intimate control over those processes which are concerned in the production of fever.

That changes in the nervous system are capable of exerting a very great influence on temperature is well seen in certain conditions, to wit—epilepsy, diseases of the brain, sunstroke, heat apoplexy, and others in which temperatures of even 106 degrees and upwards are sometimes met with unaccompanied with other obvious symptoms of fever.

These facts and others of a similar nature have given rise to the belief that the febrile state is induced by the circulation in the blood of various poisonous substances, which so react on certain parts of the nervous system, that the balance of the normal processes of heat production and heat loss are thereby disturbed.

A simple illustration will help to explain my meaning. Imagine an ordinary cistern provided with an inlet pipe and an outlet of equal dimensions. If the inlet tap be turned on the water will rise in the cistern. If, let us say, when the height of the water has reached 98 inches, the outlet tap be also turned on, water will continually be entering and leaving, but the height of the water will remain at 98 inches, because just as much water enters as escapes. Now for height of water in inches substitute height of temperature in degrees, viz.: 98. This will represent the state of the body-heat in health, and now imagine yourself the various systems controlling these taps.

Now, by either slightly increasing the inlet, or by slightly turning off the outlet, or both, the effect will be that the water, or, in our simile the temperature rises; when this reaches, say, 105, the outlet may be turned on slightly more, until the amount escaping once more equals the amount entering, the result again will be that the level remains constant, BUT it is now set at a higher index; the reading being that of fever heat instead of normal heat.

To complete the illustration, gradually turn off the inlet, and increase the outlet until 98 is again reached, then adjust the taps so that the amount escaping exactly equals the amount entering. That is, the heat production is exactly counter-balanced by the heat loss; the temperature remaining at the normal, and convalescence has returned.

The process of fever is not really so simple as this explanation would suggest, but we have at any rate arrived at a theory, which, in the present state of our knowledge—I should say, ignorance—is more or less satisfactory.

In addition to the two most constant symptoms of fever, viz., increased temperature and tissue waste, there are other general signs of the febrile state which are to be found with greater or less constancy. The face is flushed, the skin—at any rate at an early stage—is dry and hot, the eyes are bright and often glistening. The pulse rate is increased, the respiration quickened. The tongue becomes coated. Headache, pains, weariness, aching in the back or limbs are complained of; shivering, which may even amount to an actual rigor; there is, usually, loss of appetite, thirst, disturbed sleep and restlessness, and, not infrequently, delirium. Sometimes the patient vomits; and nausea, in some degree, is common. The excretion of urine is diminished, it is high coloured, and a sediment of lithates deposits on standing. Constipation is the rule, and may be very troublesome. In favourable cases, after a variable time in different diseases, improvement begins—in some cases, suddenly, by what is known as a crisis; in others, more gradually, the temperature but slowly returning to the normal; convalescence is then said to occur by lysis. The other signs of the febrile state gradually abate, and a restoration to health takes place, accompanied by more or less loss of flesh and prostration.

If the case, however, is to end fatally, the scene is very different. The temperature is maintained, and often becomes irregular, sometimes rising rapidly before death. The pulse becomes more rapid, feeble, and undulating, the respiration quickens and becomes more or less stertorous, the tongue dry and brown. Signs of profound nervous prostration become more marked. Delirium violent or muttering, sinking in the bed, picking at the bed-clothes, loss of control over the evacuations, gradual onset of coma, profuse sweats, and often diarrhœa, precede a fatal termination. In exceptional cases, however, the mind remains clear almost to the end. And it must be confessed that such cases are very few and far between—although they not infrequently occur in works of fiction. The absolutely conscious death-bed, so graphically described, in which the patient exhausted by a fatal attack of probably "brain-fever," after having given his dying monitions, and having tenderly embraced his sorrowing relatives, then sinks back and expires, relies for its foundation rather on the vivid imagination of the novelist than on any actual basis of fact. The only instances to my knowledge which bear any resemblance to such a termination, have been in certain rare cases of malignant diphtheria and hœmorrhagic small-pox.

(To be continued.)

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