

The nervous system of organs is extremely complex both in structure and function; but it may be described in a general way as central masses and expansions of nervous matter linked together by connecting cords called nerves. The principal nervous centres are the brain and spinal cord. The brain in the widest signification of the word is that large organized mass which, along with its enveloping membranes,—the *dura mater*, the *arachnoid* and the *pia mater*, completely fills the cavity of the skull and is subdivided into the *cerebrum*, the *cerebellum*, the *medulla oblongata*, and the *cephalic ganglia*; all of which are composed of two distinct kinds of nervous substances, the gray and the white, the former being the generator and the latter the conductor of the nervous influence. The spinal cord, which is also composed of two kinds of nervous substance, is subdivided into two sets of fibres, the anterior and the posterior, the one containing exclusively *motor* and the latter *sensor* stimulus or influence. From the spinal column, including the *medulla oblongata* which is but the upper extremity of that column, emanate nerves, in all directions; some of which, in a finely attenuated form, constitute the senses and others discharge the office of sensation or locomotion.

And now as to the functions performed by these nervous centres of animal life. On this point physiologists differ in matters of detail, though in the main considerable harmony prevails. It is then universally admitted that the *cerebrum* or hemispheric lobes of the brain constitute or include the organs of the intellectual and moral powers. It is the seat of consciousness, volition and emotion; and when it is removed the body sinks into a mere machine, which acts in obedience to the inherent forces of the automatic brain or responds to physical stimuli according to the laws of reflex action.

The *cerebellum* is the organ through which we exercise voluntary control over the muscles as well as the organ of the lower and animal propensities of our nature.

The *medulla oblongata* is universally allowed to constitute the seat of sensation and of respiration. The *cerebrum* and *cerebellum* may be probed and punctured without the least degree of pain; but if the smallest degree of pressure be inflicted on the *medulla oblongata*, the most acute pain is perceptible, and, if this be continued for any lengthened period, death will inevitably ensue.

The *cephalic ganglia* are deposits of nervous matter in the head. These are to be found in the shape of secretions of nervous matter all over the body, and, in the absence of regular nervous centres, such as we have in all the *invertebrata* class of animals, constitute the real source of animal existence. In the head they are evidently intended to unite the whole together, so as to spread a general sympathy throughout this department.

The *spinal cord* performs the office of conveying the nervous stimulus all over the body. The illustrious Sir Charles Bell was the first Anatomist who discovered that the spinal cord is made up of two classes of nerves, the *motor* and the *sensor*, whose offices are perfectly distinct, that of the *motor* class being for the purpose of conveying the volitions of the mind to the Muscular System, and thereby rendering them subservient to the purposes for which they were given; that of the *sensor*, on the other hand, being for the purpose of conveying the impressions made on the different senses to the mind. The former, from the functions discharged, is sometimes called *efferens*, and the latter *afferens*.

Considered as a whole, the Nervous System falls into two great divisions—that of animal and conscious life, and that of organic and automatic life; the *cerebrum* and *cerebellum* constituting the former, and the *medulla oblongata*, the *cephalic ganglia*, and the *spinal cord*, the latter. The one forms the mechanism, which, so far as it can be safely allowed, is under the control or command of the other.

With this brief sketch of the Anatomy and Physiology of the Nervous System, we are now prepared to go on and make a few observations on those conditions on which the health and vigor of the brain depend, and by which the greatest amount of intellectual effort may with safety be secured.

We shall not here dwell on the many advantages arising from a naturally sound constitution of brain. There is no part of our physical frame, when diseased or disorganized, so liable to be perpetuated or propagated from father to son, from parent to child, as the brain or nervous system; and, it is a fact worthy of observation, that there is no way by which disease is generated so largely in this system of organs as by the violation of some plain and palpable moral precept, such, for example, as intermarriages amongst near relations or an over-indulgence in viands or alcoholic drinks. How often do we see exemption from this species of disease during one generation, whilst it bursts forth with redoubled virulence during the succeeding. Neither do we dwell here on the advantages arising from an adequate supply of duly vitalized or oxygenated blood. This point we have already considered in connection with the ventilation of school-houses, and to which we would refer our readers. It cannot, however, be too frequently insisted upon, that as the life is contained in the blood, and as about a tenth part of the blood is required for the nourishment of the brain and for its preservation in full vigor, so is it indispensably necessary, that the brain may accomplish its high destination, that not only a due quantity of this vital fluid be provided, but also that it be of the right sort. Two things are requisite for this purpose. There is, first, a supply of healthful food, adapted both in quantity and quality to the age, the condition and the varied circumstances of the recipients. Then there is the requisite portion of pure atmospheric air, for the purpose of converting the venous into arterial blood—that is, of effecting the assimilating process. This latter is even of vastly greater importance than the former, for what availeth the most delicious meats and drinks unless they undergo that change which alone renders them fit for vitalizing and invigorating the whole frame. Withhold the requisite supply of this element, and that instant will you not only affect the health of the body generally, but the health of the brain in particular, and with that the health of the mind. A mental listlessness and apathy will, in spite of all our resolutions, ensue, and, if consciousness remain, an utter inability to put forth one mental effort. Would that all patriots and philanthropists but realized as they ought the outstripping importance of ventilation in connection with all educational movements! Too many seem to imagine that, in contending so much as we do for large and commodious and properly ventilated school-houses, we have only a respect to the physical welfare of the young, a matter which more properly belongs to the Parent than to the Teacher. True, the bodily health is thereby largely promoted, and this ought to be held in view by every faithful teacher. But this were a very partial view to take of our strenuous efforts for the accomplishment of this object. It is a mean essential for se-