

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

of animals, or whether the germ line contains a relatively small number of genes coding for variable regions (V) of Ig and somatic mutational events (during ontogeny, or the life of the animal) account for the observed Ig diversity. This has been the centre of much controversy, and since no final proof is available, there is opportunity for continued debate.

This nicely produced volume contains an excellent collection of articles by 12 contributors. I found it very pleasant and amusing reading; it provides an opportunity for newcomers and immunological research workers, interested in this field without active participation, to catch up on the viewpoints of several investigators. The articles are short and cover many different experimental and theoretical approaches, with hardly any overlap, and also provide a most useful list of references. The discussions include, for example: analysis of sequence data and inherited idiotypes; clonal variants of plasma cells, (where no variation in

the variable region has been detected so far); high frequency changes in plaque morphology of committed cells after division (but no convincing evidence that plaque morphology must reflect structural changes in antibody molecules); the learning of self and non-self discrimination; DNA-RNA hybridisation data; the terminal deoxynucleotidyl transferase (found so far only in T-cells) as a possible generator of diversity; antibody characterisation in isogenic tadpoles. Some articles are very scholarly, others represent an imaginative interpretation of selected observations.

Several contributors still favour a germ line theory without somatic variability. On the other hand, the best DNA-RNA hybridisation data would indicate a small number of V-region genes for K- and λ -chains of mouse and not a sufficient number to account for the known diversity of these light chains.

B. A. Askonas

Genetics and Biogenesis of Chloroplasts and Mitochondria

Edited by Th. Bücher, W. Neupert, W. Sebald and S. Werner
North-Holland; Amsterdam, 1976
xiii + 895 pages. \$ 71.50, Dfl 175.000

This massive volume is essentially 892 pages of short communications. These were given at the conference on mitochondria and chloroplasts held in August, 1976, at Munich. The book will certainly be of value to those laboratories actively engaged in the field, since it summarises the current state of the field but it is likely to be of little interest to the general reader. There are 125 individual communications so that each communication is necessarily brief and often intelligible only to the specialist. The areas covered are

- (1) Role of chloroplasts and nuclear genes in production of chloroplast proteins.
- (2) Control of formation and assembly of chloroplast constituents.
- (3) Mitochondrial ATPase complex.
- (4) Mitochondrial respiratory complexes.

- (5) Chloroplast DNA.
- (6) Mitochondrial DNA.
- (7) Transcription and translation apparatus of chloroplasts.
- (8) Transcription and translation apparatus of mitochondria.
- (9) Mitochondrial biogenesis.

The coverage of this book is so extensive and specialised that only a few general remarks need to be made on the trends of research in the field. It is clear that over the last few years considerable emphasis has been placed on genetic analysis of yeast mitochondria. This has been greatly aided by the ready availability of restriction endonucleases. These enzymes have been used also to prepare extensive physical maps of both chloroplast and mitochondrial DNA. There is obviously close integration of nuclear