Book reviews


This is a book which can be recommended without reservation. Sir Charles Sherrington, whom it commemorates, made neurology intelligible and the first scientifically based clinical discipline with his monumental work on the function of the central nervous system. In our own atomic age neurophysiology has again led the way in analysing the function of excitable tissues at the molecular level. The seminal work in this field is universally acknowledged to be that of A. L. Hodgkin and his collaborators A. F. Huxley and R. D. Keynes.

The lectures collected in this slim volume lead the reader step by step through this exciting period of research. Professor Hodgkin has the gift of presenting a difficult subject with elegant clarity and has placed us all in his debt by making this essential work so readily available. The mathematicially minded will find a formal treatment of the ionic theory of the action potential in an appendix but little mathematical ability is required to follow the exposition in the text on the method of signalling in the nervous system, the structure and general properties of nerve fibres, and the membrane theory of nervous conduction. The mechanism of saltatory conduction in myelinated nerve is then described. The nature of the permeability changes at the cell membrane has not yet been fully established and with this chapter, and the final one on the link between metabolism and ionic movements, Hodgkin takes us up to the advancing edge of the work of himself and his collaborators. This part is more difficult, requiring some understanding of biochemical mechanisms. The only criticisms one could make of this excellent volume are that the use of footnote references occasionally causes some confusion by appearing to be power indices (for example, 9000^3, KCl) and the formulae in chapter VI would be more understandable if the reaction directions were indicated in the usual way. But perhaps the fact that this confusion is momentary is an indication that Hodgkin's work has become second nature to the clinical neurophysiologist. It is now available to all.

J. A. SIMPSON


The last decade has seen striking advances in knowledge of the clinical, pathological, and biochemical aspects of diseases of the muscles but this information has not been readily available in a concise textbook. Dr. Walton has edited the contributions of 25 authorities to provide a book which will be the standard work for general physicians, neurologists, and paediatricians. The disadvantage of this type of book is that space must be allocated fairly to each contributor rather than where it is most required, and some repetition is inevitable. Thus the introductory section on anatomy and physiology gives a sometimes elementary account of neural control of muscle but little of the biophysics of muscle as a tissue which may hold the key to the muscular dystrophies. The normal biochemistry of muscle is, on the other hand, well described and the second section on pathology and biochemistry of muscle disease is admirable. A minor criticism is the difficulty in finding information about the levels of serum enzymes in the normal and in each type of muscular dystrophy though appropriate references are provided.

The section on clinical problems is excellent but one feels that it would have been better to have sacrificed the chapters on neurogenic atrophy to permit more detail on some of the recent advances in myasthenic and metabolic diseases. The role of immunological disturbances in acquired myopathies is becoming established and will surely find a place in the section on pathology of a later edition. The final section on electrodiagnosis is also, a useful summary of the present state of these techniques but, like many previous sections, there is again a concentration on the neural control of muscle.

The book is beautifully produced and unusually well provided with up to date references in all sections. For this reason it will be valuable to the specialist worker and well as to the clinician at whom it is primarily aimed.


This is a symposium on the electrical activity of neurones and congregations of neurones of the central nervous system, and in particular the relation between steady potentials and changes in potential with neuronal excitation or activity. It does not contain very much new fact but established facts are often re-interpreted and their implications reconsidered. Dr. Brazier gives one of her usual scholarly introductions. Dr. de Robertis reports his findings of the electron microscopy of the synapse. Much of this is new. On the whole greater magnification brings greater complexity. Dr. Leao re-discusses the mechanism and method of spreading depression, and Dr. Grafstein surveys the evidence for release of potassium from neurones as the operative factor in its cause. The biological function, if any, of spreading depression is still not clear and it remains a happy hunting ground for speculation—invariably because there are so many possible rôles for it.

Cortical electrical changes in sleep are once more considered.

Dr. Bates discusses some interesting findings in an analysis of the potential changes in petit mal epilepsy. Their main interest is theoretical, but their interpretation may lead back to clinical observation and even treatment.

The possible relation between brain physiology and the environment of outer space is also considered briefly.

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This is a field of enquiry where simple ‘natural history’ is still being actively pursued. The book will be of interest to neurophysiologists rather than neurologists. Some parts of its content however will be the background for tomorrow’s clinical advances: the difficulty is to know which parts.

HISTOPHYSIOLOGY OF SYNAPSES AND NEUROSECRETION
By E. de Robertis. Vol. 20 of Modern Trends in Physiological Sciences Division, International Series of Monographs on Pure and Applied Biology. (Pp. xiii + 244; illustrated. 70s.) Oxford: Pergamon Press. 1964. The author needs no introduction to the expert in electron microscopy of central and peripheral synapses and it would be impertinent to congratulate him and his publishers on the excellence of the photographs illustrating this valuable book. It is, however, more than a collection of anatomical data. There is a convincing attempt to correlate the ultrastructure revealed by the high-resolution electron microscope with the physiological knowledge on synaptic and junctional transmission.

The review covers synaptic regions of the central and peripheral nervous systems of vertebrate and invertebrate animals and of the retina, and it is shown that the ultrastructure is in all instances compatible with the theory of neuro secretion. One chapter explores the possible nature of these secretions. In Part II of the book the essential similarity of the neurohumoral mechanisms of the hypothalamic-neurohypophyseal and adrenal medullary systems is demonstrated. Earlier theories of a similar mechanism in the pineal gland are supported. The interesting suggestion is made that one neurone may produce two or more neurosecretions, one released by the other.

The data in this very useful short review are no doubt selected to support the author’s thesis but this has the merit of presenting the argument forcefully and logically in a way which will suggest many starting points for further investigation.

J. A. SIMPSON

OPERATIVE NEUROSURGERY, 2nd ed. By E. Stephens Gurdjian (Pp. xviii + 560; 130 figures. 136s.) London: Baillière, Tindall and Cox Ltd. 1964. The second edition of this work, originally by Gurdjian and Webster, appears 12 years after the first and has been extensively revised and enlarged. Most of the new techniques evolved during this period have been added, though some para-surgical methods, such as hypothermia and techniques of circulatory arrest, are only touched upon. New and complicated techniques, such as stereotactic surgery, where the progress of the operation must be determined by findings during the operation, are difficult to describe shortly and might best be left to specialized works. The purpose of this book is to guide the young neurosurgeon in operative techniques, to serve as a reference book for the established surgeon, and to provide a service manual for the general surgeon called upon to perform an occasional neurosurgical procedure. How far does it achieve these aims?

The plan of the book is formal, operations on the head, spine, sympathetic and peripheral nervous systems being dealt with in turn, and each section is followed by a lavish and satisfactory bibliography. In spite of this, however, the work is essentially confusing. In some cases quite a lot of history and clinical data is given, in others virtually none. The text on operative surgery is broken up by snippets of anatomy, clinical surgery, and minor operative procedures inserted in smaller type where the text accompanying an illustration has left available space on the page. Mostly, the material inserted in this manner bears no relation to the main text on the page. Only constant use of the index allows one to seek out information on a particular topic which may be scattered in different parts of the book, and the index is not sufficiently full for this. Much of the anatomical material is on too low a level and not sufficiently detailed for anyone specializing in neurosurgery. The section on the brain, for instance, the main interest of the neurosurgeon, comprises only six pages and two illustrations. Strange little pieces of anatomy appear in the section on sympathetic nervous system; surely no surgeon should be allowed to attempt a thoraco-femoral sympathectomy unless he knew a great deal more of the anatomy of the spleen than is comprised in the seven lines on page 428. Most of the text consists of descriptions of operations on the lefthand page with accompanying illustrations on the right. Constant cross-reference is needed, for neither is understandable without the other, and this is tiring to the eyes and difficult to follow.

The illustrations are particularly difficult to understand. Most of them are semi-diagrammatic but with peculiar distortions; many of the heads, for instance, are like something out of space fiction and have no noses or mouths and are hardly of human shape. In most of the illustrations curved lines have been replaced by angles though the shading makes some attempt to indicate that a particular shape is, say, the cross section of a muscle rather than of a bone. In fact, the illustrations neither represent what the surgeon will actually see in the theatre nor do they conform to the diagrams he is so familiar with in standard textbooks of anatomy and surgery. I needed to spend a great deal of time on these drawings before I could understand them and some still remain obscure to me. Probably only several readings would accustom one to this type of drawing so that they became meaningful in terms of human surgery.

The descriptive text is clear and contains most of the relevant information required by a surgeon about to undertake an operation. There are, as always, points of fact and emphasis with which one would disagree, but these are few. The main failure of the text is that it never really comes alive. One does not get the impression that one is reading the description of an actual operation on a human patient. The tension, anxiety, blood, the ever-present possibility of complications and disaster, are all lacking; these are operations performed on bloodless manikins whose outcome in terms of human existence is purely academic.

Most young surgeons know a great deal more anatomy than their elders and can easily find out how to approach any particular part of the body. What they need is guidance in the unexpected difficulties, knowledge of ‘the tricks of the trade’ which make all the difference between