Book reviews

THE CONDUCTION OF THE NERVOUS IMPULSE: The Sherrington Lectures VII By A. L. Hodgkin. (Pp. 108; 40 figures. 25s.) Liverpool: Liverpool University Press. 1964.

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 mathematically 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, 9000³, KCl³) 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

DISORDERS OF VOLUNTARY MUSCLE Edited by J. N. Walton (Pp. x + 628; 143 figures. 100s.) London: J. & A. Churchill Ltd. 1964.

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 as well as to the clinician at whom it is primarily aimed.

BRAIN FUNCTION Edited by Mary A. Brazier. (Pp. xviii + 394; 179 figures. 80s.) London: Cambridge University Press. 1964.

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—inevitably 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.