

Biochemistry and Neurology

Edited by H. F. Bradford and C. D. Marsden

Academic Press; London, New York, San Francisco, 1976

x + 298 pages. £6.80, \$16.75

The main reservation I have about this book is the title. It is not a textbook or overview of two large disciplines that the breadth of 'Biochemistry and Neurology' might suggest, but a transcription of the conference organised by the Neurochemical Group of the Biochemical Society at Nottingham University, 17–18 April, 1975. Part I is concerned with dyskinesias; Part II with epilepsy. Neither the neurological disorders nor the biochemical correlates are treated comprehensively, but one has to draw lines somewhere. Migraine and multiple sclerosis apart, dyskinesias and epilepsy probably account for the greatest percentage of neurological disorders in industrialised countries. The tremendous research efforts devoted to neurobiological problems have given us good reason to believe that there are at least some areas where we are close to understanding CNS dysfunction. Anyone who has witnessed the miraculous alleviation of Parkinsonian rigidity by treatment with L-dihydroxyphenylalanine, more recently combined with a peripheral Dopa-decarboxylase inhibitor, must surely be convinced of the value of a biochemical approach to such problems. The use of antiepileptic drugs is a major therapeutic advance even though the causes of epilepsy and the mechanism of action of the various drugs are not well understood.

Human post-mortem brains, although of limited availability, are providing increasingly useful material. The low dopamine concentrations in the basal ganglia of Parkinsonian patients lead directly to the use of L-Dopa. The current status of L-Dopa therapy, and its alternatives, is discussed in considerable detail. Supersensitivity of dopaminergic receptors, and the possibility that two types of dopamine receptors are present in the CNS are given an interesting and up-to-date treatment. The old hypothesis that Huntington's chorea was due to overactivity of dopaminergic neurons has had to be abandoned. Post-mortem material from these patients has not proved so

rewarding as that from Parkinsonian's. Decreases in γ -aminobutyric acid, acetylcholine and, more recently, substance P, have been found in the basal ganglia. Since we are told that up to 50% of the neurons, large and small, may be lost, these findings are not perhaps so surprising. The interpretation of biochemical data from post-mortem material must, therefore, be considered in relation to anatomical parameters. The plasticity of the CNS might allow extensive primary and secondary changes to occur before the full clinical syndrome becomes apparent. Furthermore, besides post-mortem changes, the nature of the events immediately prior to death itself may induce changes in specific biochemical pathways.

In the case of epilepsy which, like migraine, can be caused by a wide variety of insults to the CNS, the nature of the basic lesion is not known and the symptoms may only appear intermittently. Townsend states that 'The trouble with epilepsy is that most of the time it isn't there!' and biochemists are rightly cautious of systems which contain such independent variables. There are good general introductions to the clinical and biochemical aspects of human epilepsy. The use of metal implants to induce seizures in experimental animals, and the value of combining biochemical, pharmacological and electrophysiological studies is brought out by the more detailed presentations.

This is a good book for the specialist. The biochemical aspects covered are mainly related to chemical neurotransmission and naturally, therefore, a great deal of pharmacological data is presented. This conference was widely held to be a great success and the lucid introductory chapters and pertinent discussion periods certainly stimulate a lively appreciation of the research topics. The overall lesson seems to be that we need to know more about the functional anatomy of the human brain; more about the precise

pathways of neurons utilizing the established transmitters and more about different transmitters and their receptors. Biochemists may note with some alarm that drugs used to treat schizophrenia (phenothiazines, butyrophenones) or L-Dopa itself can induce dyskinesias. Nevertheless, the cover of this

book, which displays a partly dissected human head surrounded by a halo of transmitters (dopamine, GABA and something else), is a very modest statement of the art as it stands at present.

J. J. Barlow

Aging Vol. 1:

Clinical, Morphologic, and Neurochemical Aspects in the Aging Central Nervous System

Edited by Harold Brody, Denham Harman and J. Mark Ord
Raven Press; New York, 1975
xi + 221 pages. \$ 19.75

This book is the first in a series on the ageing brain. In this volume there are seven chapters that mostly concern morphological and biochemical aspects of normal brain.

The contributors are in agreement that there are correlations between mental deterioration in the elderly and morphological changes. Although some authors put emphasis on the importance of senile plaques and neurofibrillary degeneration the Scheibels conclude that the deterioration of psychomotor function with advancing years is in part a function of the quality of neuropil. Since senile plaques may contain an immunoglobulin-derived 'core' of amyloid this may be indicative of a humoral involvement in the pathogenesis of the aging brain.

The deposition and properties of lipofuscin and neuromelanin are reviewed in considerable detail. Both pigments may be derived from lysosomes,

possibly due to abnormal autoxidation while neuromelanin accumulates characteristically in catecholamine-containing neurones.

There are very few original papers dealing with neurochemical changes either the ageing human or primate brain. Despite this, the chapter on this topic accounts for almost one-third of the book. Much of the extraneous material could have been either omitted or possibly discussed in an additional chapter on 'Theories of brain ageing'. As more becomes known about the ageing human brain many neurochemists will be debating the relevance to functional and organic brain disorders of the elderly of studies on laboratory animals. This is because there is a great increase in neocortical development in man as compared with most experimental animals.

David M. Bowen