Introductory Textbook on Neurophysiology

Elements of Neurophysiology. Sidney Ochs. Wiley, New York, 1965. viii + 621 pp. Illus. $14.

In trying to write a "relatively simple yet comprehensive and modern introduction to the field of neurophysiology for medical and graduate students in physiology," Ochs has achieved his goal. This book covers neurophysiology from the structure and function of peripheral nerve through emotion and higher functions of the nervous system, and does so in a readable and intelligible way. It is copiously illustrated and contains numerous references, enough to document the points brought out and provide well-balanced access to both recent and older literature.

As might be expected in a book that covers such a wide area and is written by one man, there are numerous errors. In the sections most familiar to me, many of these errors are distortions that result from simplification and are perhaps hard to avoid. Others are mistakes that can be, and hopefully will be, corrected in a future edition. For example, the discussion of subgroups of A fibers is accompanied by an illustration (fig. 2-11) based on the work of Gasser. It does not take into account his more recent work [*J. Gen. Physiol.* **43**, 927 (1960)] which shows that in skin nerves the action potential is much simpler than once believed: there is no gamma elevation. The discussion of specificity in sensory nerves does not include much of the work on small myelinated fibers, and, in a section on C fibers that is less than completely clear, incorrectly quotes Douglas and Ritchie as having worked on single C fibers. Group II and group III fibers are incorrectly related, as a whole, with nociceptive responses; and the dorsal spinocerebellar tract is described as being contralateral to the cells that give rise to it. Very positive, incomplete, and, in part, erroneous statements are made concerning the origin and termination of the "spinothalamic" tract. There are numerous errors of this type, and, in addition, some chapters are less satisfactory than others. However, it must be stressed that, in general, the main principles are well explained and that the book has considerable merit in that it brings together a large body of material in a lucid and well-organized manner. This book fills a definite need and can be recommended for use in advanced undergraduate courses and for graduate students who seek an introduction to the field.

VICTOR J. WILSON
Rockefeller Institute,
New York, New York

Hormones as Regulators and Moderators

Mechanisms of Hormone Action. A NATO Advanced Study Institute (Meersburg, Germany), May 1964. P. Karlson, Ed. Thieme, Stuttgart, Germany; Academic Press, New York, 1965. xii + 275 pp. Illus. DM. 49.80.

This book is a compilation of the papers presented at a NATO Advanced Study Institute, held 20–26 May 1964, together with well-edited discussions by the participants. The subject matter is treated under three headings that represent the three major theoretical approaches to the field: (i) hormones as regulators of enzyme activity; (ii) hormones as agents of control of membrane transport; and (iii) hormones as modulators of gene activity, controlling enzyme induction and repression.

With few exceptions the papers are of high quality, thoughtful and critical in tone. Because of this, the book will be useful to students of the field for some years to come, unlike the usually evanescent conference reports that pour unceasingly from the presses.

H. Breuer gives an excellent summary of the data concerning hormonal actions on enzyme activation. However, he and his discussants stress the oft-forgotten point that "though there are quite a few well-known models in which hormones have an activating effect [on enzymes], these results do not necessarily explain the physiological effects of hormones *in vivo*."

The section concerned with hormonal actions on "permeability" is introduced by a thoughtful, theoretical treatment of diffusion and carrier transport by K. Heckmann and by O. Hechter's imaginative approach to hormone-receptor interaction. Hechter's approach is based largely on the concepts of "hexagonal" structure models of polypeptides, which are elaborated upon by D. T. Warner.

I. G. Wool's paper on insulin and protein biosynthesis is a model of logical orderliness and clear writing. This difficult subject is well reviewed, and Wool's theoretical proposals are clearly stated. However the expectation that insulin action could be explained by its "coordinating the translation of messenger RNA" does not seem destined for fulfillment.

H. Rasmussen reviews the present state of our knowledge of parathormone action and stresses especially the effects of the hormone on transport of ions across mitochondrial membranes.

As a result of the administration of hormones (in vivo and in vitro) the synthesis of various proteins—enzymatic and nonenzymatic—is either stimulated or inhibited. The hormonal "induction" and "repression" of enzymes is an active area of research, even though it is still problematical whether such actions are "primary" or are the consequences of hormone-receptor interactions at other sites. This lively area of investigations is treated in an authoritative manner by a group of workers: C. E. Sekeris (ecdysone and protein metabolism of the blowfly), E. Goldwasser (erythroprotein), J. R. Tata (thyroid and protein synthesis), C. D. Kochakian (androgens and anabolism), H. G. Williams-Ashman (testosterone), G. C. Mueller (estrogens), P. and M. Feigelson (glucocorticoids and liver enzyme induction), and others.

Discussions by Karlson and by Clever concerning the general concept of hormones as gene activators introduce this last section. Because widespread and sometimes uncritical generalizations have been made on this subject, it is heartening to record that Karlson is careful to point out that the concept may only be valid for some hormones. Since the hormones form a heterogeneous set of chemical compounds it might well be expected that the modes of action would be different and that one cannot assume a uniform concept valid for all hormones in general.

RACHMIEL LEVINE
Department of Medicine,
New York Medical College