

variety of chemicals, and which may in turn affect either the synthesis or activity of ALA-synthetase. In the next chapter De Matteis gives an equally critical and comprehensive review of various types of hepatic porphyria. The following chapter by Elder deals with the porphyrias caused by various halogenated compounds, and fully and critically discusses the underlying enzyme abnormalities. The remaining chapters in the book deal with the effects of chemicals on heme biosynthesis by G. S. Marks, and the pharmacogenetics in heme metabolism. There is an overlap between the various chapters, but this is by no means a disadvantage. The chapter by Tschudy deals with an interesting and still not fully explained phenomenon of the 'glucose effect' in porphyria.

Altogether, the book can be recommended as a timely and critical account of our present state of knowledge of heme metabolism in the liver, and it can be recommended to all those who have a general interest in heme biosynthesis, in the complicated problems of regulation, and to clinicians and pathologists who must concern themselves with the metabolic diseases, and particularly with the disturbances of porphyrin metabolism which occur in so many types of disease.

A. Neuberger

The Intact Chloroplast

Topics in Photosynthesis: Volume 1

Edited by J. Barber

Elsevier/North-Holland Biomedical Press; Amsterdam, New York, 1976

xi + 476 pages. \$57.25

This first volume of a series of three generally reaches a high standard and although most of the reviews and opinions are not particularly novel at least they are brought together here under one cover. The authors mostly restrict themselves to the consideration of the intact chloroplast of the higher plant although two chapters give predominance to algal chloroplasts. Where techniques make it feasible the treatment is of the intact chloroplast in vitro, exceptions arise where it has been customary or necessary either to investigate whole cells, as in studies of fine structure and of chloroplast-cytoplasm inter-relations or to investigate broken chloroplasts as in the case of photophosphorylation where permeation of the chloroplast envelope by certain substrates is slow. The editor has allowed the contributors to develop their own individual approaches which two of them admit has permitted them to present their own biased view rather than an impartial review of the literature.

There is a great deal of detail in most of the chapters and this makes the volume quite heavy going in places. Another demerit is that the reader has to master 168 different abbreviations in separate lists for each chapter, there are duplicate abbreviations for 10 words and one abbreviation is used for two different purposes.

The first chapter by J. Coombs and A. D. Greenwood deals with the fine-structural aspect of the compartmentation of the photosynthetic apparatus. The electron micrographs are good although one deficiency is a lack of any pictorial representation of the thylakoid freeze fracture faces. Two rather biophysical chapters, in which the reviewer lacks competence, follow, one on electrical interactions and gradients by W. J. Vredenberg and one on ionic regulation by J. Barber. D. O. Hall has contributed a chapter on the coupling of photophosphorylation to electron transport while G. H. Krause and U. Heber provide a somewhat broader approach to the energetics of the intact

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