Biochemical Pharmacology, 1961, Vol. 6, p. 278. Pergamon Press Ltd., Printed in Great Britain.

BOOK REVIEW

Inhibition in the Nervous System and Gamma-aminobutyric Acid (E. ROBERTS: Editor) Pergamon Press, Ltd., Oxford, 1960, 600 pp, 100*s*.

THIS important book will be read with profit by many who take an interest in biochemical pharmacology. The main topics discussed are at the point of intersection of biochemistry, physiology and pharmacology. Over twenty years ago Harriette Chick and her colleagues first described the characteristic epileptiform convulsions of vitamin B6-deficient animals. The role of pyridoxine in the metabolism of glutamic acid is now well established, and much support is given by some contributors to this Symposium to the idea that a failure of the enzyme responsible for the conversion of L-glutamic acid to γ-aminobutyric acid (GABA) is at the bottom of this neurological disorder, although there is by no means general agreement on this.

It is not easy to select a general theme to cover this collection of over seventy individual contributions, but we may come nearest when we quote the concluding sentences of K. A. C. Elliott's paper: "I do believe that we must now recognise the fact that substances which are concerned in the conditioning of nervous excitability can be intermediary metabolites. The fields of intermediary and energy metabolism and of functional activity cannot longer be separated in our studies of the nervous system."

The theory of chemical transmission of nervous impulses is derived from the experimental analysis of the activity of the peripheral effector nerves. We have at present no satisfactory evidence based on the study of the central nervous system. And yet, so firmly is this theory fixed in contemporary thought that it appears essential also when the functioning of central synapses is discussed. Reading this book makes us understand why the idea of specific and localised interaction between "transmitter" and "receptor" is such an indispensable concept. However, much of the material indicates that we have also to reckon with interactions between naturally occurring substances (or drugs) and neuronal membranes not confined to the synapses and which either raise or lower the excitability of the neurone. Is this kind of interaction also restricted to certain types of neurone, and how does it fit in with the picture of specific inhibitor pathways? These are some of the questions raised, but by no means definitely answered.

An important gain that we owe to some of the members of this Symposium is the discovery of the metabolic pathway that involves formation and breakdown of GABA and the more recent finding that in nervous tissue it represents a quantitatively significant alternative to the classical pathway of succinate formation in the tricarboxylic acid cycle. In spite of all the evidence that shows that the intermediates of the "GABA shunt" are partly held in separate intracellular compartments, it seems unlikely that a major metabolite like GABA acts as a true transmitter, but there are many observations, on invertebrate as well as on vertebrate preparations, that point to the presence of compounds related to GABA that may have transmitter functions in inhibitory neurones. The discovery of such a compound would be an important contribution to the problem of inhibition in the nervous system; the complexity of this problem is well illustrated by many contributions to this volume.

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