

## **Clinical lectures on typhus and continued fever.**

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# CLINICAL LECTURES

ON

## TYPHUS AND CONTINUED FEVER.

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It has happened to me, when having occasion, during some sickly winter, to describe the cases to a student or medical man accompanying me through the Fever Hospital, that I have been able at one visit to direct his attention, it might be, to some Celtic maiden, following us with alarmed inquiring eyes, recovering from febricula, for which she had been mistakingly removed from her Saxon master's house; then, in an adjacent bed, to the suffering aspect, gathered up on her side, shading her flushed countenance, shining eye, and contracted brow and pupil from the light, of a patient in the first stage of typhus; and, beside her, to another prostrated on her back, her eyelids fallen on the red eyeballs, the face heavy, massive, and leaden-coloured, the limbs extended and uncovered—a subject of typhus in the period of collapse. Passing along, we might look in succession to some hard-worked Hibernian, with pinched nostrils, and a crimson-coloured flush on his wan cheek, suffering from pneumonia; to another, a tavern-keeper, perhaps, sweating under the terrors of delirium tremens; to a third, with gastro-hepatic fever in the stage of excitement; and to another, emerged from this, and now in the period of intermission, and possibly of a bright golden colour from jaundice. In one side-room we might encounter several cases of variola, in another one of erysipelas, and somewhere else there might be examples of scarlatina, or of measles, or even of cholera. There might lie, like an inert mass, a silent person, replying tardily to questions, and that only in monosyllables, having a slow pulse and frequent sighings—a hopeless sufferer from cerebritis; here, confined in a jacket and secured to his bed in every limb, the maniacal-like subject of meningitis; and interspersed amongst such, perhaps along with instances of other diseases, I might in succession point to cases of enteric fever at different periods of its lingering course, or to examples of the several other forms of continued fever in their successive stages. If, after exhibiting to my companion this diversified scene, I should assure him that all he had witnessed,



so multiform in appearance, was nevertheless identical in pathological nature, the same disease in variously modified conditions; and, favouring him with some admonitory remarks on the folly of those who would map out fever into localities, as a phrenologist does a head, I should next assert the existence of an indefinite multitude of fever vortices, revolving in cycles of unknown length, and appearing in our horizon in a constant succession of new species—one in essence, though most protean in aspect, which should be treated according as they exhibit a very inflammatory, a less inflammatory, or a positively putrid aspect of the system,—in what would my position and difficulties differ from those of writers who, misled by a respect for authority, and by various general analogies, labour to adjust to the principles of a common nature the discrepancies of character and opposite requirements of treatment of typhus and continued fever? It is no marvel that writers of this sort, however accomplished or familiar with fever, should, like a recent lecturer on the subject, confess that the disease is most hard to be understood, and the economy of it so difficult to be taught, that nothing short of his long acquaintance with its habits in hospital practice could warrant his making the attempt. It would, indeed, be as real matter of surprise, were the study of fever easy, and the elucidation of it simple, when so conducted, as that some intricate question of ancient ontology had been satisfactorily adjusted by the arrangement of the bones of separate genera of antediluvian animals into one skeleton.

But it is a remarkable circumstance, that while writers of a metaphysical cast of thought, even when most conversant with the disease as practitioners, lose themselves in such embarrassments when treating of fever as a matter of philosophy, the ordinary medical practitioner, dealing with its practical curative management in every-day life, is often quite at his ease. It is a wide-spread notion amongst these, especially the less experienced of them, that the treatment of fever is a simple affair; and many such practitioners suppose, in particular, that could they but see their patients early, they might arrest the farther progress of the disease as certainly as they could extinguish a candle. Were every febrile seizure a mere ephemera, this might be true; but so many opposite conditions have their spring in the symptoms of a diary fever, that it is, in point of fact, a matter of some delicacy to intermeddle, at an early period, with a pyrexial disease, especially by the exhibition of what are called febrifuge remedies. These are means, usually of a herculean kind, which are employed with the professed object of strangling the fever, as it is called, or of forcibly breaking the chain of disordered conditions which constitute the disease.

There is a previous question involved in the employment of such agents, which is of great importance, but of difficult solution. Can any fever be cut short? I do not say any febrile condition, for on that point there is no room for doubt. We can cut



short an inflammation; but is it possible to arrest the course of a special fever?

There is no fever, including even the plague, which does not at times present itself milder in its symptoms, less complete in the number of these, and several days shorter in its course, than the regular type of the disease. These anomalies are occasioned sometimes by the smaller amount of contagion, infection, or other exciting cause which has been received; at others, by idiosyncrasies in the patients, which may even create a total inaptitude to become affected; but the question returns, do they afford us solid ground to believe that we can, by artificial means, not only produce an amelioration, but also an absolute annihilation of the symptoms of fever?

In the Fever Hospital here, the wards are sometimes, during epidemics of typhus, made to accommodate twenty-six instead of nineteen patients. The consequences of this procedure are soon observed in the increased gravity of the symptoms and augmentation of the mortality, from perhaps 1 in 9, to, as I have seen, 1 in 6.5. But let the same patients be placed in wards, or, what is greatly to be preferred, in separate apartments, affording say 800 or 1000 cubic feet of air to each patient, or let them be retained in their own homes with equal advantages of treatment, and the general complexion of the cases will not become so grave, or the casualties so numerous.

During the epidemic to which I have alluded, small-pox also prevailed, and the hospital patients here being exposed to the same overcrowding, the deaths amounted to nearly 20 per cent.; while, in a subsequent year, every element being the same, except that I could secure for my patients a larger space, the mortality from small-pox fell to 5 in 64, or to 1 in 12.8, being only about 8 per cent.

And, in regard to enteric fever, the same law was in equal operation, the mortality during twelve months that the number of patients was maintained at the high rate, being, under my care, as 1 in 8.5, and in the other period of fourteen months, when the number of patients in a ward never exceeded nineteen, it was 1 only in 14.6.

Again, in respect to the other forms of continued fever, should you happen to practise in a country district, you will meet with inflammatory fever of different kinds, which commence with great violence, and often prove fatal, perhaps as soon as the tenth day, under a strong concentration of symptoms; but if such patients be bled early, according to their strength and the inflammatory complexion of the complaint, these cases often run on in a regular, typical, and moderate manner to the ordinary period of crisis. In some instances of this kind, the copious detraction of blood on the second and third days, is succeeded by a complete remission, when, after twenty-four hours, the fever returns; but in the same fevers, in warm climates particularly, profuse bleeding



is often followed by an instant dissolution of the severity of the disease, and by a speedy convalescence.

In an analysis, made by Dr. Arthur Thomson, of 316 successful cases of fever, he found that, of 181 which came under treatment before the eighth day, the average duration was twenty-seven days; whereas, in the remainder, which received no treatment till after the seventh day of the fever, the average duration of each case was thirty-seven days, or ten days longer. And in another series of 2,074 fever cases admitted into hospital before the seventh day of the disease, the same observer found a mortality of 1 in every  $16\frac{1}{2}$  cases; while, in 1,461 cases of the same fever, which came under treatment after the seventh day, the deaths rose to 1 in  $8\frac{1}{2}$ .

I cite these as examples of varied kinds of febrile disease, which can plainly be modified by treatment either for good or evil; but we are still without proof that any of them can by such means be changed in their nature.

Some thirty-five years since, it was everywhere in this country asserted, that a fever might be made whatever one saw fit by treatment. "Shut up a mild fever," said they, "in a close, dark, and hot room; allow abundance of bedclothes, and a liberal use of cordials, and you will speedily transform your case into a genuine example of typhus. Expose the severest form of this latter fever freely, on the contrary, to a pure atmosphere, to tepid sponging, or cold affusions; give cooling drinks, purgative and saline medicine, and use local or general blood-letting, and you will gradually induce a metamorphosis into simple fever:" and such to this day are substantially the principles taught in the different metropolitan schools of clinical medicine.

But the force of such representations amounts to nothing in the present question, in consequence of the principle assumed in them, that typhus is simply a variety of continued fever. The case, so far as change of form in the fever is concerned, is simply prejudged.

Continued fever is never widely epidemic without several forms of it as ephemeral, and short fevers presenting themselves promiscuously, often, in towns particularly, intermixed with typhus, just as they also sometimes are with scarlatina, measles, or small-pox. Every such season is distinguished by many seeming remarkable recoveries, and also by many entire failures under the use of febrifuge means, as well as by frequent instances of evil consequences from their employment, such as intestinal hemorrhage and inflammation. It is from the experience of such seasons that apparent support has been yielded to the doctrine both of the conversion and extinction of fever by remedies. Yet it is clear that the mixed constitution of these epidemics affords a constant and ample facility for mistake on the subject.

The commotion of the organs which exists during the tumult of fever, often giving rise to discharges of blood, or, by vomiting and purging, and the restoration of the secreting power which



occurs at the period of crisis frequently giving occasion to sweating, catharsis, &c., these excretions have been construed into so many causes of returning health, and have been sometimes induced on this principle by the employment of various febrifuge means.

It is to the undoubted febrifuge properties of certain remedies, such as bark, arsenic, opium, &c., when used in intermittent fever, however, and to the good effects which sometimes proceed from the early employment of the warm-bath, emetics, blood-letting, the cold affusion, purgatives, &c., in the beginning of continued fever, that the expectation of cutting short the affection by such means is chiefly to be traced.

On reflecting on the physiological powers of these agents, it will be perceived that they all tend, either by stimulating the heart when given in depressed conditions, or by quieting it when employed in opposite states, to equalize the circulation. Thus, when had recourse to in the stage of vital torpor, which succeeds the impression of the exciting causes of fever on the nervous centres, those only are suitable which stimulate the system. Of this description are change of air and scene; exercise in the open air in the country, and at a distance from the presumed cause of the complaint; the internal use of stimulants and tonics, the warm-bath, and the exhibition of emetics. And when employed after the tide of vascular excitement has set in, then confinement to bed in a dark room, diaphoretics or sudorifics, purgatives, blood-letting, the cold affusion, tartrate of antimony, or such other remedy as is fitted to abate the constitutional tumult, is indicated.

It was a favourite object with physicians in the middle ages to discover a febrifuge remedy, which, by exciting a great commotion in the system, might at once stimulate the whole economy, and also carry off the fever by the creation of some discharge. Riverius tells us that he had meditated long on the construction of such a species of bomb, and at last obtained it in a salt got by dissolving determinate quantities of gold, antimony, and quicksilver in nitro-muriatic acid; and, in the present day, it is common to exhibit, as similar explosive febrifuges, combinations of both of the latter metals along with some saline evacuant.

Dr. Brown, one of the surgeons to the Royal Infirmary of Edinburgh, in a paper published in 1802, says that, out of 280 instances registered in the books of that hospital, there were twelve only in which it was noted that the fever had ceased the day that medicine was first applied; but the same writer testifies to the efficacy of certain pills, which were given by the surgeon of the *Namur*, ship of war, to those of the crew who became affected with a fever which was epidemic in the ship. These pills were, from their violent effects, called "Warren's Thunderbolts;" vomiting, purging, and profuse sweating being induced by them, followed often by the dissolution of the fever, and a great reduction of the mortality.



I remember since five grains of calomel, with half a grain of tartrate of antimony, and ten grains of bitartrate of potash, constituted a favourite febrifuge of this kind; and, at present, the exhibition of a dose of blue pill or gray powder, quickly succeeded by repeated draughts of solution of sulphate of magnesia and tartar emetic, is very generally employed; often, in the country, preceded by a full bleeding, as a similar tumultuary cure of fever. The depurating and calmative influence of such tornado-like practice is sometimes well illustrated, when it is employed in the stage of vital depression and torpor of the organic functions which precedes the rigor of fever, or during the first twenty-four hours of vascular excitement which succeeds this; although Armstrong, with a recklessness inseparable from the hop-step-and-leap spirit in which he wrote, declares that he has seen many cases of inflammation of the stomach and intestines distinctly arising from the use of antimonials and salines as febrifuges, and that they generally do a great deal of mischief. It is clear that the cases in which he saw this, must have been instances of the endemic enteric fever of London, in which the treatment was employed after inflammation of the ilium had taken place, that is, probably, after the fourth day, and certainly, in that event, the method would merit all his reprobation.

As the subject of febrifuge remedies is of great practical importance, and also involves the correct appreciation of the nature of fever, I think it necessary to speak of it more in detail. Before doing so, it may not be improper, however, to refer, for a few minutes, to those means which are supposed to be influential, not in removing, but in preventing fever.

It will be seen that the question of contagion meets us at the first moment of this attempt, and also, that the due consideration of the preventive management must extend beyond what is needful for individuals, to what is demanded by the community.

I will not speak on contagion in the way of battling an abstract argument. With this aspect of the subject I have nothing to do. In the battle of life, however, you will, each of you, frequently be exposed to the influence of two very opposite tides of popular feeling on the topic. One is the nearly universal belief and fear of contagion which has ever prevailed, and, in the existing constitution of the material world, must always prevail; the other, the disposition, amongst mercantile communities, partly to explain away or utterly deny the doctrine of contagion, in consequence of the injury to commercial interests which accrues from it. Both of these views influence the profession, as well as the general community.

Down to, and long after, the time of the Hippocratic school of medicine, the doctrine of contagious disease was held exclusively as a popular belief, and was promulgated, not by physicians, but by historians, philosophers, and poets. The Justinian code of civil law, even, embodied the doctrine of contagion before the sub-



ject received a place in the scientific writings of physicians. From the earliest periods, the attention of medical men was directed to the influence of air, moisture, winds, &c., in originating disease, but it was the pressure from without that compelled them to the consideration and the reception of the belief, that, when once so enkindled, fever may be communicated by the contact of one infected person with another. In the present day, whether the question involves a quarantine regulation at our maritime ports, or the formation of a *cordon sanitaire* around a town, or in a family only, the mercantile principle is apt to arise in collision with the hygienic, and medical men require to exert a jealous guard, equally against the commercial infidelity as against the operation of a panic fear. It was only the other day that a physician in this neighbourhood was thus the sole succourer of a stranger seized on the road with the symptoms of cholera, and in this state refused admittance into the adjoining village. And, on the other hand, it is not a great while since some of the boys in an establishment here, being affected with scarlet fever, the master of the institution contended with me on the folly of sending the other boys home, because he had been assured that the disease was not contagious, but "only in the air."

Should a river, for a time, overflow its banks, and a considerable extent of the country or city through which it runs be left covered with sedimentary deposits and damp, or should a clayey, marshy, or rich vegetable district of land be exposed to protracted rains, in either case with sufficient elevation of temperature, the atmosphere of the locality becomes loaded with animal, vegetable, and aqueous exhalations and products, and it is found, as a matter of observation and experience, that the inhabitants are often, at the same time, extensively affected with fever. Sometimes an atmospheric constitution, the origin of which cannot be so well ascertained, arises in some part of the world, and in an incredibly short time diffuses itself on every hand, affecting whole cities in a single day with influenza, or some other form of continued fever. These are examples, accidental, endemic, and epidemic, of what is called Infection. Another instance occurs when human beings are pent together, for a considerable period, in a deficient atmosphere, as on shipboard, prisons, &c., typhus exantheme is engendered; and in proportion as the locality is overcrowded, and the persons exposed to it fall ill, the atmosphere and general material of the place become charged with the poison of typhus, or are infected.

Should any of the individuals so affected, either with fever or typhus, come into contact with others not labouring under the affection, and who are resident even in a healthy neighbourhood, they communicate to them their respective diseases; or these are what is called contagious.

The enteric fever described by Baglivi, which succeeded an inundation of part of Rome by the Tiber, and the enteric fever,



which is the endemic of Hungary and of Great Britain, furnish examples of the two first of my supposed cases, or the accidental and endemial. The epidemic gastro-hepatic, or relapsing yellow fever, which affected most parts of the world in 1843, is a striking instance of the third.

I filled the empty beds of my medical wards at that time with cases of this last fever, but I was soon compelled, by the complaint being frequently communicated to my other patients, to remit all the subjects of it to the fever hospital, after which I had not an instance of it in any of the medical wards. But, in proportion as the fever house got crowded, the clerks and nurses there became largely the subjects of the disease.

As respects the contagiousness of the enteric species of continued fever, you will seldom meet with a sporadic case of it which does not extend itself, unless when a careful separation is enforced, to all the younger members, in particular, of the family in which it appears.

And in regard to the power of typhus to perpetuate itself, you may assume it as a fixed principle, that although its easiest victims are the aged and exhausted, nothing short of the most vigilant insulation and cleanliness can prevent its diffusion amongst all who have not previously been affected by it. I remember a case of this disease having found its way, by accident, into a medical, that is, a non-fever, ward here, then under the charge of a friend of mine, a warm non-contagionist. It soon became the focus of a small epidemic, four other cases of typhus being quickly produced by it, from among the patients affected with other diseases in immediately adjoining beds. And it is the invariable experience here, when this disease is epidemic, that, although such a thing as the contagion being wafted by the air to localities external to the fever house was never heard of, every unseasoned official who comes into contact with it in the house, is, as a general rule, affected by it.

We are not, unless in the case of typhus, acquainted with the ultimate causes which engender the febrile exanthemes. The ancients supposed them, like other plagues, to be formed in Ethiopia; and the modern Vegetarians, despite the immunity from these diseases of the cannibals in the islands of the Pacific till the arrival there of European, ascribe their existence to the eating of animal food. With continued fever it is different, and in dealing with it we have to bear in mind its atmospheric origin, as well as its contagious nature. That it has a primary connection with atmospheric states, is shown by the rapidity of its extension over all the quarters of the largest cities, across oceans, and throughout extended continents; and also by the changes in type which it often successively undergoes with the different seasons. When more localized, the relation which it has with the state of the weather, the presence in the grounds of moist decaying vegetables, the recent removal of the family in which it appears to a



residence distinguished by its temperature, the moistness of its atmosphere, and its rich vegetation, have all a similar interpretation. The histories of individual cases, also, have almost invariably a climatic origin. Thus, in private practice in Glasgow, a majority of the persons affected by it are females and children of the upper classes, who have accidentally got wetted and chilled; and, in hospital practice, our cases of continued fever are principally derived from the more rural suburbs, and from the adjacent country, during the prevalence of cold rains.

Warm, dry clothing, therefore, the avoidance of exposure to cold and wet, and the having speedy recourse to the warm bath, and to rest in bed after any accidental wetting, will prove good prophylactics against fever. A thoroughly well-seasoned house, in an elevated position, removed from the immediate vicinity of trees, or of large reservoirs of standing water, or of vegetable matter undergoing decomposition, will all, also, be valuable preventives. I remember having seen a great deal of an epidemic continued fever, which prevailed extensively throughout the lower, flat, alluvial, and wetter portions of a neighbouring rural parish, while not a single instance of it occurred in the higher and drier part of the same district. And it is a circumstance of constant recurrence, to find some form of continued fever appearing among the inhabitants of our city on their annual removal to various parts of the country and sea-coast during summer, especially when the season is damp.

As to preventing the extension of continued fever when in actual existence, I think that it is sound ground to assume every form of it, and also every stage, from the first flush of vascular excitement, to the completion of the desquamation of the cuticle, should this happen, to be moderately contagious, and to take your measures on this principle.

These will, in every instance, substantially comprise the segregation of the sick, the cleanness of their bodies, of their bedclothes, and of their apartments, and the purity of the atmosphere they breathe. The nature of the details will necessarily vary with the circumstances; and what will prove useful in continued fever will, *à fortiori*, be expedient in typhus, and the other exanthematous fevers.

Of prophylactic measures employed for the safety of the public community, fever hospitals have always been esteemed among the most important. I have already spoken of the imperative need there is of, at least, 800 cubic feet of air to each patient in these institutions, in order to make them really curative means; and I may be allowed to say here, that, with the same view, a mode of ventilation independent of windows, and of the volition of nurses, is also indispensable. The simplest, most economical, and best suited contrivance of this kind for a fever hospital, is to make an opening of about a couple of inches in height, and a dozen in horizontal length, in the outside wall, between each pair of joists,



on the level of the deafening. This admits the external air under the boards which form the floor of the ward; and by placing a perforated metallic plate in the central plank of the flooring, opposite to each opening in the wall, a constant gentle current of pure air rises up into the lowest, and, therefore, most impure portion of the atmosphere of the ward, and at a point the farthest removed from the patients. The foul air is easily removed by an opening made in the wall below the ceiling, and communicating, by a flue, with any of the fires or furnaces of the building. Ventilation by means of windows, besides that it renews the ground atmosphere of the wards imperfectly, leaves the patients to the discretion and judgment of nurses, and also, when used, to the evils of a strong, direct current. The practical results are the alternation of the effects of a highly contaminated atmosphere, produced by the closure, with attacks of erysipelas, inflammation of the ears, throat, and lungs, occasioned by the opening of the windows.

It has been alleged, that the number of recoveries in a fever house is proportionate to the earliness of the admission of the patients, and that this, again, corresponds with the willingness of the poor to be received. When speaking on this subject, I desire to state it as my deliberate conviction, that the plan of short, rotatory medical attendance in fever hospitals, is not the best for securing for them the confidence of the poor, or the lowest possible amount of mortality. It requires a longer familiarity with the numerous details of these institutions, and with the peculiarities of the diseases admitted into them, than is consistent with, say a two years' physicianship, to enable any one to exercise a steady, enlightened, professional superintendence over them. There is no disease, besides, in which it is more needful for the physician to possess a continuous individual knowledge of every particular case, than in fever. The changes in this affection are so constantly occurring, and are at once so important in their nature, and so insidious in their approach, that fever cases require both to be watched and individually known, whether by physicians or nurses, more than those of any other disease. My experience in this department of practice has taught me, that every change in the official staff of a fever hospital, whether this involves the removal of the physician, the clerk, or of the nurse only, is fraught with danger to some of the patients.

As regards the prophylactic influence of fever hospitals, I think it was Dr. Currie, of Liverpool, who asserted that every single removal into the house of recovery there, probably prevented the occurrence of two or three cases of the disease. I wish I could believe this of every other fever hospital. The truth is, that, during seasons of pressure for room particularly, when the average residence of the patients in the house is short, when there are, perhaps, no convalescent wards, and when, owing to the want of a separate building for the retention of persons too well to be kept in the fever house, but whose skins, and other secreting surfaces,



as the lungs, &c., are still desquamating, and whose health is still too little confirmed for it to be safe for them to mix with their families at home—fever hospitals, instead of limiting, are often the means of spreading the disease.

With these remarks on the means of preventing, I proceed to offer some observations on each of the principal expedients had recourse to for checking a fever.

1. And first, as to the analogy of the power of quinine in ague, I do not believe that there is anything in it as respects continued fever. In the gastro-hepatic species of fever, in which a crisis takes place on the fifth or seventh days, followed by a period of perfect health, which continues for other five or seven days, when a violent relapse occurs, I have, in multitudes of instances, given sulphate of quinine during the intermission, sometimes in small, frequently repeated doses; at others, in monster quantities. The patients were kept in bed, and on light regimen; or they were put on generous diet, and permitted to walk about; their bowels were carefully regulated, and sometimes they were allowed to change the air by returning home; but the steady experience was, that the relapse came on as uniformly as when the cases were let alone. In typhus, again, which has often, but erroneously, been asserted to be a pernicious intermittent, and in which the alleged febrifuge and curative powers of sulphate of quinine have recently been advocated on mistaken principles, I have also given this remedy, during different epidemics, and in all sorts of the disease—in the old, the young, men and women, severe and mild, and in doses frequently of four grains every four or six hours—and I have never seen it exert any power in shortening typhus, or operate otherwise than as a stimulant, enabling me, in the cases in which it was used, to do with somewhat less wine.

2. The warm bath has been sometimes useful in the commencement of fever, and has been supposed competent even to its arrest. It is employed for this purpose either during the rigor, or when the head has begun to be excited, but before perspiration. The ancients would not use it unless there was, at least, incipient moisture on the temples, and had a wise fear of employing it at all when there was visceral disease present. I certainly would never put any one into a bath above 98° of temperature, who has either hypertrophy of the heart, or enlargement of the liver or spleen.

The object in view, in its use, is to equalize the circulation, by determining to the peripheral vessels. A very accessible and summary method of doing this is to seat your patient, enclosed in blankets, on a kitchen chair, under which a plate, containing a couple of ounces of spirit, in a state of combustion, has been placed. At other times, when the person is unable to sit, the same thing may be expeditiously and effectually done, by sending a current of heated air under the patient's bedclothes, by means of a spirit-lamp. Place one extremity of an arched piece of tin



under the outer lateral edge of the bedclothes, and put a lighted spirit-lamp under the other end. Then raise the bedclothes by means of a stool, or a hoop or two, so as to secure a current, and in a few minutes your patient will get warm. Or an equally summary way of restoring the heat, is to wrap the patient in a warm wet sheet, and pack him all round with dry blankets. In a very short time the face will begin to get florid, and the sweat to flow. Should you have the opportunity of a hot vapour or of a hot water bath, either of them may be taken at a temperature of from  $100^{\circ}$  to  $120^{\circ}$ , and the patient may be kept in either till he is fatigued. In the case of a very weak person, it may be expedient to allow him to recline in bed, and employ only the foot-bath, with mustard. This is done by placing the pail of hot water at such a level, as will permit the patient to lie easily with his head on the pillow, and his legs in the water. Then legs and pail should be enclosed in blankets for half an hour, or an hour. If it is a child that you are called to treat, your best plan is to wrap up the body, as far as the armpits, in a warm, wet blanket, and cover all over with a sufficient number of dry, warm bedclothes.

The late Dr. Armstrong had the strongest views on the utility of the warm bath, but especially of that of the hot-air bath, of any who have written on the subject. He alleged, with great truth, that this form of applying heat does not fatigue the patient like the warm bath, and that in half an hour it will bring pounds of blood to the surface, which were previously suffocating some internal organ, and that it will produce perspiration, and restore the balance of the circulation sooner than any other remedy.

I will only add that, if you have an ephemera to treat, any of these modifications of the hot bath will expedite its dissolution; but should your case be the result of the gradual incubation of any form of continued fever, you will fail. The fever will run its course, but the bath will accelerate the stage of febrile excitement, and, should it not have been very hot or long-continued, no evil will accrue from its use.

3. Along with the external application of heat, a very common method of attempting the resolution of a threatened fever is the employment of stimulants by the stomach or rectum. I have seen beneficial reaction induced very expeditiously by means of forty drops of laudanum given during the stage of depression and rigor subsequent to receiving a chill, and it is sometimes useful to combine this, in such circumstances, with a similar quantity of sulphuric ether. A teaspoonful of brandy, or a tablespoonful of warm sherry, given every ten or fifteen minutes, in the same condition, will often restore the heart's vigour, and, should irritability of the stomach prevent their use by the mouth, they may be given in double or treble quantities by the rectum, either with hot water and turpentine, or tincture of ginger.

There are some sanguine, self-complacent practitioners, who



loudly assert that brandy is the sovereign specific against every stage of fever, and that they can stave off an attack of the disease, even after the circulatory excitement has commenced, if not by a glass of punch, at least by making the patient drunk. These modern Asclepiadii are quite as popular, and also as correct in their therapeutics, as the homœopathist empirics, who, before the time of Hippocrates, professed to strangle fevers by means of alum and other astringents, given internally, and applied in cataplasms to the hands and feet.

4. Emetics also have been had recourse to, in the expectation of breaking the fever. They act, like the hot bath, on the principle of inducing reaction, and, like it, they require similar limitations in regard to the presence of organic disease.

Frequently a rigor is induced by a loaded stomach. I have a patient, a healthy gentleman of seventy years of age. Should he happen to exhaust his vital powers by fatigue or exposure to cold, and, in that state, indulge in a hearty meal, he is seized with a violent rigor, followed by stupor, some loss of voluntary power and imperfect reaction, which continue till he is freed from the fermenting mass of undigested food by means of gentle emetics, and by purgatives. It is a remark of Celsus, that bile in the stomach often excites shivering; and here, also, an emetic will frequently bring an alarming assemblage of fever symptoms to a close. Nausea and inclination to vomit are common effects of the presence of undigested food or of bile on the stomach, and when present in what seems likely to become a fever, it has always been a usual and excellent practice to give an emetic.

But this species of febrifuge remedy is often employed both to unload the stomach, and to equalize the circulation. The splanchnic congestion which obtains in the first days of enteric fever, particularly in the portal circulation, exhibits itself by great tenderness and sense of oppression in the epigastric and hypochondriac regions; a red tongue slightly painted with bile, and a shrunk state of the general surface of the body. Here a gentle vomit of ipecacuanha is often followed, not only by a discharge of bile from the stomach and also by stool, but also by a restoration of the heat and secreting power of the skin, and by a removal of the precordial load. Many physicians have supposed that they have quite arrested the progress of enteric fever in this way, and there is good reason to believe that the succeeding fever has, at all events, been often much modified by these means.

It was a favourite method of breaking a fever, practised by the late Dr. Richard Miller in this hospital, to determine to the skin by means of an emetic and other appliances. His formula was as follows:—

“About eight o’clock in the evening I order the emetic—generally ipecacuanha—after the operation of which the patient is enjoined to bathe the feet and legs in warm water, during at least a quarter of an hour or twenty minutes, and upon retiring to bed



he is to swallow a large dose of Dover's powder. Sweating soon commences, and it is to be supported and encouraged by tepid diluents. This method, when administered early enough, I have found singularly successful. My chief experience of it has been among the nurses of our Infirmary, when they happened to catch the contagion. With them I have seen it repeatedly dissipate every symptom of fever. Upon visiting them next morning, I found that, after profuse sweating during the night, the pulse had come down, that the headache, with the pains of the back and limbs, had vanished, that the tongue had regained its moisture, and that nothing remained but a little debility; in short, that all those threatening signs had disappeared, that, if left alone, would have soon matured themselves into a regular and genuine typhus." And Dr Miller subjoins the histories of similar seizures, treated in the same way, in two of his Fever Hospital clerks, with equally happy results.

Dr. Miller, in the manner universal at the time he wrote, employs the term typhus here as a convertible name for fever. Whether his success was equal to his own estimate of it is, I think, open to doubt. Clerks here are often in fear of fever when their chilliness, want of appetite and spirits, nausea, head and back aches, and disturbed circulation depend on cold, to which they are the more liable from the indigestion and loss of constitutional tone incident to their often remaining too much within the atmosphere of the hospital; and, as to fever nurses, it is really not usual to see them falling quite so thickly under the disease as appears to have been Dr. Miller's experience, although every one knows that, as a class, they often subject themselves to other very potent causes of temporary tumult in the circulation.

Emetics are sometimes still employed, as they often were in ancient times, after the fashion of a fever-pump, by which the germs of the disease are expected to be raised from their lurking places in the body to be eliminated by the gastric surface. It was objected to their use for this purpose formerly, that not unfrequently the patient was freed of his spirit (*animam suam evomit*) rather than of his fever by this means, and the objection remains as good in the present day as it was when first employed.

Sydenham had nearly constant recourse to emetics on the access of fever, but where reaction had begun, and much acceleration of the circulation had appeared, he recommended that their use should be premised by the detraction of blood.

5. Blood-letting is another alleged febrifuge which, potent both for good and evil, has been employed to an immense extent, and from the most opposite motives, whether in the prevention or treatment of fever. In this hospital we rarely have the opportunity to test its power as a febrifuge, but in an epidemic of simple continued fever which I saw in the country in 1821, a number of persons came under my care at an early stage of the symptoms, in whom, after the application of external heat for the removal of



the coldness, and the detraction of a quantity of arterialized blood, the tumultuary fever was sometimes speedily dissipated. A couple of large bleedings in one highly plethoric man, seemed competent to occasion no more than a remission. A perfect dissolution of the symptoms occurred for twenty-four hours, after which they returned, and a crisis was got only on the 21st day. It is needful to add that there were cases of this fever on which blood-letting had no influence, unless it was a noxious one. Delirium of a most outrageous kind seemed to be sometimes induced by it in nervous, excitable habits, and in one case in which it was largely employed in the outset, it appeared to give rise to the symptoms of intense apoplexy. Such appearances of determination of blood to the head have been long known to be excited by the loss of blood, although the fact has again of late been recurred to as a general principle by the ingenious Dr. Marshall Hall.

In a similar short inflammatory form of continued fever which succeeded a typhus epidemic in Edinburgh, and some cases of which I saw, the same appearance of the dissolution of the fever by the aid of profuse blood-letting was observed. There is little doubt that the cessation of the fever in these cases after bleeding, was more dependent often, however, on the fever than on the remedy. The fever was essentially a short one, but was confounded with the typhus which had preceded, and to some extent accompanied it. My cases are described in the first volume of the *Glasgow Medical Journal*, and those at Edinburgh in the first volume of the *Library of Medicine*, and in Dr. Welsh's treatise on the fever of that period.

Bleeding is, especially in country situations, a remedy less likely to do harm than most other alleged febrifuge means; as, even when the disease was typhus, I have never seen a single blood-letting at the outset do harm. There is a wise remark which I have read somewhere—“*Sanguis frænat nervos*,” and in typhus the disturbance and disorder of the nervous system is one of the great evils of the disease; yet, whether it was from lessening the quantity of circulating mass, and thus diminishing the extent of the venous congestion which afterwards occurred, and which is one of the chief causes of death in typhus, or from whatever cause, I have never seen any evil arise from bleeding in the outset even of typhus. There is, as there has ever been, a class of active practitioners who, whether from an innate, constitutional spirit of restless effort, or from a nervous, silly desire to escape the critical reflections of others by practising in a mechanical, routine way all that has been recommended as useful, leave “no stone unturned,” as they say, to insure the destruction of the fever. I have had cases of typhus sent in from the hands of such men, and also frequently of enteric fever, but I can frankly say that I have not seen a tithe of the mischief done in typhus by the lancet, which I have seen in enteric fever by drastic purgatives. I think that the employment of blood-letting in



typhus is generally a mistake. I know there are some physicians—Dr. Armstrong, for example, asserted that he had bled in typhus to more than a hundred ounces, with a marked febrifuge effect. Dr. A. was misled by his own nosology. His typhus, in the form of it in which he thus bled, was, he says, Cullen's synocha, but neither would he, nor any of the advocates for the unity of essence of typhus and continued fever, have followed such a practice with what they called pestilential typhus—the typhus of these lectures. You would not, if in your sane mind, try to treat a supposed case of typhus fever by blood-letting, if the case presented itself to you during an epidemic of that disease, or if the patient had recently been exposed to any contagion.

But it has been in the attempted destruction of some of the forms of simple fever, and not of typhus, by blood-letting, that this remedy has been mainly found either beneficial or not hurtful. The similarity of many of the symptoms of fever to those of inflammation, their tumultuous vehemence, and the fact that young persons are its most usual subjects, as well as the frequent occurrence, sometimes with useful effects, of profuse hæmorrhages during its course, have all tended to suggest the employment of blood-letting as a febrifuge. The ancients believed that fevers could often be cut short *in limine*, or, as it was afterwards called by Willis, "crushed in the egg," by this means, when employed before the third day; and Van Swieten thus records:—"Ut Galeno, sic febrem curanti, adstantium quis dixerit, O homo! jugulasti febrem!" This latter writer, followed by Botallus, Sydenham, Clutterbuck, Armstrong, and others, thought that blood should be taken at the beginning of an ardent fever to syncope, and that, by so doing, the body, even though the fever was not at once destroyed, would be so lightened as to insure a short and easy illness; but it was mainly from the reports of those engaged in the treatment of the climatic fever of warm or fenny countries, of the marvellous power of copious detraction of blood in arresting fever at a single stroke, that the practice obtained a footing with ourselves in recent times. I must refer you to the writings of Mitchell, Rush, and other American physicians, as well as to those of our own Jackson and others, for the interesting proofs of the high prophylactic value of full depletion of blood on the first day of the fevers of warm latitudes; and, also, to the periodical literature of the day, for many striking instances of the value of the practice at the outset of continued fever at home, in the beginning of the present century. But I cannot dismiss the subject without cautioning you, that the records of medicine, especially those of the middle ages, are full of frightful examples of the ruinous consequences of blood-letting when employed freely in certain forms of epidemic continued fever. I believe it to be chimerical to expect to arrest the progress of a fever by blood-letting later than the second day; and, also, that it is wrong to repeat this remedy when the second sound of the heart has become



prolonged, or when the murmur of the larger arteries on the application of the pressure of a stethoscope is found shortened.

6. The form of fever in which venesection has been chiefly alleged to prove competent to the extinction of the disease has been the cephalic, and here its use has been often succeeded instantly by the employment of the cold affusion with the same purpose. The sudden impulse on the system of this remedy is said to have induced sweating and sleep, and thus to have frequently at once cut short the disease. The usual mode of applying it has been to pour, say a couple of gallons of water on the patient while standing in a tub, and to repeat it during the first and second days of the disease as often as the heat of the skin returned. The mode by immersion has also been sometimes adopted. In warm climates, cold water has been productive of eminent advantage at the outset of fever, and both externally and internally its use has been resorted to from the earliest periods as indeed the only *febrifugum magnum*. At the commencement of the present century, the reports of Dr. Currie regarding its use in fever took strong hold of the profession, and as late as 1815 I remember seeing it resorted to in this hospital. I think Dr. Clutterbuck speaks of having seen the cold affusion practised here in 1803, and that it was then often followed by catarrhal and inflammatory seizures. Be this as it may, it is a means which for many years has been discontinued in the latitude of Glasgow, unless by the hydropaths, in whose hands it is certainly an agent fraught with much danger to the unfortunate fever patient who is subjected to it.

7. The only other febrifuge agents of which I shall speak are purgatives. These have formed an element of every formula for the tumultuary or short method of curing fever, from the bleeding, sweating, diuretics, and emeto-cathartics of the Dogmatists before the days of Hippocrates, down to the tartar emetic, calomel, and black draught of the present time. In the more expectant methods of treating fever adopted by the Father of Medicine, and even as late as the time of Sydenham, while the supposed power of purgatives to attract the noxious principle of the disease to the intestinal surface was not disputed, certain notions about the necessity of "thickening the fever," prior to its expulsion, prevented their early employment. It was Stoll of Vienna who was the first strongly to recommend their use in the arrest of bilious fever, and, on the principle, "*sat cito, si sat bene*," he gave them on the first day, often, he says, with the effect of dissolving the disease. Their use became popular subsequently in the bilious fevers of America and the West Indies, and in the beginning of the present century the late Professor Hamilton of Edinburgh, from having observed that antimonials, when given in fever, as recommended by Cullen, were often followed by benefit when they produced catharsis, introduced the exhibition of purgatives into the treatment of fever in this country. His object was restricted to the moderate evacuation of the contents of the bowels,



but his authority was instantly made the warrant for a system of daily profuse purgation in fever which reigned here, and was practised also on the Continent, until, first, the doctrines of Broussais, and, afterwards, the more matured and accurate views of succeeding writers, made us acquainted with the frequent direful consequences of the plan when practised in enteric or typhoid fever.

I do not think there is room for hesitating on the employment of febrifuge purgatives in the cephalic species of fever, after the patient has been blooded according to his strength, or in the gastro-hepatic, or even, in a cautious way, in the thoracic, but it is more difficult to determine how far their use may be ventured on, and on what principles, and with what expectation of either stopping or shortening the fever in the enteric or typhoid form of the disease. I believe that every one who has had much experience of this kind of fever will have been often disappointed in the results of all exclusive modes of treatment in it, whether expectant, antiphlogistic, evacuant, sedative, tonic, or stimulant; and that every such practitioner also will have frequently met with instances of apparent arrest of the complaint, especially when recourse was had to remedies calculated to unload the mesenteric system. In the second and subsequent weeks of enteric fever, there is often nothing between the abdominal cavity and the contents of the bowel other than the attenuated peritoneal coat, and sometimes large openings may be observed after death even in it, which have been plugged up by masses of feculent matter. In such circumstances the paramount importance of rest and quiet of the bowel will be apparent, but, in the first week of the disease, the chief element in the affection, in addition to the disturbance of the nervous centres, is a condition of sanguineous congestion of the abdominal viscera. The symptoms at this time, such as febrile reaction, anorexia, nausea, red tongue painted with bile, pain in the pit of the stomach and forehead, and, perhaps, diarrhoea, strongly suggest the propriety both of bleeding from the epigastrium, of warm fomentations, tepid baths, strict diet, and also of largely diluted and mild saline purgatives. Now, I have seen instances of this nature, which were also caused by cold and not by contagion, and which, therefore, were more likely to be amenable to treatment, fail to receive benefit from such means, and I have also seen them prove eminently successful. I think that the proper course in regard to the exhibition of purgatives at the outset of enteric fever, is to select those which, by producing large watery stools, are fitted to unload the mesenteric vessels, as, for example, sulphate of magnesia in a state of great dilution; and that, should the case not manifest improvement within forty-eight hours, the treatment on this principle should be discontinued.

In relation, finally, to the previous topics referred to in this lecture, I believe that I am safe in affirming that a true ephamera may exist independently of a local inflammation, and that its conversion into a more protracted form of fever may be prevented by treat-



ment. I think that there is evidence, farther, that a fever, when dependent on causes suddenly applied, as cold or insolation, may be greatly modified by active treatment at its commencement, but that no fever which has a lengthened incubation period—that is, which depends on the introduction of a poison into the blood for several days before the symptoms appear—can be prevented running its normal course.

The head, the liver, the veins, the presumed air in the arteries, and, in modern times, the arteries themselves, have been adopted as the seat of fever. Van Helmont, who was a remarkably acute, although eccentric person, declared, with a pertinacity and dogmatism which have scarcely been exceeded in modern times, that every fever was situated in what he called the “first shops;” that is, in the stomach and bowels. Chirac, a Frenchman, who wrote in the end of the seventeenth century, boldly insisted on the head being the deadly source and seat of the disease. The same notion was taken up and revived by Marcus in Germany, and at the time that France was resounding with the exaggerations of Broussaism, Clutterbuck, Armstrong, Mills, and others in this country, were quite as earnest in inculcating the figment of congestion or inflammation of the brain as the cause of every fever. The phantom of cerebral congestion haunted the minds of young practitioners here at that time in a way which was often most destructive. I remember having had my own jugular vein opened very gratuitously when a little dyspeptic, by one of these, otherwise a man of first-class education. The country was full of great bleeders from this cause; and practitioners of standing, even, had often to yield to what was accounted the progress of the age. I once, when acting as a clerk in this house about that time, was got by a senior physician to bleed a patient privately who was covered with livid typhus blotches. Not having any knowledge of typhus more definite than the sliding scale of Cullen, he was without fixed principles by which to test and withstand a strong professional clamour; and, like many others in similar circumstances, he was betrayed into the absurdity of removing blood from one in whom the vital forces were already fast verging to extinction. Leeching and cupping of the head, and opening the temporal artery, were all at that time in high repute in fever, from the prevalence of the same notions of its pathology. I visited the Cork Street Fever House, Dublin, in 1815. Besides arteriotomy, which was frequently practised there, the work of leeching the temples was going on during my visit, with a heartiness quite unequalled by anything I have since seen of the use of the same remedy, except when employed a few years later for the removal from the stomach and bowels of an analogous imaginary parent evil. Many of the alleged cures by bleeding were obviously febriculæ only, going to hospital under the impulse of panic, and some of these, in which bleeding was ordered, got well by the fourth and fifth day, although from different causes the bleeding was not performed. In other



instances of the then Irish fevers, bleeding was no doubt had recourse to from the temporal artery in genuine typhus without much apparent evil ensuing. It was employed either when there was smart reaction still present, and its injuriousness then was not very obvious, or during the stage of subsidence and collapse, when a quantity sufficient to occasion present sinking was seldom detracted; yet it has been recently asserted that this innocuousness of bleeding in the public fever hospitals did not always exist. Dr. Stokes, in his second lecture on fever, avers, on the authority of an apothecary, that, at the time now referred to, it happened over and over again that the patient died while the leeches were upon his temples—died as surely and as suddenly as if shot through the head; his informant asserting that, when an apprentice, “there was hardly a week that he was not summoned to take off a large number of leeches from the dead body!”

Since the cerebral and gastro-enteric hypotheses of the seat of fever have fallen into disrepute, there has been a greater disposition to recur to the doctrine of its essential, independent, or specific nature than for some time before, and to consider the disease in the light of a universal affection of the whole organization, to observe the individual symptoms of each seizure, and to treat its different cases in their varied aspects on the obvious and acknowledged principles of general medical science. This is very much the old Cullenian hypothesis of fever, and, provided the ordinary sequences of functional disorders which it presents be recognised as its special and not its accidental phenomena, and that typhus, as arising from a different animal poison, as consisting of peculiar, and, compared with continued fever, entirely opposite pathological conditions and effects, and as requiring a distinct and special mode of treatment, be shut out from the field of inquiry which the theory would regulate, I have no objections to it. Continued fever is an essential disease of the whole animal system, although in some part of its course becoming more distinctly localized, the situation and nature of the anatomical or secondary lesions varying according to circumstances.