cal phenomenon, and it often produces a beneficial and curative effect, lessening the local determination and irritation. Under these conditions it should not be interfered with.

But cases are met with in which, from the amount, continuance, or recurrence of the bleeding, the patient's life is placed in jeopardy, and then we are called on to check the flow if possible.

The manner of the hemorrhage is twofold. Sometimes it consists in a *weeping* from the mucous membrane. More rarely a vessel of some size is opened by ulceration—this especially happens in the second or third week of enteric fever. Fortunately, the treatment likely to be of use is nearly the same in both cases. Rest is of paramount importance. Cold drinks and ice may be given. Turpentine, in small doses, is particularly useful where the hemorrhage is associated with much tympany. Acetate of lead and opium sometimes act well; or opium may be given in full doses if there are strong grounds for supposing that the source of the bleeding is an eroded artery. The points in favour of such a view will be the suddenness of the occurrence of the bleeding, its large amount, the advanced period of the illness, and the absence of hemorrhages in other parts of the body.

A man, of middle age, was almost convalescent from a comparatively mild enteric fever, when in the middle of the night he was seized with sudden diarrhœa. The resident clinical clerk was hastily summoned. He soon found that the motions consisted principally of blood, at first dark and tar-like, then of a more florid and arterial appearance. The quantity passing from the patient was so large that no time was to be lost. The clinical clerk accordingly at once administered a full opiate; in an hour he gave a grain of opium with acetate of lead, and he repeated this dose every two hours until the patient had taken 7 or 8 grains of crude opium. The hemorrhage was soon checked, and the curious thing is that the patient showed the same remarkable tolerance of the opium which we have already spoken of in connection with peritonitis. He made a good and rapid recovery. Of course the utmost caution should be employed in these cases, and the effect of every dose should be attentively watched.

Among other remedies in this complication may be mentioned tannin, tincture of the perchloride of iron, and ergot. The last is highly commended by such authorities as Dr. Murchison, and Dr. J. B. Russell, of Glasgow. The former has used it subcutaneously with excellent effect.

LECTURE XXXII.

TREATMENT OF THE NERVOUS SECONDARY SYMPTOMS OF FEVER—HEADACHE—Cold lotions, warm fomentations, moderate leeching, shaving the head, cold affusion, ice—DELIRIUM—Treatment depends on (1) period of case, (2) presence of hyperæmia of the brain, or otherwise—Ice, leeches, shaving the head, cold affusion in *active* delirium—Nourishment and wine in *passive* or anæmic delirium—SLEEPLESSNESS—Moderate leeching, cold affusion, ice—Turpentine in constipation and tympany—Catheterism in distended bladder—Sedatives—Opium, tartar emetic and opium, hyoscyamus, bromide of potassium, chloral, wine—CONVULSIONS—Most formidable in fever—Uræmic, due to (1) *retention* of urine: catheterism; (2) *suppression* of urine: dry-cupping and poulticing over kidneys, diluents, diuretics, aperient enemata, promotion of action of the skin.

AMONG the earliest, most frequent, and often most prominent of the nervous symptoms in fever is HEADACHE. At first it is seldom very violent, and no important or vigorous measures are required for its relief at this period. It is generally a symptom which subsides early in the case, and is rarely indicative of anything beyond functional derangement, or incipient or progressive affection of the brain. The intensity of the symptom is more marked in typhus than in typhoid; but in neither form of fever is it often accompanied by indications of active determination to the head, and in both it commonly subsides without any interference beyond the application of a cold lotion, such as vinegar and water, or chloride of ammonium (sal ammoniac) and water.

But should it be severe, and attended with more or less heat of the head, you may employ with advantage warm stuping of the forehead and temples. These warm fomentations may be repeated according to circumstances, and you have often seen the marked relief afforded by them. Should this measure fail, the application of two or three small leeches to the temples or behind the ears will be followed by relief—a relief out of proportion to the quantity of blood taken. You will, however, remember that the pain generally subsides by itself after the lapse of a few days. Yet it sometimes continues, and resists even the treatment I have suggested; and then, when it is severe and attended with heat and fulness of the head, you may adopt more active measures. You may apply a larger number of leeches in relays for two or three times. It used to be the practice in this city, when the pain was obstinate, with heat of the head, sleeplessness, and

commencing delirium, to open the temporal artery—a proceeding often followed by excellent results. It should be remembered that I speak of a time at the commencement of the change of type in disease; yet the general adoption of this measure is not to be advised, as the wearing of a tight ligature round the head is often distressing, to say nothing of the accidental re-opening of the wound or the formation of a small traumatic aneurism. I should tell you that the quantity of blood removed in this procedure was never excessive, varying from six to ten or twelve ounces.

Now, I believe that by shaving the head, the cold affusion, and, if necessary, the application of ice, you will do all that arteriotomy could effect.

Yet *shaving the head* should not be a matter of routine, especially among hospital patients. You must not forget that the poor convalescent cannot afford to purchase a wig, and that in consequence he may become liable to otitis and other accidents, such as rheumatism or neuralgia of the head. And this reminds me that in the epidemic of 1826 and 1828 one of the physicians of our large temporary hospital adopted the routine practice of shaving the head of almost all his patients. Dr. Graves and I, on the other hand, had very rarely occasion to direct the operation, so that when the shorn and the unshorn patients met in the convalescent wards the former became greatly dissatisfied. But this was not all, for soon those whose heads had escaped the routine razor turned on the shaved ones such a battery of Irish satire on their appearance that on one occasion it proved too much for endurance, and a general engagement took place in the convalescent ward, which was quelled with the greatest difficulty.

Cold affusion is best carried out in the following manner: The patient's head is held over a basin, while cold water is allowed to pour slowly from a jug holding a quart or two, and held at no great height above the head. It is necessary to let the stream fall on different parts of the head from time to time, for otherwise a very painful sensation may be produced. The almost instantaneous relief afforded in this way is often remarkable.

Now as to the *application of ice:* This is frequently most clumsily and ineffectually performed. A bladder containing fragments of ice is placed on the vertex and allowed to remain there. The effect of the cold thus locally employed on the shaved head gives such distress as to be at times intolerable until the ice is all melted, when you may frequently find your patient's head covered for hours with a bag of water at *fever heat.* Of course you will not permit such an error to

happen—the frequency of which showed how much we were in want of skilled nurse-tending. The proper method of proceeding is to place a piece of ice, rubbed smooth with the hand, in a cup-sponge of convenient size, and by inverting the sponge to bring the ice into contact with the shaved scalp, keeping it in gentle motion round the head. The sponge absorbs the water, and when it is saturated it can be squeezed out, the ice replaced, and the application recommenced. In this way no pain is caused, and the proceeding is grateful to the patient, while the entire head is cooled. Of course, in many cases the application must be renewed at shorter or longer intervals.

Before passing from the treatment of headache I wish to mention the influence for good on the general condition of the patient often observed on cooling of the head by some of the means I have described. At times, in advanced fever with continued determination to the head, you may see a rapid improvement (which continues to recovery) of the patient when the heat and fulness of the head have been allayed by appropriate measures. It seems as if the influence of periodicity, which had been interrupted by the local malady, was again permitted to act. There can be no doubt of the existence in fever of a condition more or less persistent, in which various influences may bring about a cessation or subsidence of the morbid phenomena. Thus we read of cases of camp fever subsiding on any forced removal of the patients. You will find marked benefit to follow the removal of a patient in protracted fever to another ward; and even crisis has been observed closely following a simpler proceeding, such as a change into a fresh bed, the washing and shaving of the patient's face, sponging the surface, and so on.

In considering DELIRIUM in fever, strive to keep the great pathological principle before you of the rarity of actual cerebritis in essential disease. Also that when it does occur it is in most cases specific and reactive, and as such, not to be treated as a simple primary inflammation. You will do well to study Dr. Collins' history of the epidemic of cerebro-spinal fever in Dublin—the so-called "cerebro-spinal arachnitis"—and you will perceive, I do not doubt, that the condition of the brain and spinal cord was strictly analogous to that of the ordinary secondary diseases in typhus and typhoid fevers; that it bore the same relation to the essential malady; and that in all things—treatment included—there was an analogy between the local and predominant affections of these forms of disease. They differed only as to symptoms referable to the organs which bore the weight of the secondary malady, and agreed in inconstancy of occurrence, variety in degree, and incompetency of the local phenomena to account for the general symptoms.

A key to the treatment of delirium is to be obtained by having regard mainly to two considerations. First, the period of the case at which this symptom is developed. The earlier the period, the greater the chance of relief by remedial measures, such as the cold affusion and leeching. Secondly, the presence, the degree, or the absence of signs of active hyperæmia of the brain.

Now, the symptom may be actively developed at an early period, making it probable that it is still of toxic and functional origin; or it may occur at a more advanced stage, when—if signs of active determination to the head be present—it may be supposed that reactive irritation is already set up. It is in this latter condition that Dr. Hudson advocates the practice of arteriotomy, but this measure is seldom necessary if leeches are judiciously used, and the cold affusion or the application of ice to the head properly carried out.

Ice is especially useful under such circumstances. I remember attending a professional man, who with a very large head was of a highly nervous and choleric temperament. He had a well-marked typhus fever with severe cerebral symptoms, such as frequently-violent delirium, long-continued want of sleep, and extreme heat of the head. Leeches had been freely applied, and followed by shaving the scalp and cold affusion. I recommended the application of ice in the way I have detailed to you. There had been no sleep for several days and nights. A proper supply of ice having been obtained, his wife commenced to move the sponge with ice slowly and steadily round and round and over the great head. The patient at once became quiet, and soon fell into tranquil sleep. So long as the application was continued he remained asleep, but awoke suddenly and delirious whenever from fatigue his wife rested her arm. In this way he used to get continuous sleep for half an hour or an hour. For three days and three nights she hardly ever intermitted her labour of love, and might be seen kneeling at the bedside while a cloud of vapour was rising from the head. Her unwearied efforts were rewarded, and her husband recovered.

The devotion of woman is truly wonderful. In another case—one of putrid typhus fever—the disease, from the condition of the skin and the discharges, was of a most loathsome nature, and the patient, also a medical man, in his wild delirium could not be kept in bed unless his wife undressed and lay down beside him. This, I ascertained, she continued to do during the long course of the disease, for in this way alone could any sleep be obtained. At our daily visit this lady received us in a fresh and elegant morning costume. She too had her well-earned reward, and we cannot doubt that her noble

indifference to personal risk went far to protect her in the dreadful exposure to contagion. A lesson taught us is that contagion is one thing, the state of receptivity of the body another.

Gentlemen, you will learn many things in your future practice besides medicine, and will be taught what a woman will do when the object of her love lies prostrate in disease, in shame, in sorrow, or in madness. This is indeed the bravery of devotion. In one of the Ballads of the Cid, he is represented as rescuing from death by drowning a leper whom none of his train would approach. He mounts him on his horse, brings him to a place of refuge, and even shares his bed with him at night. He is awakened by a sensation as if a sword passed through him, to find his companion gone. Soon afterwards the room is suddenly filled with light, and the holy Lazarus stands effulgent by his side, bringing a message from the Throne of God, that all honour will be given to him in this world, death in victory, and life eternal in the world to come.

The form of delirium I have just been speaking of is that accompanied by high arterial tension and other active symptoms. If, on the other hand, such signs are wanting, you must be very cautious in bleeding locally, or even in the application of cold. An opposite line of treatment is in this case generally indicated. If we have delirium, even violent, without heat, fulness, or increased arterial action, the treatment by leeching and cold may be in the highest degree dangerous. This we have often witnessed in pure delirium tremens, and in the frequent affection in Dublin called "the whiskey-fever," when these are combated by depletion of the head.

It is now many years since I was called to see a Polish officer in an advanced stage of typhus fever. He had been very delirious, and at my visit I found him with his shaven head covered by a bladder of ice, while in each axilla a large mass of ice was fixed, and his hands were clasped as in prayer. He was perfectly pale, and with great feebleness of pulse; but he recognized me, and turning towards me he mournfully said, "I think I am one of the lost ones." I need not say the ice was all removed, warm and dry clothing supplied, while wine and nourishment were given. The result of the change of treatment was in every way satisfactory.

In administering stimulants in delirium you must in every case begin tentatively, watching their effect from hour to hour. The chief indications for their employment are the nature and the advanced period of the fever, the absence of signs of *active* determination to the head, the want of vigour in the heart as to its impulse and the intensity of its sounds, and, lastly, the age and previous history of your patient.

With regard to this last point, you will remember what I have said in a former lecture as to the sanative influence of stimulants so often observed in patients of previously temperate habits.

The question of the exhibition of sedatives in delirium may fitly be considered in connection with the treatment of INSOMNIA, or SLEEPLESSNESS, to which I would now bespeak your attention. The symptom is frequently one of the most serious, troublesome, and unmanageable of the evidences of nervous derangement in fever. It is sometimes combated successfully by such measures as have been already considered—namely, moderate leeching, the cold affusion, and the application of ice. In cases where the bowels are confined with more or less tympany, Dr. Hudson states that the best effects were produced by the administration of a full dose of turpentine. I have myself observed a like result follow the relief of some local distress in a distant part of the body. A man in advanced fever, who had been sleepless and very delirious, was found to labour under a distended bladder. The catheter was at once passed, and an immense quantity of urine drawn off. Very shortly the delirium ceased and the patient fell asleep.

It remains for us to speak of sedatives in fever.

In seeking for a guide as to the exhibition of opium you will find assistance in observing the state of the eye, for the contracted or "pin-hole" pupil seems to be more closely related to active hyperæmia of the brain than the natural or dilated one. Still, the condition of the pupil is not an absolutely certain guide, and cases are recorded in which an opiate acted well notwithstanding its contraction. This sign also may be present in one eye and absent in the other. Speaking generally, it is far safer in fever to give opium in small and repeated doses than to venture upon a large single dose. It may be advantageously combined with antimony, as advocated by Dr. Graves, not so much as an antiphlogistic or eliminative agent, but as a direct means of increasing the hypnotic influence of opium. This appears to be one of those therapeutic results, the explanation of which, like that of many others relating to the action of medicine, is so far involved in obscurity. Dr. Graves used to prescribe a mixture containing four grains of tartar emetic and a drachm of tincture of opium in eight ounces of camphor water. A tablespoonful of this was given every second hour until the desired effect was produced. The efficacy of the remedy in his hands was most remarkable; and in the number of the *Dublin Quarterly Journal* for August, 1849, Dr. Robert Law bears his testimony to the value of this treatment.[1]

[1] Second Series, vol. viii. p. 63.

Tartar emetic and opium are in general indicated in those cases of even high delirium, with sleeplessness, where the head is cool and the action of the heart is not vigorous.

Other sedatives which you will find of use in fever are the tincture of hyoscyamus, bromide of potassium, and chloral. With respect to the last-named remedy, I would caution you against giving too large a dose at once. In fever ten or fifteen grains of the hydrate of chloral are generally sufficient to produce the wished-for effect, and if this dose fails it can be repeated after a lapse of one or two hours. The remedy is of especial value in the management of many cases of simple delirium tremens. In this disease it may be employed in moderate and repeated doses if necessary.

You will occasionally find that wine has a well-marked calming and sedative effect in fever. A patient who has been restless, sleepless, and delirious will sometimes become quiet and fall asleep after the administration of a little wine. This occurs where the nervous symptoms are probably due to an anæmic or spanæmic condition of the brain associated with a weak heart and a flagging circulation.

CONVULSIONS in fever are among the most formidable complications of the disease, more particularly so when they occur in its advanced stages. Under the term "convulsions" may be included a group of phenomena varying from slight *subsultus tendinum* and *floccitatio*, or picking at the bed-clothes, to the most violent and general perturbation of the muscular system. These symptoms in a more advanced stage of the fever are often attributed to uræmic poisoning, and there can be no doubt that there is frequently disturbance referable to the urinary organs. You will see in Dr. Hudson's work[1] a quotation from Sir Dominic Corrigan in reference to the importance of attention to the relieving of the bladder. Sir Dominic shows that daily attention to the state of the bladder is imperatively necessary, and that the catheter should be employed in retention of urine with or without dribbling. In truth, you must not trust to any report from the nurse as to the existence or absence of retention, for often, although a large quantity of water may have been passed, the bladder will be found greatly distended. This state may have been preceded by suppression, and it sometimes happens that the return of the secretion is attended by an enormous flow, especially when this occurs at a critical time of the fever. In such a case it will be right for you to re-visit the patient within an hour or two after catheterism, when you may be surprised to find the bladder again over-distended.

[1] Lectures on the Study of Fever, second edition, p. 183.

The amount of distension is sometimes extraordinary. "I saw not long since, in private practice," says Sir Dominick Corrigan, in speaking of the necessity of attending to the bladder in fever, "another case illustrating the same point. In this case the patient was a lady under the care of a homœopath. You know a homœopath would not use a catheter. It was on the fifteenth or sixteenth day of fever. I found her in epileptic convulsions, which had continued for some hours, foaming at the mouth, insensible, unable to swallow, and, to all appearance, dying. On examining the abdomen, I felt the bladder extending up as high as the umbilicus. On introducing the catheter, it was scarcely possible to bear the intolerable ammoniacal smell of the urine, which must have been shut up for several days. It continued to flow until some large basinfuls were drawn off. This patient recovered, but she suffered much from the neglect. Subacute and then chronic cystitis followed, under which she continued to suffer for more than a year afterwards."

In connection with the presence of uræmia in fever we have observed the urine in such cases to effervesce briskly on adding a dilute acid, and I have already mentioned a case of extreme subsultus in which the cerebral sinuses and the veins of the pia mater contained air in considerable quantity.

The most long-continued and violent attack of convulsions I ever witnessed was in the case of a student of this hospital, who had gone on to the thirteenth day of fever. The distended bladder could be felt; but such was the violence of the convulsions, attended with extraordinary priapism, that all attempts at catheterism were futile. It was also impossible to get the patient to swallow anything, or to use an enema, and under these desperate circumstances we determined to employ chloroform inhalation. The greatest difficulties attended the administration, but at last the effect was produced. The convulsions ceased like magic, and suddenly a jet of urine sprang upwards to a great height from the still erect penis; the stream continuing to flow until the bladder was empty, when the priapism disappeared.

We see, therefore, that, where the uræmic condition and its accompanying convulsions depend on mere *retention* of urine, we have a ready and efficacious remedy in careful and judicious evacuation of the bladder by the catheter.

But in *suppression* of urine our treatment must be different. Dry-cupping freely employed over the kidneys, the diligent application of poultices and sinapisms in the same region, the use of diluents, and the exhibition of a combination of nitre with the spirit of nitrous ether, are the measures in which you are to place most confidence.

It is also necessary to keep the bowels open by turpentine enemata, and the action of the skin may be stimulated by sponging with tepid vinegar and water and subsequent rubbing with a dry towel.

LECTURE XXXIII.

PHLEGMASIA ALBA DOLENS—The swelling is not always painful, or white in appearance—Symmetry of the affected limb not lost—Professor Trousseau's views as to the etiology of the affection—Phlegmasia (1) of puerperal women, (2) in scrofulous and (3) cancerous cachexiæ—Pulmonary *embolism* caused by phlegmasia—Case of phlegmasia after typhus fever—TREATMENT of the affection—GENERAL CONCLUSION.

GENTLEMEN, you may remember my mentioning to you that a continued rapidity of pulse after the other constitutional symptoms of fever had subsided was to be taken, not—as suggested by Laennec—as a sign that the heart had been weakened, but rather as showing the existence of some acute organic change attended with irritation. I mentioned as examples of these changes two pathological conditions—one, the acute and sometimes general development of tubercle; and the other, that form of disease to which the name of PHLEGMASIA DOLENS, or PHLEGMASIA ALBA DOLENS, has been given.

We shall by-and-by examine how far the term "phlegmasia" is properly applied; and, although the disease is commonly more or less painful, it may occur so free from local suffering that its discovery is accidental; and so, as I have already shown, the adjective "dolens" is not always applicable. Again, in place of the swelling being colourless, the entire limb may be covered with deep purplish-blue arborescent stainings, so that the remaining portion of the term is not always appropriate. This, however, is less often met with than the absence of pain. The pain, too, may be singularly localized; thus, in a case which was under the care of an eminent physician, the pain was confined to the sciatic notch. The disease was held to be merely sciatica, and the actual cautery ordered to be applied over the nerve. In preparing to effect this the assistant accidentally exposed the opposite extremity, when he was struck by its comparative emaciation, and the real nature of the case was at once revealed.

This illustrates an interesting circumstance, which we have often observed—namely, that, though the swelling of the limb may be general, it has little if any effect on the symmetry of the part. The limb is simply larger and fuller than the opposite extremity, so that