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Essay on

Typhus Fever

John Middleton
Symptoms.

Typhus fever is generally ushered in by a feeling of chilliness, followed by a more or less severe rigor; this is followed by a severe frontal headache, of which the patient complains very much, a dry tongue with great thirst, and general debility. The expression of the patient's face becomes wholly changed losing its intelligence, acquiring a dull, heavy, stupid look, exactly resembling intoxication. The mind becomes absent; the patient is quite unable to pursue one train of ideas. He generally has a feeling of impending danger. One of the first symptoms noticed is a gradual rise in the pulse, generally between 100 and 120; this is most observed in persons of a delicate or susceptible temperament. When the pulse rises much above 120, a very severe attack may be expected. The muscular power becomes prostrated in a most wonderful manner; he cannot walk, or, extending his hand or protruding the tongue, great tremor is observed. There is shortening of the tendons at the wrist, which is called syphilitic. This is not always present, but when it is, it must always be taken as a bad omen. These symptoms go on increasing during the whole of the first week, until at last there is quite a painful feeling of prostration and feebleness. But during the first week also a very characteristic appearance is manifested, viz. the typhus fever eruption on each which we must now attend to.
Eruption. Generally on the 4th or the 5th day, but between the 4th and the 9th day, the eruption of typhus makes its appearance, which when fully developed should not for a moment be confounded with that of enteric fever. It has been called a morbilliform rash from its resemblance to that of measles. Dr. Jenner named it the mulberry rash. At first the spots are of a dusky pink colour, slightly papular, disappearing completely on pressure, but in a day or two they become of a brick-dust colour, do not disappear but only slightly fade on pressure, to one on a level with the surrounding integument.

By placing a part in the shade, and examining carefully, another rash lying below the epidermis may be seen, giving a marble-like or motled appearance, called the subcuticular rash. This is combined with the more superficial markings which constitute what Dr. Jenner called the “Mulberry Rash.” The eruption is generally fully defined by the end of the first week.

At this time there is a change from the symptoms of nervous depression & prostration before described, to those of nervous excitement. The eruption ceases to come out, but the spots that have appeared remain throughout the whole course of the disease. They generally come out first on the abdomen, from whence they spread to the thorax, back, & limbs. It is most constant on the abdomen except, but I have generally seen it most copious on the back. There is
only one exception to the rule of the permanence of the spots: that is, when the eruption has in some few instances appeared first on the backs of the hands, it shortly disappeared. The rash of typhus is extremely variable in amount, situation & character.

At the end of the first week, as I have said, the symptoms change from those of depression to those of nervous excitement. Delirium begins, sometimes noisy & violent, more often, low & muttering. The patient cannot sleep; indeed, all his symptoms are exaggerated. At night, the tongue becomes dry, hard, & black, the teeth & lips covered with sordes, the breath is extremely offensive. If the eruption changes its appearance somewhat, by becoming darker & there true jaundice may be observed. About the 10th or 11th day, the delirium generally merges into a deep stupor, in which all the powers of the body remain in abeyance. He lies with his eyes fixed upon one spot of the roof, paying no attention to what is going on around him. It is difficult sometimes impossible to arouse his mental faculties, especially as deafness is a very common symptom of this stage. He passes his feces involuntarily & often does the same with the urine on it is retained necessitating the use of the catheter. This is the most {fetal & critical period of the disease, for death generally happens about the end of the 2nd week. The amendment dated from the 14th or 15th day.
If the disease is about to terminate fatally, the stupor (coma dormil) goes on increasing, the head's action becoming weaker, the breathing somewhat laboured, cold clammy sweat breaks out over the skin, the patient passes quietly away from out by the violence of the poison. On the other hand, if the issue is going to prove favourably, there is noticed a marked improvement, on the 14th or 15th day in most cases. The patient slugs better, he does not toss about as much, his pulse is steadier, his tongue somewhat cleanser, he is again in a condition to notice circumstances. At this time, there is first noticed how very great the evaporation caused by the fever is, which has been hitherto concealed by the suffusion of the countenance. His cheeks are fallen, the eyes sunken, the skin shrivelled. The appetite begins slowly to return, the emulsion gradually disappears in about a week of convalescence. Strength is slowly regained, the deafness & other unpleasant accompaniments disappear.

This is the ordinary course of a typical case of typhus fever, but there are many circumstances which frequently seem to complicate more or less the disease. Some are...
patient is in. They are produced by the weight of the body pressing upon the prominences of the body viz. the sacrum, hips, trochanters, shoulders & heels according to the decubitus assumed; these joints at the time leaving their vital power very much depressed. They are always extremely distressing to the patient & tend very much to weaken the system. They may be followed by gangrene of a digit, or even of a limb in very acute cases.

Bruises are a very common accompaniment of typhus but is very harmless. It may alarm the convalescent lest his heart should not return, but such fears are groundless. Some nurses even consider it a very favourable symptom, but this is not the case, as it does neither harm nor good.

Military Eruptions. Eruptions are very uncommon in typhus fever. Dr. Jenner found that they occurred only seldom after the age of 60, but more commonly in those of younger age. They are generally observed after a copious perspiration, giving to the cuticle an appearance like that of desquamation. They consist of minute elevations of the cuticle containing a limpid fluid.

Pulmonary Diseases as Pneumonia - Bronchitis - Pneumonia - Bronchitis - pleurisy all have a most unfavourable action on 

Thus, all tending to bring about a fatal result. Sometimes in these cases death is caused by gangrene of the lungs.

The bowels are generally constipated in typhus but there
may be diarrheæ, especially towards the end of the second week.

Urine. The state of the urine changes very much during typhus fever, both as to quantity and constituents.

1. During the first stage, the urine is usually very much decreased in quantity, but the specific gravity is high, about 1025, while in the later stages a very large quantity of urine of low specific gravity is passed. In the advanced periods of very severe attacks there is sometimes complete suppression of urine & this is always a fatal symptom.

2. The urea excreted by the urine is increased by about one-fifth, but notwithstanding this it is found in the blood, even in those dying of typhus with strongly marked central symptoms. Also it has been observed in some cases of suppression of urine that the patients have died suddenly by uræmic poisoning. From this it has been conjectured that the central symptoms of typhus are caused by the excess of urea poisoning the brain, or rather its product the carbonate of ammonia. This idea is further encouraged by the ammoniacal characters of the exhalations from a patient suffering from typhus fever.

Albumin. There is nearly always albumen present in the urine of typhus fever during the second week & in some few cases before it.
Dr. Murchison from careful experiments found that in nearly all severe cases, albumen was abundant, so that it may be considered as a bad symptom.

Convulsions during typhus sometimes occur. In these cases very rarely recover. Dr. Murchison states that in every case he examined, there was albuminuria of organic renal disease. It is not however always the case for in two of Dr. Murchison’s cases, there was a mere trace of it in one no albumen at all.

Sequela.

Continued Mania is a most distressing though fortunately curable termination of typhus. It is not a common result. It may continue for weeks or even months, I remember seeing a case of this kind in Part XVII under Dr. W.T. Gardner’s case, which continued maniacal for a long time after convalescence. It was the case of a young girl who had passed through a very severe attack, it is observed that this sequela of typhus only comes on after severe illness.

Paraplegia & Hemiplegia, are occasional sequela of typhus, which however generally are cured in a few months.

Deafness which is often a transient symptom of typhus may remain after convalescence. Shot, diminution of sight may annoy the patient during convalescence. Epilepsia, which often occurs during fever may follow.
Prognosis.

The probability of a favourable or unfavourable issue in typhus fever may be calculated from the following circumstances and symptoms.

If the patient be young and vigorous of sober habits, with a moderate eruption, no subcutaneous tenderness or tremor, or very little; if he appears to be able to appreciate surrounding circumstances; these are all so many points in his favour. On the other hand, if the patient be old, of weak health or dissipated habits, with a pulse frequent, or still worse an irregular ticking pulse; if there be any heart disease, if the subcutaneous tenderness or tremor be great, if the eruption copious, our prognosis must be very bad. It is a common saying among uneducated people, that it is a good thing when the eruption comes well out, but this is a great mistake; for we know by experience that a very copious eruption always denotes a very severe attack of the disease. Every one agrees in considering a great degree of subcutaneous a very bad omen; as it shows that the fever poison is taking a powerful effect on the nervous system. Painful suffering from valvular disease of the heart must be considered as in great
danger if attacked with typhus fever. An extremely bad sign in typhus is a contracted state of the pupil. It is always somewhat contracted, but when it becomes very small the danger is very great.

Hiccup is not only a very distressing but a very unpromising symptom, probably caused by sympathetic spasm of the diaphragm caused by irritation in the stomach. Retention of urine, early involuntary passage of feces with urine, albuminuria, clammy perspiration are all very many unfavorable signs.

Diagnosis.

Typhus fever is apt to be confounded with pneumonia, delirium tremens, uremic poisoning, measles, meningitis, encephalitis.

It is to be distinguished from pneumonia by an examination of the lungs whenever there is no eruption.

Uremic Poisoning. This is often impossible as the symptoms exactly resemble each other.

Delirium tremens by the history of the case, by the soft, creamy tongue of delirium tremens differing from the dry brown hard tongue of typhus.

Measles by the eruption of the latter not going through the stages of the typhus rash, and the catarrhal symptoms which accompany measles.

Inflammation of the brain and its membranes by the more intense headache, delirium of the latter with a complete want of that drunken
leader took as characteristic of typhus, also by attending to the history of the commencement of the illness. In the delirium fever of typhus fever cases must sometimes be doubtful.

Pathology.

There is no disease in which the post-mortem examinations are more unsatisfactory. Judging from the intensity of the symptoms one would naturally look for extensive lesions & great disorganization of tissue to account for them. But experience has shown that but little, if any, lesion is to be found. These appearances, that have been observed I shall now shortly notice.

The erythema generally fades, but some of the dark red spots or true pustules may remain permanent. The mucous membrane of the alimentary canal is usually somewhat congested & softened, but ulceration is extremely rare. Siemens mentions one case of it in the stomach & jejunum. There is no affection of Pericardial patches & the only pretty constant symptom is the state of injection of the conjunctiva & ileum. The spleen is generally somewhat hypertrophied & softened.

The liver is usually softened or congested, but it may present quite a healthy appearance.

The Peritoneum is nearly always healthy.

The heart in most cases is large, softened & easily torn, which Dr. Munroian ascribes to acute fatty


Typhus Fever.

History.

Typhus Fever is one of the most ancient diseases of which we have record. Many of the deadly pestilences related in the Bible and Roman history were supposed to have been typhus fever.

One of the earliest that we have any description of, was, in the year 1489, when 77,000 of the troops of Ferdinand then besieging Granada, died of a spotted fever, called "El Tambardjikus," which has since been used to designate typhus.

An epidemic fever which proved very fatal during the years 1520-1528, in Italy, is very particularly described by Francastorius. It was called "Lenticulae" or "Punctulae," from the appearance of the eruption as he explains, "Civis quantum seget, septimum diem, in manibus, docto et postero, maculae rubrariae, caede et jucunda, irruptant, punctum punctum similis, caede majores irritata, punctulae, unde et nomen niditavit."

This, as well as the other symptoms of the treatment found to be most successful are exactly applicable to typhus fever. Celsinus still further tends to prove this point, by remarking that the great danger in the diagnosis of the fever, was that of confounding with the eruption of muscles which it very much resembled. In our own time, one of the appellations of the eruption.
Great sentences of the questions in Typhus is a very bad sign—much worse than great despair. Page XVII.
degeneration, caused by paralysis of the sympatheticplexuses of the heart. He examined the heart in six cases microscopically, and in all found very distinct evidences of this degradation of tissue.

All the membranes of the respiratory system are generally much injected, and there may be evidences of pneumonia, inflammation, or bronchitis. The two former are very rarely seen, but the last is one of the most common complications of typhus.

The central substance is seldom altered, but it may be engorged or congested. There are very rarely any signs of inflammation. There may be ecchymoses beneath the membranes, or very rarely an increase in the sub-acanthoid secretion of the fluid of the ventricles.

The kidneys are very often found to be diseased, chiefly with hypertrophy and softening.

The blood is usually fluid after typhus fever, and this is supposed to be due to the action of carbonate of ammonia. This idea is supported by the fact that the blood presents exactly the same appearance as if it had been treated with that substance out of the body.

From these appearances, being all that is discernible, it may be concluded, that we do not yet understand how the poison of typhus acts upon the system, for it is especially remarkable that with such violent nervous symptoms we find no central lesion to account for them.
Treatment.

The first thing to be considered in the treatment of typhus fever is a plentiful supply of fresh air. The excellent effects of this upon the disease is very clearly shown by the speedy recoveries that soldiers make under canvas, or often having been conveyed long distances, perhaps in stormy weather, to hospital. This was also very remarkably shown during the epidemics of typhus among the poor Irish, who recovered in a most wonderful manner, though very often their sick bed was made in a ditch, with a blanket to cover them. These should therefore be chosen for the patient, the largest and airiest room that can be obtained, from which contain all unnecessary furniture should be carefully excluded. The temperature should be kept at an average of 60° Fahr, if there be a fire it should not be a large one. Air should be admitted by the doors and windows, but on no account should the patient be placed in a draught.

The bed of the patient should be a good hair mattress, which is much more comfortable for the patient & convenient for the nurses than a soft bed which is constantly requiring changing & so wearying & irritating the patient.

The room should be light & cheerful, not darkened as was formerly the custom.

The patient's body should be sponged frequently with
cold or tepid water, containing a little vinegar or
frustric acid. This is not only very conducive to
cleanliness & the safety of the attendants but extremely
comforting to the patient himself.

Diet. This is a matter of vital importance in the
Treatment of this fever. The patient must be supported,
for this he must have nourishing food. On the
other hand his digestive powers are at a minimum;
consequently the selection of his food must be
carefully considered. His appetite is lost, to his
intestines being absent, or nearly so; he does not
understand why he should eat, but this must be
overcome. His food should consist of beef tea
or chicken broth as long as possible, or essence of
beef. These may be varied, with coffee, milk, toast,
wine, whisky, arrow-root, etc. These should be given to
him at regular intervals of two or three hours, as
it is found that while he is tolerably sensible, he
takes them much more readily if given at stated
intervals. He must not be worried about these things
if possible because anything that disturbs the
mind acts unfavourably on the disease.

Drinks constitute a very important part of the
comfort of the patient. Formulated by thirst,
cool refreshing drinks give him great relief.
Enable him to bear his sufferings more calmly.
Many different drinks are employed but those
that give the most satisfaction which are need,
effervescent, e.g. lemonade, raspberry vinegar + soda water &c. A little ice added to these very often has a very good effect. A very good plan is to combine the acid therapeutic treatment with the drink as in the following formula:

- Acidi Phosphorici Diluti \(\frac{2}{3}\) fip
- Syrupi Anantii \(\frac{3}{4}\) fip
- Aquae \(\frac{3}{4}\) fip

Fig. \(\frac{3}{4}\) to be taken every 2nd hour.

After the first week the drink taken is particularly in the form of stimulants, & at this stage for those who can afford it champagne has a very grateful & reviving effect.

If the patients will consent, but this is not often the case in the female sex, the head should either be shaved or the hair cut very close. This is a most valuable indication, as it enables the nurse to apply cooling lotions constantly to the head. This should never be neglected, unless the patient complains that it makes him chill.

The history of the treatment of typhus fever has been that of change from one extreme to another, from depletion to repletion. It is hardly necessary to say that both like all other extremes were wrong. What we have to do in typhus is to check the tendency to death & keep the patient
alive till the poison has spent itself. As this poison produces death by typhoid sinking, it wearing out of the vital powers, it is evident that we must oppose this tendency by support.

For this reason resection has gone completely out of use, and no doubt with propriety, but this is by no means a modern discovery for we find that Frascatarios in the sixteenth century objected strongly to blood-letting if treated typhus fever precisely as we do now. It is surprising that any one should even have bled in this disease.

This is explained by supposing that a change has taken place in the character of the disease, but this is not the case, for we find that death occurred then in typhus fever precisely as it does now.

In treating a case of typhus, the most serious danger is that of doing too much. There is no medicine yet discovered which can cut short a case of typhus, this being the case all drugging of the patient is prejudicial. The de minimis non curat medicus, must be carefully guarded against. Many remedies such as emetics quinine have been proposed, but all of them are inefficient, and therefore of doubtful propriety.

In visiting a patient in the first stage of typhus probably the best rule are to clean out the bowels by mild purgatives, to give the patient...
plenty of nourishing food & cooling acid drinks to enjoy complete rest of body & mind. Generally about the sixth day but perhaps sooner, the pulse being feeble & compressible & the prostration very great, stimulants are called for. At this stage they should be alcoholic stimulants.

The indications for the employment of stimulants may be summed up as follows - A weak, irregular, compressible pulse, tremor & quivering tendinum, a cadaverous countenance, & the circumstances of the patient being aged or intemperate, all call for their use.

The following symptoms contra-indicate the use of stimulants - a full hard frequent pulse - great flushing of the face - severe headache - a hot languid skin & delirium fevers.

They are but rarely required as I have said before the sixth day, but in the great majority of cases their use is urgently called for in the latter stage. In the milder forms claret & burgundy & especially champagne answer admirably but when the tendency to sinking is very marked, then, port wine or brandy are called for. Brandy is much too strong for the patient to swallow undiluted but it may very advantageously be combined with lemonade. As a general rule in many cases 3/16 of port wine, 1/16 of brandy daily make a very good allowance, but in
the malignant forms of the fever, they should not be measured, but the patient should be encouraged to drink as much as he can. Strong beef tea and essence of beef should be given when even the patient will not take them, but the appetite during the second week is in almost complete abeyance. When typhoid collapse is threatening to supervene, the stimulants should be increased, and more diffusible stimulants may be exhibited with advantage. Of these the best is ammonia, given in the form of the aromatic spirit, in 1 fluid ounce every second or third hour.

During the course of the disease the kidneys, skin, and bowels are to be kept working. Great care must be taken to remove the faces of urine which he passes involuntarily, as this if not attended to is very likely to cause sloughing of the skin.

The headache which is sometimes excruciating may be relieved by evaporating lotions or still better by the cold affusion thoroughly applied, or if the patient be young and robust by the application of two or three leeches to the temple, which is often followed by permanent relief.

If the patient be troubled with sleeplessness, this must be remedied by the use of opium, as nothing wears out a typhus patient more than want of sleep. Fifteen drops of the solution of the tincture of morphine may be given in the evening.
If there be retention of urine the catheter must be used regularly never allowing the bladder to become much distended, for if it is there is often difficulty in restoring its tone.

If bed-sores do form on the back, they must be treated with poulties till the ulcers separate and after that, as ordinary ulcers of a weak tendency. Wherever there is fever, it should at once be corrected by the use of one of the chlorides or Condyl’s disinfectant fluid.

Liquors should be treated with stimulants and alkaline tonics — the mixture of the metallic of iron on M. XV every third hour.

Hiccups is most quickly and permanently relieved by soda-water.

Care must be taken throughout the whole disease to appear cheerful to the patient, if possible keep up his spirits as this has a most powerful effect on the disease.

Convalescence from typhus is extremely rapid but it is necessary to be careful as to the diet of the patient just so much from fear of relapse; for it is one of the few bright points in this fever that there is little or no fear of a return of it; but because the alimentary tract is been in abeyance for some time, must have time allowed it to regain the full exercise of its function. The appetite is generallyavenous, so often as few days of any...
beef tea, calf foot jelly, eggs, milk & the patient may
be indulged with chicken & in about a week more
he may return to ordinary diet. Malt liquors should
be taken with the food during convalescence &
probably the best one is good bitter ale.

The return to health may be materially assisted
by change of air & scene & the use of tonics,
especially the preparations of iron.

These are the general rules to be attended to
in the treatment, but in all cases it is neces-
sary to vary the treatment, to meet the exigencies
of the disease & to alleviate symptoms.
is taken from its resemblance to the rash of measles. During the whole of the sixteenth century, there were epidemics of this type of fever, recurring at intervals, and it is well worthy of notice that these attacks always followed seasons of famine, or failure in the crops, which happened very often during that century. This effect of privation was also evidenced in a very disastrous manner during the period of the thirty years war, from 1619 to 1648, while the whole of Europe was in a state of famine, when a fearfully fatal epidemic of the plague broke out. The average of fatal cases, in those attacked in some parts as Montpellier, being so high as one in three. This was called by Lazares Riviéres the "Fébris malique Pestilenç", preceding and following the great plague of London in 1665 was an epidemic of this fever. In 1638, a fatal epidemic fever spread over England caused by a failure in the crops, two years afterwards Professor Hoffman of Halle described a fever which he called "Fébris pestificalis vera", which had appeared among the German troops. He gives the following symptoms: "Venter, quieta, belia atque sepultina die, in conspicuum prodecunt maculae, in dorso juxta radicum, et tumidus flesus minus capiaces, unguem undique color eximnque tamen sine examine, idem symptomatice magis graviter critici". Along with this were symptoms of severe nervous
depression, delusions, brown tongue & delirium.

The treatment most approved of was supported by

nourishing food, stimulants & acids.

Ireland, as may be expected, has suffered much

from epidemics of fever. This has been caused by

the failures in the potato crop & also in oat-

meal; combined perhaps, with the evil effects

of the domestic animals living under the same

roof. O'Sullivan, Rogers & Hasty have given very

good accounts of several appearances of it. A few

of these writers condemn benediction altogether,

but they say that the cases in which it is

indicated are very few; it as a rule, nourishing

food, alcoholic & sublimable stimulants, with

attention to均由 & cleanliness, are the

principle to be followed. They also recommended

the use of bark & the mineral acids.

In the commencement of this century there were

many hot discussions as to the best mode of

treating continued fever, one party, advocating

blood-letting, the others stimulants & both

going to absurd extremes.

Probably the most deadly epidemics that has

visited our country, raged from 1846 to 1848.

It began in Ireland, whence it was taken

to Scotland, England, & America by the Irish,

who emigrated in great numbers to these

countries at that time. The greatest number,
of cases occurred in Ireland the number being computed at one million and 40,000 in Dublin alone. In Edinburgh about 11 percent of the population were attacked and there were upwards of 2,500 deaths. About 1 in every 7 or 8 cases died. Typhus fever made fearful ravages in the allied armies at Sebastopol, doubtless caused by exposure, privation, and overcrowding. In Edinburgh for some years there had been a remarkable exception from typhus, till this winter when though by no means epidemic, there had been an average number of cases.

uses. I. Predisposing. The predisposing causes of typhus fever may be divided into those depending on external conditions as temperature etc. and those depending upon the state of the individual, as age, sex, etc.

A. By far the most potent and common predisposing to typhus is privation. This is seen at a glance, in looking at the history of the fever, for nearly every epidemic may be traced to a famine caused by war, failure of crops or extensive failure in commercial speculations. This is particularly observable in the case of the Irish people, when disappointed in their potatoes they were mowed down by the disease in thousands.
This is also well seen in the Asiatic attack caused by deficient supplies, coupled of course with other causes, as exposure to wet and cold.

Overcrowding is also another fertile source of evil; preventing that ventilation so necessary to health, and condensing those emanations so favourable to disease.

Seasons of the year have little influence on this disease, as it sometimes occurs in the heat of summer, sometimes during hard frost. Whatever depresses the vital powers, such as cold and wet, certainly acts unfavourably as a predisposing cause.

Natural Constitution certainly causes great differences in the liability of individuals to contract the disease. Some persons, possibly not of robust health, expose themselves freely seemingly without danger, while others seemingly much stronger than they succumb at once to the power of the contagion.

Age. In this particular typhus contrasts strongly with typhoid fever, the latter being naturally a disease of youth or adolescence while typhus in the great majority of instances attacks the adult-aged.

Sex. This has no influence or very little, the occasional apparent difference being caused by accidental circumstances.

Habits of life have a very striking bearing on the liability of contagion, those who lead a dissipated life being
especially exposed to danger, if there is no time more favourable to contraction of the disease, than when fatigued & depressed by a debauch. This has been observed after a single misspent night. In the other hand, those who lead a regular orderly life, taking wholesome food, & exercising in the fresh air, are comparatively free from danger. Doubtless, the large number of fever nurses infected, may be partly accounted for by their intemperate habits, want of fresh air, giving all due allowance for additional exposure.

Mental depression is a very powerful predisposing cause; it very many people increase their danger very much by an excessive & childish dread of the disease.

Previous illnesses predispose strongly to typhus, even though it may have been a very slight ailment, but merely convalescence from a serious disease, renders contagion extremely probable. I have noticed this is several cases this winter, that patients having passed through enteric fever, or scarletina, have on very slight exposure contracted typhus. This points strongly to the urgent necessity for the precaution of keeping patients with these diseases strictly separate, which is so often either neglected or impracticable.
3. Exciting Causes.

Contagion. There have been many long discussions and debates, whether typhus fever is contagious or not. It is now generally believed to be so. By considering how it spreads, there can be but little of any doubt left that it is so in a very high degree. The following are some of the proofs in evidence of this.

I. A distinct history of importation may generally be traced by careful inquiry. A ship going from an affected port, very often carries it to the port whether she is bound. Persons living in a healthy district may be infected by persons coming from an infected town to visit them.

II. Individuals may catch the disease by visiting others suffering from fever, though they themselves live in a distant part of the country, yet unvisited by the fever.

III. When typhus begins in a house it very often spreads rapidly through all the occupants as is seen in large lodging houses. I saw this exemplified last winter 1861-2, in that unhealthy district beside the Mace of Seil, where in several families one being attacked, the rest speedily were infected.

The attack of typhus fever is, in the great majority of cases, prophylactic against a second attack, though Dr. Mchildren himself proved a distinct exception to the rule, as he passed through two attacks of eruptive typhus, a space of ten years intervening.
How is the poison of typhus fever conveyed from one patient to another?

I. The most usual way is no doubt by directly inhaling the breath or emanations from the body of the patient, by which means the poison is directly conveyed to the blood. This is therefore as much as possible to be avoided in examining patients.

II. Actual contact with the patient may possibly give the disease, but this is not so likely.

III. Fomites are substances containing the emanations of the patient, this is a fruitful cause of spreading the disease. Everything about the patient may act as a fomite, his clothes - bed - walls persons visiting him etc.

It is found that the typhus poison acts at very short distances, so that if there be a plentiful supply of fresh air, visitors may come into the room to see the patient with safety if they do not put their heads as near as to inhale the emanations.

The experiments of Dr. Penttunen show that typhus fever is not contagious during the first week, but after that period, and during convalescence it is extremely infectious. They found contagion to be most active in those patients in which the emanations from them came most strongly. In those cases especially therefore abundance of fresh air should be supplied.