

chloroplast. H. W. Heldt has written the most concise and readable chapter in the volume, on metabolite transport through the chloroplast envelope. D. A. Walker has attempted to account for the control of CO₂ fixation on the basis of current and rather fragmentary knowledge. The chapter by J. Coombs adds fuel to controversies about chloroplast–cytoplasm interrelations in C4 plants. J. D. Schwenn and

A. Trebst have written about photosynthetic sulphate reduction, R. J. Ellis on nucleic acid and protein synthesis and R. M. Leech and D. J. Murphy on the synthesis of small molecules. J. A. Raven concluded the volume with an assessment of the role of the chloroplast in the energy relations of the 'green' cell.

J. W. Bradbeer

Microbodies/Peroxisomen pflanzlicher Zellen

Morphologie, Biochemie, Funktion und Entwicklung eines Zellorganelles.

With an English Assessment

(Cell Biology Monographs (Continuation of Protoplasmalogia) Volume 5

by B. Gerhardt

Springer-Verlag; New York, Wien, 1978

ix + 283 pages. S 1200.—, DM 174.—

Although first discovered in animal parenchymal cells about 25 years ago, the microbody/peroxisome of plant cells is now probably better understood than the animal organelle regarding both biochemical and cell-biological aspects. A comprehensive monograph on this interesting and actively expanding topic has, in fact, been overdue, although a few competent review articles are available.

Laid out in 13 chapters, an extended picture of current knowledge on the plant peroxisome and of the glyoxysome is presented. Following introductory chapters on definitions and general features applying both to the plant and animal kingdom, on structure of the organelle and possible associations of the microbody with other cell organelles, and on cytochemical methods, the remainder of the book is restricted to the plant. Chapters are devoted to the identification of microbodies as regularly occurring organelles in plants in general, with only few exceptions; to methods of isolation and their results; to a detailed assessment of the peroxisomal components of the membrane and matrix as well as inclusions, and properties of the peroxisomal enzymes and of intraparticulate compartmentation. These chapters are

well-supplied with tables and information on the references.

A further section is concerned with functional aspects of peroxisomes in higher plants, with emphasis on the glyoxysomal metabolism with its main function of the conversion of fat into carbohydrate and the glyoxylate cycle on the one hand, and the leaf-peroxisomal metabolism with the intimate metabolic interplay between chloroplasts, mitochondria and peroxisomes known as the glycolate pathway on the other hand.

Separate chapters then are devoted to peroxisomes in algae and in fungi, followed by a general discussion on the biogenesis and development of microbodies/peroxisomes, as well as on regulatory parameters such as light, phytohormones and metabolites.

A final chapter, curiously the only one written in English, carries the heading 'Assessment' and is, in fact, a summary of the preceding chapters which were written in German. This lingual dichotomy is puzzling for the reader who went through the book in German, and may be even more puzzling to an English-speaking reader who glances through the summarizing pages and then finds himself confronted with a text written

in another language. The latter situation is not liable to come up very often, however, and this is a pity. The quality of figures and tables and the standard of the appraisal and discussion of the literature on the plant peroxisome actually deserve a general readership.

The book, unfortunately marketed at a prohibitive

price, contains a useful list of references in alphabetical order according to authors' names, carrying full titles of the papers published until mid-1976 and, for a few selected papers, until 1977.

Helmut Sies

Cellular Degradative Processes

by R. T. Dean
Chapman and Hall; London, 1978
80 pages. £1.75

The 'outline studies in biology' series of monographs were designed to provide short but authoritative introductions to certain areas of modern biological research for final year under-graduates and fresh post-graduates. This volume which attempts to collate information on the degradation of all types of macromolecules, from extracellular as well as intracellular locations, is a thoroughly marvellous idea, certainly the first of its kind. However, it is totally spoiled by an inattention to detail that is alarming. Material presented for consumption by anyone, but particularly by students of tender years, must be wholly accurate and it would appear that the author (editor?) has paid little attention to proof-reading his manuscript, particularly in chapter 3, which covers the chemistry of the biological macromolecules. Lipidologists will be surprised to learn that stearic acid really has 19 carbon atoms while guanosine tetraphosphate is a very high energy compound and a few polysaccharides appear to have evolved new types of glycosidic linkages. The author's uncertainty is even reflected on the front cover — his initials are given incorrectly! However, the factual and typographical errors are outweighed by the deficiencies in the presentation. It is considered necessary to define (for honours students) the conventional R_1 CONH R_2 peptide but yet Dip-f and Pms-f are introduced without comment and umbelliferone appears totally unannounced during assay of exoglycosides (not exoglycosidases). Many of the illustrations (plus legends) have been taken from other articles and while the legends were probably adequate in their original context, there are

numerous examples where the figures are not explained, either by the text or by the legend and where the abbreviations used are not defined. For example during intravascular lipoprotein metabolism, the terms apo C peptide, VLD and HD lipoproteins (both nascent) appear in the figure, unexplained. Of course, if you know what it is all about, everything is understandable but the book is supposedly designed specifically for the uninitiated. Overall, far too much material has been crammed into too short a space with the result that explanations, definitions and justification of the illustrations have had to be skimmed.

However, with the material that is considered, the author does present a very fair balance, sharing his attention among nucleic acids, proteins, lipids, carbohydrates, glycoproteins and stating right from the outset that he intends to examine the breakdown of biological macromolecules, leaving the interconversions of the monomers to the standard textbooks. Indeed, laudable efforts are made to compare and contrast the catabolism of extracellular and intracellular components. Chapters are presented on the lysosomes, on characteristics of degradation in cells and on the mechanisms of control of catabolism. It is sad to reflect what might have been achieved with more care and attention. This text, as has already happened to most of its predecessors in the series, could have been attractive to virtually every Honours school and could have been adopted onto recommended book lists.

J. Kay