LECTURE XXVII.

STIMULANTS IN FEVER—Views as to the nutrient properties of stimulants are to be received with caution—*Anticipative* use of stimulants—Meaning of the term—Considerations to be taken into account in resolving upon this method of treatment: (1) prevailing epidemic character of the disease, (2) previous condition of the patient ("Sinking of vital power"—Illustrative case—Stimulation often unsuccessful in the intemperate, and in those whose brains are overworked), (3) development of symptoms of severe typhus, (4) development of *fever odour*—Contrast between typhus and typhoid as regards period at which stimulation is called for—*Condition of the heart, a guide*—Physical signs of cardiac weakening.

FOLLOWING the consideration of food in fever we shall next take up that of diffusible stimulants. Their employment we have had together a full opportunity of studying, and those of you who are practising pupils have learned to prove their value and importance in every form of fever. You have learned also to avoid routinism, and you well know that when we speak of every form of fever we do not mean every case of the disease. We have had cases in which no wine was used, in which it was sparingly employed, where it was not used until after the middle period of the fever. In many cases, too, you had to use it and other stimulants with great boldness and for many days, beginning at an early stage of the disease. Again, wine had sometimes to be omitted, though the disease still was running on; and, lastly, its exhibition or its withdrawal had to be alternated several times in the course of the disease.

Many of you have also learned that in fever the common error of delaying the giving of stimulants to a very late period of the case is a practice fraught with mischief, attributable to the prevalence of the doctrine that fever and all its local symptoms were induced by inflammation. By this system all the good of the anticipative use of stimulants is lost.

Any unbiassed observer of fever will admit that between the condition of vital prostration and what is termed "waste of animal tissue" there is no constant relation. We cannot deny the occurrence of metamorphosis of tissue and waste of organic substance as incidental to fever; on the contrary, we believe that these phenomena are remarkably perceptible. But we must also hold that there is a prostration of vital energy—a thing *per se*, which is totally unconnected with loss of organic substance. Do not for a moment forget this—that the

forms of disease in which we find the greatest prostration of vital power are those wherein we discover least signs of organic mischief. A striking example of this is found in cholera, and in the various forms of continued fever.

Now, I must tell you that the views of my lamented friend Dr. Todd are to be received with caution. One thing is certain—that whether we look on wine and brandy as food or simply as stimulants, the great point is to know when and how to administer them beneficially. We have not indeed attempted to decide the question experimentally as to whether stimulants act as food by repairing the wasted tissues, for in all our cases food and stimulants were given together—our object being rather to save life than to settle an abstract physiological question; and many of you had cases of weakened heart in fever where the influence of stimulants was too rapid to be accounted for except on the principle of a direct action on the nervous system.

It is true that we have seen life prolonged for several weeks by stimulants alone. Some years ago a patient in one of the small wards had long used a fabulous amount of spirits. He lived on brandy or whiskey for a month, during which time he swallowed nothing else, and cost the hospital a good deal more than his life was probably worth.

If Dr. Todd's views were to be carried out in every case of disease, essential or otherwise; if, in short, we were to administer stimulants on the *routine* principle—regarding them as nutrient substances, calculated to supply the waste of animal tissue, and as it were rebuilding the organic structure, we should find ourselves lamentably disappointed. The adoption of such a system found very few supporters among experienced physicians.

But let us do justice to Dr. Todd's memory. As practical men, in the present state of our knowledge, we have little to do with questions of physiology, and to him belongs the merit of showing that the use of alcohol may be resorted to or at least borne in states of disease where it was held to be dangerous. He has still further shown the error of the anatomical school, which referred everything in acute disease to inflammation; and though he may have fallen into a routine practice, we should be slow in holding him answerable for the errors of some of his followers.

Even in many essential diseases you will find that stimulants are contra-indicated or badly borne. I do not say that in such, an opposite mode of treatment will succeed, but there are many cases of essential disease—of puerperal fever, pyæmia, malignant scarlatina, small-pox, and others—in which, though the vital strength is fearfully prostrated, for some reason which we cannot explain stimulants are too often powerless for good. There can be no doubt that the efficacy of stimulation is closely connected with the prevailing epidemic character of disease, and thus it was observed in our late visitation of small-pox that wine and brandy were often productive of good effects. But still the proposition is true that stimulants in the class of diseases I have mentioned are not followed by the same happy and almost heroic effects which we so often witness in typhus fever.

We may dwell upon the question of the use of stimulants in fever as regards, first, the anticipative treatment, and next the treatment urgently called for by the circumstances of the case. By the term *anticipative treatment* you are to understand the administration of stimulants at an early stage of fever, when, although there may be no very pressing vital symptoms calling for their use, the sagacity of the physician enables him to foretell the occurrence of great prostration of vital energy. Under such circumstances he gives stimulants *by anticipation.*

In comparing the relative value of these two modes of proceeding, I am of opinion that the anticipative method is that which will tend most to the saving of human life. In adopting this line of practice the physician does not wait until the patient has been labouring for many days under the exhausting influence of the disease. He does not withhold the needful aid until the 10th or 12th day, when the prostration of vital energy has assumed a formidable aspect, when the prompt use of stimulants is suggested by common sense, and when often, unfortunately, the system is incapable of responding to the remedy. For you will learn that where the powers of life have remained long without support, a downward process may commence from which no effort can rescue the sufferer.

In the anticipative treatment we follow the old maxim, "venienti occurrite morbo," and he who knows when to adopt it has gained a high place in practical medicine.

In determining on the employment or the contrary of the anticipative treatment, the following considerations must be present to you

First, the epidemic character or habit of the disease; secondly, the previous condition of the patient.

What we have to guard against is a sudden sinking of the vital energy, shown by special conditions of the nervous and the circulatory systems. I have told you, that, with respect to these and the other systems in fever where the strength has been unsupported, the downward tendency goes on until a point is reached from which there is no revival. In these cases there is between the heart and the nervous

centres a great sympathy, and the condition of the one—which is revealed by manifest physical signs, and with which you are all now familiar—gives you a clear conception of the state of the brain and the spinal marrow.

This failure of the heart, like the other secondary affections, is under the law of periodicity, yet I believe it may occur in chronic cases, but with this difference—that having become established it continues until the end. A gentleman of energetic and industrious habits, who lived well and took his bottle of wine daily, and who never showed any disease of the heart, became subject to attacks of ordinary gout. He was persuaded to undergo a protracted course of hydropathy, during which the candle was burned at both ends, for no wine or stimulant was allowed for more than a month. His condition was remarkable; he had no pains, no fever, the pulse was about sixty, weak but regular, and when asked to describe his symptoms he said, "I have no complaint to make, but of a strange weakness of body and mind which is quite new to me." He lived for several weeks, the failure of the heart increasing every day, while no amount of stimulation had any effect in restoring its vigour, and he died without any ascertainable cause beyond mere nervous exhaustion. The process of death was peculiarly slow.

This sinking of the vital power, not accounted for by any apparent loss of organic tissue, takes place in fever, and it is with a view of arresting its progress that we have recourse to the anticipative treatment. But there are various grounds for adopting this line of conduct; for example, if you know that in the epidemic, a great number of cases assume well-marked symptoms of prostration, say on the seventh, eighth, or ninth day, you will on the fourth or fifth anticipate their occurrence by commencing the use of stimulants. Even in the middle of the course of a fever case, or at any period of its progress, you will do right to guard against the occurrence of sudden prostration, which, when once it has set in, especially in mature age, may resist the most active stimulation.

But there are collateral circumstances to which you must look—such as the previous history of your patient, his habits of life, his previous health, in short, whether he brings into this contest with a formidable disease a constitution affected by previous illness, bad habits, or nervous exhaustion. You will also ascertain whether any ignorant attempts to cut short the fever had been made; the patient may have been bled for supposed inflammation, he may have had cathartics, mercury, tartar emetic, or powerful diaphoretics. In such cases you have solid reasons for adopting the anticipative method,

though the patient may not as yet have fallen into a state of prostration.

The full administration of stimulants is generally called for when the patient has passed the age of eighteen or twenty. In children we are obliged to have recourse to stimulants, but we employ them in a modified manner; their energetic use is indicated principally in adults between the age of twenty-five and forty-five, and here we employ them at an early period, not so much to combat existing prostration, but to anticipate the depression of vital power which sooner or latter is almost certain to ensue.

In estimating the chances that the employment of stimulants will be followed by success, much will depend on the previous habits of the patient. We have long found that the greatest triumphs of the stimulating treatment were seen in patients of strictly temperate habits, who seem more capable in fever of bearing large quantities of stimulants without intoxication. In private practice we often find that stimulation cannot be carried on so boldly as in hospital; and this appears to be connected with the previous habits of the patient, not in the way of intemperance in the use of wine, but in that of over exercise of the brain. Men engaged in anxious callings, or in intense mental exertion, are bad subjects in fever, and bear the stimulating treatment imperfectly. Thus it is that professional men so frequently succumb—witness the frightful mortality among the medical men of Ireland in the famine fever. In many such cases, with symptoms of profound adynamia, stimulants are badly borne, and hence—when the disease, as too often happens, is of a malignant character—the patient makes but a poor fight, and adds to the list of victims who have fallen in the discharge of their duty.

For the first few days your patient may make little complaint. There are often remissions in which he declares himself much better; but if the symptoms of essential fever are gradually developing themselves, if petechial spots begin to appear, and particularly if the skin exhibits the dusky discoloration so characteristic of typhus, you may expect severity of symptoms. This discoloration appears, and after a time recedes, as the petechiæ come and vanish, and like them too is subject to the law of periodicity.

Another indication for the early exhibition of stimulants is the peculiar fever-odour sometimes present from a very early period. Benign fevers rarely are attended with this peculiar odour, which belongs to more malignant forms of disease.

You will observe that the symptoms I have particularized are more closely connected with typhus and with typhoid fever, and accord-

ingly we find that early stimulation is much more frequently indicated in the former than in the latter; in other words, the free use of stimulants, when necessary, is called for at a later stage of the disease in typhoid than in typhus. It is right, however, for us to bear in mind that some of the cases requiring the most powerful stimulation have been of typhoid fever in its advanced and complicated condition.

It is in petechial typhus that the anticipative treatment is most frequently called for, and will be found to answer best. In typhoid fever the occurrence of prostration is commonly later observed, and is of more gradual development. As we have already seen, this form of fever is less manifestly under the law of periodicity than true typhus, and the character of its secondary affections is more variable.

Physicians have from the earliest times been in the habit of determining on the administration or withholding of stimulants in fever by the state of the pulse. But—at least in the early periods of fever—the pulse taken alone is not to be depended on. It may be, up to the fourth day, full, throbbing, and resisting, and this has often led to errors in practice of both commission and omission. I have shown you that even under these circumstances an examination of the heart may reveal the commencement of a change in the vital condition of that organ. It was this temporary excitement of the pulse that led to the practice of bleeding, and of employing other depleting measures, by which the vital power was expended at an early stage of the case, and the influence of the law of periodicity was interfered with.

This ephemeral state of arterial excitement led, on the other hand, to errors of omission. The apparently inflammatory condition caused apprehension—the existing state was alone attended to, and the probable future in the case disregarded. You will not fall into these errors. The secondary debility of the heart may have commenced at a time when this pseudo-inflammatory state still existed, while in fact the pulse continued full and bounding, and the temperature high.

Take this rule with you into practice—that in the treatment of fever, and at almost any period of fever, you are not to be guided by the pulse alone. It must be observed in relation to the action of the heart—remembering that a full and good pulse may coincide with a feebly acting heart—a heart under the influence of the fever poison, often as it were on its way to the state of softening. All this you see bears on the question of the anticipative treatment.

Now among the most reliable indications for the early use of this treatment are the physical signs of weakness of the heart.

A man, aged 30, was admitted on the sixth day of typhus fever.

He was the fifth of his family who within a short time had severe maculated typhus. The impulse of the heart was scarcely perceptible, and there was already a distinct preponderance of the second sound. On the next day the impulse was imperceptible, even when he lay on the left side. He was ordered twenty ounces of wine, a blister over the heart, and beef-tea. The following day the impulse could be felt, but the sounds resembled those of a fœtal heart. The wine was increased, and two glasses of brandy were also administered. On the 12th day the pulse had fallen to 80, and the sounds of the heart were greatly improved; on the 13th day the impulse of the heart was restored, its sounds were proportionate, and the pulse had fallen to 76. The diminution of the first sound of the heart led us to the exhibition of stimulants boldly, and at an early period of the case. On the 7th day the impulse was imperceptible, while on the 8th the first sound had disappeared; and although the other symptoms did not seem to call for active stimulation, wine was ordered in free doses from this indication alone. The symptoms of cardiac debility were observed at so early a period as the sixth day, but it is probable that the typhous affection of the heart had commenced even before admission to hospital.

So far as the heart is concerned, the following are the physical signs which seem to indicate the anticipative use of stimulants. I have put them down in their chronological order:—

(1.) Early subsidence of the first sound, observed over the left ventricle.
(2.) Diminution of the first sound over the right ventricle.
(3.) The heart acting with a single, and that the second sound.
(4.) Both sounds being audible, but their relative intensity being changed so as to represent the action of the heart of a fœtus *in utero*.
(5.) With these signs, a progressive diminution of impulse, which occasionally becomes imperceptible, even when the patient lies on the left side.

During convalescence, as we have seen, the signs of recovery of the heart are usually observed first on the right side, and afterwards over the left side.

With reference to the anticipative treatment, we have spoken principally of the results of physical examination, as indicative of the typhous weakening of the heart in the early stages of fever. I have stated, that, although in the commencement of a typhoid fever any bold exhibition of stimulants is not often called for, yet in its advanced stages we have sometimes to make free use of stimulation.

I have observed that students were occasionally under a misapprehension about the doctrines which we have long held in this hospital with respect to the condition of the heart as a guide for the use of wine. They have come to the erroneous opinion that we are to give wine only when we find the want or diminution of the first sound of the heart, and that we are not to give wine where the heart is acting well. This is a mistaken view. As to the state of the heart in connection with the effect of stimulants, we have ascertained that the efficacy of stimulants is often directly as the debility of the organ. It has also been ascertained that the power of bearing stimulants, their effect upon the nervous system, their good effects on the general condition, are directly as the weakness of the heart.

We may lay down as a rule, that there are three conditions of the heart to be looked at by the practical man in the treatment of fever.

In one, we have an excited heart—a violently excited heart all through the case; and this, although the symptoms be those of extreme adynamia, although the surface be cold, the breath cold, and the pulse so feeble that it cannot be discovered. Nay, the heart may act with great force for several days, and yet there may be no pulse at the wrist. This is one case.

In the next case, we find an exactly opposite condition, in which the systolic force of the heart is diminished. This is shown by loss of impulse, by diminution—and, in certain cases, by extinction—of the first sound of the heart, while the second remains. This is a case which calls for wine, and in which you should give it; it is a case in which, in the vast majority of instances, wine will agree with the patient.

There is a third set of cases in which the heart does not seem to be implicated at all in the course of the disease—in which, notwithstanding the existence of the most extraordinary group of symptoms affecting various organs, the heart, in the middle of the storm, seems to be in a state of calm and quiet.

If we compare these three conditions with a view to prognosis, we may arrange them in this way. The excited heart all through, with feeble pulse and with adynamia, is unquestionably the worst. There is no worse symptom in fever than an excited heart. It is especially a bad symptom when, with that excitement, we find a feeble pulse. Next will be the case of sinking of the heart; and the most favourable condition is that in which, as I said before, the heart seems to escape disease.

You are not, however, to suppose that because you have an excited heart you are not to give wine; or that, because the heart is not affected at all, you are to withhold wine if in either case the general symptoms of the patient require it. You are not to found your exhibition of wine or other stimulants upon any one thing; you are to take the general state of the patient into consideration. What we have done is to discover an intelligible practical rule which will guide you in the use of wine in certain, I think in many, cases; but you are not to suppose that because a man has a clear first sound of the heart, therefore you are not to give him wine. You are not to suppose that because the heart is safe you can do without wine. Now, in a case recently under your observation, although the heart seemed to escape, or was at most only feeble through the course of the disease, frightful adynamia existed; day after day the patient's face was Hippocratic, or almost so; the general character of the disease was that of the most terrible putrescent fever—yet his heart escaped. And here is the result. We have given that man upwards of twenty bottles of wine and twenty-four ounces of brandy, and now, on the twenty-eighth or thirtieth day of the disease, we have the satisfaction of feeling that his case may be set down as among the triumphs of medicine.

I wish also strongly to impress on you the great importance of the use of other forms of nourishment in this disease; for we must not only keep up the nervous energy of the system by wine, but we must support nature by food. There is no greater mistake in fever than that of the withholding of food.

LECTURE XXVIII.

STIMULANTS IN FEVER, *continued*—Signs in connection with the heart of the agreement of stimulants: (1) return of impulse, (2) return of first sound, (3) gradual fall in the rate of the pulse—In cases of "fœtal heart" great boldness in stimulation is needed—No certain rules as to quantity of wine and whiskey or brandy required—Examples of free use of stimulants in malignant typhus—Case of Hardcastle (typhoid fever)—Eruption of vesicles as a secondary complication—Bed-sores.

WE are to-day to consider practically the use of stimulants in fever. This is a matter difficult to be taught orally. The exhibition and the management of stimulants in fever are among those points in practice which are best learned at the bedside, so that when I am addressing the advanced students—men who themselves have already largely shared in the responsibilities of the fever wards—I do so as a fellow-student on the one hand, and a brother practitioner on the other.