BOOK REVIEWS

Secondary Metabolism, J. MANN, University of Reading. Oxford University Press, 200 Madison Avenue, New York, NY 10016. 1978. xi+316 pp. 14 x 22.5 cm. $26.00.

The avowed aim of this book is as "a text suitable for undergraduate courses in natural products/secondary metabolism, and of use to research workers entering the field"; however, I felt on reading it that Dr. Mann was never sure for which audience he was writing. I found the book to be inadequate for graduate students, mainly because although there is a list of suggested further readings, there are no references to the literature dealing with biosynthesis, and in some ways too advanced for undergraduate students. There is a good deal of sophisticated chemistry (e.g., much of the chemistry in the chapter dealing with isoprenoids) which seems to require a chemical facility beyond that of undergraduate students, and which is presented without explanation.

The introduction is brief, dealing with primary and secondary metabolites, enzymes and coenzymes, and the elucidation of metabolic pathways. The last topic is dealt with in one page! Some account of the reactions met with in biosynthetic pathways would have been helpful.

The chapter on acetate-derived metabolites covers the field very nicely; I particularly liked the well chosen questions at the end of the chapter, and the emphasis throughout (here and elsewhere) on the biological activity and possible significance of many of the compounds. I doubt however that "the assignment of [^{13}C] spectra is now almost routine" (p. 45)!

Chapter 3 which deals with isoprenoids again covers the subject well but there are errors, showing how difficult it is for one author to do justice to the whole field of biosynthesis. Bisabolene is incorrectly shown as an intermediate in the biosynthesis of several sesquiterpene skeletal types (p. 102); the electron flow in Figs. 3.2 and 3.1 is in the wrong direction; several of the hydride shifts (p. 108, 114) are hypothetical, others (Fig. 3.11, reaction 4) marked hypothetical have been demonstrated.

In Chapter 4, Shikimic acid biosynthesis and metabolism is dealt with very briefly for so important a pathway. The old numbering for shikimic acid (p. 156) is used in this chapter, the new numbering in Chapter 6. The structure and stereochemistry of isochorismic acid are incorrect on p. 167. Chapter 5 deals with the biosynthesis of alkaloids; again there is a mixture of great detail (e.g., for penicillins), brief outlines (e.g., lycopodine), and incorrect information (the biosynthesis of gramine *is* known; that of cephalotaxine *has* been established). Chapter 6 on metabolites of mixed biosynthetic origin, and Chapter 7 which deals with ecology and the significance of secondary metabolites I found to be the best chapters in the book.

Generally I found the book readable and informative. I would not recommend its use as a textbook at either the graduate or undergraduate level, but I would urge its addition to the library of any group involved in the chemistry and biosynthesis of natural products.

J. MICHAEL EDWARDS, *School of Pharmacy, University of Connecticut*

Alkaloid Biology and Metabolism in Plants, G. R. WALLER, Oklahoma State University, and E. K. NOWACKI, Oklahoma State University and Institute of Plant, Soil, and Nutrition Science, Poland. Plenum Press, 227 West 17th Street, New York, N.Y. 10011. 1978. xvii+244 pp. 16 x 23.5 cm. $22.50.

A book on alkaloid biology and metabolism in plants would be read by a pharmacognosist with great anticipation and interest. This book lives up to almost all expectations. It is unique in that I know of no other treatise that brings together in one volume discussions of the following topics: alkaloids in chemotaxonomic relationships, genetic control of alkaloid production, environmental influence on alkaloid production, sites of alkaloid formation, the role of alkaloids in plants, and metabolic (catabolic) modifications of alkaloids by plants.

In my opinion these authors have done an excellent job and have come up with a volume that I would recommend to all workers in the area of natural products. The topics are arranged in chapters which are prefaced with an introductory section which in most cases, sets the limits of the discussion. This is followed by a reasonably detailed exposition of the experimental work supporting the points which the authors make. Included in these sections are numerous figures and tables from the experimental literature. The authors finish each chapter with a brief conclusion and whether one agrees with them or not the conclusions provide interesting food for thought. In fact the entire volume is filled with stimulating ideas for those who are involved in natural products research.

A minor criticism is that it is stated on the dust jacket that the book covers biosynthesis. This may be somewhat misleading, such discussions on alkaloid biosynthesis are not all inclusive and are used by the authors only when necessary to illustrate points to be made concerning the biology and metabolism. In this regard the authors appropriately state in the preface that alkaloid biosynthesis is such a large field that it would require a separate book.

JAMES E. ROBBERS, *Department of Medicinal Chemistry and Pharmacognosy, Purdue University, West Lafayette, Indiana 47907*