foods takes place mainly in the muscles of the body, and is more extensive when these are engaged in active exercise, when, as a matter of fact, it is not uncommon for the bodily temperature of a healthy man to be raised a degree or two.

Heat is lost, on the other hand, partly by being given off in the breath and the urine, both of which are warm, but mainly by radiation, as it is called, from the skin. It is to diminish this latter loss as far as possible that we wear clothes, the thickness of which we vary according to the temperature of the air around us.

The amount of heat given off in the breath and urine is not under our control, but that lost by radiation is. If the blood vessels in, and just underneath, the skin are dilated, so that more blood flows through them, more heat is given off from the blood (via the skin), and less if they are contracted. Inasmuch as the total amount of heat in the vessels of the body remains constant, it follows that when the surface vessels are contracted, the internal organs are comparatively warm, and vice versa. This control of the size of the blood vessels in different parts of the body is effected by the brain acting through the nerves running in the walls of the vessels themselves. When the blood vessels of the skin are opened, so to speak, perspiration occurs, and heat is carried off in the sweat. When they are contracted, there is but little perspiration, and heat is retained.

Under ordinary circumstances an exact balance is kept between the production and loss of bodily heat by the brain, or rather by a particular part of it called the heat centre.

Sometimes this heat centre is injured directly, as in cases of hæmorrhage into its substance, such as occurs in some forms of apoplexy, and the balance is then disturbed so that the patient's temperature may rise even to 110° in a few moments.

The disturbance of the balance, however, does not often arise in this way. A far more common cause of a rise in the bodily temperature is the presence of poisonous substances in the circulating blood, such as are produced by the growth of microbes that have invaded the body. These toxins, as they are called, act as poisons to the heat regulating centre, and so upset the balance of heat in the body.

Strictly speaking, there are three heat centres in the brain, one which looks after the loss of heat, another concerned with its production, and a third controlling the other two, and regulating the balance between them.

A good example of a toxic cause of pyrexia is seen in inflammation of any part of the body. This is now known to be practically always due to the presence of micro-organisms, and it is almost always associated with a rise in the bodily temperature.

Now comes a word of warning. It cannot be too strictly laid down that the *height* of the temperature within ordinary limits bears no necessary relation to the severity of the illness. Of course a very high temperature (over 105° for instance) is in itself dangerous, because the blood is so hot that the brain it supplies cannot work at all, and the patient dies, but otherwise it is possible for a patient to have a temperature of 104° from a simple tonsillitis, for instance, which is not anything like so serious as diphtheria of the same organ, which may be associated with a pyrexia of 101° only. Similarly in enteric fever and in appendicitis a temperature of 101° is often of graver import than one of 104°. In practice, the main point is that we should not treat comparatively slight degrees of pyrexia with scant respect, and I have dwelt on this point because in my experience it is one of the little failings of the average nurse! I must confess to having sometimes administered a mild snub when a nurse has informed me with a cheerful smile that the temperature *chart* is lower than it was: I have then replied, "So is the patient!"

Of far more importance is the variation in the temperature from time to time, great difference in a short time being often of serious omen. Incidentally, this is a reason in certain cases for taking the temperature every two hours, or even every hour. I well remember an instance of this. The patient was a lad of fourteen with a discharging ear, and some tenderness behind which made me suspect mastoid disease. The chart—for morning and evening only — showed the temperature pretty steady at 101°. I did not like the look of the patient, and asked for a two-hourly chart, when I found that the real limits of the temperature were from 98° to 104°. I thereupon opened the bone, and found a collection of foul pus surrounding the lateral sinus of the brain. Of this the rapidly varying temperature was practically the only sign.

(*To be continued.*)

Dr. G. H. Wright states that four times in a child's life the tonsils become enlarged without infection or disease. When the first group of temporary molars appears at about two years of age, at six years, when the first permanent molars erupt, at twelve years, when the second molars are in active eruption, and at eighteen when the process is completed.

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