

will commonly be greatly alleviated whenever the skin is moist, so that a regulated temperature and sudorific diluents are useful, such as tepid weak tea, or diluted lemon juice.

Yet in almost all cases, if the constitution be good, in which there is manifestly a preternatural accumulation of blood in a part of importance, attended with an universal excitement, general blood-letting should be adopted first, and where that fails, local afterwards. Because the general blood-letting, if carried sufficiently far, will immediately diminish that violent action of the heart and arteries by which the inflammation is chiefly maintained; while the local blood-letting will make a still further impression on the heart, and may likewise induce a change in the state of the part affected, on the principle of sympathy or revulsion. Since the first edition of this treatise passed through the press, I have made many experiments as to the power which local blood-letting has over the action of the heart, and have found it infinitely greater than I had previously supposed; so much so indeed, that I am now induced to believe, that the *principal* efficacy of local blood-letting rather depends upon this than any other cause. In the course of these experiments, too, a remarkable and unexpected fact was presented to my observation: namely, that the action of the heart may frequently be weakened by small quantities of blood abstracted by leeches, when moderate or larger quantities would be required to produce a similar effect by venesection from one large vessel; but this however, is more especially the case when the excitement does not run intensely high, and in all examples where it does run intensely high, the general should always precede the local bleeding. Thus if the chest, or the belly be the seat of the inflammation, a vein may be opened at the arm; and as the benefit is generally greatest when the blood is rapidly abstracted from a great vessel, the orifice should be made very large. This is a point of the first importance, and ought never to be neglected in inflammatory affections of an urgent nature. About an hour after decisive venesection, several leeches may be applied over the integuments of the chest or abdomen, nearest to the site of the uneasiness; but as in visceral affections, the prin-

cipal efficacy of local blood-letting depends upon its influence on the heart, it should be continued until it sensibly weakens the action of that organ, which may be known by its lessening the force or the frequency of the pulse. And though it may seem surprising from the comparatively small quantity of blood which they abstract, yet practitioners will generally find the pulse reduced immediately on the removal of several leeches from the skin; and where this effect is not observable at that time, glasses exhausted of air should be applied over the punctures, until an evident reduction of the pulse succeeds. The cupping glasses, invented by Mr. John Welsh, surgeon at Haddington, answer uncommonly well, as I have proved by many trials, though they are merely exhausted by suction with the mouth; * and this method is generally preferred by patients, but especially in febrile diseases, to the ordinary mode of cupping and scarifying, over which it has one very obvious advantage, since it does not add the stimulus of pain to the febrile irritation. But nevertheless, where a considerable and rapid detraction of blood from the skin is required from the urgency of some threatening symptom, cupping and scarifying may be preferable, on account of the greater saving of time.

When an acute inflammation of the brain or its appendages has taken place in typhus, I have usually bled from the arm first, and where that did not give decided relief, recommended the instant opening of the temporal artery as the best mean of local blood-letting; and the happiest effects have often followed these two methods used in quick succession, but especially when cold cloths have been freely applied to the head at the same time. Dr. Stoker introduces an interesting fact, on the authority of an experienced surgeon, "who, scarcely in any instance, when opening the temporal artery is prescribed for patients in fever, fails of taking as much blood as may be required; though during forty years, in which he has been surgeon to the County of Dublin Infir-

* For an account of these very useful glasses, see vol. xi. page 193, of the Edinburgh Medical and Surgical Journal.

mary, he found the operation generally unsuccessful when directed in other diseases, either from the difficulty of puncturing the artery, or of getting a sufficient quantity of blood from any orifice that could be made."* In almost every instance, where the brain is seriously affected in the open forms of typhus, the arteries of the head will be found much more distended and pulsating than natural; thus at once affording a strong evidence of vascular excitement, and a much greater facility to the topical detractions of blood. The anterior branch of the temporal artery may be opened where local blood-letting is expedient, at a short distance from the trunk, which, in more urgent cases, may itself be punctured, a little below its separation into the anterior and posterior branches. When the operation is done on the anterior branch, the vessel ought to be divided after a sufficiency of blood has been drawn; but when the main trunk of the artery has been opened, it should be taken up in the usual way, otherwise there might be the risk of hemorrhage, or of a future aneurism. Surgeons often fail in abstracting as much blood as is wanted from some part of the temporal artery, not because it is absolutely impossible to obtain it, but because they divide, instead of puncturing the artery slightly obliquely lengthways. In inflammatory affections of the cerebrum, some have conceived, that if, instead of the temporal artery, the external jugular vein be opened, you abstract blood returning from the brain, and directly relieve the inflammation, by removing a portion of that which produced it, and thus clear the channel for a freer transmission of the remainder to the heart. It seems to have been forgotten, however, that this reasoning is only applicable to the *internal* jugular vein, for what *immediate* connection has the external one with the brain? Perhaps no peculiar advantages result from performing the operation at the external jugular; but in very young subjects it may be sometimes more easily punctured than the veins in the arm.

* See page 27 of Dr. Stoker's Treatise on Fever.

In all acute inflammations, seated in vital parts, it is of great consequence neither to confide entirely in one powerful measure, nor in a combination of secondary means;—but rather to employ, from the first, the most approved antiphlogistic agents, successively or together, that their influence may be so exerted as to produce a complete change in the circulation of the blood, with the least possible loss of time. Most of the ancient physicians, and even Sydenham himself, trusted to venesection in the first instance, and the expedients which they afterwards used were comparatively inert:—but under this plan many cases might prove mortal, which would be readily arrested by a judicious conjunction of active remedies. The free exhibition of purgative medicines, with or without venesection, is one of the greatest improvements in modern medicine, as it respects the cure of acute fevers; and if, to the agency of those two means, that of calomel as an alterative be added, we give a summary of what ought to be attempted, not only in the inflammatory typhus, but in all the varieties of acute visceral inflammations. Nevertheless, how superior soever be the united efficacy of bleeding, purging, and mercurials, there is yet an application that should not be disregarded. Much contrariety of opinion seems still to prevail, relative to the propriety of using blisters in typhus. If my observations be correct, they should not be employed in the inflammatory variety, until evacuations have been premised; otherwise they will commonly excite a general irritation, which will more than counterbalance any local advantage derived from them. I have, however, generally seen them exceedingly serviceable, when applied to the vicinity of the topical affection, soon after the employment of venesection and purgatives. It also deserves to be noticed, that they should hardly ever be recommended at a very late period, when the exhaustion is excessive, except where there is a tendency to coma, when they sometimes contribute to rouse the latent energies of life; on the whole, I conclude from what I have observed, that, when properly used, they are even more beneficial in typhus than in common fevers, especially when subdued degrees of inflammation or

irritation exist in a vital part. When the spinal cord is inflamed, blisters are peculiarly serviceable, and they should be applied repeatedly over the vertebræ where most pain exists, and also to the pit of the stomach. If the patient be seen early, blood should always be drawn before their application, and purgatives continued steadily afterwards until the symptoms entirely abate; but as the constitutional powers sink very soon under inflammation of the spinal marrow, the lancet should either be withheld, or most guardedly used when the inflammation has continued for some days, and then indeed blisters and purgatives will mostly be decidedly preferable (20).

My experience does not enable me to speak with perfect confidence concerning the general effects of the affusions of cold water, in the inflammatory typhus. It would be most unreasonable to expect that they should prove as highly efficacious in it as in the simplest form of the disease; yet their application in both probably requires to be regulated by the same principles. In the inflammatory typhus the heat is almost always above the natural standard, but the skin, particularly when the abdominal viscera are affected, is frequently moist, while there are distinct sensations of chilliness. A combination of such symptoms preclude the cold affusions, but not the warm bath, for it may be beneficially used after bleeding and purging, as it has a power of equalizing the circulation, by inducing a flow of blood towards the surface. In some cases of typhus, which were complicated with cerebritis, and in which the skin was very hot and dry, I have seen the cold affusions used with evident advantage, *before* bleeding and purging. But if any practitioner should flatter him-

(20) Blisters have not, in general, been found to possess any peculiar efficacy in the typhus of this country. The majority of our physicians, at least, do not speak of them in very high terms. We have, however, seen them used with the most unequivocal benefit in the early stages of the disease, after proper evacuations had been premised. In cases where local inflammation is present, they are indispensable, and should be applied immediately over the affected organs, excepting where the brain is the subject of disease. We have then thought they answered best if applied to the lower extremities.

self that they will, unassisted, subdue a fixed visceral inflammation in typhus, he will find his hopes utterly fallacious;—although, if applied when the surface is preternaturally hot and dry, and no sense of chilliness present, they will often lessen the intensity of the excitement, and thus add to the power of the subsequent depletion. I am persuaded, that they should seldom be employed in typhus *after* copious venesection, which reduces the vigour of the system too much to enable it to maintain a proper temperature under their application. In the north of England, it was not uncommon for typhus to be combined with catarrhal symptoms; and when those symptoms have not been urgent, I have found that they did not preclude the use of the cold affusions, but, on the contrary, yielded to their application, in conjunction with purgatives and blisters. Notwithstanding all that has been written, it still remains for future inquirers more fully to ascertain, in what modifications of inflammatory affections the cold affusions ought to be used, and in what rejected. Simple and philosophical as the principles of Dr. Currie are, when limited to some forms of typhus and the scarlet fever, yet they are not alike applicable to some other febrile diseases; at least I shall afterwards particularly consider one, produced by intoxication, in which the aspersions of cold water may be used with success, when the whole surface is covered with perspiration, a circumstance which he imagined entirely to prohibit them (21).

Most of the preceding remarks are intended to refer to typhus, combined with the acute species of inflammation. It is incumbent on me, however, to guard the practitioner against carrying depletion too far, even in the acute form of the inflammatory typhus. When a decided impression has

(21) Opinion is still at issue with respect to the propriety of having recourse to cold affusion in cases of fever combined with local inflammation. By not a few physicians, it is deemed in all cases wholly inadmissible. There can be no doubt, however, that where the brain has been the inflamed organ, that it has proved decidedly beneficial. In every other case of local inflammation, we should look upon it as extremely injurious, and should prescribe it accordingly.

been made upon the topical affection, we should desist from the employment of very active measures, and either leave nature to exert her own energies towards restoration, or to second them by moderate treatment. It cannot be too often repeated, that the system sooner sinks under depletion in typhus, than in merely common fevers; and this is an important peculiarity of the disease which should never be lost sight of by the medical attendant.

The acute inflammations of typhus sometimes originate from causes, which neither the physician nor the patient can control, and by the rapidity of their progress endanger life from the very onset. But this is not altogether the case with the sub-acute kinds of inflammation which, being the gradual results of the increased action of the heart and arteries, may often be prevented by timely care, and which, when actually formed, may proceed for some days, before they bring life into immediate hazard. The prevention of these latter affections may be best effected by frequently taking a cautious and comprehensive view of all the symptoms, so that if any part be threatened by an attack, it may be immediately ward off by local blood-letting, blisters, purgatives, or similar means. Thus if there be too great a determination of blood to the brain, the patient should either be frequently placed in an easy chair, as Sydenham recommends, or the bed upon which he lies should be raised at least eight or ten inches at the top, by placing blocks of wood under the upper poles that he may rest on an inclined plane, with his head considerably elevated. And this simple precaution, with the free admission of cool air, cold applications to the head, the exclusion of light and noise, brisk aperients, and perhaps a few leeches to the temples, will frequently prevent an attack of inflammation. If the pleura, lungs, or mucous membrane of the trachea be pre-disposed to inflammation, leeching or cupping, a blister afterwards, small doses of antimonial medicines, and saline purgatives, will be amongst the best preventives. If any of the abdominal viscera be threatened, the warm bath, large cathartic enemata, a tolerably full dose of calomel, determined to the bowels by the sulphate of mag-

nesia, and the abstraction of a few ounces of blood from the surface of the belly, will often obviate the necessity of having recourse to more active expedients. When the sub-acute inflammation really exists, it will be best overcome by a suitable perseverance in the antiphlogistic plan. One moderate bleeding from the arm will be generally necessary, after which local blood-letting, blistering, and purgatives, in combination with mercurials, for the most part will suffice to effect the cure. General venesection, or arteriotomy, may be recommended, with propriety at a much later period than it would be advisable in those cases of typhus which are complicated with the acute form of inflammation; for when the topical affection does not advance so quickly, the supervention of the stage of collapse is proportionably delayed. In an instance of this kind, which lately came under my inspection, the subject of it sickened on the eleventh day of the month, and gradually became worse, until the nineteenth, when my first visit was made. The patient was then extremely restless, shrunk on forcible pressure being made over the abdomen, which was somewhat fuller than natural, and he complained of an unquenchable thirst, with a constant burning heat at the stomach. Purgative medicines having been previously exhibited without arresting the complaint, I ordered a vein to be immediately opened at the arm, and, placing the patient in the erect position, allowed the blood to flow till it was stopped by approaching syncope. About ten ounces of blood only were drawn, the crassamentum of which became extremely cupped and buffy; yet the relief obtained was permanent, and the recovery rapid, through the assistance of a blister, and purgatives of calomel and jalap. In this case, blood was abstracted on the ninth day of the fever, with the most obvious utility; and on some occasions I have seen the temporal artery punctured to great advantage at as advanced a period, when the head was oppressed by a sub-acute inflammation of typhus. My experience does not enable me to limit the time at which the lancet may be employed in such affections, but the earlier the better, when the evidences of visceral inflammation are once sufficiently revealed. The

case above is not brought forward to show that phlebotomy may generally be adviseable at so advanced a stage of the disorder, but merely to prove that it may sometimes be resorted to with advantage, even when the sub-acute inflammation has been allowed to proceed far without any decided interruption. Though some modern authors have recommended, as Langrish did in the last century, repeatedly small general venesections several days later than in the instance reported, yet at such a time, I cannot but consider this practice as exceedingly dubious, and would myself prefer, in most cases, the occasional use of local bleeding (22). After a few of its diurnal revolutions, the stage of excitement begins to decline, and symptoms of universal collapse appear, during the existence of which it is extreme rashness to use general blood-letting. Indeed, the blood taken from a large vein is then frequently in a thin dissolved state, so that it remains a fluid gore, without coagulating; and whenever this is observed, it is the most certain proof that the operation has been done at an improper time. Unfortunately, the physician is often consulted in febrile disorders when they have become all but desperate by their long continuance, and if he should attempt to save the patient by a daring measure, will generally have the mortification of seeing him sink rapidly after its employment. In the worst cases of this kind, powerful expedients are hardly ever admissible, for where they once succeed, they will fifty times fail; and perhaps all that is left in general for the practitioner to perform is, to give a conscientious prognosis, and, if possible, to palliate the predominant symptoms.

For some years past, I have closely directed my attention to the effects of purgative medicines in hepatic, gastric, and

(22) Dr. Gamage of Boston in 1818 published a very interesting little work, the object of which was to show the extent to which blood-letting may be carried even in the advanced stages of typhus fever. He records several cases in which the disease was subdued after several weeks standing by this active remedy, although the apparent debility was very great. We coincide with Dr. Armstrong, in considering the practice as of rather doubtful efficacy, and would prefer trusting to less powerful evacuants.

other abdominal inflammations; and the result has been most satisfactory, particularly in the sub-acute modifications, sometimes commencing with typhus, but far more frequently originating during the progress of the fever. In affections of this kind, it will very often be found, that the bowels have been constipated, or in an irregular state before or during the attack, which makes it necessary that they should be as speedily and thoroughly opened as possible; but on account of the irritability of the stomach, this cannot always be accomplished without difficulty. The contents of the lower part of the intestines should first be evacuated by large and repeated injections, containing at least a quart of fluid; but if twice that quantity, or even more can be administered, it will be still better, provided much feces be retained. The benefit resulting from large enemata, injected with a sufficient force, from a suitable syringe, or an ox's bladder properly fitted up, has not been rightly estimated; but, from repeated trials, I can recommend them as remedies truly worthy of notice in abdominal inflammations, often inducing copious motions in a very short time, and contributing to allay retching and vomiting, so that the medicines afterwards prescribed will not be rejected by the stomach. But their effects in general are not sufficient, and therefore aperients should be ordered immediately after their operation, to act upon the whole course of the canal. Under such circumstances, small doses of certain drugs, especially of calomel, are as liable to be rejected as full ones; and even when retained, they either do not operate at all, or only very defectively, and may do much more harm than good, by their immediate irritation, and by occasioning a loss of time, every moment of which is precious in the beginning of such disorders (23). Full doses of purga-

(23) Dr. Miner of Middletown, Connecticut, prescribes calomel in such doses and at such intervals as to be retained in the stomach and bowels *twelve hours* before it produces its operative effect. If in eighteen hours catharsis has not ensued, he directs castor oil or some other mild vegetable laxative to be given. From the statement of this writer, we have reason to believe that his practice has been eminently successful. At the same time it is proper to apprise the reader that no *sthenic* cases of typhus appear to have fallen un-