

ion flux, and facilitates acetyl choline release from nerve endings.

Of the two remaining chapters, one is devoted to the plant toxins abrin, ricin, and their derivatives. These toxins inhibit an elongation reaction in protein synthesis, although the precise one is still disputed by some workers. Finally, there is a chapter on the steroidal alkaloid, batrachotoxin, which has been isolated from the skin secretions of the Kokoi, a South-American frog. The toxin exerts its action by binding to cell membranes of electrogenic tissues. The binding results in the opening of Na^+ ion channels through the membrane and consequently alters the potential difference across these membranes.

This book should have wide appeal. Primarily written for research workers, it will nevertheless be appreciated by final year undergraduates and by others wishing to widen their biochemical knowledge.

Each chapter is written so that readers with different backgrounds can fully appreciate the information in the article. A common format has been used by all the authors. An article is divided into several sections usually along the following lines:

- (i) Introduction and history.
- (ii) Purification, structure and chemical studies on the toxin.

- (iii) Interaction of the molecule with the plasma membrane.
- (iv) The mechanism of action of the toxin, usually the major section.
- (v) Concluding remarks such as practical applications and future research. This format allows easy comparison of the information in the individual reviews.

The authors are authorities on the topics they are discussing. Therefore, each article is critically written and is full of interesting current information. The discussions are amplified by a copious use of examples and comparisons of toxin effects in different cells and organisms. Most chapters present many examples of original data (tables, graphs, etc.) to augment the text, and original literature is exhaustively quoted.

I have two criticisms. The chapter on colicin E_3 despite its high quality is rather misplaced in a book otherwise devoted entirely to toxins affecting eukaryotes. Secondly, there are too many minor printing mistakes in many of the chapters. Thus, it is difficult to convince oneself that the text is totally free of small factual errors inadvertently incorporated.

The book will satisfy a need for many people. It covers wide areas of biochemistry and places them in one volume. Personally, I found the articles very enjoyable to read and extremely informative.

Kelvin E. Smith

Essays in Neurochemistry and Neuropharmacology, Volume 1

Edited by M. B. H. Youdim, W. Lovenberg, D. F. Sharman and J. R. Lagnado
John Wiley and Sons; London, New York, Sydney, Toronto, 1977
195 pages. £ 9.90, \$ 19.50

Many neuroscience journals now publish short reviews on specialist topics meant for the expert. The undoubted success of 'Essays in Biochemistry' indicated the need for a different kind of inexpensive publication written as an up-to-date essay, intelligible to finale-year and postgraduate students. This first of a similar series on neurochemistry and neuropharmacology partially meets the requirement. I

found the articles both stimulating and enjoyable. One was left in no doubt that neurochemistry and neuropharmacology are exciting fields of research of enormous future potential. However, most of the contributions turned out to be a cross between a chapter in a specialist textbook and a learned review.

The properties and function of methyltransferases are described in the first essay. Transmethylases are

enzymes which can transfer the methyl group from *S*-adenosyl-L-methionine to either an oxygen or nitrogen residue. Biological activity is greatly modified by their action, for example, in the production of melatonin from *N*-acetyl-serotonin or in the possible role of catechol-*O*-methyltransferase in action on catecholamines in stress and mental disorder.

Rather less is known about the role of taurine in the mammalian CNS, as is indicated in the second essay. The possibility that it may act as a neurotransmitter is reviewed at some length. On the whole, the evidence proves to be inconclusive. Other possibilities are that taurine is involved in epilepsy or that it may act as a membrane stabilizer. Anyone intrigued by the problem of the neurobiology of taurine should read this article.

The third chapter is written much more in the style of an essay with key references only given at the end. Molecular events in trans-synaptic regulation of macromolecular synthesis is discussed. The peripheral sympathetic nerve serves as a model for trans-synaptic regulation of synthesis of tyrosine hydroxylase and dopamine β -hydroxylase. Synthesis appears to be induced through acetylcholine release from preganglionic cholinergic nerves. Evidence for involvement of cAMP is less good. This really is a fascinating system for further study for it relates to the fundamental question of neuronal plasticity.

Aldehydes produced by oxidative deamination by monoamine oxidase of biogenic amines have unexpected biological activity. For example, biogenic aldehydes are involved in sleep and may also alter the

excitability of nerve fibres. In the fourth essay the metabolism of such aldehydes in the brain is discussed. The main enzymes involved are aldehyde reductases, alcohol dehydrogenase and succinic semialdehyde dehydrogenase, whose activity may be modified by barbiturates and alcohol.

In the next essay there is discussed the role of hypothalamic peptides in their direct action on the brain and in releasing pituitary hormones. The melanocyte-stimulating hormone (MSH) and ACTH have a most interesting behavioural action, appearing to improve visual memory in human subjects. The release of MSH is regulated by another centrally-acting peptide MIF-I which has potential value in treatment of Parkinsonism. This is another intriguing example of an area which can be expected to be greatly expanded in the future.

In the sixth chapter the neurochemistry of Huntington's chorea is briefly reviewed. Unlike in Parkinson's disease, glutamate decarboxylase activity has been found to be depleted in the post-mortem choreic brain but GABA receptors remain intact. In addition, choline acetyltransferase activity is reduced in the basal ganglia but not in other areas of the affected human brain. The value of neuropharmacological research on human post-mortem brain material is clearly illustrated.

Finally, the book is reasonably well produced but an index would be a useful addition to future issues.

A. N. Davison

The Generation of Antibody Diversity: A New Look

Edited by A. J. Cunningham
Academic Press; London, 1976
viii + 211 pages. £ 7.80

One individual can produce of the order of 10^6 different antibody molecules. The genetic basis for this enormous diversity is an intriguing problem in immunology, and has occupied many theoreticians

and experimentalists. The central question is whether the size of the gene pool is sufficiently large to account for the wide spectrum of immunoglobulin (Ig) molecules within an individual, and within an inbred strain