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VASO-CONSTRICTOR AND VASO-DILATOR NERVES.

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The nervous energy necessary to the activity of the heart and muscular coats of the arteries is furnished in two ways, viz., (1) by intrinsic ganglia which are situated in the substance of the heart and distributed along the coats of the arteries. (2) By means of fibres from the large sympathetic ganglia. None of these are capable of reflex action, and as it is evident that the calibre of an artery is frequently determined by events occurring at a distance from the vessel, cerebro-spinal nerves must be in some way concerned in regulating the arterial tension in different parts of the body.

A question which medical practitioners are frequently called upon to decide is this—are constricting impulses carried to the coats of the arteries in response to impressions received by sensory nerves, or do cerebro-spinal nerves convey influences which counteract the tonic impulses constantly being supplied to the vessels by the sympathetic ganglia?

The evidence in favour of the view that vaso-constrictor nerves belong to the cerebro-spinal system is chiefly derived from the results of experiments which show that under certain circumstances the stimulation of afferent nerves causes a rise in the general blood pressure, and that the divi-

sion of certain rami communicantes between the last cervical or first dorsal ganglion and the spinal cord permits the vessels of the head and neck of the same side to dilate.

The rise in the general blood pressure which occurs in the above-mentioned experiment is said to be due to the reflex action of a vaso-motor centre in the medulla oblongata. But that such is the case, at least in the sense that vaso-motor impulses proceed directly from the medulla to the muscular coats of the blood vessels, is open to doubt. When an afferent nerve is stimulated, the vessels of a corresponding area dilate, and there is a rise in the general blood pressure. This rise, however, is seldom noticeable except when the animal operated upon is under the influence of urari, when the animal is under chloral there is a fall in the general blood pressure. With regard to the effect upon the vessels of the head and neck which follows the division of the rami communicantes, it may be said that it is not quite certain that these nerves belong to the cerebro-spinal system.

In considering the arguments in favour of the theory that the sympathetic nervous system furnishes all constricting impulses to the blood vessels, and that cerebro-spinal nerves carry impulses which invariably restrain the action of the sympathetic nerves on the vessels, our attention is first directed to the influence of the intrinsic ganglia in maintaining the activity of the