Essays in Neurochemistry and Neuropharmacology

Volume 2

Edited by M. B. H. Youdim, W. Lovenberg, D. F. Sharman and J. R. Lagnado
John Wiley and Sons; Chichester, New York, Brisbane, Toronto, 1977
xiv + 174 pages, £8.75

An essay on essays prefaces this book, praising the literary essay and advocating a comparable form of scientific writing as a leavening or antidote to the stereotype of papers proceeding by Methods–Results–Discussion. The terse wisdom and precise word-choise of Bacon, or the charm of Lamb, would indeed be welcome in the neurosciences, but this book's contents exemplify a different and quite worthy stereotype, the review. Are literary essays ever multi-author, as are half of the present contributions? Two of the most effective essays here are indeed single-authored: the first few pages of K. G. Walton's account of cyclic necleotides and postynaptic events could be a model of literaty workmanship properly applied to clear exposition of its subject, combining historical insight with some necessary definitions. Subsequently, inevitably, documentation supervenes. And M. R. Boarder attractively combines an analysis of psychological concepts with chemical and metabolic data in discussing the mode of action of hallucinogens, especially of lysergic acid diethylamide.

The Biochemical Society's 'Essays in Biochemistry' which antedate the present series by 11 years are also despite their name broad, didactically-oriented reviews in which many authors use figures and tables as a means of avoiding cumbersome passages of text; a necessary distinction from the literary essay and much to be encouraged. So also are author and subject indexes which are lacking in the present book. It also has no running titles or author's names at the head of its pages; and as the list of abbrevations and the literature references come at the beginning and end of each individual essay, lack of this guidance to where the beginning and end are located is to be regretted. The text is in the main commendably free from petty errors, but the abbreviations SIF does not appear in the appropriate list and some search is needed to discover that it means 'small intensely-fluorescent' (cells). The book's subject coverage is commendably broad: isolated cerebral preparations, the retina, behavioural and clinical subjects are included.

H. McIlwain

Chemical Pharmacology of the Synapse

by D. J. Triggle and C. R. Triggle
Academic Press: London, New York, San Fransisco, 1977
viii + 654 pages. £20.00, $43.75

This joint venture by D. J. and C. R. Triggle is as welcome now as was its singly-authored (D. J. T.) predecessor 'Neurotransmitter–receptor interactions' in 1971. The new volume is not simply an updating of the earlier one, but as indicated by the present title, the emphasis has appreciably changed. The first chapter is now devoted to the structure and function of the synapse. In particular, information available

up to 1975–6 about the control of synaptic activity is usefully reviewed. The content of the chapters in the earlier book on the forces involved in receptor–ligand interactions and on cell membrane structure, has been severely pruned and incorporated mainly in chapter 2, which is devoted principally to 'quantitative aspects of ligand–receptor interactions'. The discussion here ranges thoroughly from classical theories of drug–receptor action to the multiple, interactive binding of ligands. Included is the useful reminder that co-operativity might arise from membrane events after the drug–receptor combination, or from non-oligomeric structures in which the interconversion between receptor conformations is rate-limiting. Examples quoted, however, of necessity stop short of the more recent reports of the co-operative bindings found with solubilised and purified acetylcholine receptor protein.

Chapter 3 is as lengthy an account (approx. 200 pages) of 'structure-activity relationships' and the consequent speculations about receptor topography as was featured in the earlier book, but now dopamine, amino acid, and histamine receptors are also included.

Chapter 4 gets down to the electrophysiology of neurotransmitter–receptor interactions and deals with membrane potential, its control, the properties of ion channels and their pharmacological differentiation, the role of Ca^{2+} in membrane excitability and the control of membrane permeability by ACh, catecholamines and GABA in a variety of tissues. The discussion then moves from the concept raised in chapter 2, that ion channels and receptors may be identical, or discrete but allosterically-linked components, to the possibility of a linkage mediated by further membrane components. Cyclic nucleotides, phospholipids and calcium are discussed in this context.

The final chapter discusses neurotransmitter receptor isolation, purification and characterisation. The earlier account of the nicotinic receptor has been brought further up to date and includes a useful summary of the variously reported physical characteristics of the protein. Attemps are described to reconstitute receptor preparations by incorporation into artificial membrane systems. An account is also given of the beginnings of progress in the use of suitable, radio-labelled affinity reagent for the identification and isolation of beta-adreno-, muscarinic acetylcholine- and amino acid-receptors.

This volume has proved valuable in a final year course intended as an introduction to research on the biochemistry of synaptic action. It is a worthy and useful companion to its predecessor.

A. K. Prince

Cyclic Nucleotides in the Nervous System

Edited by John Daly
Plenum Press; New York, London, 1977
xiv + 401 pages. $39.00

In these days of multi-author, multi-volume texts purporting to be a 'total synthesis', a 'definitive text' or, perish the thought, 'indispensable reading' it is unusual, even a relief, to some across a moderately sized monograph which is a personal appraisal of a complex field. Dr. Daly's task was formidable since 375 papers were published in 1975 on the subject of cyclic nucleotides in the nervous system compared with only 9 between 1963 and 1966. To a considerable extent this growth of interest parallels growth in our knowledge of communication whithin the nervous system – the most complex and enigmatic of all biological systems – and the discovery of an increasing number of putative 'first messengers', not least the peptides.

The author has made a heroic attempt to provide 'the cyclic nucleotide specialist, burdened by an ever increasing literature, with a fairly comprehensive

Pharmacology of the Synapse PHCL 4343 - Now a 3 credit hybrid course. Next course offering is Fall 2016. Class meets 4:40 - 5:30 on Mondays in Bruininks 420B. This course meets Pharmacology minor requirements. PHCL 2001 & 3100 are recommended prereqs but you can also take with instructors consent.Â In parallel, Dennis Kaetzel (Sir Henry Wellcome Fellow, UCL and Oxford) is applying the latest optogenetic and chemical-genetic methods to understand the circuit basis of schizophrenia. Institute researcher Dimitri Kullmann says, "These developments provide an important bridge from human genetics to circuit dysfunction, and promise to accelerate the pace of discovery of neurological and neuropsychiatric disease mechanisms at Queen Square".