or 14th day is highly characteristic of Typhus, and is the cause of Sir Thos. Watson's using the quotation "At such an hour the fever left him".

Diagram I.

Name Margt. Hitchison Age 13. Disease Typhus Result Recovery.



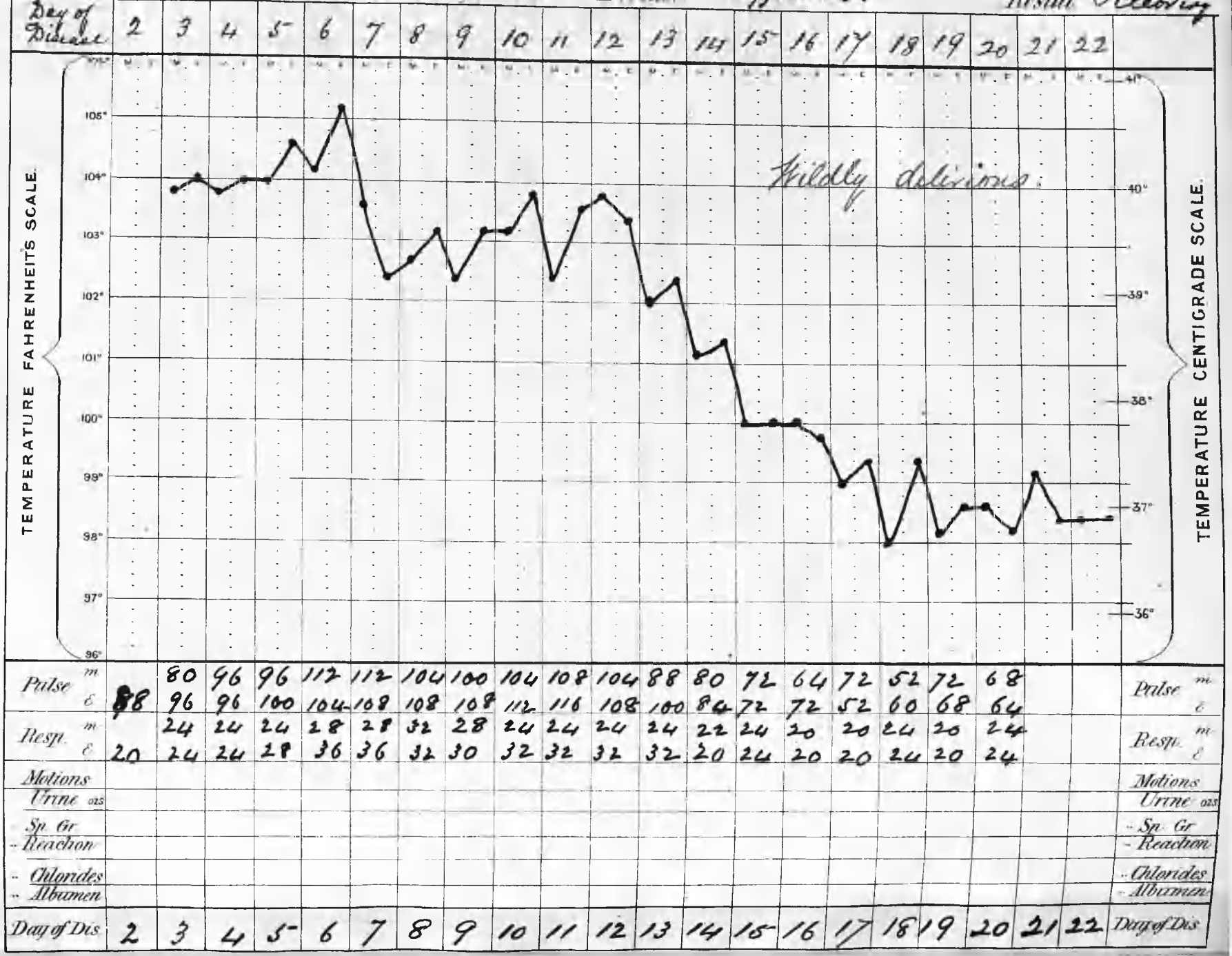

| | | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pulse | m | — | 105 | 113 | 116 | 120 | 112 | 125 | 116 | 124 | 112 | 96 | 92 | 88 | 88 | 92 | 80 | 80 | 100 |
| | e | 125 | 112 | 120 | 112 | 112 | 120 | 128 | 124 | 112 | 102 | 96 | 120 | 80 | 72 | 72 | 68 | 80 | |
| Resp. | m | | | | | 33 | 32 | 32 | 48 | 56 | 44 | 48 | 36 | 32 | 24 | 20 | 20 | 28 | 20 |
| | e | | | | | 32 | 32 | 44 | 52 | 44 | 56 | 36 | 36 | 28 | 20 | 20 | 20 | 28 | |
| Motions | | | | | | | | | | | | | | | | | | | |
| Urine ozs. | | | | | | | | | | | | | | | | | | | |
| " Sp. Gr. | | | | | | | | | | | | | | | | | | | |
| " Reaction | | | | | | | | | | | | | | | | | | | |
| " Chlorides | | | | | | | | | | | | | | | | | | | |
| " Albumen | | | | | | | | | | | | | | | | | | | |
| Day of Dis. | | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |



REYNOLDS, 13 BRIGGATE LEEDS.

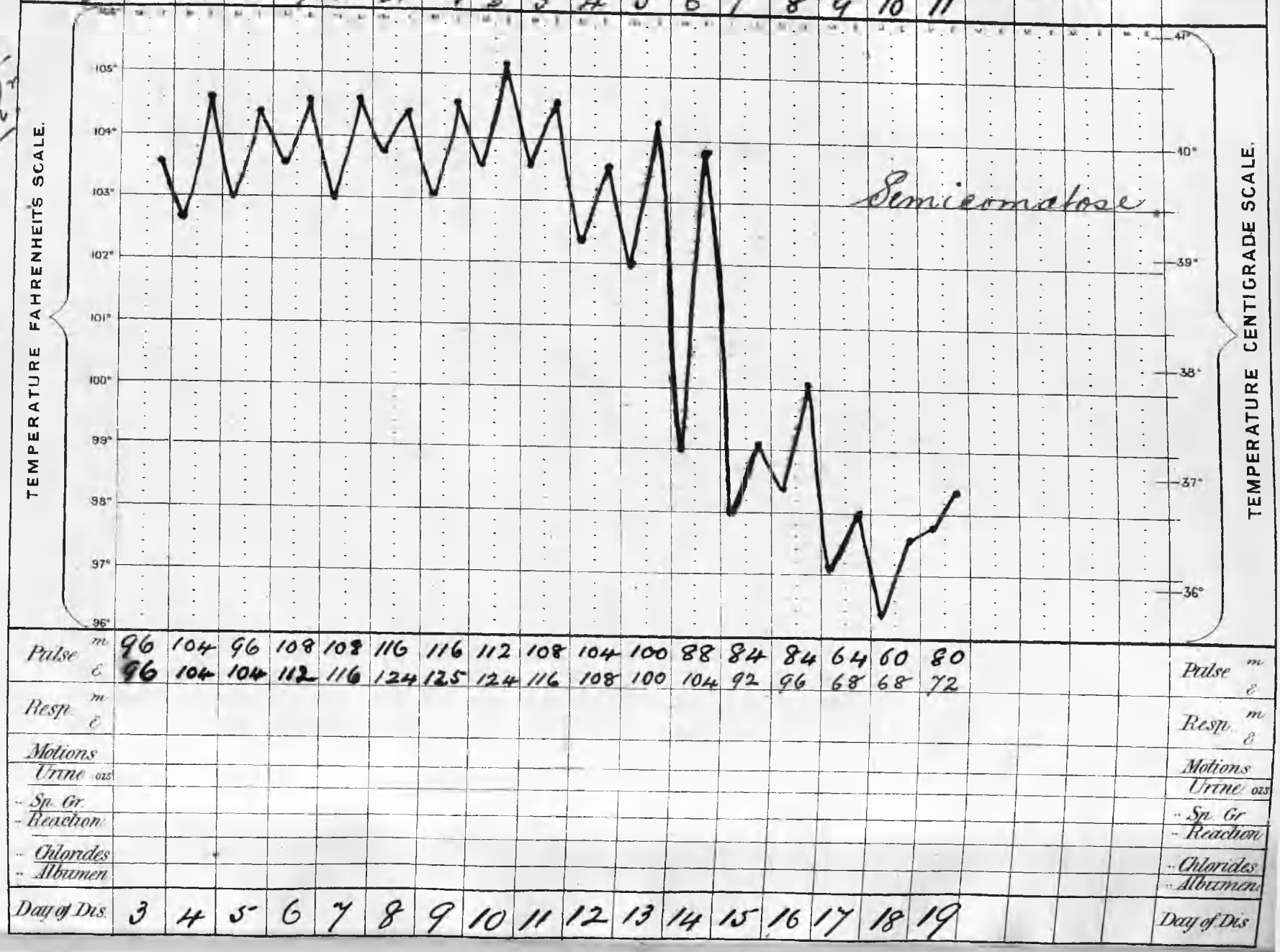
Diagram II.

Name James Hickeson. Age 22 Disease Typhus. Result Recovery



Name Lawrence Leonard Age 14. Disease Typhus. Result Recovery.

Diagram III Fah.




| | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pulse | m | 96 | 104 | 96 | 108 | 108 | 116 | 116 | 112 | 108 | 104 | 100 | 88 | 84 | 84 | 64 | 60 | 80 | | | | | Pulse m |
| | e | 96 | 104 | 104 | 112 | 116 | 124 | 125 | 124 | 116 | 108 | 100 | 104 | 92 | 96 | 68 | 68 | 72 | | | | | e |
| Resp. | m | | | | | | | | | | | | | | | | | | | | | | Resp. m |
| | e | | | | | | | | | | | | | | | | | | | | | | e |
| Motions | | | | | | | | | | | | | | | | | | | | | | | Motions |
| Urine ozs | | | | | | | | | | | | | | | | | | | | | | | Urine ozs |
| " Sp. Gr. | | | | | | | | | | | | | | | | | | | | | | | " Sp. Gr. |
| " Reaction | | | | | | | | | | | | | | | | | | | | | | | " Reaction |
| " Chlorides | | | | | | | | | | | | | | | | | | | | | | | " Chlorides |
| " Albumen | | | | | | | | | | | | | | | | | | | | | | | " Albumen |
| Day of Dis. | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | | | | | Day of Dis. |

Diagram III.

Name Susan Lawson. Age 14. Disease Typhus. Result Recovery.

| Day of Disease | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pulse E. | 124 | 132 | 128 | 136 | 128 | 116 | 124 | 100 | 100 | 100 | 104 | 88 | 92 | 90 | 84 | 92 | 76 | |
| Pulse M. | | 128 | 120 | 128 | 128 | 140 | 120 | 108 | 116 | 92 | 96 | 76 | 92 | 84 | 82 | 92 | 96 | |
| Resp E. | [illegible] | | 44 | 52 | 53 | 48 | 60 | 40 | 48 | 36 | 32 | 24 | 22 | 20 | 20 | 28 | | |
| Resp M. | | | 48 | 48 | 52 | 48 | 56 | 40 | 52 | 40 | 40 | 28 | 34 | 28 | 28 | 28 | 20 | |
| Motions | | | | | | | | | | | | | | | | | | |
| Urine ozs | | | | | | | | | | | | | | | | | | |
| " Sp. Gr. | | | | | | | | | | | | | | | | | | |
| " Reaction | | | | | | | | | | | | | | | | | | |
| " Chlorides | | | | | | | | | | | | | | | | | | |
| " Albumen | | | | | | | | | | | | | | | | | | |
| Day of Dis. | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | |

TEMPERATURE FAHRENHEIT'S SCALE. 106° 105° 104° 103° 102° 101° 100° 99° 98° 97° 96°

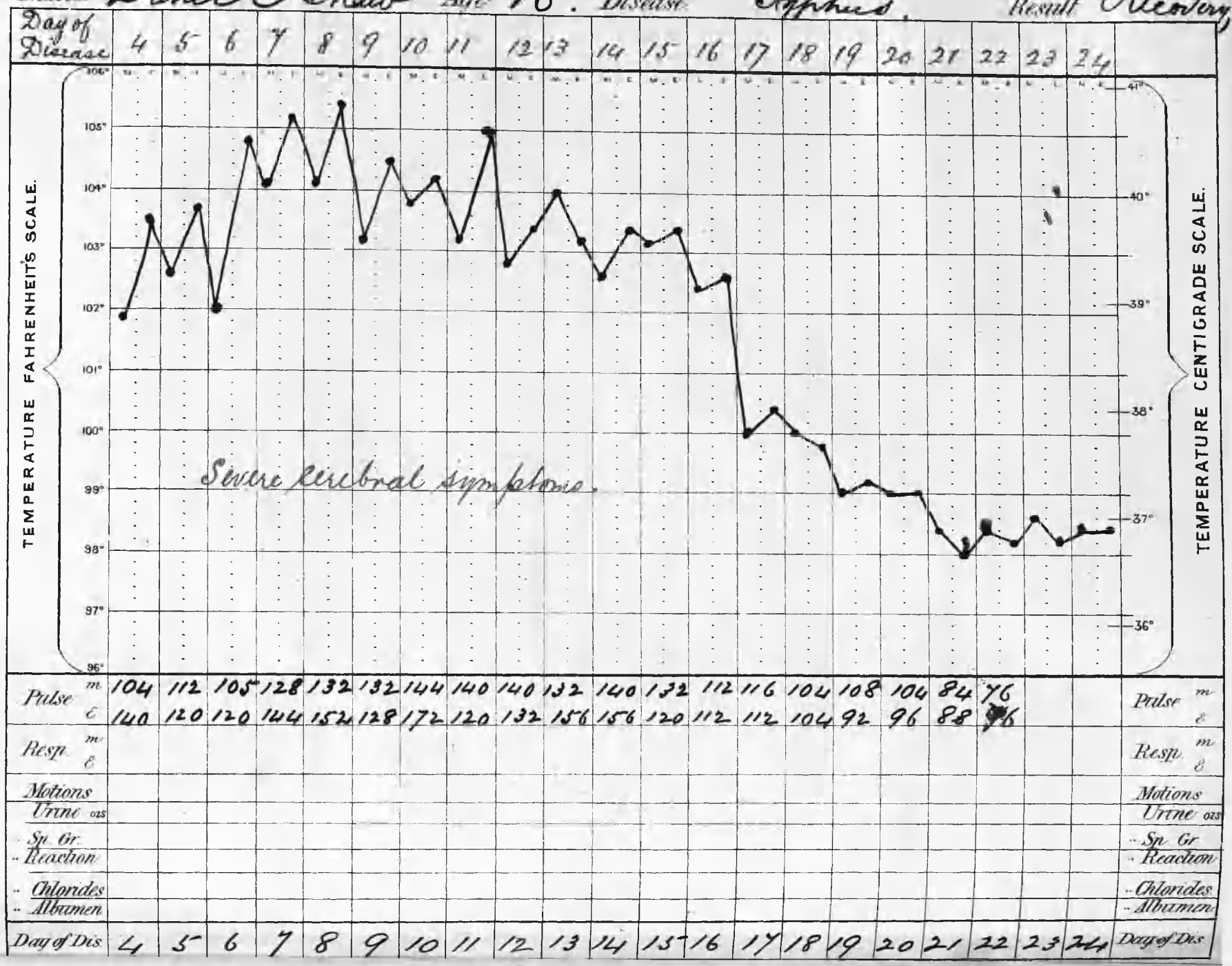
TEMPERATURE CENTIGRADE SCALE. 41° 40° 39° 38° 37° 36°

Uncomplicated.

No cerebral symptoms.

Diagram II.

Name Daniel Shaw Age 16. Disease Typhus. Result Recovery



As regards prognosis, the look-out is not very reassuring, if there is a very high temperature in the first week, or if there is no remission about the 7th day. Should the temperature suddenly rise very high in the second week, it is the sign of the supervention of some complication or other. Lung complications cause great variations in the temperature. Thus, at the end of the second week, they may keep it up; or during the whole course of the fever, where there is pulmonary obstruction, the temperature may not rise much above 103°. In children, the temperature has a tendency to rise higher than in adults. At the beginning of convalescence, the temperature may be below normal for several days.

5. Moisture: The skin from the first is usually dry and harsh, and the crisis is commonly ushered in by profuse perspiration of an acid reaction. In some cases, however, chiefly drunkards, there are frequent sweatings throughout.

6. Odour from Skin: All typhus patients give off a peculiar and characteristic odour. Nurses depend mostly on this to guide them

in their diagnosis; and a story is told of an old horse, belonging to the Royal Infirmary, which used its nose for the same purpose, and always stopped of its own accord at the door of a Typhus case.
I have never been able to define to myself this odour, or name anything which it at all resembles. It has been compared to the "odour of rotten straw", to the smell given off from a case of confluent Small-pox, and to the smell of mice; but to me, these similes convey no meaning, and with more reason, I think it better to call it a smell sui generis. It is an odour that is extremely offensive, one that requires to be felt before it can be understood, and once felt can never be mistaken. The odour is usually in direct proportion to the severity of the case, and it would seem that it is closely connected with the typhus poison. When smelling it, one is almost compelled to admit this, and it is dangerous, when a person, who has never had Typhus, is too sensible of its presence. I well remember that just before suffering

in my own person from Typhus, I was particularly sensible of, and affected by, the sonell from one particular case.

## C. Circulatory System.

1. The Pulse of Typhus is, at the commencement, usually full, soft, and compressible; but in young, sanguine and plethoric persons, it may be firm and bounding. For the first three or four days, it seldom rises above 100, unless when there is some Complication. After that, it remains at from 100 to 120 till the decline of the fever, then, like the temperature, it suddenly falls and may even go below normal, remaining there for several days. I have frequently seen it fall as low as 48 or 50. With the advancing course of the disease, the pulse becomes weaker and smaller, and at last may become almost imperceptible. Before death, it may be quite imperceptible for a day or two. In a large proportion of my cases, the pulsations reached above 120, & in my own case, 150 was reached. Such cases are always severe. There is slight increase in the evening pulse over the morning; but it

is comparatively trifling, and when the maximum is attained, there is generally little variation; or, it may go on to increase till death or recovery. A sudden rise denotes the advent of some complication, and the erect posture accelerates it, — chiefly during the course of the fever, but sometimes also in convalescence. If a number of patients convalescent from Typhus, some from Enteric — were placed in the same room, the pulse would almost serve to separate accurately, the one set of patients from the other; for, while the Enteric pulse is rapid and small, that of the Typhus patient is slow and steady, & perhaps below normal.

The pulsations in various cases, ranging in severity, are given on the opposite page.

In Typhus, the pulse is usually dicrotous — that is, there are strongly marked undulations in the line of descent in the sphygmographic tracings. This is most marked in the second week of the fever. Compare it with a healthy pulse tracing:

# Diagram VI.

Healthy Pulse.

Rate 76. Pressure 3 oz.

age 27.

Typhus Pulse. Rate about 140. Pressure 2 oz. Age 27.

Table VI.

| | No 1 | | No 2. | | No 3 | | No 4 | | No 5. | |
|---|---|---|---|---|---|---|---|---|---|---|
| Day. | m. | E. | m. | E. | m. | E. | m. | E. | m. | E. |
| 2 | | 88 | | | | 96 | | | | |
| 3 | 80 | 96 | 96 | 96 | 88 | 96 | | | | |
| 4 | 96 | 96 | 104 | 104 | 88 | 100 | | | 104 | 140 |
| 5 | 96 | 100 | 96 | 104 | 100 | 100 | | | 112 | 120 |
| 6 | 112 | 104 | 108 | 112 | 100 | 108 | | 124 | 105 | 120 |
| 7 | 112 | 108 | 108 | 116 | 104 | 108 | 128 | 132 | 128 | 144 |
| 8 | 104 | 108 | 116 | 124 | 108 | 116 | 120 | 128 | 132 | 152 |
| 9 | 100 | 108 | 116 | 125 | 116 | 124 | 128 | 136 | 132 | 128 |
| 10 | 104 | 112 | 112 | 124 | 116 | 108 | 128 | 128 | 144 | 172 |
| 11 | 108 | 116 | 108 | 116 | 92 | 96 | 140 | 116 | 140 | 120 |
| 12 | 104 | 108 | 104 | 108 | 92 | 96 | 120 | 124 | 140 | 132 |
| 13 | 88 | 100 | 100 | 100 | 80 | 96 | 108 | 100 | 132 | 156 |
| 14 | 80 | 84 | 88 | 104 | 68 | 80 | 116 | 100 | 140 | 156 |
| 15 | 72 | 72 | 88 | 92 | 84 | 84 | 92 | 100 | 132 | 120 |
| 16 | 64 | 72 | 84 | 96 | 84 | 84 | 96 | 104 | 112 | 112 |
| 17 | 72 | 52 | 64 | 68 | 72 | 72 | 76 | 88 | 116 | 112 |
| 18 | 52 | 60 | 60 | 68 | 72 | 68 | 92 | 92 | 104 | 104 |
| 19 | 72 | 68 | 80 | 72 | 80 | 76 | 84 | 90 | 108 | 92 |
| 20 | 68 | 64 | | | | | 82 | 84 | 104 | 96 |
| 21 | | | | | | | 92 | 92 | 84 | 88 |
| 22 | | | | | | | 96 | 76 | 76 | 96 |

2. Heart's Action. The chief points to be noted in auscultating the heart are that its impulse is lessened and that the first sound is feeble. These are due to softening of the muscular fibres.

## d. Respiratory System.

1. The Respiratory movements of the first week do not usually exceed 24 in the minute; but they gradually increase, and in severe cases reach to 48 or 50. Respiration is generally more or less of a sighing character. Where there are lung complications of course it is very much altered; and where the breathing partakes of a 'nervous character' — that is where the inspiration takes place through the nose, accompanied by a hissing sound, and where the expiration is accompanied by a blowing sound, the mouth being closed and cheeks puffed out — the look-out is a very dark one; all such cases being almost invariably fatal.

2. Hypostatic Congestion is present more or less in every case that is at all

severe, and has always to be very carefully watched. It is the cause of death in a large number of cases; indeed, no death occurs without it; for, in every post-mortem examination I have found it present, situated at the lower and back part of the lungs. It has been confounded with Pneumonia, but is quite distinct: The one is active, the other is passive. It is a very rare occurrence, indeed, that pneumonia occurs along with Typhus. I have only seen it once or twice. In hypostatic Congestion there is accumulation of mucus in the bronchi, & where the patient is strong, this is accompanied by cough; but if the cough is absent, the case is usually hopeless, as the mucus cannot be expectorated, and the bronchi consequently become blocked up. Where there is expectoration, it consists of frothy, tenacious mucus, sometimes streaked with blood.

The presence of hypostatic congestion is evidenced by increased respiration, by moist râles in the chest; by dulness on percussion over the affected part; by the signs of deficient Aëration of the blood, Viz. Lividity of face and lips, Cold Extremities, and in the Stages

before death, coma & clammy perspiration. The breathing too, is feble.

In typhus, whenever the breathing becomes at all hurried or seems feble in any way obstructed, the chest should always be carefully auscultated. because, if this symptom of hypostatic Congestion is not detected in time, you will soon have cause to regret it. It spreads with extreme rapidity and is with great difficulty got rid of.

The appropriate treatment consists in Gently altering the patients position in bed: The head & shoulders should be raised, and the patient should be made to lie on one side and then on the other, & never permitted to remain long on his back. Poultices or turpentine stupes should be applied to the bases of the lungs, care being taken not to blister the skin, as troublesome sores may be the result. Alcoholic stimulants are also required, as well as some stimulating Expectorant: Thus R Tr. Scillae 3iv, Vin. Ipecac. 3vi, Spt. Aether. Nitr. 3ij,

Decoct. Senegae Conc. @ 3viii ℔. and give a tablespoonful every two or three hours as the case may be.

At first, I was in the habit of prescribing Carbonate of Ammonia with the above Mixture, but, in most cases it seemed to do harm. It appeared to act like a blood poison; or as if one were administering a medicine to a person already overdosed with it. I, therefore, gave up its use.

Turpentine given internally, I have found to be a good remedy — 15 Mins every hour or so. I first noticed this when giving it in a case of Meteorism. (Case XIX p. 194.)

3. The Expired air is extremely offensive and is of much the same odour as that exhaled by the skin.

## c. Digestive System.

1. The Tongue is at first covered with a thin white or creamy fur, gradually becoming more yellow and thick. In many cases, even in

those of some severity, the tongue may retain this creamy coating, and remain moist throughout; but, usually at the beginning of the second week, it becomes dark brown, dry, and rough down the centre. In very severe cases, the tongue becomes cracked, rolled up into a ball, and looks as if it had been scorched by flame. The dryness and darkness of the tongue is in proportion to the severity of the case. With beginning convalescence, the tongue becomes moist, the edges clean and red; this process of cleaning takes place day by day, till the tongue assumes its natural appearance. The colour of the tongue, at the tip and margins, is usually pale; but, in some cases, more rarely, the edges are bright red, and the papillae enlarged. At the present moment, while at write, I happen to have three cases, presenting this latter appearance.

In very severe cases, the tongue becomes fissured and bleeds; but this occurs much more seldom than in enteric.

Towards the latter end of the fever, and in very severe cases, the tongue is tremulous, and sometimes cannot be protruded at all.

(Where the tongue is very dry and hard, and the patient has difficulty in swallowing, a very grateful sensation is produced by smearing the tongue with glycerine.)

2. Sordes: In the second week of the disease, these appear on teeth and tongue; and are always an indication of a severe type. They may encrust the teeth so firmly as to resist removal; and their presence on the tongue and in the mouth give the patient great annoyance. Sordes consist merely of Epithelium that has been shed; + of any blood which may have exuded from fissures in the lips or tongue.

3. Loss of Appetite as well as
4. Thirst is an early symptom; and its return is an indication of Convalescence. The Thirst is not so invariably present, but is usually very great; and in the later stages of nervous prostration, it may be altogether wanting. For the thirst, ice is most grateful

to the patient ; but with most patients it is dangerous to give them water : not that it will do them harm ; but, because, if they once get water, they will hardly take milk, the one being preferred so much more than the other. The same may be said of lemonade - though one often finds it advantageous to give some acid drink in tablespoonful doses.

5. Dysphagia is an extremely dangerous symptom, both because it denotes very low vitality ; & because sufficient nourishment cannot be given. Though such cases are usually fatal, there are some recoveries, as in my own case. In all very severe cases, there is towards the end of the second week a little inability as well as a want of inclination to swallow. Where a patient can swallow but won't, it is necessary to force him to it - as by compressing his nostrils & pouring the liquid into his mouth, or by the nose, as recommended by Dr. G.P. Tennent.

7. Meteorism very rarely occurs in Typhus, and when it does, it is never so great as in Enteric, under which it will be more fully spoken of. Its cause in Typhus is atony

of the coats of the bowel, thus differing from the cause of that in Enteric.

8. Constipation is a very prominent symptom of Typhus; indeed, diarrhoea rarely exists, and when it does, the stools are dark. In one or two cases, however, the stools have much resembled those of Enteric, both as to colour & smell, and in one case in particular I have been led to suspect the existence of Enteric running its course along with the Typhus.

The bowels must be moved occasionally with Castor oil, & after each evacuation thus produced, a marked improvement in the symptoms is often seen.

Diarrhoea may occur at the crisis, or a relaxed state of the bowels, as very frequently happens at the approach of death. I have only three or four times seen the diarrhoea of Typhus so severe as to call for the use of astringents. The Typhus stool resembles in all respects the healthy one.

## (f.) Urinary System.

The quantity of urine at the beginning is diminished; its colour is darker, its consistence or

sp. gr. greater; and its reaction acid; but as the fever advances, it becomes more plentiful, paler, & of low sp. gr. The quantity passed may be greater than normal. Its reaction becomes less acid or neutral, and at the crisis, there is frequently a copious deposit of lithates.

Retention of urine frequently calls for the use of the catheter, and in all cases of low vitality, care should be taken to examine the bladder daily. Hot fomentations in the regions about pubis & perinaeum often give relief.

Incontinence is by no means uncommon & is extremely troublesome, from its tendency to give rise to bedsores. The sheeting & mattress require to be frequently changed, & the skin about sacrum & gluteal region to be dusted frequently with some absorbent powder or painted with a solution of Gutta percha in chloroform.

## (J.) Nervous System.

Headache is a constant symptom of Typhus, and is usually one of the earliest. It may last only a day or two or all through the fever, especially in plethoric persons (see Case VII, p.)

or until the advent of delirium, when it disappears. As delirium generally comes on about the beginning of second week, the headache is most severe during the first week. The severity of the pain varies, it is most severe in young & plethoric persons. It is usually referred to the forhead & is of a dull & heavy character.

2. There is generally more or less <u>Vertigo</u>, which is always increased on assuming the erect posture. It is complained of most when patient is getting out of bed for first time after convalescence. I remember well that for a good few days after I recovered consciousness, I could not allow myself to lie on one particular side of my head without feeling giddy & loseing my sight.

3. <u>Pains in back & limbs</u>: When enquiring at a patient how his illness began, among the symptoms enumerated, one invariably finds, "pain in the back", referred to the lumbear region. This mostly remains during the course of the headache, but frequently remains after it; or it may last only for a day or two & then disappear, coming back

again, it may be, during convalescence. Pains in the limbs are often complained of too and are of a dull aching character.

4: **Delirium**, next to the eruption, is perhaps the most invariable of the Typhus symptoms, and appeared in between 70 & 80 per cent of my cases. So important a symptom is this, that it is no wonder, that it has given rise to the name 'brain-fever', sometimes applied to Typhus. Though delirium may not actually be present, there is, at least, some obscuration and weakening of the mental faculties. Delirium seems to be more generally present, more severe & more prolonged in persons of high Social Standing & of high mental Culture. I have never seen it to appear before the eruption & rarely before the second week. Its duration varies greatly, in mild cases, it may only exist for a day. In others again, it is much longer; thus, as in my own case, it began on the 5-th. day, & lasted for 11 days.

The delirium usually begins first in the night time & shows itself by a low muttering while the patient is dozing. It is almost always worst in the night time, & indeed,

during the day, the patient is very often quite rational. It may persist however, both day and night; & commonly lasts till death or convalescence.

The following table shows the day on which the delirium commenced in 22 consecutive cases:

Table VII.

| DAY. | 3rd. | 4th. | 5th. | 6th. | 7th. | 8th. | 9th. | 10th. | 11th. | 12th. | 13th. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 1 | 2 | 3 | 2 | 6 | 1 | 1 | 2 | 1 | 2 |

The delirium may either be of a low muttering type, in which the patient lies quietly speaking in an incoherent manner to himself, and making irrational remarks of things about him; or it may be of a busy character, in which the patient, though weak & tremulous, gets out of bed, apparently without any object; and is easily led back again.

There is a third form, viz. the <u>delirium ferox</u>, in which the actions of the patient are those of a demoniac. He persists in getting out of bed, & doing all sorts of wild tricks. His eyes are glaring & fierce,

Conjunctivae deeply injected, temper extremely irascible. He refuses drinks, & does nothing but in his own way. He shouts incessantly & his strength is not to be despised. He will bite or kick like a brute at all who come near him. One of my patients coolly wrapped his hand in a blanket & dashed it through a pane of glass; another seized a poker & threatened to dash out the brains of any one who came near him; several have tried to get out of the ward, both by the window & door, & one wildly dashed his drinking cups on the floor, &c. &c. Out of more than 100 cases specially noted, there were only four which really came under the division of delirium ferox.

There is another form of delirium, somewhat resembling the second, but partaking of the nature of delirium tremens. Two of my cases have been of this character, & both were drunkards. Fear was a leading feature, & figures were seen by them flitting across the walls. Had both not had the unmistakable signs of Typhus (& in a

Very marked degree too) the case would have been apt to be diagnosed as delirium tremens pure & simple. Both died.

Without going much further into details as to the various delusions ~~of~~ which a Typhus fever patient has, I would merely mention that some believe themselves being poisoned & require great coaxing to take food; that some see imaginary friends or foes about them; that some have particular missions or works to perform, in a certain time; and the dreams or visions of these are curious & even ludicrous. Thus, in my own case, I somehow or other, rushed across to America for a cargo of cattle & in their transit made them execute some marvellous feats in jumping. Immediately on being extricated by some unknown cause from this job, I found myself on the top of an old house, examining it as to its qualities; & believing myself in the office of one who passes votes of demolition on houses, whose sanitary arrangements are at fault, &c.

Let me now proceed to the precautions

to be taken in the treatment of delirium:

Never, in the hearing of a delirious patient, say anything that may create suspicion in his sensitive mind. Thus, don't let the patient hear you tell the nurse to "watch him well". Most likely the poor deluded creature, will turn round with a fierce gesture & expression, hissing out — "Ay, watch — I'll watch ye"!

We must always remember that everything to them — in their highly strung state — is real, fearfully real. In trying to quiet them, if possible refrain from struggling or using force; for, to them, the tussle appears as a death struggle; & what must be the mental agony felt by such a patient? The thought is too horrible to contemplate.

There are some persons, however, and more especially as it seems to me, those who are naturally of a quick & fiery temper & are physically strong, when it is simply an absolute necessity to force down in bed & fasten there by means of the strait jacket or sheet — this

being to prevent them from injuring themselves or others. This however, I have found to be the exception; & it is only comparatively rarely that I have had to confine in this manner. Moreover, besides being unpleasant, the practice is fraught with danger, as will be obvious when I say that a patient, whom the nurse had confined by means of the sheet without orders, suddenly died apoplectic from his struggles, as I found on opening the skull.

You are generally able to quiet & bring to reason even those who are inclined to be most obstreperous, by first tapping them smartly on the cheek to direct their attention & then speaking to them firmly but kindly.

Where the patient has been for long without asleep; where the restless & brilliant eye; and the words muttered unceasingly without meaning to you, denote a highly sensitive & excitable state of the brain, you may find it necessary or feel inclined to give some soporific.

The one which I myself use (but that as seldom as possible) is a mixture of

Hydrate of Chloral (Frerichs') & Bromide of Potassium. You will generally find that it is of no use to try a small dose; & that you should at once give at least 20 grs. of the former with 30 of the latter — this to be repeated every half hour or hour till sleep is procured. Much larger doses, however, may be given, & even then, in some cases, you will fail to induce sleep. The patient remains as restless as before; & such cases in my experience, are generally doomed ones. I have found, however, that where one medicine has no effect, another has. Thus, the Chloral & Bromide of Potass failing, I have seen 40 minims of Tr. Opii have a most charming effect, & bring on a sleep that lasted for several hours. A good combination, too, is Bromide of Potass & Spt. of Chloroform.

There are three very important points to be borne in mind in the giving of these sleeping draughts:

Firstly, We must distinguish between the restless and wild delirium, and the low muttering form, in which the patient lies

bordering on a state of coma. In this latter withhold the draught; and I believe Cold affusion to the head to be the treatment, or as Graves recommends (but more especially for headaches) a towel wrung out of hot water to be wrapped round the head.

Secondly, Where there is any tendency to lung complications, as bronchitis or pneumonia (the commonest) be very chary of your draughts. In every such case, I would first treat the chest complication; for, if when mucus is being quickly secreted, you set your patient into an artificial sleep, he most likely slumbers into a state of asphyxia or awakes only to find that he has not strength to expectorate — and in a short time, the scene is ended.

Thirdly, Care must be used in the administration of opium after chloral, for the action of the former is sometimes much increased by the previous administration of the latter.

If, in delirium, the patient's bowels are costive, & he has not had an evacuation for several days, then in such a case, a

smart enema of castor oil, turpentine, & warm water, has a wonderfully soothing influence. This purgation, too, in typhus, almost invariably removes to a great extent the heavy specific smell & very frequently has a remarkable influence in improving the state of the tongue. Indeed, for these reasons, it may sometimes be advisable to give such an enema whether purgation is wanted or not.

If, from any cause, it is necessary to put the finger in or close to a delirious patient's mouth, never do so with it unguarded. It must always be well protected with a towel & if possible there should be a second person to press on the patient's forehead & chin while he lies flat in bed, thus keeping his teeth apart. Without some such precaution, you may otherwise get an ugly bite.

5. <u>Wakefulness</u>; <u>Somnolence</u>; <u>Coma vigil</u> & <u>Coma</u>:

<u>Wakefulness</u> or inability to sleep during the night is very often present & lasts till the middle of the second week, & the first sign of improvement may

be the patients falling off into a sound sleep.
For the last two or three days of the fever, the patient is more commonly drowsy, & when roused up is stupid; but in rare cases there is an opposite state to this, viz. Coma vigil, in which the mind of the patient fails to be overcome by sleep. The eye remains open & gazes into vacancy. No sleeping potion has any effect. This state is always of the most ominous import & invariably ends in death. This coma vigil differs entirely from that form, falsely named, in which the patient wakes from a long sleep & denies that he has slept at all.
Sometimes the drowsy state goes further than mere somnolence; & more particularly I think, in the young, there is apt to occur a state bordering on the semicomatose or even the comatose. Morning, noon, & night, you find them in the same condition, with eyes closed, heavy breathing, & it may be perfect quietness, or only an occasional incoherent muttering. They never think of nourishment; so that it is necessary to wake them up at intervals to give them their milk or their beef tea.

I have seen this state continue from the beginning of the fever to the crisis; but for fear that this drowsy state should creep into one of actual coma, I am in the habit of prescribing cold affusion to the head for 5 minutes or so at a time, or cold wet cloths to be wrapped round the head — those being changed every 10 or 15 minutes for a couple of hours. This treatment, besides having the effect of rousing the patient is most grateful; & I have found that where a few minutes before, a boy has been lying dozing & senseless, he becomes after this treatment quite lively & will talk to the nurse & ask for drinks. This will probably have to be repeated at intervals during the whole course of the disease.

One must be particularly careful in distinguishing the state of coma from that of collapse, in which latter you find the temperature remaining persistently below normal & the pulse weak & flagging; because were you to apply cold application to the latter as is done in the former, the practice

would certainly be serious. For collapse, the free administration of stimulants is essential. At the same time, I would order additional bedclothing, hot bottles to the feet, & sinapisms to the cardiac & Epigastric regions & the calves of the legs. Friction is an useful adjuvant.
This treatment is also useful in simple stupor.

## (h.) Muscular System.

1. Loss of muscular strength is present in a greater or less degree from the beginning; & so rapidly does this loss proceed that the patient has to take to bed on 2nd, 3rd, or 4th day. The prostration increases as the disease advances; (except where there is delirium ferox) until about the middle of the second week, it is sometimes that patient cannot turn himself in bed or assist himself to anything whatever.

2. The Decubitus is usually dorsal, at least after the first two or three days; As this is the position always taken by patients who are extremely weak, as no muscular force

thus requires to be put forth. Of course where there is restlessness & active delirium, all positions are tried; but sooner or later, this position on the back is adopted; & the hand lie across the epigastrium. When the prostration becomes extreme, the head sinks from the pillow & the whole body slides towards the foot of the bed.

3. Paralysis of any of the muscles is always a dangerous symptom; but more especially when it gives rise to dysphagia, a state, when extreme, that precedes death. In all cases, the tongue is more or less paralysed, as evidenced by the inability to speak & the difficulty experienced in its protrusion. Retention of urine is due to paralysis of the bladder & has occurred in about 10 per cent of my cases. Care should always be taken to percuss the bladder to see that the use of the catheter is not required. Dribbling away of the urine is due to paralysis of the sphincter urinae; & is apt to chafe the skin & give rise to bed sores. In involuntary defaecation,

the sphincters of the rectum are affected, & in both this & dribbling, great attention has to be paid to cleanliness, & the use of such measures as will prevent the formation of bedsores. as by painting the parts with a solution of Gutta percha in Chloroform, with Spt. Camphorae, &c. Both of these states, usually precede every case of death.

Meteorism, due to paralysis of the coats of the intestine, is to be combated in the way afterwards mentioned, when speaking of Enteric Fever.

I have only seen one case in which there was paralysis of the orbicularis muscles. The conjunctivae became much congested; the Cornea became opaque & ultimately ulcered. The patient lived.

4. Muscular agitation always exists in cases that are of some severity. The parts that tremble most are the hands & tongue; but in rare cases, especially the old, it is present over all the body. Subsultus tendinum is not uncommon & is found in cases that are in any way severe,

And is most frequently seen at the Wrist & in the forearm. Spasmodic twitchings of the face are not nearly so frequent — (See Case VIII, p. 82.) I have only seen two cases & one of them died. It is also the Co angle of the mouth that was pulled up chiefly & the Corresponding eye shut.

Floccitatio or Carphology is a form of this spasmodic action, and Consists in the patients fumbling about here & there with his hands & picking at the bed clothes. It nearly always precedes death. Some patients, however, live even after presenting this symptom. Hiccup is sometimes met with. I have seen it in at least 6 of my cases, all of whom died, except one, viz. Case VIII, p. 82. For the hiccup, perhaps the best thing in the way of remedies is sinapism to Epigastrium.

All of these symptoms occur only in very severe or fatal cases, & then even, the prognosis is not very encouraging. I have had patients, however, who variously presented these phenomena & recovered.

It is needless to add that the presence of any of these symptoms is a sure indication for the free administration of stimulants.

Convulsions occurred in one case, viz. in a man about 30 years of age & on the 12th. day of the fever. They were evidently uraemic & the man recovered under the administration of diuretics & the hot pack.

## (ii.) Organs of Special Sense.

1. Organs of Vision. The conjunctivae are always darkly injected — the depth of colour depending on the severity of the case. The pupil is most commonly contracted ~~though~~ in some cases (I recall one more especially at present) it may be contracted to the size of a pinhead (pin-hole pupil of Graves). I have seen it sometimes dilated or even normal.

2. Organs of hearing. Tinnitus aurium is sometimes present for the first 4 or 5 days, & deafness is a very frequent occurrence (See Case I, page, 19.)

3. Organ of Smell : Catarrh of Schneiderian membrane is sometimes present at commencement, but Epistaxis rarely exists. I have never seen it.

4. Organ of taste. The taste is perverted, & articles which were before thought pleasant are detested. In the later stages, this sense may be altogether lost.

5. In one or two cases, I have found the cutaneous sensibility increased & the patient crying out when touched.

## The Crisis.

The Crisis has already been stated to take place about the twelfth or 14th. day (pp. 18 & 38.) & the suddenness of defervescence at all times, has been noted.

Though as a rule, the crisis in Typhus fever may be roughly stated as occurring at the end of a fortnight from the time of the patients first feeling unwell, yet there are cases where it falls short of

of this; & cases where it is even more decidedly protracted. The following Case will illustrate the truth of this latter point:

## Case VII.

Crisis on 20th. day.

Mrs. H. — (Milk Retailer) aet. 24, was adm. July 17th. 1876, with well-marked Typhus. (Her two children were admitted along with her — both being interesting cases as giving force to the term morbilliform rash — both being literally covered from head to foot with a beautiful Typhus mottling). Patient was an extremely stout woman & this may account, in some measure, for her long continued fever.

She first felt unwell 8 days previous to admission with the usual premonitory symptoms, as headache, shiverings, pains in limbs, Vomiting, &c. Her condition on admission was: Great headache, thirst, no appetite, dusky countenance, Conjunctivae slightly injected, pupils normal, tongue only slightly furred, typhus rash well marked on chest & arms. Breathing

rather impeded, mucous râles in upper part of chest. Pulse 116. Temp., though not noted, was high. Slight subcrepitus tendinum. She fainted shortly after admission.

At first patient was much annoyed by pain in mammæ, caused by their over-distension with milk. This, however, was soon got rid of means of an Exhauster & a lactifuge.(*)

Throughout the course of the fever, too, she was much harrassed by bronchitis & a difficulty in expectorating the mucous; from this cause, indeed, at one time, the case looked uncomfortably serious. But means of Brandy, close attention to feeding, poultices assiduously applied & the following stimulating Expectorant, she wasteided over: Rx. Ammon. Carb. ℥ii, Tr. Scillæ ℥iv, Vin. Ipecac. ℥vi, Decoct. Senegæ Conc. ℥iii Aquæ ad ℥viii M. Sig. Tablespoonful every 2 hrs. till relief obtained.

Throughout the course of the case, patient was frequently put in the hot pack & with evident relief.

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(*) Rx. Extracti Belladonnæ ℥ij, Glycerini ℥iv, Aquæ ad ℥xx Sig. Apply on lint over mammæ except on nipple.

Her pulse ranged between 124 in the morning & 136 in the evening throughout the first 19 days; but on the morning of the 20th. it dropped to 108; & her skin which previously had been pungently hot, became cooler & moist. Her tongue, also, for the first time, showed signs of softening. Next morning, pulse 100 & tongue quite clean. She continued to mend from that time; but from the Commencement of her illness till the 20th. day, she had an almost unbearable headache. Nothing gave her relief, & so severe was it, that she sometimes cried out with it.

It may be asked, was there no mis-Calculation made by the woman or by myself? There can be no mistake about the woman having been in the hospital 14 days before the crisis; and there can be no mistake about her having Typhus distinctly marked on admission. It will be remembered too that the rash was well marked on chest and arms when first seen by me (i.e. on day of admission) & that the eruption appears in Typhus from 4th or 5th to 7th day.

So that, I think, there can be no doubt as to the critical period or "turn" having been in this case unusually protracted.

If any reason can be assigned for this lengthened fever — lengthened almost to that of Enteric (to which by the by, it had not the slightest resemblance except in this one point,) I think in the present instance, the febrile state was kept up (1.) By the great obesity. (2.) By the lung complication. (3.) By the irritable state of mammæ. (4.) By her system having been more than usually well saturated with the Typhus poison.

My reason for believing in this last cause (to which I am inclined to put great weight on it, believing as I do that the severity of the case, in great part depends on the state of Concentration of the poison) is: On the second day after admission, the rash became very abundant over her face — making her quite measled in fact — and this always appears to me (except perhaps in the case of children) to denote a bad type of the fever or deeply poisoned state of the System.

# Complications & Sequelæ.

In speaking of the complications & Sequelæ of Typhus, I intend to make mention only of such as have come under my own observation, & to leave altogether out of account those which have been noticed from time to time by various observers.

1. <u>Bronchitis</u> is present in a large number of cases; indeed, in half of the cases there are wheezing râles in the chest & cough at some time or other. In all cases of hypostatic congestion of the lungs it exists, and the one dies away with the removal of the other. Though the breathing may be hurried from a cerebral cause yet in all cases where this is present, & especially if there is any lividity about the lips & face, the lungs should be carefully auscultated.

The treatment of course will consist of uniform temperature, & poultices, along with expectorants internally. If there is any tendency to congestion, none of the so-called cough mixtures, such as those containing Morphia or other form of opium, are admissible;

for the aim must always be to get the secreted mucus expectorated in as large quantity & as soon as possible.

2. Pneumonia. Though this does not come in its order of frequency, I mention it here, as being closely related to bronchites. True Pneumonia is a very rare complication indeed, the most of those forms so called being really cases of passive congestion. I have not seen it more than once or twice, & in these, the subjects were persons in the lowest class of society, living in a miserable damp room with scanty clothing & fire. Pneumonia does not follow on Typhus, because it is Typhus; & one reason why it is so rare is probably because the onset of Typhus is so sudden that they are forced to take to their bed at once & so be out of the influence of colds. It is more likely that the Typhus follows on the Pneumonia than that the Pneumonia follows on the Typhus. The treatment is as usual, viz. Antephlogistic.

I perhaps should say more

with regard the passive form of Congestion of the lungs, which is found in so many cases in the later stages, at the bases of those organs posteriorly. It is found in nearly every case of death; & generally gives more or less trouble & requires to be carefully looked for in all cases of great prostration. The treatment consists of Elevation of shoulders, frequent alteration of position, poultices, turpentine stoops, a stimulating Expectorant, ℞ or as an astringent of the pulmonary arterioles, Spt. Terpentine internally.

3. Multiple abscesses in Lung: Only one such case occurred. It followed on congestion & was fatal, (See Case V, p. 27.) The patient was previously a strong, healthy, man.

4. Pleurisy. Though I have not seen a case of Typhus, where an accumulation of fluid took place in the pleura, yet others are not uncommon in which pain is all that is complained of, & in which, on Auscultating, friction is heard. Such cases have been

up & going about & exposed to cold. At P. M. Examinations, too, one very frequently finds a roughened or even adherent state of pleurae.

5. Oedema occurs occasionally during Convalescence & is most commonly seen in Women. Though I have examined the urine, no disease of the Kidneys was indicated. The subjects in whom it appeared were much reduced by the fever, & it disappeared as they regained strength & flesh, or rather blood, as no doubt it was due to a too liquid state of that fluid. Nourishing diet is of course Essential, & I generally had recourse to some such Haematinic as Syr. Ferri Phosph. Co.

6. Buboes vary in frequency at different times; & are more common, as it appears to me, in one epidemic than another. I have seen them exist in several persons at once; then they would disappear & not been seen for months. The glands that are chiefly affected are

the parotid, submaxillary, & axillary; & though it would appear that it is chiefly the subcutaneous tissue over the gland that is inflamed, I have seen the whole gland break down & be carried away in the form of pus. To prevent total destruction of the gland, an incision should be made early — that is, as soon as pus is detected.

7. Abscesses occur in various parts of the body, but chiefly in the form of small boils on front of abdomen & on scalp. There was one case in which a large abscess containing several ounces of pus, which was drawn off by aspirator, was situated at the edge of the ileum on the gluteus muscle. In my own case, a series of carbuncles appeared on the back, which were exceedingly painful & protracted my convalescence.

8. Bedsores are exceedingly apt to occur in all cases of Typhus, so that they should always be looked for, especially if there is great prostration. They occur chiefly about the sacrum

and hip joints. The treatment should be preventative. Those parts exposed more especially to pressure should be hardened by frequent rubbings with spirit, the bed should be kept dry; & if the skin becomes red, a water bed or cushion should be procured, and the inflamed parts covered with sticking plaster. When they do break out, they must be kept clean with charcoal poultices. Pressure should be removed as much as possible. Bedsores are always indications for the administration of alcoholic stimulants.

9. Gangrene: In two cases has gangrene occurred from pressure; the parts affected in one case being over the sacrum; in the other at the sacrum & heels. The gangrenous parts should be wrapped in cotton wool, & freed from pressure. If the skin is broken, warm poultices dusted with charcoal should be applied.

In one case did spontaneous gangrene occur, & that in the point of the nose.

The part became black & cold. I painted it with a solution of Gutta percha & Lastecoe Cotton Wool over it. This prevented it from spreading & warmth returned somewhat to it; but the patient died as did the others. The subjects of Gangrene are exceedingly far reduced & of low vitality. Hence warmth & stimulants in large quantity are necessary.

10. Erysipelas of the scalp & face occurred in one case; but under the use of Iron & exclusion from the air, it was recovered from.

11. Intestinal Haemorrhage. I take notice of this, because it is so exceedingly rare, and because I had one case of it. The patient recovered & on that account, I am tempted to relate the case at some length; for so far as I can ascertain, there is not another recorded case of recovery from Intestinal Haemorrhage in Typhus:

# Case VIII

## Typhus Complicated with Intestinal Haemorrhage. Recovery.

In the Glasgow Medical Journal for July, 1876, Alexander H. Reid, M.B. of Arnold, Nottingham, relates a case of Typhus Fever, complicated with intestinal haemorrhage, in which the result was fatal. From this & from the result of Murchison's & Russell's Experience *, it would appear that such cases have always an unhappy termination; but that that is not invariably so, is shown by the case which came under my own observation. In that which follows I intend to advocate a different line of treatment from that which Dr. Reid so much extols.

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* Murchison had six such cases in about 7000. all six died. (Murchison on Continued Fevers; Ed. II, p. 209.) Russell met with intestinal haemorrhage in three out of from 3000 to 4000 cases; and all three died. (Russell: Glasg. Med. Journal, May, 1869.)

Thomas G. — aet. 56, was admitted into Belvidere Fever Hospital on 14th June, 1876, complaining of pain in his head & back, want of appetite, thirst, & muscular weakness.

History: Six years previously, had had rheumatic fever, followed by paralysis. Though he recovered the use of his limbs & was able to follow his employment, he was ever afterwards very 'shaky'. For a year before admission he had not been in good health, & had fallen off in flesh. There was a history of contagion — two of his sons having been in the hospital with Typhus. His present illness began Eight days prior to admission with pain in head & back, loss of appetite & vomiting.

Present state: Patient's face is 'muddy'; his expression dull & heavy. Conjunctivae much injected. Pupils dilated. Tongue not very foul, but with a thin dark yellow coating in the centre. Bowels regular. Typhus rash well marked on chest & back. A few petechiae on arms & legs. Skin not particularly hot. Pulse

104 & rather compressible. Whole body very tremulous — the head & hands most markedly so.

Course: The fever Continued to rise in severity, till, on the 12th day, low, muttering, delirium set in, and lasted for several days. On the 13th, he was much worse — pulse 116 & very weak, lips livid. On the 14th day, his pulse rose in frequency to 136 & he was troubled badly with hiccup. A Sinapism was applied with benefit to Epigastrium, though during two days, it occasionally returned. During that night, his delirium became very noisy, & he required to be restrained in bed. On the 15th, he was quieter & his pulse fell to 112. Tongue also showed signs of cleaning. On the 16th, his pulse was 96 & stronger, but the muscles of his face began to twitch & work in a suspicious way. His mouth was screwed up, & his eyes rolled about in a horrible manner. That night was a restless one, & the convulsions continued. Whilst at Stool, he passed a large quantity of

blood – the exact quantity could not be ascertained. but it was considerable & of a florid colour, giving the appearance of being quite fresh. Next day he passed about 2 tablespoonfuls more. The only treatment that was adopted was the administration of lead & opium & the application of cold wet cloths to abdomen. On the 18th, he was much better, & his pulse came down to 84. Though convalescence was rather protracted, he gradually grew well, feeling better than he had done for a year before.

All through, this case looked very unpromising; & during the whole course, patient required to be freely stimulated – the quantities administered varying as the occasion seemed to demand. At one time, he received as much as 16 oz. Brandy in the 24 hours. During the course of the fever, he was frequently put in the hot bath, & sponged at regular intervals. His regimen was made as nourishing as possible, consisting for the most part, previous to convalescence, of milk & eggs & beef tea.

Remarks: The reason why only lead & opium were given internally & cold applied externally to check the haemorrhage will appear from what follows, and, as seen, the treatment employed answered the purpose.

As with Dr Reids case, I believe the haemorrhage here was due to a defibrinated state, an abnormally liquid, state of the blood: The man had not been well for a long time, had not been taking much nourishment, & finally was exhausted by this attack of Typhus, which well nigh proved fatal. There were no haemorrhoids to account for the bleeding they were contained no blood. That the blood was from the intestine there could be no doubt & that it came from the lower part of the gut was shown by its colour. It was a bright red. Had it come from the stomach, or high up in the intestine it would have been more or less altered in colour - digested in fact - the colour depending on the length of time it remained in, & the nature of the ~~juices~~ secretions by which it was acted on whilst in the viscera.

There was no haematemesis or other haemorrhage. And now having regard to treatment, let me point out wherein my opinion differs from that of Dr. Reid. The gentlemen used Tinctura Ergotae, because it "had been so much lauded in Typhoid fever". Just there lies an error. I think there is a mistake made in arguing that because ergot is of so much in the haemorrhage of Enteric, it should be of the same value or take the same place in the treatment of the intestinal haemorrhage of Typhus. The two cases are different. In the one there is a distinct pathological lesion; in the other, there is simply an exudation of blood, or "weeping from the mucous membrane", as Dr. Reid himself terms it. In the former case, there is an open bloodvessel to close; in the latter there is no such change to deal with.

Dr. Reid emphatically states that in the treatment of intestinal haemorrhage in Typhus & Enteric "no remedy rivals ergot, which is supposed (Brown-Séquard has proved experimentally that it does) to act on the muscular coats of the

Vessels through the sympathetic system".
Now, it appears to me that we do not
require "to act on the muscular coats
of the vessels"; but rather that our treat-
ment should be directed against the
atonic mucous membrane. Dr. Reid,
himself, in fact, leads one to that con-
clusion when he says that the haemorrhage
is a "weeping from the mucous membrane".
Hence the use of lead & opium which
are both mucous astringents. Both,
it is true, like the oleate cornutum,
may act through the central nervous
system, & thus in like manner act
as astringents of the bloodvessels;
but these medicines (opium & lead)
exert a power over the intestinal mucous
membrane, which ergot does not possess.

It is but right to mention that
discharges from mucous membranes
may be restrained or altered by
changes in the blood itself, and in
the bloodvessels. But what I contend
is that our attention should be directed
more to the mucous membrane than to
the bloodvessels: And with this view, I

would recommend as an adjunct to whatever mucous astringents may be used, the introduction of enemata of cold water. Such enemata, apart from their directly astringent action, I have found to be excellent tonics. Stimulants, too, must of course be freely given.

I would remark that I quite agree with Dr. Reid as to the advisability of having recourse to the hypodermic injection of Ergotine in those cases where the power of absorption by the mucous membrane of the stomach is abnormally low, (and also where the haemorrhage partakes of the nature of a "flooding" where as speedy action as possible is essential) but I do not think that this method of introduction of ergot into the system is always the best. The use of this medicine (apart from obstetrical cases) is usually at a time when patients cannot stand excitement, and the introduction of even a very delicate needle into the skin is to them a much more formidable affair than the simple swallowing of a little fluid. Besides when repeated doses are required, it is much more convenient to

give the Ext. Ergotæ Liq. by the mouth than the solution of Ergotine by sub-cutaneous injection. Moreover troublesome abscesses & inflammations are apt to follow on the latter method.

In conclusion I would suggest that there are differences of opinion as to whether any medicine rivals ergot (& Dr. Reid says there is not) as astyphic in haemorrhage. Murchison in his Work (Ed. II. p. 653) says that "During many years, I have found the following mixture almost invariably successfull for arresting the bleeding. The doses are for an adult — ℞. Acid. Tannic. gr. X, Tinct. Opii, M. X, Spirit. Terebinth. m XV, Mucilag. ʒii, Tinct. Chloroform. Co. m XX, Aq. Menth. pip. ad ʒi. M. haust. 2 â. q.q. horâ sum".

# Mortality.

The death rate varies in different Epidemics. Though Typhus is always more or less with us, yet small

Epidemics occur every now & again in separate streets and in separate blocks of buildings; and while, for perhaps a month at a time, not a death will occur, at another time, there may be one every day for a week or so.

The following table shows the death rate for several years in the Belvidere Hospital.

Table VIII.

Death Rate at Belvidere from 1871 to 1876.

| Years. | Admissions | Deaths. | Mortality Per Cent. |
|---|---|---|---|
| 1871-72 | 504 | 55 | 10·9 |
| 1872-73 | 297 | 33 | 11·1 |
| 1873-74 | 228 | 33 | 14·4 |
| 1874-75 | 457 | 51 | 11·1 |
| 1875-76 | 518 | 62 | 11·9 |
| Totals | 2004 | 234 | 11·6 |

The Percentages given above may represent a higher rate of mortality than actually occurs in Typhus over all; for some of the cases sent into hospital

are quite moribund from the beginning, while numerous children, &c. who recover, are treated at home.

Numerous circumstances, which have to be considered in making a prognosis, influence the death-rate, & a tendency to death. Thus, intemperate habits, destitution, and to some extent apparently a cultivated intellect, are all unfavourable to recovery.

Of all the circumstances, however, that seem to influence the rate of mortality most is Age. With advancing years, the chance of recovery lessens. Sex, too, seems to have some influence; for the number of males that die exceeds the number of females.

See Tables IX, & X, on the following pages:

# Table IX.

Syphus.

Numbers treated at quinquennial periods of age and rate of mortality. From 1871 to 1876 inclusive.

| Ages. | Numbers treated. | Deaths. | Per Cent. |
|---|---|---|---|
| 0 — 4 | 123 | 5 | 4.06 |
| 5 — 9 | 278 | 2 | 0.7 |
| 10 — 14 | 364 | 7 | 1.9 |
| 15 — 19 | 327 | 22 | 6.7 |
| 20 — 24 | 262 | 33 | 12.5 |
| 25 — 29 | 161 | 29 | 18.1 |
| 30 — 34 | 156 | 30 | 19.2 |
| 35 — 39 | 111 | 28 | 25.2 |
| 40 — 44 | 101 | 31 | 30.6 |
| 45 — 49 | 53 | 22 | 41.5 |
| 50 — 54 | 44 | 8 | 18.1 |
| 55 — 59 | 17 | 7 | 41.1 |
| 60 — 64 | 12 | 8 | 66.6 |
| 65 — 69 | 4 | 1 | 25. |
| 70 — 74 | 2 | 1 | 50. |

# Table X.

Typhus.

Number of Males & Females treated in Belvidere; and Number of deaths of each from 1871 to 1876 inclusive.

| Years | Males | | Females | | Males. | | Females. | |
|---|---|---|---|---|---|---|---|---|
| | Treated | Died | Treated | Died | Per Cent. | | Per Cent. | |
| 1871-72 | 226 | 32 | 278 | 23 | 14. | 1 | 8. | 2 |
| 1872-73 | 144 | 21 | 153 | 12 | 14. | 5 | 7. | 8 |
| 1873-74 | 116 | 16 | 112 | 17 | 13. | 7 | 15. | 1 |
| 1874-75 | 229 | 35 | 228 | 16 | 15. | 2 | 7. | 01 |
| 1876-76 | 247 | 39 | 265 | 23 | 15. | 7 | 8. | 6 |
| Totals | 962 | 143 | 1036 | 91 | 14.8 | | 8.7 | |

Here it will be seen that the percentage of male deaths very decidedly exceeds that of female deaths, except in the year 1873-1874; and taking the percentage on all, the death rate for the males is 14.8 percent & for the females 8.7 per cent.

## Prognosis.

The following are the leading symptoms and complications which would lead us to give an unfavourable prognosis of

a case of Typhus. They are only favourable when absent:

1. If the pulse in adults much exceeds 120 or is extremely soft, compressible, intermittent or imperceptible.
2. Absence of cardiac impulse or an excited and palpitating state of heart, especially if radial pulse is small.
3. Hurried respiration.
4. Very severe cerebral symptoms.
5. Sleeplessness, not yielding to treatment.
6. Coma Vigil.
7. A very contracted state of pupil.
8. Muscular tremors, subsultus, carphology, & twitchings of the muscles of the face.
9. Constant hiccup.
10. Relaxation of sphincters; or paralysis of bladder, so that the urine is retained. It is more unfavourable when these are developed early.
11. Early prostration.
12. Sordes in great abundance; dry, hard, and tremulous tongue.
13. A very dark Petechial eruption. The more abundant the eruption, the more severe the case.

14. Lividity & coldness of face & extremities.
15. If the temperature continues very high & if there is no remission at the beginning of second week.
16. Complications of all kinds, such as pulmonary hypostasis, pneumonia, &c., bed sores, gangrene of extremities, &c.

Though all these symptoms are extremely unfavourable, yet it must be borne in mind that a patient may recover from any of them; & that so long as there is life there is hope.

## Treatment.

Several points in the treatment have been spoken of incidentally as they turned up; & they will be found on reference. There are others, however, as well as the general principles of treatment which fall to be considered here; & that in the briefest manner possible.

The treatment of Typhus Fever naturally separates itself into two

divisions, the prophylactic and the curative. The former belongs to the Sanitarian, and will be dismissed without further notice. It is with the latter that we, as physicians, have most to do; and through it we endeavour to conduct the fever to a favourable issue by bringing into play all the knowledge of Hygiene & Therapeutics which we may possess.

In Typhus Fever, medicines are only used for relieving symptoms and ameliorating complications; none have yet been discovered (or are likely to be discovered) that are able to cut short or abort an attack. Though some have professed to do so by means of emetics, bloodlettings, purgatives, quinine, &c.

Though many a case goes on to a favourable recovery without a single drop of medicine, yet there are many more that cause us at some period of their course to resort to our pharmacopeias. Though medicine may not be required, yet all cases seem to be benefited by the administration of the mineral acids; at all events they do no harm. & their

acidity makes them exceedingly grateful to the patient. 15 mymims of Acid. Hydroch. dil. may be given in water every 3 or 4 hrs. or if there is any tendency to diarrhoea, Acid. Sulph. dil. instead. Further in the early stage, when the urine is scanty & of high sp. gr. some such mixture as this may be given: Rx. Spt. Junip. Co. ℥i, Spt. Aether. Nitr. ℥ß, Acid. Mur. dil. ℥ii, Mist. Camph. @ ℥vi, Misce, Sig. A tablespoonful in Water every 4 hours.

In a case of Typhus, without Complication, the treatment consists chiefly in reducing the temperature & in regulating the frequency of the heart's action; & this is perhaps best performed by the judicious management of the "Water treatment" so called. Depleting measures must be avoided as Typhus is essentially a debilitating disease. After a trial of the baths, I have given it up for cold or tepid sponging, or the cold or hot pack, as these latter methods are neither so annoying nor fatiguing to the patient.

With regard to the sponging frequently, it is cooling, pleasant to the patient, and keeps the skin clean. I have found that the tepid is liked in preference to the cold. The patient should be well sponged all over every 3 or 4 hours, and must not be dried. When the temperature reaches 104°. F. I am in the habit of ordering the hot pack — the hot in preference to the cold, as the temperature is reduced nearly as much, and the effect is more agreeable to the patient. It may be used once or twice a day as occasion requires & is administered thus: It is better that two beds be used side by side. A dry blanket is laid across the bed, & on the top of that is placed a sheet wrung out of boiling water & kept as hot as possible. In this, the patient, naked, is placed, the sheet folded tightly over the body, & then the dry blanket tucked closely all round. Other coverings are laid above, & the patient is allowed to lie thus for from ½ to half to one hour. If this process

is sharply & efficiently performed, the temp. should be reduced at least 2 degrees, and the pulse 20 pulsations. Moreover, the patient perspires freely & almost invariably falls into a sound sleep.

Ice, or iced drinks, are at all times desireable; & the pleasure derived from bathing the head frequently with ice cold water is great. When there is great headache heat of the scalp, a lotion containing Spt. Vin. Rect. Vel. Meth. & Aether. Sulph. (aa ʒi @ Aq. ʒvi) placed on the scalp in lint is useful. As Graves recommends, a towel wrung out of hot water & wrapped round the head, will answer the same purpose sometimes.

As adjuncts, to the pack & sponging, Sulphate of Quinine & Salycilate of Soda (3 to 5 gr. twice or thrice daily) may be given, but are not necessary.

To aid in keeping the patient cool, there should always be plenty of fresh air. The room should be large & airy but not draughty. The temp. of surrounding atmosphere

should not be above 60° F. & it is as well to have it below this. The mattress should be firm, & too many bed clothes should be avoided. Where it is possible two beds should be in use; one for the day & one for the night. No one, except he who has had experience of the two beds, can have a notion of the comfort thus obtained. At the beginning, the hair should be removed from the scalp; the shaving of the head may be left as an actual part of treatment, when it becomes necessary, as when delirium sets in.

Diet & Stimulation: This forms the most important part of the treatment and always requires particular attention. As to diet, something that is easily swallowed, easily digested, & does not overstimulate the glandular organs is what is required. Hence milk, switched Eggs & beef tea form the best diet during the course of the fever. Three or four pints of sweet

milk should be sufficient for the 24 hours, either taken pure or diluted with water. Taken in the latter form, the thirst is much readier quenched. Half a pint of lightest, without fat, should be given during the day, & as many eggs as may be thought desirable. The nurse should not wait for the patient to ask himself, but should supply him with a drink every 2 or 3 hours or oftener. Care however, being taken not to trouble the patient too often; & only small quantities should be given at a time, as the stomach is apt to become overloaded. A small quantity quenches the thirst as effectually as a hearty drink. With convalescence, light soups, as chicken broth, should at first be given; & when the appetite is fairly returned (which it usually does with great strength) care ought to be taken that the patient does not overfeed himself.

Stimulation: This has, of late, been a vexed question; but I think, any one who has had any Experience at all of fever, will own that alcohol in some form or other, is of the greatest importance in treating certain cases. Indeed, I would not take upon myself the treatment of any case of fever without having at command an unlimited supply of alcohol. The quantity to be given must be judged of chiefly by the pulse; but besides, there are ~~circumstances~~ symptoms which present themselves (as subsultus, Carphology, pulmonary hypostasis, &c.) that call for the careful administration of this stimulant. It matters not particularly what form the alcohol takes, provided it be given in proper quantity. The cases in which alcohol is demanded are chiefly

1. Where the pulse is flagging, is soft & compressible, irregular or intermittent.
2. Where there is a very dark or copious Eruption.
3. Where the extremities become cold, or

where there is much perspiration.
4. Where there are complications.
5. An old person requires it more readily than a young one. Indeed those under 20 seldom require it at all.
6. If the patient has been accustomed to stimulants, his favourite should be given.

If brandy or whisky seems to make the patient more restless or to make the pulse irritable & wiry, wine may be tried instead & if there is no amendment or if there is an increase in the severity of the symptoms, the alcohol should be stopped altogether.

When either of these stimulants is administered, it should be well-diluted with water, or milk, & if the extremities are cold or if there is perspiration, the water should be hot. A good way to give them is mixed up with egg & milk.

One cannot define the quantities of wine or spirits that should be

given in any individual case; but the quantities which I have prescribed have varied from a glass of wine (2 oz.) to half a bottle of brandy or whisky (12 or 16 oz.) in the 24 hrs. But such large quantities are seldom required.

When the symptoms for which the stimulant has been given begin to abate, it should be stopped — not all at once, however, but by degrees. During convalescence, I believe that malt liquors are often of much service — that is, where the patient does not seem to pick up flesh quick enough or where the appetite is not very good. An imperial pint of porter, given at the middle of the day has, in some cases, an undoubted good effect; and, I only say this after frequent trials of a "do-with" & a "do-without". It is not absolutely necessary that a convalescent should get porter or beer, but I believe that for a public institution, it is cheaper to give it than withhold it in certain cases; for, in such,

Convalescence is sooner completed, & dismissal can be sooner given.

Besides alcoholic stimulants, nucleated stimulants may be given with advantage in cases of great prostration. I have tried both the Carbonate of Ammonia & the Spt. Ammon. Aromat. but I am not inclined to look on them with favour, as the results obtained did not come up to my expectations. indeed they seemed to have a poisonous effect on the blood. I now prefer Spiritus Chloroformis, or Aether. Sulphuric.

It should here be remarked that the patient's strength should be laboured as much as possible. Hence after the first week, the bed pan & slipper should be used. the patient should be disturbed as little as possible while the bed is being made up; & if there is delirium except in wild cases, restraint should be avoided, as often the knowledge that that they are being confined makes

the patients worse, & causes them to increase their struggles — with, of course, a consequent weakening effect. In some cases, however, it is necessary to keep patient in bed, by fastening a sheet over him & each side of the bed.

## Relief of Distressing Symptoms.

Headache is perhaps the most common symptom that the patient seeks relief from; this may be obtained in some instances by the administration of cathartic medicines; but failing these, evaporating lotions, applied to the scalp, are most agreeable. The head should be shaved & the lotion mentioned at page 100 used. If this, too, fails, pouring cold water on the head over a basin may be tried; or as Graves recommends, hot fomentations. This last application often has an immediate & lasting effect.

The treatment for Delirium & Sleeplessness will be found at pages 57 & 64; for

Stupor, p. 64; for hiccup, p. 68, & for pulmonary congestion, pp. 44.

## Complications & Sequelae.

Of these the most important are the pulmonary Complications; the chief being bronchitis & pulmonary hypostasis. The treatment has already been given. True pneumonia must be treated in the same way as the passive Congestion.

Paralysis after typhus requires generous diet and tonics as strychnia & the mineral acids. Galvanism may also be used.

Incontinence of urine during convalescence, I have only seen once & was recovered from under the use of the tincture of the perchloride of Iron & Quinine.

Diarrhoea should be treated by Astringents or opiate enemata (starch & Laudanum). The mixture I most frequently use is ℞ Sol. Mur. Morph., Acid. Hydroch. dil., aa 3ii, Aquae ad 3vi ℔. Dose: a tablespoonful. Lead & opium pills may do all that is required.

Bedsores, Spontaneous Gangrene, & Erysipelas have already been spoken of – see p. 79.

In concluding these remarks on the principal points of treatment in Typhus, I would only add that it is of the greatest possible moment to have a thoroughly qualified nurse – a nurse on whom you can depend. She must be strictly sober, patient, & kind, as the carrying out of the treatment devolves upon her. The nurse should be so qualified as to be able to notice any change in the patient's symptoms from hour to hour & should notify the physician of the same. She must be in constant attendance (one night & one day nurse) & must see that the patient gets proper quantities of nourishment, & medicines, when ordered at the proper times. There are in fact, numerous points to be attended to, which can only be done by a carefully trained & conscientious nurse.

# Enteric Fever.

## Definition.

As the definition given by Murchison* is nearly perfectly complete, I will reproduce it here in toto:

"An endemic disease, generated & propagated by certain forms of decomposing organic matter. Its symptoms are: a commencement often insidious, or marked by slight rigors, a sensation of chilliness, or profuse diarrhoea; pulse usually frequent & soft, but pulse and temperature both subject to great variations in same patient; febrile symptoms in mild cases often remittent, tongue red & often fissured, occasionally becoming dry and brownish; in most cases, but not invariably, increased splenic dulness, tympanites, abdominal tenderness, gurgling in the iliac fossae, and diarrhoea, with or without intestinal haemorrhage; skin warm, with occasional sweats, an eruption of isolated, elevated, rose-coloured

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* Murchison on Continued Fevers Ed. II. p. 417. London, Longmans, Green & Co. 1873.

spots, vanishing on pressure, first appearing between the seventh & fourteenth days, and coming out in successive crops, each of which lasts two or more days; frequently Epistaxis; prostration coming on late, patient rarely taking to bed before the seventh or eighth day; headache, sometimes followed by stupor and active delirium, but mind often clear throughout the attack, even in fatal cases. dilated pupils. the disease protracted to the twenty-fourth or thirtieth day, and occasionally, though rarely, followed by a relapse of all the symptoms, including the eruption; after death, disease of the solitary and aggregated glands of the ileum, and enlargement of spleen and mesenteric glands."

To this description, however, should be added the peculiar pinkie flush on the cheeks, so frequently seen in Enteric; as also the characteristic pallor of the whole skin.

# Etiology.

## (a.) Predisposing Causes.

1. Sex: Though sex is said to have no influence on the prevalence of Enteric Fever, males being attacked as readily as females, yet in Belvidere Hospital, the greater number has been among the males as will be seen from the following table:

Table XI.

Enteric Fever: No. of Males & Females.

| Year | Male | Female | Year | Male | Female |
|---|---|---|---|---|---|
| 1871-72 | 56 | 27 | 74-75 | 184 | 158 |
| 72-73 | 106 | 75 | 75-76 | 265 | 232 |
| 73-74 | 121 | 154 | 76-77 | 150 | 144 |
| Totals. | Males: 882 : Females: 790. | | | | |

The difference however, is not very striking; & it will be seen that in one of the years (1873-74) the females predominated. Taking the aggregate of all these years, the males exceeded the females by 92 or 10.4 per cent.

2. Age has a very marked influence in predisposing to Enteric Fever – it being more frequent in youth & adolescence than in old age. See following table.

Table XII.

Enteric Fever.

No. of Patients admitted to Belvidere from May 1871 to April 1876, at quinquennial periods of age.

| Age. | 0 to 4 | 5-9 | 10-14 | 15-19 | 20-24 | 25-29 | 30-34 | 35-39 | 40-44 | 45-49 | 50-54 | 55-59 | 60-64 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 59 | 172 | 300 | 273 | 293 | 137 | 76 | 24 | 24 | 9 | 7 | 2 | 1 |

From this table, it will be seen that the greatest number are from the age of ~~the age~~ of puberty on to 25; and that it is very rare over 40.

3. Mode of Prevalence: Enteric Fever is decidedly an endemic disease, and is always with us. The following table shows the number of admissions during several years into Belvidere Hospital:

Table XIII.

Enteric. Yearly Admissions.

| 1871-72 | 1872-73 | 1873-74 | 1874-75 | 1875-76 | 1876-77 |
|---|---|---|---|---|---|
| 83 | 181 | 275 | 343 | 497 | 294 |

The prevalence of Enteric has nothing whatever to do with Typhus; for, while in the year 1871-72 there were admitted to Belvidere Hospital 504 cases of Typhus and 82 of Enteric, there were admitted in 1872-73 only 297 Typhus while the Enteric had increased to 181. Again, in 1873-74, while the Typhus had diminished to 228, the Enteric had increased to 275; and so on with other years.

Enteric Fever has never occurred in large epidemics like Typhus, or like it devastated whole countries. When it is Epidemic it is only on a small scale; being confined to one street, or block of houses, or a small portion of a large town, or to a village, or to a certain number of persons supplied with milk from the same dairy. &c.

This will be well seen in the description of the "Washington St." Epidemic, detailed further on. Just at the present moment as I am writing, there is a small epidemic (I know of 7 persons who are attacked) in which all the patients have received their milk from one dairy. (This Epidemic swelled to huge proportions - See additions).

4. Months & Seasons: Enteric Fever has a more marked relation than Typhus to the seasons of the year. Thus, it is more frequent in autumn, as will be seen from the following table of monthly admissions from 1871 to 1877.

Table XIV.

Enteric: Monthly admissions to Netley from 1871 to 1877.

| | | | |
|---|---|---|---|
| May | 85 | Nov. | 171 |
| June | 68 | Dec. | 109 |
| July | 88 | Jany. | 124 |
| Augt. | 164 | Feby. | 106 |
| Sept. | 238 | Mar | 182 |
| Oct. | 190 | Apr. | 98 |

Here it will be seen that the greatest number of cases occurred in September & in all the years it was most prevalent in autumn, Excepting in one instance (1873-74) when it was Epidemic in the spring months.

Its prevalency has been seen to increase in an autumn following a dry & very hot summer and to decrease after a cold wet one. A warm damp summer, too, seems to predispose to it.

5. Overcrowding and deficient Ventilation: These have no effect on Enteric Fever. It occurs as readily at a farm house in the centre of a moor as in the densely peopled Irongate of Glasgow.
While we find the number of cases of Typhus from populous districts far in excess of the Enteric cases; the Enteric exceeds the Typhus in number as we go nearer the suburbs; and in the country, it is almost the only fever of those two that we find.

## Exciting Causes.

Enteric Fever is acquired by the people Firstly, through drinking water or milk &c laden with the specific poison — the excretory products of an Enteric patient having somehow or other got into these substances. (Budd's theory.)

Secondly, through defective sanitary arrangements, as the constant presence of decaying animal matter, bad water supply, &c. This is the origin de novo of Murchison.

Thirdly, through Contagion (or contact) Infection. (Budd's theory.)

With regard to the first cause, I could not do better than reproduce the account of certain outbreaks of Enteric Fever in Glasgow by James B. Russell, B.A., M.D. Medical Officer of health for Glasgow; and published by him in pamphlet form in October, 1875.

Article by James B. Russell, M.D.



119.

house of friends, &c. which can never be traced, and will therefore stand out in subsequent inquiries as apparent exceptions.

Asking you to bear in mind these remarks, I shall now give, in a continuous narrative, such facts as I have been able to make out concerning certain recent outbreaks of Enteric Fever in Glasgow, which I shall call the Washington Street, the Pollokshaws Road, and the Kingston epidemics.

Washington Street contains a population of 625 persons, inhabiting 150 dwelling-houses, nearly half of which are of one apartment, and of the remainder, two-thirds are of two apartments, and one-third of sizes ranging from three to five apartments. The inhabitants are for the most part of a very respectable, cleanly, well-doing class. From Dr. Fergus' return I find that there are only 35 water-closets in it, and 127 sinks. There are no water-closets in the one-apartment houses, only two in the two-apartment houses, and for most of that size of house the sinks are on the stair. The previous character of Washington Street, judged by our books, has been good. In 1874 there were only four cases entered as Enteric Fever, and of these, one sent to Hospital was found not so affected, and another is doubtful, leaving only two cases which are certain.

In the first days of September last we found that Enteric Fever had suddenly become very prevalent in this street, the most of the cases being mild, but many being well-marked and even severe. There were also many cases of slight derangement of health—nausea, giddiness, loss of appetite, slight diarrhœa. The first case of Fever sickened on the 25th August, and the last on the 27th September. In that interval 42 persons were seized with undoubted Enteric Fever, and 27 with the form of sickness described, which might be called Enteric Febricula. This, in a population of 625, is nearly 7 per cent. attacked with Fever, or, adding the minor cases, 11 per cent. ill in one form or another within one month.

From the clearly defined nature of this outbreak, and other circumstances, it comes easier within the bounds of strictly scientific investigation than the other outbreaks, and I have expended most labour upon it. Every house in Washington Street has been visited, and the source of the milk supply of every family ascertained, and the following is the relation of the milk supply to the Fever. We shall call one particular Dairy, X.

120.



224 individuals used milk from Dairy X alone, and of these 38 were attacked with Enteric Fever, and 11 with suspicious febrile disease.

116 individuals used milk occasionally from Dairy X, and of these 3 were attacked with Enteric Fever, and 16 with suspicious febrile disease.

285 individuals never used milk from Dairy X, and of these only 1 had Enteric Fever, and there were no cases of suspicious febrile disease.

As might be supposed, the customers of Dairy X were not confined to Washington Street, and it is interesting to observe how the Fever followed the milk. In Bishop Street, Main Street, and Stobcross Street there were cases of Fever among the customers, and I caused the milk supply of every family on the stair where these customers resided in each case to be ascertained, with the following result:—

In Bishop Street two closes contained 277 inhabitants. Of these, 77 individuals used milk from Dairy X solely, and of these 7 had Fever, and 2 were sick of suspicious disease, while 200 individuals did not use milk from Dairy X, and not one was ill in any degree.

In Main Street three closes contained 105 inhabitants, of whom 46 used milk from Dairy X solely, and of these 9 had Fever, while 59 did not use milk from Dairy X, and not one was ill in any degree.

In Stobcross Street, in one close, there were 20 individuals who used milk from Dairy X, of whom 1 had Fever, and 1 was suspiciously ill, while of 35 individuals not using milk from Dairy X none were ill in any degree.

The following is a Tabular Summary of these facts:—

| | No. of Individuals. | Fever Cases. | Suspicious Sickness. |
|---|---|---|---|
| Using milk from Dairy X solely, | 367 | 55 | 14 |
| Do. do. partially, | 116 | 3 | 16 |
| Not using milk from Dairy X, | 579 | 1 | — |

The thoroughly epidemic character of the outbreak will appear from the distribution of the cases as to dates of sickening, which, of course, has also an important relation to the cause of infection. Throwing all the cases of undoubted Fever in the various streets

together, there were 59 cases in 37 different families. These sickened thus:—

| | | | | | |
|---|---|---|---|---|---|
| In last week of August, | 31 | new cases and | 20 | new families. |
| First week of September, | 13 | ,, | ,, | 6 | ,, |
| Second ,, | 8 | ,, | ,, | 7 | ,, |
| Third ,, | 5 | ,, | ,, | 3 | ,, |
| Fourth ,, | 2 | ,, | ,, | 1 | ,, |

So that more than half of the cases developed in the last week of August, and among those first victims was one of the dairyman's own family.*

We have now to transfer our investigation to a farm in the Parish of Eastwood, from which Dairy X derived most of its supply, the milk being delivered there by the farmer's own cart.

This farm is occupied by two families whom we shall call $Y^1$ and $Y^2$. The wife of $Y^1$ took ill of Enteric Fever on 2nd August last, and her daughter sickened a week thereafter. Thereupon, I am informed, the dairy was taken into the sole charge of family $Y^2$. This plan of the farm will show how wretchedly it was designed for the safe management of transmissible sickness. I would particularly point out that the boiler-house contains three boilers for clothes-washing, for scalding dishes, and for cows' meat, all built together, and that close to those boilers there is a pump-well, the water from which is said to be used for washing dishes, &c., while drinking water is brought from a well at some distance. In this washing-house washings were done for the sick persons on 3rd, 10th, and 27th of August. You will remember that the first explosion of the Fever in Washington Street, took place in the last week of August. I have had both waters analyzed, and find them not above suspicion.† But it is clear that a well in a washing-house, near a sink and cesspool, and a liquid manure well, should be used for no purpose whatever in connection with a dairy.

Near this farm there is a row of seven cottages, inhabited by 36 individuals, of whom 16 used Y's milk alone (which is also the milk supplied to Dairy X), and of these 4 were ill of Enteric Fever; 15 used it partially, and 5 not at all, and none of these were ill. These persons sickened in the first and second weeks of September.

* See Appendix A. † See Appendix B.

Although the bulk of the milk from Y's farm went direct to Washington Street, part passed into the hands of $Y^3$, a milk agent on the South-side, and in the beginning of September Dairy X ceased to receive any part of this milk. Thereafter, the destination of Y's infected milk is concealed. The milk agent, when asked by me where it was sent, made the remarkable statement, "It gangs out o' your jurisdiction a' thegither—awa Paisley Road way!"

I am unable to go as minutely into the Pollokshaws Road and Kingston outbreaks as into that in Washington Street, because of the impossibility of getting at the facts in the same satisfactory way. I have, however, proved from its effects in Washington Street that the milk sent from Y's farm possessed a high infecting power. We have it admitted that this milk passed through the hands of the milk agent, $Y^3$, and we have ascertained several dairies supplied in whole or in part from this source, but possibly not all. I shall simply state that, of 199 cases of Enteric Fever registered by us *in the whole Southern District*, 98, or 49 per cent., certainly got milk from these dairies. As in the case of Washington Street, one of the victims was a servant in one of those dairies; and in this connection I may state that I have never known so many cases of Enteric Fever in the families of dairy-keepers. In two other cases, not, so far as we can ascertain, supplied by $Y^3$, members of the family were attacked; and the disease also prevailed to some extent simultaneously among their customers. All these cases were at once removed from the dairies.

The connection between the Fever and Y's milk becomes much more clear if we take the two infected areas apart. Thus, the Pollokshaws Road area yielded 55 cases, of which 40, or 73 per cent., were supplied with that milk constantly; and the Kingston area yielded 66 cases, of which 58, or 88 per cent., were supplied with that milk constantly.

The following are the dates of sickening of these cases in those areas. If this Table is compared with that previously given of the Washington Street outbreak, a remarkable agreement will be observed in the development of the epidemics, with this difference, that the acmé was attained in the second week of September instead of in the last week of August. The dates of the infected washings at the farm of Y, taken along with the circumstance of the diversion of the milk from Washington Street to the Southern

District early in September, afford a not improbable explanation of this difference.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Last week of August, | | 21 | new cases | and | 11 | new families. | |
| First week of September, | | 23 | „ | „ | 17 | „ | „ |
| Second | „ | 41 | „ | „ | 26 | „ | „ |
| Third | „ | 9 | „ | „ | 7 | „ | „ |
| Last | „ | 4 | „ | „ | 3 | „ | „ |

There were thus 98 cases in 64 families.* A striking feature in all recorded milk epidemics has been the number of individuals attacked in each family, and this is obvious in the outbreaks now reported upon.

The mortality from those outbreaks has been small. Of the 59 cases in the Washington Street epidemic 3 died. Of the 98 cases in the other epidemics 3 died.

Secondly: The following case that came under my own notice illustrates the fact that Enteric Fever may be caused by gross defects in drainage - foecal matter being allowed to accumulate and de-compose:

Case IX.

(Enteric Fever arising de novo).

Jessie M. — aet. 22, was admitted to Belvidere Hospital on 5th June, 1876, complaining chiefly of great weakness & pains referred to her bones. She had turned unwell 8 days before with shiverings and headache. She had vomited & her bowels had been relaxed. Pupils on admission were dilated. Tongue Coated with whitish yellow fur. No decided rash, but pain on pressure in right iliac fossa; and her stools were clay-coloured. In other respects, such as temperature, &c., she presented the symptoms of Enteric. After a rather protracted illness, she recovered.

This girl, three weeks before admission had gone to a new situation as a domestic servant in the West End

of Glasgow, where no fever was at the time, as ascertained by the Sanitary Inspectors. She had been perfectly strong, and in good health previous to that time. The Kitchen was on a sunk flat and was very damp. She complained of a bad smell in the place that sickened her. A fortnight had only elapsed when she turned unwell and had to take to her bed two or three days after. On the day on which she was brought to the hospital, workmen were Engaged in the Kitchen. The floor was raised and a drainage pipe was found to be burst or leaking. The smell that came from it could not be borne by patient & she had to go out-side.

This case would also seem to show that the period of Incubation in Enteric is about 14 days. (See the case under Contagion, page 124.)

Murchison in an essay presented to the Royal Med. & Chirurg. Soc. in March, 1858, endeavoured to prove the de novo origin of Enteric Fever, and his proofs are exceedingly interesting & striking.

Thirdly. Contagion:

Of contagion, there are various degrees. It is an undisputed point that small pox & scarlet fever are eminently contagious; and the weight of experience goes to prove the same of Typhus. With regard, however, to Enteric, there are great differences of opinion. Among the advocates of the non-contagious theory are ranked Andral (1833), Chomel (1834.) and Stewart (1840); whilst on the opposite side, as believing in the contagious nature of Enteric Fever are such authorities as Louret (1828), Bretonneau (1829), Budd (1856.), Trousseau (1861), Sir Thomas Watson (1871) and Murchison (1873.).

Though Enteric Fever seems to have been pretty conclusively proved to be contagious (especially by Wm. Budd), it does not possess this character (and it is well that it is so) to so high a degree as either Typhus or small pox. It ~~is~~ is true that it very rarely (or ever) happens that this disease is communicated to nurses or

other patients in the Belvidere Hospital. I have never seen such take place; but it is also true that Typhus is very seldom communicated from person to person in this establishment. I have only seen 6 such cases (Typhus). No medical officer, with the exception of myself, has ever been attacked here with fever, though for hours together, he has been in the wards.

But reverting again to Enteric, the following case, I think, goes to prove the contagious nature of that fever, and also to put the length of the period of incubation down at about a fortnight — 14 days being the length in one of Murchison's Cases, & in another, 21 days.

## Case X

(Enteric Fever contracted by Contagion.)

Two young men — Peter M.— and James Mc.L.— aged respectively 17 and 22, lodged together in the same room, but did not occupy the same bed. Peter M.— was a watchmaker; & James Mc.L. a Salesman in a Spirit Merchant's shop.

Peter M.— Contracted the disease first, having become infected at the coast, where he was spending his holidays. He first felt unwell on the day of his coming home. He took to bed then, & a fortnight after, James Mc.L— also fell ill — he having been staying in the meantime in the same room as Peter M.— Nine days after ~~Jas~~ Jas. Mc.L— turned unwell, both were admitted to the Hospital. Peter M.— had Enteric Fever in a very marked form: there was the typical face, rosy lenticular spots on abdomen, clay-coloured stools, &c. Jas. Mc.L— case was not so marked; but in a day or two, the features became decided enough, especially as to the temperature & clay-coloured stools. Both recovered. In the house in which they lodged, no one else took the fever & there were no cases in that locality. Both used the same food & the milk supply for the whole household was got from the same dairyman.

The Contagion of Enteric Fever is not a <u>Contagion</u> in the proper or usual sense of the term; as it is through

the stools that the disease is communicated; very seldom or never by direct contact, and never by a third person. As has been seen, the germs from the stools may be imbibed with milk or water – they having found their way through the soil into a well for instance – or through the air; or they may be inhaled directly from the stools. Dr. Wm. Budd says that it can only be communicated by means of the stools; & his book on this subject ably supports his assertions. Though Enteric stools are contagious they are not always so; because when fresh they are harmless; it is only when decomposition or fermentation liberates the poison that they become at all infecting.

Murchison * after treating of the Etiology of Enteric Fever thus sums up:

"1. Enteric Fever is either an endemic disease, or its Epidemics are circumscribed.

2. It is most prevalent in Autumn & after hot weather."

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* Murchison. Ed. II, p. 496.

3. It is independent of overcrowding, & attacks the rich & poor indiscriminately.
4. It may be generated independently of a previous case by fermentation of faecal & perhaps other forms of organic matter.
5. It may be communicated by the sick to persons in health; but even then, the poison is not, like that of small pox, given off from the body in a virulent form, but is developed by the decomposition of the excreta after their discharge.
6. Consequently, an outbreak of enteric fever implies poisoning of air, drinking water, or other ingesta with decomposing excrement."

## Symptoms of Enteric Fever.

The invasion of Enteric Fever is exceedingly insidious; and in many cases is taken no notice for several days by the patient, who will tell you that he believed "it was only a slight cold". Very rarely does

the patient take to bed till the end of the first or even the second week; so that when admitted to the hospital, the fever is usually pretty far advanced. Those sent in the first stages are usually the relatives of patients who already have the fever & who have in consequence been kept under observation. The onset may be simply a feeling of cold, seldom great shiverings, "a weakness", pains throughout the body, or a relaxed state of the bowels. The pulse becomes accelerated, the skin hot, appetite vanishes, and thirst comes on. The tongue becomes covered with a pale fur and is usually red at tip and edges, with, it may be, enlarged papillae. Occasionally there is epistaxis. The fever is remittent, the remissions occurring in the mornings. At the end of the first week, the lips become parched & dry; the bowels are usually more or less relaxed - the stools being of the colour of pea soup & of a very foetid odour. The weakness is such that patient is disinclined to exert himself. The abdomen becomes more or less distended and tympanitic & there is occasionally gurgling in the right iliac fossa. Pain

is more frequently present in this region.
The urine, as in Typhus is scanty, of high
sp. gr. & colour, and very frequently contains albumen.
Headache may have
Continued or been absent from the beginning.
Sleep is absent; but there is very rarely
any delirium or impairment of the
mental faculties. There is not the heavy,
stupid look of Typhus: The eyes are
clear the pupils dilated; the skin has not
that dusky colour so characteristic of Typhus,
but is pale & on the cheeks is frequently
a circumscribed pink flush, chiefly
seen at night. Sometime between the
seventh and fourteenth days, in a typical
case, appears an eruption on the chest,
abdomen, back, & more rarely on the
Arms consisting of small, elevated,
rose-coloured spots which disappear
on pressure. These remain out for two
or three days, when they give way to
successive crops of similar spots. They
may number from one or two to hundreds;
but most usually (when present at all)
a dozen or a score of spots at most
are all that can be seen. Very frequently
they are entirely absent.

About the middle or end of second week, the headache disappears, and somnolence, but rarely delirium, supervenes. The delirium, when it does occur, is of a more noisy & querulous character, than that of Typhus. The pulse is about 120 & usually weak and lacks the firmness of the typhus pulse.

The remissions become more decided but the temperature still keeps up. The lips become parched, cracked, & may bleed. Epistaxis may occur at intervals. The tongue is dry in centre, brown & cracked, though it may continue red at edges. The tympanitis increases; the stools may contain blood; the urine is paler & of lower sp. gr. The prostration increases & emaciation makes marked progress.

Improvement usually takes place at the end of the third or in the fourth week. When death results, it is usually at a late stage of the disease, & commonly is from some bowel lesion as perforation & peritonitis, haemorrhage & diarrhoea causing exhaustion.

Of course, death may occur at any stage of the disease from various complications, such as those of the lungs.

There is no sudden crisis as in Typhus, but the defervescence is gradual & fluctuating. The pulse, even in convalescence, continues quick & is easily accelerated. Convalescence too, may be cut short by a relapse of all the symptoms, and this time, it may terminate fatally. Hence, Enteric fever, though its duration is commonly from three weeks to a month, may be lengthened to three months or more.

It is exceedingly difficult to give a perfect sketch of enteric fever, as its modifications are so numerous. Thus, the only symptoms present may be a temperature of 102° to 104° in the evening, with debility, loss of appetite & slightly furred bowels. In some cases, the tongue is very little changed from normal; in others it may be pale & flabby; more commonly is it covered with a white fur & enlarged papillae having red tips & edges, somewhat

like that of scarlet fever. There may be diarrhoea & not tympanitis; & not unfrequently there is no diarrhoea at all, but Constipation instead. There may never be a spot seen; the appetite may not be bad & there may be no great thirst. Indeed the modifications are endless and these are only got up by the inspection of numerous cases.

## Illustrative Cases.

### Case XI

(Enteric Fever of mild type. Convalescence at end of 3rd Wk.)

James S. —, aet. 17, Adm. into Belvidere Hospital, 19th Aug., 1876. The first symptom noticed was loss of appetite. Had had diarrhoea — the motions, as patient described, being like ~~pea~~ milk.

Aug. 19. (12th day.) Face clear. Tongue very dry, with brown fur in centre. Several rosy, lenticular spots, disappearing on pressure, on abdomen. Temp. not great. Perspiring a little. Pulse 68 & good. Ordered milk & beef tea in small quantities & only if there was no diarrhoea.

Aug. 20. (13th day.) Slept pretty well. Had one enteric-

looking motion. Pulse 68. No pain or tympanitis in abdomen. Aug. 21 (14th day), Sudamina on chest. Eruption well marked. Some new spots. Pulse 72. Tongue dry, red at tip & papillæ enlarged. Pale formed motion. Sleeps well, but has great thirst. Got acid drink. Aug. 23. (16th), Temp. feels almost normal to hand. Rash still persists. Not so thirsty; motions loose. Aug. 24, (17th day.) Tongue quite clean. Pulse 64. Skin Cool. Motions still pale. Complains of hunger. Ordered rice & milk. Patient continued to improve, was up in a day or two & was dismissed well on Sept. 23rd.

## Case XII.

(Enteric Fever with Delirium. Haemorrhage. Boils, Lung Complication. Recovery.)

Patrick M. – æt. 18, Adm. Sep. 16th, 1876. Patient states that he took ill 6 days ago with profuse diarrhoea & that he couldn't sleep for requiring to get up to stool. His back & legs ached & he had a tendency to vomit. On admission eyes were normal; tongue dry & covered with a light fur. No rash, nor pain in abdomen; but feverish.

Pulse 96. Ordered simply milk diet.
Sep. 16 (7th day.) Asthire was severe diarrhoea, got a mixture containing Sol. Mur. Morph. & Acid. Hydroch. dil. The stools were thin, Yellow & foul smelling. Slept well. Pulse 104.
Sep. 17, (8th day.) Five or six rose spots on abdomen, disappearing on pressure. Was more feverish — ordered hot sponging. Sep. 18 (9th day) Three motions. Tongue dry & brown. Skin pungent. Ordered hot pack for ½ hr.
Sep. 19. (10th day.) Pulse 100 & good. Slept all night. No motion. Pain & gurgling in right iliac fossa. Cough & sputum tinged with blood. Poultices to chest & abdomen. Sep. 22 (13th day), Doesn't sleep well now & is slightly delirious. Tongue & teeth covered with sordes. Pulse weak & 96. Has become deaf. Gets 6 oz. Wine. Sep. 23, (14th) Last night, patient passed from bowels a large qty. of fluid blood — of the colour of venous. Ordered 2 pil. plumbi & opii, 2 drachms Liq. Ergotæ Ext., ice to suck, and cold wet cloths to abdomen every 10 minutes for an hour. The hæmorrhage did not recur; but of course with a stool this morning, there was a slight admixture of blood. Receives 10 oz. Wine. Muttering delirium.

Drinks well. Rose spots gone. Sep. 24 (15th.) A deal of blood in sputum. To get 10 drops Turpentine in milk every hours, Poultice to chest. Patient is much weaker. Sep. 25 (16th. day.) Pulse 100. Rested well. Two or three new rose spots on abdomen. Subsultus. Kept tongue out when asked to show it. Sep. 26, (17th. day.) Blood gone from sputum. Turpentine stopped. Sep. 27, (18th. day.) As rusty sputa again, turpentine recommenced. Tongue & teeth black & dry. Pulse weak & 104. Temp. high. To be sponged every 3 hrs. & to get egg flip. Oct. 3, (24th. day.) Last night patient began crying & pulling up his legs & exclaiming that he was suffering abdominal pain. Poultices were immediately applied & he got 3 grs. Calomel & ½ gr. opium every 2 hrs. Oct. 4 (25th. day.) Tongue cleaning. Much better. Pain gone. Oct. 11, (32nd. day.) Tongue clean. Is weak, both in mind & body. Can't articulate words very well. Solid diet. Opened numerous boils over body. Got up soon & was dismissed 15th. Nov.

# Case XIII.

(Enteric Fever with haemorrhage, severe bronchitis, and great perspiration. Very copious Eruption. Recovery.)

Wm. H. – aet. 21, Adm. 7th Oct. 1876; Turned unwell 12 days before admission "with a cold through body". Worked for several days before taking to bed. He lost his appetite, became very thirsty, and had slight diarrhoea.

On admission, pupils dilated & eyes brilliant. Complexion clear. Tongue dry & thickly furred. Skin moderately hot & covered with copious sweat. Very copious rash of rose-coloured spots on abdomen. Pulse 100 & good. Throat slightly painful. Ordered milk diet & sponging. Oct. 8 (13th day.) Becoming a little delirious. Two pale loose motions. Oct. 10 (15th.) Rose spots very well seen on abdomen. Some have also appeared on arms & in all there are several hundreds. Gets 4 oz. whisky. Oct. 11 (16th day.) Was called to see patient & found he has passed 4 or 5 pints of fluid & clotted blood from bowels. Patient was pale; lips were livid. Pulse very weak & 104°. Gave him 2 drachms Ext. Ergot. Liq. at once & 1 dram every hr. for 6 hrs. Cold cloths also applied to abdomen & got 6 oz. Brandy & Soda. Oct. 12, (17th) No haemorrhage.

Rash fading. Pulse fair & 112. Tongue white. Pain on pressure in right iliac fossa. Poultice applied. Difficulty in voiding urine. Fomentations applied to pubic & perinæal regions. Oct. 15 (20th.) Rash still evident. Tongue dry & tremulous. Skin hot & pungent. Pulse 112. Normotion. Pupils contracted. Sleeps pretty well. Ordered hot pack & eggs. Oct. 22, (27th.) A natural motion. Pulse 116 & very weak. Tongue still dry. Patient lies listlessly in bed & is slightly somnolent. To get 6 oz. Brandy & beef tea & soup. Oct. 23 (28th. day) Epistaxis. Oct. 29 (34th. day.) Pulse 96. Pallor of countenance great. Perspires a great deal & has a slight cough. No appetite. Ordered Quinine & Iron. Nov. 2 (38th. day.) Perspiration stopped, but Cough becoming worse, though he has been getting Camphor water. Ordered ℞ Sol. Morph. Mur. ℥ii, Spt. Chloroj. ℥ii, Syr. Scillæ ℥iv, Glycerini ℥i, Aq. Camph. ad ℥vi ℔. Sig. Tablespoonful every 4 hours.

Continued to improve. Got out of bed on Nov. 6, & was dismissed on Dec. 6.

## Case XIV.

(Enteric Fever with very profuse haemorrhage causing Death on 35th day during a Relapse).

Wm. C. — act. 16, adm. 26th Sep., 1876. Turned unwell 7 days prior to admission while at work, with pain in head & all through body. His legs became weak & he had shiverings. Bowels were not loose; but when he sat up he felt as if he would vomit.

On admission pupils were dilated; tongue covered entirely with white fur. No rash, No tenderness in abdomen. As bowels had not been moved for several days he got a small dose of castor oil.

Sep. 27, (8th day.) Had pale, badly smelling motion. Skin hot, pulse good. Not very ill & no very bad symptoms. No tenderness in abdomen.

Oct. 2, (13th day.) Patient is almost well. Tongue nearly clean. Temp. about normal. Pulse 68. Put on rice diet, with bread &c. Oct. 3 (14th) Pulse 65. Tongue cleaning steadily. Skin cool. Oct. 10 (21st day.) Put on steak & egg & was permitted to be out of bed.

Oct. 17 (28th day.) Patient relapsed. Became feverish; Two or three rose spots appeared on abdomen, tongue became furred & pulse more rapid. Ordered hot pack & returned to milk diet.

Oct. 18, (29th day) Sleeps moderately well but temp. 104°. F. Tongue covered with whitish ~~[illegible]~~ fur. Enteric stools. Oct. 19, (30th) Several red rose spots. Becoming deaf. No tenderness in abdomen. Oct. 20, (31st) Delirious, pulse weak + 112. To get 3 Eggs + 4 oz. brandy. Oct. 22, (33rd) One motion. Pulse 116, + Very weak. Tongue dry + tremulous. No sleep, very delirious. To be sponged with tepid water every 3 hrs. + to get 6 Eggs + 8 oz. brandy. Oct. 23, (34th) Very ill this morning. Had an exceedingly restless night. Tongue foul + tremulous. Sordes on teeth. Continues very delirious + passes urine + stools in bed. Sponging every 3 hrs. + to get following ℞. Tr. Nucis Vomicæ 3i, Tr. Opii 3i, Aquæ ad 3vi ℔. Liq. 3j every 2 hrs. Oct. 24 (35th day.) Patient this morning took very severe intestinal haemorrhage. All at once the bed was flooded. Gave 3ii Ext. Ergotæ Liq. + 3i every hr. Also cold cloths to abdomen. As pulse was very weak, got brandy freely. Moist râles appeared in Chest, Sinapisms were applied + he got an ammoniacal expectorant. The haemorrhage reappeared several times with an hour or two between the times. The

liquid extract of Ergot was having no effect. Then tried the hypodermic injection of ergotine (5 gr. twice), but all in vain & the poor fellow died the same evening at 6 o'clock.

## Case XV.

(Enteric fever with delirium. Death at end of 4th Wk.)
Timothy H. — aet. 23, Adm. Oct. 30, 1876.
Took ill about 3 Wks. previous to admission & was in bed for the last 15 or 16 days.

He has the regular enteric physiognomy: dilated pupils, flushed cheeks, sordes on teeth, dry tongue not much furred; hot & dry skin, full & rounded abdomen, tympanitis, the typical rosy lenticular spots & profuse diarrhoea but no tenderness in right iliac fossa. Pulse 104 & of fair strength. Ordered milk & beef tea and occasional sponging.
Oct. 31 (19th day.) Slept pretty well. Had 2 or 3 enteric stools. Rash very brilliant. Tongue dry & brown. Complains of being giddy on getting up; so bed pan to be used. Nov. 1 (20th.) Only slept at intervals & was delirious. Some new spots on abdomen but still no tenderness. Head to be shaved. Nov. 3 (22nd) Tongue

Covered with bloody sordes. Pulse 104 & weaker. With difficulty kept in bed. Ordered 6 oz. whisky & in addition to the milk & beef tea to have raw eggs. Nov. 4 (23d.) Didn't sleep at all at night & only a very little in the morning. Tongue very dirty & tremulous. Subsultus tendinum. No motion. Passes water in bed. Pulse weak. Rash still persists & there is pain in abdomen on pressure. Ordered the application of poultices & whisky increased to 8 oz. Nov. 5 (24th.) Restlessness & delirium continues. Hands pick & fumble about. There is some distension of & pain in abdomen. Poultice applied & to get 20 grs. Chloral. Hydrat. & 3i potass. Bromid.

Nov. 6 (26th.) Pulse very weak & 128. Passes motions in bed. Muttering continually. Ordered the following prescription ℞. Ammon. Carb. 3i, Spt. Chloroform. 3iii, Liq. Strychnicae 3i, Syr. Simplicis 3i, Aq. ad 3viii M. Sig. One ounce every 4 hrs. Nov. 7 (26th.) Ordered 10 oz. brandy instead of the whisky. Nov. 9 (28th. day.) Patient is pretty strong though his pulse is scarcely perceptible. Has become very cross & not easily dealt with. Swallows well. Passes

water in bed. No motion for two days.
Nov. 11 (30th. day.) Pulse entirely gone. He spits out whatever is given him, & fights against everything done for him. He died that night.

## Case XVI.

(Enteric Fever with great delirium, meteorism, & pulmonary hypostasis, causing death at end of a month.)

Agnes M. — Aet. 18, Adm. July 26, 1876. Took ill 17 days prior to admission with headache, which confined her to bed at once. There was no vomiting nor purging but she became deaf. On admission, her pupils were dilated, eyes clear, tongue red & creamed. No eruption, nor diarrhoea. Pulse 128 & weak. Temp. 104°. 8 F. Abdomen very tense & tympanitic. Slightly delirious. Ordered head to be shaved, to have hot bath for ½ an hour, 4 oz. wine, milk & beef tea. July 28, (19th. day) Two undoubted rose spots have appeared on abdomen & 3 on chest. Enteric stools during

the night. Delirious, tongue very dry & foul. Pulse 104. July 29, (20th.) Pulse 124 & wiry. Sputum contains blood & sibilant râles heard in chest. Ordered poultices. July 30 (21st.) Had a little better but was very restless and delirious. Ordered ℞. Potass. Bromid. 3iii, Chloral. Hydrat. 3ii, aquæ @ 3iii ℏℌ. Liq. 3ß every hr. till sleep procured. Sponging Continued when not sleeping & urine measured. July 31, (21st.) Slept a little after the draught but towards morning was with difficulty kept in bed. Has cough & breathing not free. To be poultried, Shoulders raised, position altered at intervals & to get ℞. Ammon. Carb. 3i. Spt. Ammon. Aromat., Vin. Ipecac. aa 3iv, Decoct. Senegæ Conc. 3ii aquæ @ 3i, ℏℌ. Sig. 3ß every 3 hrs. Aug. 1 (22nd.), Rested very well. Tongue moist. Pulse weak & 124. Cough not so severe. Diarrhœa checked by Sol. Mur. Morph. & Hydroch. acid. dil. Abdomen very tympanitic. Ordered turpentine to be given internally & turpentine stupe applied externally. (Aug. 2 (23rd.) Tension of abdomen has

in great part disappeared, but patient was very noisy last night & tossed about in bed. Had 1 motion. Pulse bounding & 120. Temp. high. Face flushed. Tongue very dry. A little blood in sputum. Cooing râles heard chiefly at right apex. Poultice & Carb. Ammonia Mixt. to be continued Toast & Eggs & milk & to be fed carefully. Aug. 4 (25th.) Patient has been spitting up clots of blood in tenacious Sputa. The breathing is harrassed & sibilant râles are heard all over chest. There is also rough breathing and at right base are rough crepitations. Mustard poultice to base & patient to lie on left side. Pulse 136. Sudamina on chest. Aug. 7 (28th.) Was much worse. Fell into a sort of comatose Condition. Her lips were livid & breathing harrassed, evidently both from pressure on diaphragm by distended bowels, from mucus & from hypostatic Congestion of lungs. She was evidently being poisoned by Carbonic acid. Ordered Cold cloths to head, poultice to chest, turpentine internally & externally, Wine changed for brandy; and as

there was great distension of the bowels, an attempt was made to remove some of the flatus by stomach pump tube passed up rectum. This failed, however, tho' a quantity of pea soup stools came away. The breathing became easier later on in the day. Pulse 140. Temp. 103: 7. Aug. 9 (30th) Spent a very bad night, but had a little sleep in the morning. For tympanites got peppermint water & turpentine stupes to abdomen but only with temporary relief. Pulse 132. Breathing very short & she can with difficulty Cough & expectorate. The astringent action of the turpentine reduced somewhat the pulmonary congestion. Hands very tremulous. Swallows well. Aug. 10 (31st day.) Evidently dying. Pulse 144. Picks bed clothes. Difficulty in Coughing. Feet & hands cold. Sordes cover teeth. Passes motions in bed. Ordered hot bottles to feet &c. Gradually she became worse. Lost pulse & died Comatose on the evening of the next day.

# Analysis of Principal Symptoms.

## (a.) Physiognomy.

In many cases, there is no change in the facial appearance, except perhaps an expression of languor. But the typical face of Enteric Fever consists in bright, clear eyes, dilated pupils, clear skin, & hectic flush on one or both cheeks, much resembling the flush seen in pulmonary phthisis. This flush, when seen, appears most readily at night or after the administration of stimulants. It differs from the flush of Typhus in being lighter & clearer, & as the colour of a pale pink rose differs from that of a dark crimson one. The dusky, dull expression of Typhus is entirely absent; though in the late or Typhoid stage, there may be some resemblance between the two.

## (b.) Symptoms referable to the Skin.

1. The eruption of Enteric fever consists of small rosy, lenticular, isolated papules. These spots, which generally appear between the 7th & 12th days of the disease are from

half a line to two lines in diameter, and are raised above the level of the skin, so that they are easily felt when the finger is passed over them. They are most frequently seen on the abdomen, chest & back; though, when the eruption is profuse, they may occasionally be detected on the arms. The sides of the abdomen are their favourite seats. When each spot is watched, it will be noticed to last for only two or three days; & while some are disappearing, others are coming into existence. They are most plainly seen in persons of a fair complexion. Throughout the whole of their existence, they disappear under pressure, but return again, thus differing from the rash of Typhus. When they are present, new spots generally continue to appear till the commencement of Convalescence, when they die down, though they may continue for some time longer. Though the eruption forms a very characteristic symptom of enteric fever, it is very frequently absent. indeed, I believe it is more commonly absent than present.; yet,

though it may be altogether absent in the primary fever, if a relapse takes place it may show itself distinctly. (See Case XIV. p. 141.) And this is very common. So far as I have seen, the presence of these lenticular spots bears no relation to the severity of the other symptoms. They never become petechial & are never, like the eruption of Typhus, seen on the dead body. Their number is usually small, most commonly six or seven or there may be only a single spot, or there may be hundreds, as I can well recollect in at least 4 cases. Were we to compare the eruptions of Enteric and Typhus, the comparison would be something like this:

## Eruption.

| Enteric. | Typhus. |
|---|---|
| 1. Not always present. | 1. Invariably present. |
| 2. Rose pink in colour & remaining so to the end. | 2. Pale red at beginning, but becoming dark red or reddish brown. |
| 3. Spots appear in successive crops. | 3. The whole eruption appears at once. |
| 4. Each spot remains only for 2 or 3 days. | 4. Remains to the end of the disease. |

| Enteric. | Typhus. |
|---|---|
| 5. Each spot isolated. | 5. Contiguous, run into one another & form a mottling. |
| 6. Eruption situated on a pale skin. | 6. On a dark ground. |
| 7. Papular – elevated above level of skin. | 7. Not raised above skin – at least after first day. |
| 8. Spots are usually few in number. | 8. In large numbers. |
| 9. Most commonly seen on abdomen | 9. More frequently about chest, Arms Legs & especially on Anterior fold of axilla. |
| 10. No subcuticular mottling. | 10. Generally a subcuticular mottling. |
| 11. The number of spots bears no relation to the severity of the case. | 11. The more copious the eruption, Generally the more severe is the fever. |
| 12. Never seen on dead body. | 12. May persist after death. |
| 13. Never become petechial | 13. Eruption may become petechial. |
| 14. Spots disappear on pressure & return when pressure removed. | 14. Do not disappear on pressure – at least after first few hours. |
| 15. Usually appear between 7th & 12th days. | 15. Usually appear on 4th or 5th day. |

2. Hyperaemia of the skin very often precedes the appearance of the rash & is best seen on white, clear skins. This blush alone may be seen & no rash make its appearance. It somewhat resembles the flush of scarlet fever.

3. Taches Bleuâtres. I have seen in three cases, but they are evidently of no import. I have already described their appearance when speaking of Syphilis. (See page 37.) They vary in size from a split pea to a sixpence, and look as if the tip of the finger had been dipped in pale blue paint & placed on the skin. Their seat is chiefly on the abdomen as would appear from those that I have seen. And there is generally just one or two present; though in one of my cases, they completely covered the body, causing a very curious but not an ugly appearance.

4. Sudamina like taches bleuâtres are of no import; but are very commonly present, especially in children & young persons. They are most commonly seen like very

small particles of sago (boiled) over the chest and abdomen, and are, as in other acute affections, the accompaniments of heat and perspiration.

5. Desquamation usually takes place more or less during convalescence and is chiefly seen in young persons. Just now as I write, I have a patient, a little boy, whose cuticle is peeling off in large flakes from all parts of the body; very much as in the convalescence from Scarlet fever.

6. The Temperature: As a rule, there are a greater number of mild cases of Enteric than of Typhus, & consequently there are greater variations in the range of the temperature in individual cases of Enteric than Typhus. A very common evening temperature in Enteric is 103°F., & never rising above that all through the disease. The temperature in Enteric Fever makes a gradual rise & usually reaches its maximum at the end of the first week: So that a normal

temperature at the end of the first week in any illness would exclude the idea of Enteric Fever; so also would it be excluded if the temperature should be high (104° F. for instance.) on the first or second day. The fever is of a remittent type — the temperature falling in the morning and rising in the evening — the difference between the morning and evening temperatures being, when there is no complication, one-and-a-half or two degrees. The evening temperature rarely rises above 105° F. and is more commonly, in moderately severe cases, 104°. When it reaches its maximum, there is usually no change for 8 or 9 days; but at that time the morning remissions become more decided; so that there may be a very great difference between the morning & the evening temperatures.

Variations from the normal standard of temperature may be caused by the presence of complications. Thus the sudden appearance of a boil may cause the immediate rise of the temperature. It will fall if there is profuse diarrhoea or haemorrhage;

and it should be borne in mind that a sudden fall in the temperature with an increase in the rate of the pulse is almost always, if not quite, diagnostic of intestinal haemorrhage; so that when such a state occurs even although no blood has yet been seen, I immediately order the treatment for haemorrhage; viz, the administration of Ergot, &c. & the application externally of cold cloths. During convalescence, the temperature may fall below normal, and rise again. Until the temperature remains normal for several days, it is not advisable that the patient should get up; & even then, it is hard to say in this fever, that Convalescence is fairly established; for, although the temperature may remain normal or below the normal for a longer or shorter time, a relapse of all the symptoms & a sudden rise in the temperature may take place; thus showing that one cannot be quite certain for some time whether his patient is out of danger. It is this which makes Enteric

Diagram VII. Temp. in a mild case of Enteric Fever from 1st day of attack. After Wunderlich.

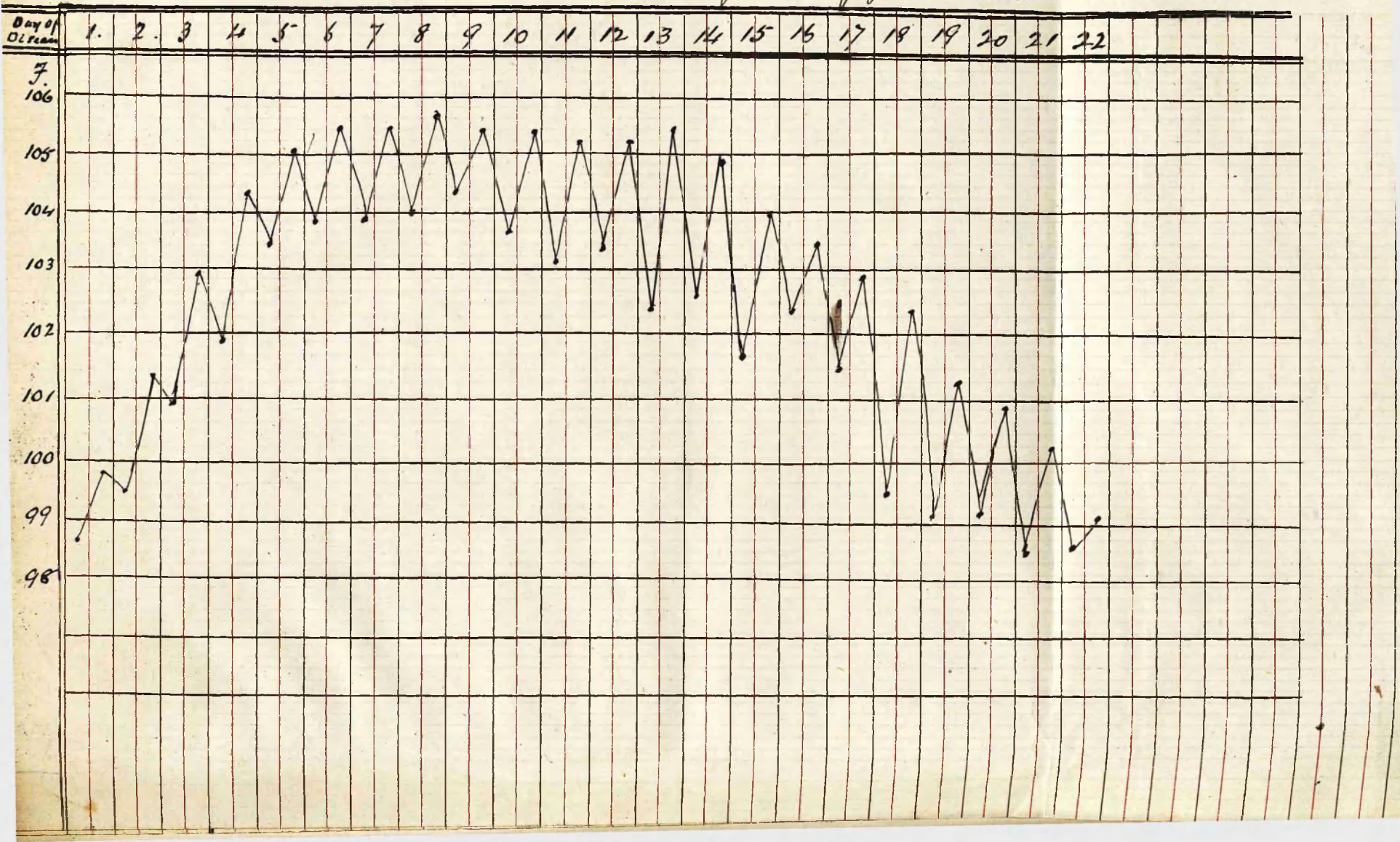
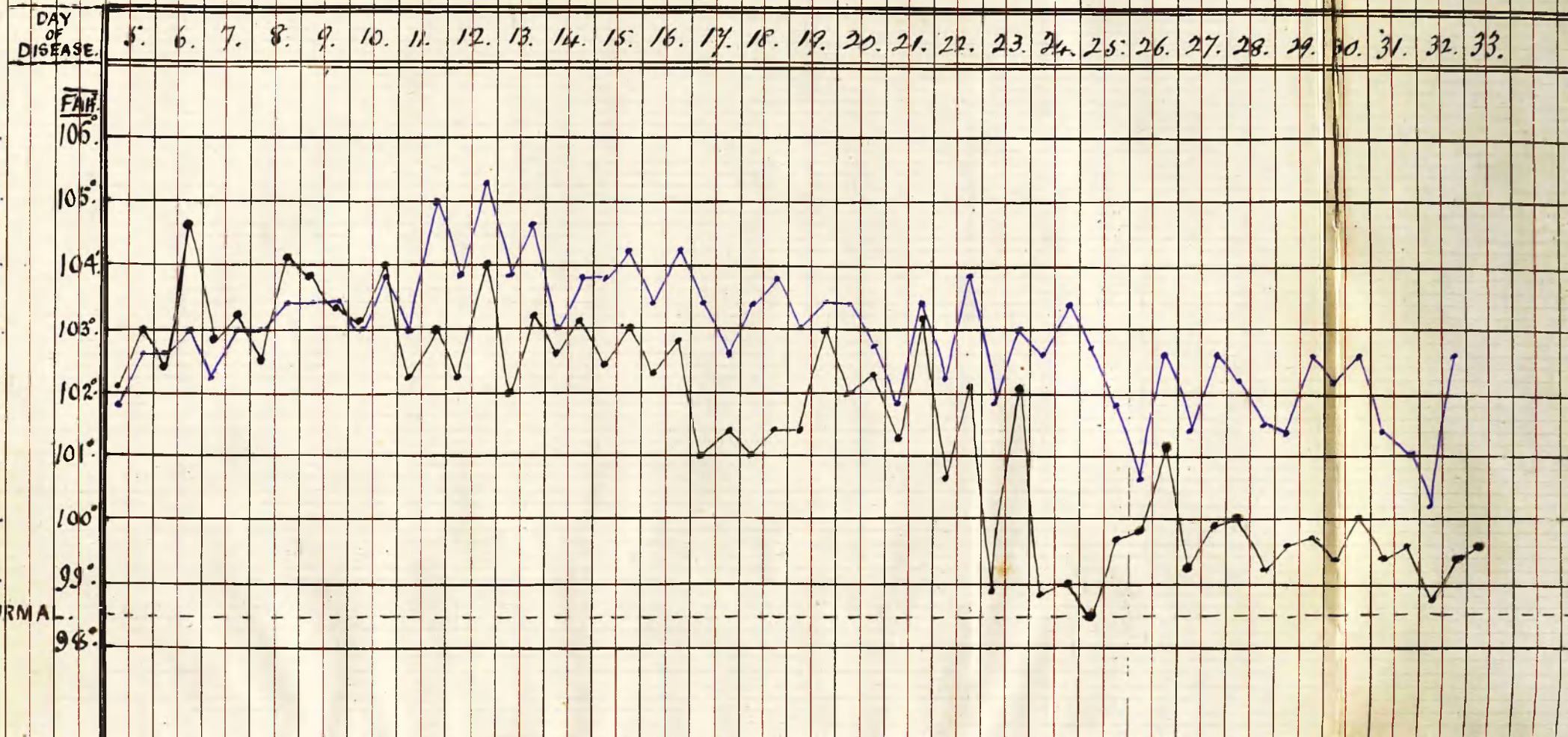


Diagram VIII.

John M.F. – aet. 12.

ENTERIC FEVER. Irregular temperature Pulse chart in moderately severe case. Tepid sponging thoroughly used throughout



such a heart-breaker to treat. And as bearing on this point I may state that I never considered myself justified in dismissing a patient till he had been at least three weeks or a month quite well and going about.

## (c.) Symptoms referable to the Circulatory System.

The pulse, like the temperature gradually rises and reaches its maximum about the end of the first week; always excepting, of course, the advent of some complication. The rate is always higher in the evening than in the morning and evidently bears some relation to the temperature. Unlike the pulse of Typhus, that of enteric varies greatly at different times, and is not at all of the same steady character. With convalescence there is a gradual fall, but, unlike the Typhus pulse, it seldom sinks below normal, and is always more easily excited than it; nor does it present the same resistance as the pulse of Typhus. The case is a grave one when the pulse of an adult

rises above 120 and a sudden rise in its rate, as ~~for~~ before mentioned (page 156.) is very suspicious.

The following table shows the pulse rate in two uncomplicated cases of Enteric Fever.

Table XV.

| Day | | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. 1 | M. | 88 | 96 | 92 | 100 | 104 | 100 | 100 | 108 | 108 | 100 | 108 | 104 | 104 | 104 | 100 | 104 | 88 | 92 | 88 | 96 | 97 | 76 | 84 | 92 | 84 | 72 |
| | E. | 96 | 100 | 100 | 104 | 104 | 108 | 120 | 122 | 116 | 108 | 112 | 112 | 96 | 108 | 104 | 97 | 104 | 108 | 100 | 104 | 88 | 96 | 96 | 88 | 96 | 80 |
| No. 2 | M. | | | 100 | 88 | 96 | 92 | 96 | 88 | 92 | 96 | 84 | 84 | 104 | 84 | 68 | 84 | 60 | 68 | 68 | | | | | | | |
| | E. | | 96 | 108 | 100 | 100 | 96 | 88 | 96 | 96 | 92 | 100 | 88 | 64 | 80 | 80 | 66 | 68 | | | | | | | | | |

The following Sphygmographic tracings were taken at various stages of the fever. A healthy pulse tracing is added for the purpose of comparison.

Diagram IX.

Healthy pulse. act. 12. pressure 2¾oz.

Enteric Fever. Adt. 19. Pressure 24. Taken at an early part of the disease. It is fully dichrotic and very soft; yet not a bad pulse.

Enteric Fever. Tracing taken from young man on the day before death, about the 16th day of the disease. Pulse very small; irregular in force; hyperdicrotic to slight extent, and a small dicrotic wave — the whole indicating failure of the heart's action. Pressure 1½3.

Enteric Fever: Tracing taken from a patient just convalescent. The full upstroke indicates that the heart is propelling the blood with good force into the arteries; and the tidal wave is beginning to appear.

## (d.) Respiratory System.

The respiratory movements, as in other febrile diseases, are quickened, and especially in the advanced stages.

## (e.) Digestive System.

1. The tongue, all through the fever, may present no remarkable change from the normal, or it may be only slightly furred & moist throughout. At the commencement it is moist & is usually covered with a thin white fur, the tip & edges at the same time being red. The 'strawberry tongue' is a not uncommon appearance — the tip and edges being bright red, the centre covered with white or creamy fur & the papillae enlarged & standing prominently out. Again in some, the tongue may be a counterpart of that seen in scarlet fever; being quite red, raw looking & having enlarged papillae. In the later stages in severe cases, it takes on the typhoid character, is dry, brown, & hard, or it may look as if it were smeared with glue. A very characteristic feature

of the enteric tongue is the seaming which is so often present in the later stages; but all sort of appearances are witnessed: Thus, it may be moist throughout, or dry, or thickly furred, or nearly perfectly clean, or pale & flabby, or red, & glazed, smooth, &c., but the typical tongue seems to me like that which has the white central fur, & is red at tip & edges; or has transverse cracks across the middle. The tongue may bleed & is very often painful. It is seldom so tremulous as that of Typhus & there is rarely such difficulty in protruding it.

2. The Lips and Teeth in severe cases are covered with sordes. The lips are usually parched & cracked & may bleed. Children not unfrequently cause them to bleed by picking.

3. The appetite and Thirst. The appetite is gone. The thirst in the early stages is great, but there is not such a craving for liquids as in Typhus. With convalescence, the appetite does not assert itself so forcibly as in Typhus.

4. Meteorism is a very prevailing symptom being generally present in a greater or lesser degree. In most fatal cases, it is marked; and it increases as the disease advances.

5. Gurgling in right iliac fossa on pressure, is not so frequently present as one would suppose from reading books. It occurs as well in Typhus, & is not a symptom that I would place much reliance on.

6. Abdominal pain and tenderness are very common symptoms and are usually most marked where there is tympanitis or diarrhoea. Their most common seat is in the right iliac fossa.

7. Diarrhoea is perhaps the most constant symptom of Enteric Fever. Though there may be only one stool in the 24 hours, it is generally fluid. Constipation is the exception & in 50 cases, which I specially noted, it only occurred 3 times. Diarrhoea, which may occur at any time of the disease is frequently the

first symptom to which the patient's attention is directed. But at first there may be constipation, and patient will tell you that it was only after the administration of some such purgative as Epsom Salts that the diarrhoea commenced. The diarrhoea varies in intensity, but it is only in comparatively rare cases, which are always grave, that it is excessive. But this may be due to the fact that precautions are always taken to prevent anything like an approach to profuse evacuation. I bear in mind one case in particular in which it was very excessive, protracted & uncontrollable. It will be mentioned further on when speaking of the treatment.

8. Characters of the stools: The stools of Enteric Fever are peculiarly distinctive being thin, pale, clayey-looking, or light yellow. Perhaps more dependence is to be put on their odour than on their appearance. It is particularly offensive and always has the same character. Their reaction is alkaline, whereas those in health are acid.

Sometimes mixed with the stools may be noticed greenish sloughs or flakes from the ulcered bowel, or there may be a few thin streaks of blood. While usually, at first, the stools are fluid, as Convalescence is approached, they become firmer, but still retain their pale appearance and offensive smell.

9. <u>Haemorrhage</u> from the bowel must always be looked for as the natural result of the pathological changes that are known to take place. It is not, however, a very common symptom, and I have only seen one death from it, while out of more than 100 consecutive cases, it has only occurred five times. In one of the cases, the haemorrhage occurred on the 16th. day; in another at the end of the 3rd. week; in a third on the 35th. day, & during a relapse (See page 141.), in the fourth, on the 14th. day, & in the fifth on the 21st. day. The blood may be either fluid or clotted or both combined. It usually is of a red colour, no doubt owing to the alkaline state of the bowel contents;

and it is clotted when it has remained sometime in the intestine. After haemorrhage, several of the stools are dark coloured from the admixture with blood. As was before mentioned, haemorrhage should always be suspected when the temperature suddenly falls and the pulse suddenly rises at the same time. At such times a pleuleiw greenish hue of the face & pinching of the alæ of the nose may be noticed. The quantity of blood passed may vary from a few drops to many pints, as occurred in my fatal case, and in which the haemorrhage was so profuse as to flood the bed, just as might take place in post partum bleeding. (See Cases XIII & XIV. p.p. 139 & 141.)

## (f.) Symptoms referable to the Muscular & nervous Systems.

1. Headache, Vertigo, and pains in back & limbs are nearly always complained of, especially at the commencement of the disease.

2. Delirium: Whereas delirium is present in a greater or lesser degree in nearly every case of Typhus, it is only in part & in very severe cases of Enteric, that it is seen at all. Out of 42 Consecutive cases which I specially noted in reference to this point, only five were delirious, and two of them were fatal - the cause of death in each being pulmonary hypostasis. As in Typhus, the intensity varies; but it appears to me that the delirium when it occurs in Enteric is always ~~very acute~~. of a wild nature.

At first it is acute, but as the patient becomes prostrate, it dwindles into low muttering. It makes its appearance later in Enteric than in Typhus, for it is seldom that it occurs before the second week. Thus, on looking up 8 Cases, I find that the first appearance of delirium in each case was (given in days) 10th, 13th, 14th, 16th, 17th, 21st, 28th. (this last being a case in which it occurred during a relapse. (See Cases, XIV, XV, XVI (pp. 141-145.)

3. Wakefulness, Somnolence & Coma. For the first week or ten days, there is usually more or less wakefulness at night; and only short snatches of sleep are obtained. But, generally about the end of the second week, this state is changed for the somnolent and the patient lies in a drowsy state, so that at whatever time you may see him he seems to be sleeping. The complete somnolency of Typhus is rare in Enteric and it is most marked in persons younger than adults. I have never seen coma vigil occur in Enteric.

4. Prostration comes on more gradually in Enteric than in Typhus. The person is not struck down, as it were, as in the latter fever; & may continue to work for a week or even a fortnight, before he is compelled to give up. Nor is the prostration so complete as in Typhus. A large proportion of the Enteric patients are able to get up to stool all through, & I have seen one get up not long before death (and the death did not result from any sudden complication, such as haemorrhage.)

5. The decubitus is the same as in Typhus. That is, it is usually dorsal, except with Children.

6. Muscular Paralysis is not so common as in Typhus, but in severe cases, the Stools & Urine are passed in bed. This takes place more frequently in children, & the urine is oftener passed in bed than the Stools. Dysphagia only occurs in fatal cases, & very frequently, where the Case is very grave & in a late stage, there is inability to protrude the tongue.

7. Muscular Agitation is not so common as in Typhus, and tremulousness of the hands and tongue occur only in severe cases, & in a late stage. Of six fatal cases, Carphology & subsultus were present in five, and in one there was hiccup.

Without Classifying them, there are other three Symptoms which I should mention, viz. dilated pupils, Epistaxis, and Emaciation. Dilated pupils

are nearly always present. They are seldom contracted. Epistaxis is by no means uncommon; it is sometimes a premonitory symptom. Thus, on the day on which I write this, I saw two cases of Enteric Fever in both of which Epistaxis occurred. Both were boys. The emaciation is sometimes extreme, especially when the disease is protracted, and it is always more a subject of remark than in Typhus.

## Stages & Duration.

The stages of incubation and invasion have already been incidentally mentioned — (See cases IX & X, pp. 125-127.) So also, to some extent has the stage of Lysis when speaking of the temperature. It will therefore now be only necessary to say a word about Convalescence.

One can never be sure when Convalescence has fairly begun; at all events we should never say so, unless the temperature is normal on several consecutive evenings; and it is always more protracted where there

is much emaciation. Though the temperature remains low, yet the pulse may keep high, in this respect differing from Typhus. Enteric further differs from Typhus in that the appetite and strength are longer in being established.

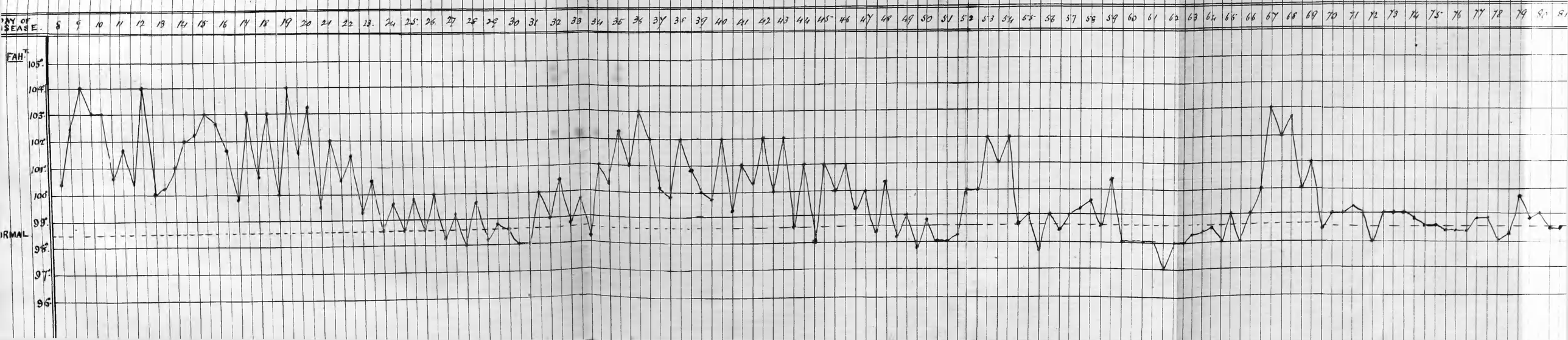
The Duration of this fever presents greater variations than does Typhus; for while some may not have a longer duration than a typical case of Typhus, yet others may continue for 60 days, as occurred in one of my own cases; and again, the patient may be prevented from getting out of bed for 4 or 5 months, with persistent diarrhoea (See Case of Charlotte St. p. 190.) The greater number, however, commence their convalescence in the fourth week.

## Relapses.

A relapse of the symptoms of Enteric fever is not very uncommon; and is one of the trying points in the treatment of this disease. It has occurred with me 12 times in 140 cases & one of the patients died during the relapse from haemorrhage (See Case XIV, p. 141).

Maria J. L. – æt 23. Adm. 26th Feb. Discm. 8th June.

ENTERIC FEVER. RELAPSE ON 31st DAY. THE 3rd & 4th RISES IN TEMP.R WERE DUE TO CONSTIPATION.

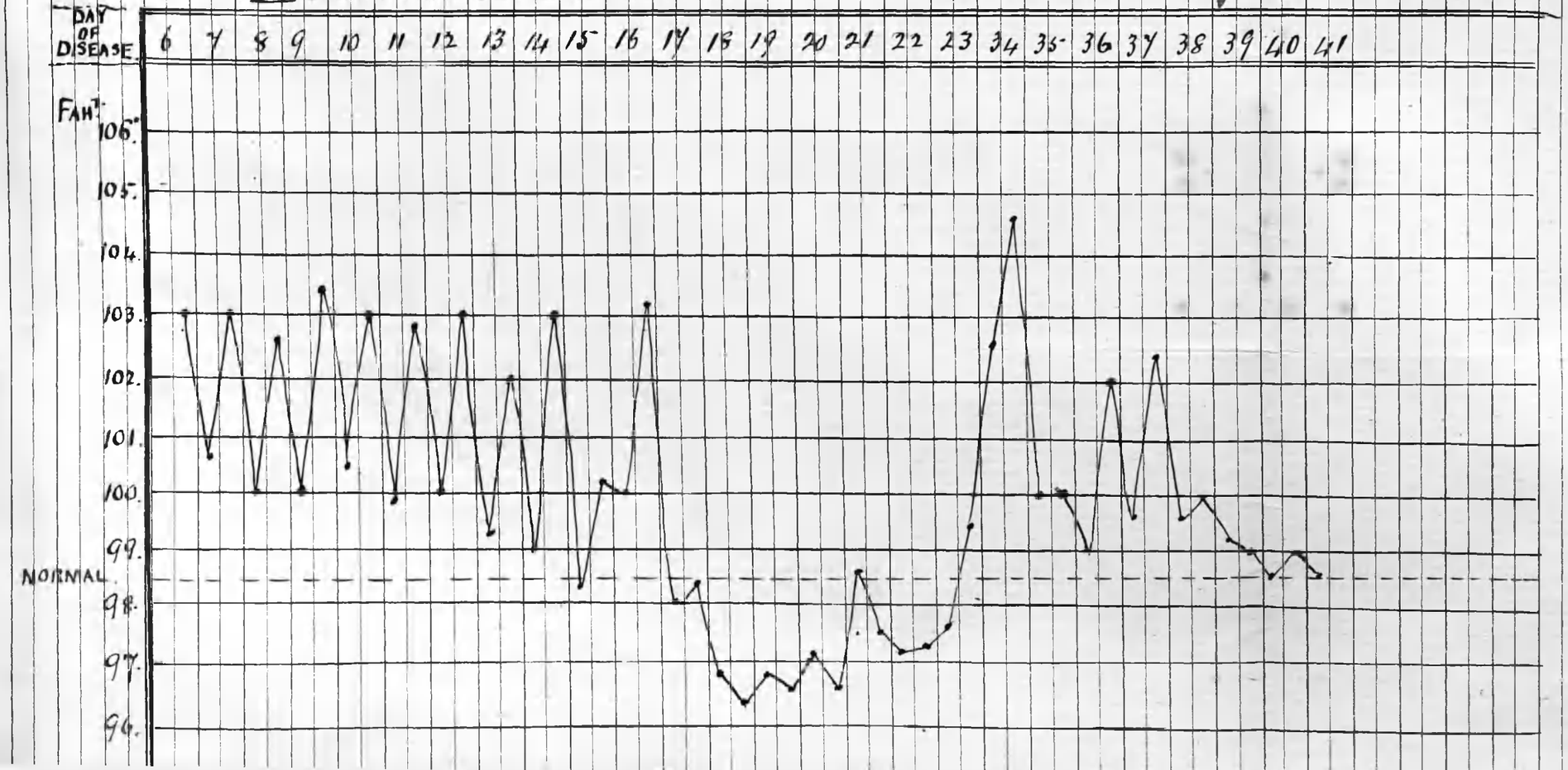


John McKillop – aet. 11.

Mild case of Enteric with almost collapse temperature – then a relapse –

Pulse showed same characteristics as in case 60.

Temps. at beginning of relapse not taken.



is much emaciation. Though the temperature remains low, yet the pulse may keep high, in this respect differing from Typhus. Enteric further differs from Typhus in that the appetite and strength are longer in being established.

The Duration of this fever presents greater variations than does Typhus; for while some may not have a longer duration than a typical case of Typhus, yet others may continue for 60 days, as occurred in one of my own cases; and again, the patient may be prevented from getting out of bed for 4 or 5 months, with persistent diarrhoea (See case of Charlotte H. p. 190.) The greater number, however, commence their convalescence in the fourth week.

## Relapses.

A relapse of the symptoms of Enteric Fever is not very uncommon; and is one of the trying points in the treatment of this disease. It has occurred with me 12 times in 140 cases & one of the patients died during the relapse from haemorrhage (See Case XIV, p. 141).

After a convalescence of several days (patient perhaps having been going about) he loses his appetite again, has recurrence of the old headache, becomes languid, the temperature goes up, diarrhoea comes on, the tongue becomes furred, and the rose spots may appear on the abdomen, though they may have been absent during the first attack. The relapse is usually shorter in duration than the primary fever. Secondary or even tertiary relapses may take place.

Subjoined are two temperature charts in cases of relapse. In the first chart, at the first glance there would seem to have been three relapses, but the third & fourth rises of temperature were only very ~~temperature~~ temporary & were evidently due to constipation; but the temperature always fell again after an aperient medicine. In the second chart the whole of the normal temps. between the end of the primary fever & the beginning of the relapse are not given.

# Complications & Sequelæ.

Without entering into an account of all the complications & sequelæ that occur in Enteric Fever, I will simply confine myself to a few of the more important that have come under my own observation; and at the same time I will dispense with an anatomical or particular classification.

1. Bronchitis is not uncommon tis a very troublesome complication. It is usually conjoined with some pulmonary hypostasis. All severe cases have it in a greater or lesser degree.

2. Pneumonia in Enteric Fever is not very common, but it seems to be more common than in Typhus — probably because the Enteric patient is able to go about longer than the Typhus. When occurring in the early stages of the fever it may be mistaken for the fever. But when it does occur, it usually in a late stage of the disease.

Hypostatic Congestion is much more

Common — indeed, in all severe cases, it is seldom absent.

3. Tubercle. An attack of Enteric Fever in a phthisical patient, seems to act like a hot bed for advancing the progress of the disease. and with the onset of the fever, the disintegration of lung tissue makes rapid strides. I remember one case in particular, in which, on admission, there were only very imperfect signs of lung disease, but in less than a month, they had become very pronounced; and on the person's death, a large cavity was found in the left lung. Of course one must bear in mind that cases of acute phthisis might possibly be mistaken for Enteric Fever. The chance of recovery is no doubt greatly lessened in one of a strumous diathesis; and it would almost seem as if Enteric Fever had the power of preparing the way for future tubercular deposits.

4. Perspiration frequently occurs as a

sequela as well as during the course of the fever. It is more debilitating in Enteric than in Typhus and is more frequently present, especially in those who have a phthisical tendency. In these Enteric fever always encourages such ~~secretion~~. Perspiration too, occurs very frequently in those who have been heavy drinkers of ardent spirits.

5. Paralysis as a complication or sequela is usually only temporary and is for the most part confined to the sphincters of the bladder and rectum, so that both urine and fæces are voided unwillingly in bed. As the patient becomes strong, if he lives, this state gradually passes off. It is more frequently seen in children than in adults, except perhaps in the later stages of very severe cases.

6. Otorrhœa has occurred four times in my practice.

7. Vomiting occurs frequently as a

sequela, and takes place along with impaired appetite, especially in those who have been long ill.

8. Diarrhoea is at all times exceedingly troublesome, and when it occurs as a sequela, it is particularly annoying. In one case, the diarrhoea continued for at least 5 months in Belvidere Hospital, and after she was dismissed (apparently better) she took ill again & came under the care of Professor Gairdner in the Western Infirmary, where she remained for several months, without cure. Such a case will most likely be due to atony of the bowel, owing to severe lesions. (See case of Charlotte H. — p. 190.)

9. Oedema of the feet & legs is frequently seen & is more common in females than in males. It is chiefly observed when the patient first gets out of bed; but as strength & flesh is gained, it disappears, thus showing that it is anaemic.

10. Bedsores are more frequent in Enteric than in Typhus, and this is easily understood: The emaciation is greater and the duration of the disease is longer. They are always aided in their formation when the evacuations take place in bed. Their chief seat is the sacrum.

11. Ulceration from blisters: Great care should, & if possible, be taken not to blister an Enteric fever patient, especially in the later stages; as very troublesome ulcers are apt to result. One case I remember (See p. 190.) where from the stupidity of a nurse, the front of abdomen & chest formed one large slough after a Mustard poultice. It was exceedingly painful & long in healing.

12. Bubos & Boils occur perhaps more commonly than any complication of Enteric Fever. Their principal seats are the axillæ, scalp & front of abdomen. They are usually very painful & keep up the fever. They occur chiefly

in weakly persons or those who have not been well fed; but they would almost seem to bear some relation to particular Epidimics; for I have seen several persons afflicted with them in the Samecard at the same time. At other times, not one will be seen for a long time.

Case XVII,

13. Abortion.

# CASE OF ABORTION IN ENTERIC FEVER.

BY

JOHN SERVICE, M.B.,

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SPEAKING of the complications and sequelæ of enteric fever, Murchison remarks (p. 580, Ed. II.) that "According to Rokitansky and Niemeyer, pregnancy confers almost entire immunity from enteric fever; but the correctness of this opinion has been denied by Forget, Jenner, Griesinger, &c., and I have met with many instances of pregnant females attacked by the disease. Pregnancy is a less formidable complication than is commonly imagined, or than it was stated to be in the first edition of this work, nor does abortion or miscarriage necessarily take place."

The following case, which came under my care, illustrates the truth of Murchison's experience, and as it aids in disproving the general German belief, it may not be uninteresting:—

Mrs D., æt. 27, was admitted on the 18th July, 1876, with well-marked enteric fever. It could not be accurately ascertained when the attack actually commenced, but patient had been in bed about three weeks.

On admission, her pulse was 120. The typical rosy, lenticular spots were visible on the abdomen, and her tongue was dry, deeply seamed and covered with a pale yellow fur. Before admission, she had had profuse diarrhœa.

1781



This had ceased, but, in other respects, her stools were of the enteric type. Pain, on pressure over abdomen (not localized at any particular point), was removed by a poultice. She had also a troublesome cough and rusty sputa. Auscultation of the chest discovered sibilant and sonorous râles at both apices.

According to the patient's own statement, she was between three and four months pregnant.

On the day after admission, she was rather delirious, and her temperature being high, she was sponged frequently with cold water. On the 24th (that is, six days after admission) when patient was mending somewhat, my attention was directed to a small quantity of blood stated to have been discharged from the vagina during the night. My first thought was that the hæmorrhage was from the bowel, but this was found not to be the case. There was no pain. An examination, both by the finger and by the speculum, revealed nothing abnormal, and the os uteri was firmly closed. On account of the state of the lungs it was deemed inadvisable to give an opiate, but cold wet cloths were applied to the abdomen and vulva. The discharge, though diminished in quantity, continued on the three following nights.

On the 1st of August (the discharge having in the interval been completely arrested) I found patient complaining of pains in her abdomen and of hæmorrhage from vagina—both having continued for about an hour. On the patient getting up to stool, a large clot of blood came away. On making a digital examination, *per vaginam*, I found the os uteri dilated sufficiently to admit the tips of three fingers; two fingers could be inserted with ease. The membranes and a part of the placenta were presenting. A drachm of ext. ergotæ liq. (B. P.) was given. The pains were coming at regular intervals, and I endeavoured to dilate the os with my fingers. This causing the patient pain, chloroform was administered; but the attempt to dilate the os further failed. I ruptured the membranes and speedily brought away the fœtus, which was dead. Some difficulty was experienced in the extraction of the placenta, but ultimately this, too, was brought away, with the exception of a very small portion.

After the operation, cold water was injected into uterus and

vagina, a cold compress applied above the pubis, and cold cloths every half-hour to the vulva. Patient also got half-a-drachm ext. ergotæ liq. and a little brandy.

She slept well during the night, and there was very little discharge. The treatment that followed was expectant. For the two days following the operation there was slight tenderness over the uterus, and on each of these days a turpentine stupe was applied. She received three grains of calomel and half-a-grain of opium every three hours. A weak solution of carbolic acid (about 1 in 60) was injected into the vagina every four hours. She was not permitted to get up to stool; and her diet consisted of milk, chicken soup, a morsel of toast, and 8 oz. port wine.

The discharge that followed was quite natural. She immediately began to recover; and on the eighth day after the abortion was permitted to get out of bed. Two days later, she was in the open air; and on the 26th of August was dismissed perfectly well, after having been in the Hospital for five weeks

It may be remarked that this patient had had three children and no previous miscarriage. On removing the fœtus, it was seen to be about the fourth month, and seemed to have been dead for several days. Whether the destruction of the fœtus was due to the hæmorrhage or to the specific poison of enteric fever, it is hard to say. It appears to me, however, to be most probable that death, resulting from the poisonous influence of the maternal blood, caused the body of the fœtus to act as a foreign body and thus excite reflex action. The severity of the hæmorrhage was no doubt due to the partial placenta prævia that existed.

Since writing the above, I have been informed by Dr J. M. Barbour, my predecessor, that of three cases of abortion in enteric fever which came under his notice, there were two recoveries.

DUNN AND WRIGHT, PRINTERS, GLASGOW.

# Prognosis & Mortality.

## (a.) Rate of Mortality.

The following table gives the rate of mortality during several years in Belvidere Fever Hospital:

### Table. XVI.

| Year. | Admission | Deaths. | Mortality per cent. |
|---|---|---|---|
| 1871-72 | 83 | 13 | 15.6 |
| 1872-73 | 181 | 20 | 11.04 |
| 1873-74 | 275 | 26 | 9.4 |
| 1874-75 | 342 | 24 | 7.01 |
| 1875-76 | 497 | 57 | 11.4 |
| ~~1876~~ Total | 1378 | 140 | 10.15 |

From this it will be seen that the mortality from Enteric is more than 1 per cent less than from ~~Enteric~~ Typhus. (11.6)

## (b.) Circumstances influencing the rate of Mortality.

a. Age has not the same influence in Enteric as in Typhus on the death rate; and

enteric fever is much more fatal in young persons and adults, say up to 40, whereas, Typhus is the more fatal of the two above that age. Table XVII gives the rate of Mortality at Quinquennial periods of age in Belvidere Hospital:

Table XVII.

Rate of Mortality from Enteric at Quinquennial Periods of age during several years in Belvidere Fever Hospital.

| | Males. | | | Females. | | | Total. | | |
|---|---|---|---|---|---|---|---|---|---|
| age. | Adm. | Deaths | Mortality per cent. | adm. | Deaths | Mortality per cent. | Adm. | Deaths | Mortality per cent. |
| 0·4 | 34 | 3 | 8·8 | 25 | 2 | 8·0 | 59 | 5 | 8·4 |
| 5·9 | 45 | 1 | 1·3 | 97 | 2 | 2.06 | 172 | 3 | 1·7 |
| 10·14 | 120 | 5 | 4·1 | 174 | 6 | 3·4 | 294 | 11 | 3.7 |
| 15·19 | 149 | 21 | 14·09 | 218 | 18 | 8·2 | 367 | 39 | 10·6 |
| 20·24 | 195 | 24 | 12·3 | 98 | 12 | 12·2 | 293 | 36 | 12·2 |
| 25·29 | 85 | 11 | 12·9 | 52 | 11 | 21·1 | 137 | 22 | 16·05 |
| 30·34 | 40 | 6 | 15· | 36 | 7 | 19.4 | 76 | 13 | 17.1 |
| 35·39 | 10 | 2 | 20· | 14 | 1 | 7.1 | 24 | 3 | 12·5 |
| 40·44 | 14 | 2 | 14·2 | 10 | 1 | 10· | 24 | 3 | 12·5 |
| 45·49 | 5 | 1 | 20·0 | 4 | 0 | 0 | 9 | 1 | 11·1 |
| 50·54 | 3 | 0 | 0 | 4 | 0 | 0 | 7 | 0 | 0 |
| 55·59 | 1 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 |
| Total | 731 | 76 | 10·3 | 763 | 60 | 7·8 | 1464 | 136 | 9·2 |

2. Sex: From the above table, too, it will be seen that the rate of mortality amongst the males was nearly 3 per cent. more than amongst the females; and that Enteric attacks males nearly equally with the females.

In addition to age & sex, there are of course various other circumstances which control, to some extent the rate of mortality in Enteric Fever, such as station in life, Constitution, habits, &c.

## Prognosis:

With regard to the prognosis to be given in any case of Enteric Fever, the following are probably the most important points to attend to:

1. If the morning remissions in the temperature are slight and of short duration, the prognosis is bad. The higher the temperature, of course, the more unfavourable the case.
2. Diarrhoea is unfavourable when severe.
3. Meteorism & abdominal pain are

also unfavourable.

4. Haemorrhage is always dangerous; because if it is great, it may induce fatal collapse; if there is only a little, it may become more profuse.
5. If peritonitis occurs, the case is almost hopeless.
6. Muscular tremors are unfavourable.
7. Congestion of the lungs is exceedingly dangerous.
8. A copious eruption does not seem to affect the severity of the case.
9. Pregnancy does not seem to be a very serious complication, but the mother generally aborts.
10. It must be remembered that Enteric Fever is a very treacherous disease that though seemingly mild, it may prove rapidly fatal; & though Convalescence may be apparently established, a relapse may occur.

## Anatomical Lesion.

The chief anatomical lesion in Enteric Fever is, of course, the affection of the

solitary and agminated glands of the small intestine. It is an affection which is always present, and without it you cannot have enteric fever.

The glands first become enlarged & then ulcerate, which ulceration may lead to perforation or haemorrhage. The ulcerated patches (Peyer's Patches) run in the length of the bowel, thus differing from the ulcers of Tuberculosis which run transversely. As a result of the deposition in these glands, and the consequent irritation, the mesenteric glands become enlarged these can be distinctly felt in patients who are much emaciated. The pain in abdomen (especially about right iliac region) felt by enteric patients is accounted for by the bowel lesion.

## Curative Treatment.

The treatment in the main very much resembles that for Typhus. Thus, the mineral acids, though given on no definite principal, seem to have

a good and pleasant effect; and then dilute sulphuric acid is at the same time a good astringent in diarrhoea.

Of course, as in Typhus, fresh air is indispensible. and diluents & diuretics are of much use. It is good to combine an acid & a diuretic together in some such mixture as this: ℞. Spt. Junip. Co. ℥i, Spt. Aether. Nitr. ℥ss, Acid. Mur. dil. ℥ii, Mist. Camphorae @ ℥vi, M. Sig. a tablespoonful every 4 hrs. in water.

Laxatives: In Enteric Fever, I believe the bowels should be moved every day, except perhaps where there has been or is a tendency to, great diarrhoea or intestinal haemorrhage; and when, as sometimes happens, the bowels are costive, laxatives should be administered; not, however, by the mouth, as diarrhoea is very apt to supervene, but the bowel should be cleared ~~out~~ by an enema gently given; and generally a pint or so of warm water with a small quantity of castor oil is all that is necessary for this purpose.

For the purpose of Reducing the Temperature, the same methods are used

as in Typhus; viz. hot or cold Sponging and the hot pack, or iced cloths applied to abdomen. (The accompanying chart shows the Effect of iced cloths applied to the abdomen. The cloths were wrung out of iced water & applied every two hours for half-an-hour, being changed every minute — the patients chest, during the operation being well protected by blankets.) Sulphate of Quinine & Salycine or Salycilate of Soda or Salycilic acid may be used for the same purpose. I can't say, however, that I ever got any good result from their administration; and it appears to me that more efficacy cannot be expected in a specific fever as in an ordinary pyrexia.

The Strength of course must be ~~maint~~ Sustained, and during the Course of the fever milk, beefted, raw Eggs & corn flour or arrowroot should form the principal articles of diet. The beefted sometimes causes diarrhoea or increases it when present, so that it may be

John McDonald, aet. 20.

# ENTERIC FEVER

(Admitted 12th May, 1899. Discharged

(Patient was treated by means of cold cloths to abdomen.)

Day. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40.

Cold cloths begun.

RESP. PULSE TEMP.

120 106°
110 105°
100 104°
90 103°
80 102°
50. 70 101°
40. 60 100°
30 99°
NORMAL TEMP.
20 40 98°
10. 30 97°

necessary to stop it altogether or thicken it with corn flour, &c. When convalescence sets in, rice & chicken soup are all that I find necessary; but vegetables should be avoided for some time. Indeed care should be taken all through the fever that no fruit of any description be taken by the patient. I have seen a person convalescent from Enteric, up & going about, injudiciously eat a part of a raw cabbage. He relapsed & shortly afterwards died. As the patient becomes stronger, steak, broiled meat, boiled eggs, &c. form the large part of the diet in Belvidere Hospital.

<u>Stimulants</u> as a rule are not required in such quantities as in Typhus. But they are more frequently required by young persons in Enteric, & less frequently by the old. (See remarks on Stimulation, page 101.)

If <u>medicinal stimulants</u> are required, Carbonate of Ammonia should be avoided as it has a tendency to irritate the bowels.

There are certain distressing symptoms which are common to Typhus & Enteric, & which require the same treatment. These are headache, sleeplessness, delirium, drowsiness, Stupor and hiccup. (See page 107.) But besides these, there are others which are peculiar or almost so to Enteric, & which require special treatment. The chief are diarrhoea, intestinal haemorrhage, abdominal pain, and tympanites.

Diarrhoea is one of the most constant and at the same time most troublesome of the symptoms of enteric fever; for, besides its weakening effect, it is apt when severe, to lead to haemorrhage. When there are not more than two or even three motions in the 24 hours, whether they be fluid or not, I do not know that there is any good in interfering. But if it should be thought necessary to give something, lime water, given with the milk, may do. When the diarrhoea is profuse, however (that is, more than three motions in the 24 hrs.) I am in

the habit of prescribing Either lead and opium pill or a tablespoonful (repeated as often as necessary) of the following mixture: ℞. Sol. Mur. Morph. ℥ii, Acid. Hydrochlor. dil. ℥ii, Aquæ ad ℥vi, M.

A tablespoonful, too, is generally all that is required at the time, but it may be necessary to repeat it every day. Bufted should not be given, or if given, thickened with some light farina. Vegetables, as well as fruit, should also be avoided. As I mentioned before, I have seen a convalescent patient, up & going about, stricken down with diarrhœa, a relapse of the symptoms, ending in death, from eating a part of the heart of a raw cabbage, after he had been specially warned against the practice. If the medicines, mentioned above, fail, a starch & Laudenum injection should be tried, as well as several other drugs, such as Tr. Catechu, Pulv. Opii, Pulv. Bismuthi oxide, Lead, &c. I only know of one case which would not yield to some of these remedies. After being in Belvidere Hospital for more

than five months, she went out + was taken under the charge of Professor Gairdner -; but several months after, when I heard of her, there was no improvement in her symptoms. The following is an Epitome of her case, when she was under my charge in Belvidere Hospital:

## Case XVIII.

### Enteric Fever with protracted and incurable diarrhoea.

Charlotte H. — act. 30, Adm. apr. 30, 1876. Had been ill 5 days before admission. No rash ever was seen but there were developed the characteristic physiognomy, enteric motions, gurgling in right iliac fossa, &c. There was prolapse of vagina, & at a later stage retention of urine, requiring the daily use of the catheter.

Bowels in this case became excessively relaxed. Motions were passed constantly in bed. Patient looked at one time as if she were going to die. Nothing at first would check the diarrhoea. Tried lime water, brandy, Pil. Plumbi & Opio, Sol. Mur. Morph., Hydrochloric acid,

Tr. Catechu. For a day or two, the following mixture seemed to do good, but it had to be stopped on account of gastric irritation: ℞. Tr. Catechu ℥i, Vin. Ipecac. ℥ii, Tr. Opii ℥i, Mist. Cretae ℥i, Aquae @ ℥vi ft. Sig. A tablespoonful every 4 hours.

The muscular fibres of the lower part of the bowel & the sphincters seemed to have lost their tone. This was thought at one time to have been due to the presence of a large raw surface on abdomen (6 inches × 4 inches) caused by the carelessness of a nurse in applying a pure mustard poultice & allowing it to remain all night, and then dressing simply with soft cotton wool which adhered firmly & was with difficulty removed. It was fully two months before this got better. It was dressed with ol. Camphorae first, then with water & finally with sticking plaster.

The diarrhoea continuing, Morphia Suppositories, and Bismuthi & Opium were next tried; but like the other medicines the good they did was small. Also

tried Starch & Laudanum enemata without good result. The constant diarrhoea kept her from sleeping. Bedsores had a tendency to form but were well kept under by Sol. Guttæ percha in Chloroform and by Empl. Adhesiv. As the appetite was bad, got Quininæ & Iron: also Strychnicæ, to see if that would have any effect as a nervine tonic.

For about 2 months she did not dare to taste anything but milk. Was put on Syr. Ferri et Quin. ~~Cit~~. et Strych. phosphatis. As a last remedy for the diarrhoea, I tried enemata of cold water night & morning. This did good & after a day or two she could contain her motions & go to stool, which she had never yet done. Stopped the cold water enemata & gave cold sitz baths instead, & patient after being more than three months in bed was allowed to get up; but as the diarrhoea sometimes returned, she was kept under observation for two months longer. She ultimately went under Professor Gairdner's charge with the result already mentioned. (p. 190.)

Intestinal Haemorrhage is of course of great danger. When in early stages of the fever, the haemorrhage is slight, starch and laudanum enemata or Pil. Plumbi & opii will almost never fail; but when it is very profuse, the best remedy is Ergot. I have only seen it fail once; (Case XIV. p. 141) and that was in a case of extreme flooding. It may be given as Ext. Ergot. Liq. (which is the handiest form) or as Ergotine by sub-Cutaneous injection. The dose of Ext. Ergotae Liq. (B.P.) that I prescribe is 2 drams first, and then a dram every hour for two or three hours. I also use cold applications to abdomen, cold diet, and perfect rest. Turpentine & Tannic acid may also be tried.

Abdominal Pain should always be attended to, and should always be looked for. When present, it is most Commonly situated in right iliac ~~from~~ region & can nearly always almost be instantaneously removed by warm poultices or turpentine stupes. The regular application of these remedies, I believe often averts haemorrhage.

Tympanites: In Enteric fever (as also in Typhus, though not so commonly or to such an extent) tympanites and the distension of the abdomen with a gaseous element is not uncommon & is exceedingly troublesome. It sometimes looks serious enough, and in some cases, one would think that the abdominal walls could not distend more, but that at any moment, a rupture would take place. The abdomen is rounded & smooth, firm to the touch, & on tapping, sounds like a drum. Besides being troublesome there is no doubt that it is dangerous. This we can easily understand, when we know that the bowel is weakened by ulceration. If an ulcer has penetrated to the peritoneum, one can easily conceive how simple it would be for perforation to take place, by the great distending powers of the ever increasing gas. Another danger that threatens is the check given to the breathing. and this is all the more serious when there is any existing pulmonary Congestion.

The short quick breathing gives evidence of the distress thus occasioned.

We necessarily want something to relieve this state of matters, and that as quickly as possible. For this purpose I find turpentine in some cases do all I require. Ten or twenty drops given in milk, mucilage or the yolk of an Egg every two hours in some cases, soon brings the abdomen back to something like its normal size. Should you find this fail the dose may be increased to a teaspoonful frequently repeated, and its action will be aided by a turpentine stupe applied to the abdomen. Indeed, this latter will sometimes do of itself; but, unfortunately in some cases they fail, viz. in those in which the tympanetic continues to increase where there is great bowel lesion. Dr. Graves says that Acetate of Lead in such cases is the remedy. In one case I tried the rectum tube, cautiously introduced, but although just at first there was a rush of gas, the tube very soon became blocked up with faecal matter; and

I did not care to persevere further. I need scarcely say that one would hardly fail before the popular remedy, peppermint water, a trial. Besides the remedies already mentioned, there are others that have been tried; thus Enemata containing Carbolic Acid, Creasote, Vegetable Charcoal, turpentine, assafoetida, [illegible] (as given by Dr. Murchison). If everything else failed, I don't see any objection to the puncturing of the bowel through the abdominal wall by means of a fine canula.

Very frequently, where there is tympanites, there is debility. In such cases, Stimulants, as brandy, must, of Course be given.

During the administration of turpentine, there was one point to which my attention was accidentally drawn - a good effect unintentionally brought about - an effect which I will endeavour to bring about again should the opportunity offer itself. Here is a statement of the facts:

Case ~~XIX~~.

(Congestion of Lungs cured by Turpentine)

A girl, Agnes M. — aet. 19, was admitted into the hospital with a severe attack of Enteric Fever. Her lungs were much congested — indeed, previous to admission, she had been treated for this affection alone. In the course of the fever, meteorism of an afflicting degree supervened. She received Spt - Turpentine in frequent doses, and although flatus was passed in large quantities, yet the distension did not diminish. But after the Continuance of the medicine for a very few hours, the Congestion gradually diminished, the mucous rales became less numerous and ultimately disappeared.

In the present case, nay in any case, this was an important result and was brought about no doubt by the astringent action of the turpentine on the pulmonary Capillaries.

There is another point to which attention should be drawn: Turpentine

is apt to produce strangury, and I have noticed this frequently, more especially in children. When such happens the turpentine should of course be stopped: and the urine will shortly be found to flow freely by the application of fomentations to the loins, perineal & pubic regions.

The principal Complications and Sequelae of Enteric Fever requiring treatment are

1. <u>Peritonitis</u>: Poultices to abdomen, and opium internally (a grain every hour.) For the relief of the pain & for irritable stomach, Murchison (<u>Ed. II. p. 655</u>) recommends the subcutaneous injection of Morphia.

2. <u>Bronchitis</u>, <u>Pneumonia</u> & <u>Tubercle</u> must of course be treated on general principles.

3. <u>Perspiration</u>: I find 3 gr. Quin. Sulph. given every 4 hrs. in dilute Sulphuric Acid, never to fail.

Dr. McCall Anderson recommends 1/100 th. gr. of Atropia, & I must say I have seen most marked results from its use.

4. Otorrhoea. I syringe the affected ear twice a day with tepid water, and drop into it Rectified Spirits of Wine diluted with water. This nearly always succeeds in checking the discharge.

5. Vomiting: Lime Water, Brandy & Soda water, Bismuth, Rhubarb & Soda, Hydrocyanic acid, Sinapisms to Epigastrium &c. may all be tried.

6. Bedsores: Poultice. Keep clean & remove pressure. Good diet. Stimulants.

7. Buboes: Open early.

8. Abortion: See page 177.

# Principal Distinctions Between Typhus and Enteric.

| Typhus. | Enteric. |
|---|---|
| 1. Period of incubation generally ~~about~~ within a fortnight; but varies according to quantity of poison imbibed. | 1. Usually longer than in Typhus — about 21 days. |
| 2. Invasion rapid. | 2. Insidious & slow. |
| 3. Duration of fever most commonly about a fortnight. | 3. About 3 weeks. |
| 4. Temperature has a crisis or Sudden fall at termination of the disease. | 4. There is no crisis; only a lysis. |
| 5. Pupils contracted | 5. Dilated. |

| Typhus. | Enteric. |
|---|---|
| 6. Conjunctivæ Suffused | 6. Bright & clear. |
| 7. Face dull, heavy, Expressionless, if any flush it is dark. | 7. Face intelligent, clear, and pink flush on cheeks. |
| 8. Tongue at first Covered with yellowish fur, afterwards becoming black. | 8. At first covered with white fur & having tip and edges red. Not so frequently black. |
| 9. Skin of dark colour. | 9. Pale. |
| * 10. Eruption appears all at once about 5th. day, becomes petechial & confluent and remains to the end of the fever. Allways present. Persists after death. | 10. Appears about 12th. day, and consists of isolated raised Spots, appearing in successive crops, & disappearing on pressure. Frequently absent. Do not persist after death. |

* For the differences between the Eruptions see page 151.

| Typhus. | Enteric. |
| --- | --- |
| 11. Delirium or mental derangement is present in nearly all cases. | 11. Delirium is the exception. |
| 12. Bowels costive & motions dark. acid. | 12. Diarrhoea. Stools light. Alkaline. |
| 13. Intestinal Haemorrhage so rare as hardly to be worthy of mention; & occurring only in anaemic persons. | 13. Not uncommon. |
| 14. Emaciation usually not great. | 14. In protracted cases Very marked. |
| 15. Contagion very great. | 15. Not so great and chiefly from stools. |
| 16. Found chiefly amongst the poor & nearly always in cities. | 16. Amongst rich & poor alike & in the Country aswell as in the town. |

| Typhus. | Enteric. |
| --- | --- |
| 17. No relapses. | 17. Relapses frequent. |
| 18. No bowel or other particular lesion. | 18. Peyer's patches enlarged and ulcerated and corresponding mesenteric glands enlarged. |
| 19. Chiefly found amongst adults. | 19. Most common in youth and adolescence. |
| 20. Convalescence rapid. | 20. Usually slow. |

The End.

(over.)