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NEUROLOGY.

An Introduction to Neurology. By Prof. C. Judson Herrick. Pp. 355. (Philadelphia and London: W. B. Saunders Co., 1916.) Price 7s. 6d. net.

ALL the special sciences naturally seek incorporation into some comprehensive scheme of thought which tends to embody the conceptions that we hold into one organic unity. Neurology, for instance, is brought out, with its component parts of anatomy, physiology, and psychology, into the conception of biology. In no department of human thought is this striving for an organic unity better exemplified than in the co-ordination and subordination of these special studies into the wider and more embracing science of biology.

The researches which have been brought together in this volume cover an immense reading; the references amount to many scores of contributions, and the book will be of great value to those who seek for an exact knowledge and a succinct account of the nervous system, the highest controlling machinery of animal and human life; for it is the nervous system that determines the adjustments and mutual relationships of all the other systems, as well as those of its own activities, which are so regulated as to promote its own welfare.

The study of neural actions must proceed from the more simple to the more complex—*i.e.*, from simple reflex action up to acts of consciousness involving deliberation, reflection, and judgment. This progress depends upon (a) a correlation, which is the resultant of all the afferent processes involved; (b) the co-ordination or orderly co-adjustment and sequence of these—absence of this means inco-ordination; and (c) the full association of responses secured by individual modifications. In the simple reflex mechanism there are three essential factors: (a) an initiating organ or receptor, sensitive to receive a stimulus which is often far less in intensity than the energy liberated, and which may only be some change of environment acting upon the organ; (b) a conductor to and from a correlating centre; and (c) an effector or organ of response—the data from these three instruments being as necessary for the most elementary nervous response as they are for the highest mental manifestations, including abstract thought. The author accepts the classic experiments of H. S. Jennings to explain the adaptation of an organism to its changing environment, and he divides behaviour or conduct (which he calls "action system") into two kinds, *viz.*, that which is innate and invariable, and that which, through "docility or plasticity," is modifiable and variable or labile. He maintains that every reaction contains elements of both, the

variable being characteristic of the higher animal type, implying an intelligently directed choice, yet expressed always through the agency of the lower centres.

The volume under review commences with a useful biological introduction, describing life as a correlation of physical forces for the conservation of the individual, the continued welfare of any living organism depending upon a properly balanced adjustment between itself and its surroundings—*i.e.*, between internal and external relations. An interesting chapter is devoted to the neurone or the nerve cell, which is itself an independent unit, leading an independent life, and separated from its fellows by a reticulated continuum—the synapse—yet it is linked with them by this fibrillar structure, which acts as a damper or a resistance to the passage of impulses, thus limiting excitability. The neurone effects the conduction of physico-chemical waves towards the effectors, but in one direction only, and this by means of its dendrites, axon, and collaterals, which are continuous with the nerve fibre. The author omits to mention the important discovery that the living neurone consists of protoplasmic granules, each surrounded with a lipid oxidising substance; the Nissl granules of the neurone, or the tigroid bodies, being artefacts after death.

The last four chapters are devoted, fully but concisely, respectively to the physiological psychology of pain and pleasure—*i.e.*, the hedonic tone of consciousness connected with modifications of the subject by the object; the track of the pain nerves in the spinal cord being illustrated in the text; to the general anatomy of the cerebral cortex, and here, we note, there is no reference to the extremely valuable and important work of Dr. G. A. Watson on the mammalian cortex; and to reflex acts, instinct and intelligence. This chapter opens up two or more interesting psychological points, *viz.*, whether reflex acts and instinct are only biological adaptations, and whether instincts are intelligent acts. In regard to these the opinions of psychologists differ, but the view of the majority is that every instinctive act is determined by intelligence. Between the chapters named the text is mainly histological and descriptive.

The book is concise and scientifically accurate, but owing to its extreme technicality it is difficult to read except by the expert anatomist or the senior advanced student. It certainly should be in the hands of every teacher of psychiatry. The illustrations are numerous and well chosen to illustrate the text, the bibliography is extensive, and the index as perfect as can be made and doubly useful through the help of the glossary. It may safely be added that the author has succeeded in his aim "to disentangle the inconceivably complex interrelations of the nerve fibres which serve all the manifold functions of adjustment of internal and external relations."

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