

Dilatation is the excess of tension over the active motor power. The former is produced by inflammatory irritation of the brain, by mechanical stimulus applied to the third nerve, and by tetanus. The latter succeeds compression of the brain and epilepsy, in which "the pupils are dilated during the fit, and it is very remarkable how this is associated purely with the epileptic condition." (Dr. Wilkes, *Medical Times and Gazette*, January 16, 1869.)

The influence of the sympathetic on the iris is analogous to its recognised office of preserving the tone or natural tension of the capillaries. The paralysis caused by its section allows dilatation of the capillaries and contraction of the pupil, the third nerve being then unresisted; while its irritation, as in epilepsy, produces contraction of the capillaries and dilatation of the pupil, the third nerve being overcome by the extra nerve-power evolved. By this can be explained the varied actions of those different drugs which are grouped under the head of narcotics, and hence may be derived an index of their value and appropriateness in the treatment of disease. The familiar symptom of contracted pupil in poisoning by opium, and the same effect more recently produced by Calabar bean, demonstrate that in these drugs we possess powerful sedatives of the sympathetic system, which can thus relax the capillaries, a consequence long since admitted by the use of the former in full doses to cut short the first stage of ague, and of late by the administration of the latter to combat the condition of tetanus. On the other hand, the dilatation of the pupil induced by belladonna and hyoseyamus shows that by these substances we are afforded means probably of narcotising the motor tracts, but more certainly of stimulating the sympathetic to increased action, thereby lessening the calibre of the capillaries and dilating the pupil.

A case, copied from the *Medical Record* by the *Medical Press and Circular*, March 24, 1869, in which the poisonous effects of subcutaneous injection of morphia were counteracted, when life seemed extinct, by a similar use of solution of atropia, proves that these are antidotes. The antagonism of nicotine to strychnia is probably also thus explained.

Eliminating, then, the consequences of paralysis, the state of the pupil furnishes us with an index for recognising the narcotism or stimulation of either of the two great nervous centres, the animal or organic. Out of this reasoning arises the question whether the accepted theory, "that the brain during sleep is anæmic," be not open to doubt, which I hope to discuss in another paper.

North Fort, Liverpool.