Phytochemistry, 1974, Vol 13, pp 1635 to 1637 Pergamon Press Printed in England

BOOK REVIEWS

Phytochemistry: Vol. II. Edited by LAWRENCE P MILLER, Van Nostrand–Reinhold, New York. £12.25.

I HAVE already commented on the shortcomings of the first volume of this three-volume work (*Phytochemistry* **13**, p. 690, 1974) and this second does nothing to change my opinion The authors in this volume also have not been given enough space to develop their subject to any more than at an introductory level and most of the references given again imply that they completed their tasks four or more years ago. This has meant that several important treatises, to which the reader should be encouraged to refer for further information (for example, *Plant Lipid Biochemistry* (by C. Hitchcock and B. W. Nichols). Academic Press, London (1971), *Aspects of Terpenoid Chemistry and Biochemistry* (T. W. Goodwin, Editor), Academic Press, London (1971) and *Chemical Ecology* (E. Sondheimer and J. B. Simeone, Editors) Academic Press, New York, 1970) have not received mention. I also looked in vain for a reference to what is, in my view, the classic book on secondary metabolism, *Organic Chemistry of Secondary Plant Metabolism* (by T. A. Geissman and D. H. G. Crout). Freeman, Cooper, San Francisco (1969). Surely one of the distinguished authors must have had occasion to refer to this book and find it indispensable? Before going on to the individual chapters, I have one further criticism to make regarding the arrangement of the chapters in all three volumes. One can, perhaps, forgive the chapter on "Carotenoids" appearing in Vol. I, but not the order "Steroids, Lipids, Terpenes, Rubber, etc." which appears here. And surely the Gibberellins, which are promised in Vol. III, should have been dealt with along with the other terpenoids?

These flaws apart, the contributions in this second volume generally live up to the standard set by the first. This is especially true of the chapters on Amino acids by L. Fowden, Steroids by E. Heftmann (who managed to have one 1973 reference), Terpenes by H. J. Nicholas (these two last chapters have some overlaps and some "underlaps"), Rubber, Gutta Percha and Chicle by B. L. Archer and B. G. Audley, Lipids by R. C. Jack and Flavonoids by J. B. Harborne. In all cases the chapters serve as valuable introductions to the subjects they cover (there is a lack, however, of an overall discussion of terpenoid biosynthesis from mevalonic acid to polyterpenes including the stereochemical aspects). The chapter on Flowering Plant Proteins by D. Boulter is, in my opinion, a poor one. Not because the author hasn't done his best; he has. But the subject matter is, like that of Glycosides, too nebulus to warrant a separate chapter. One is tempted to paraphrase Gertrude Stein and say a protein is a protein is a protein! The chapter on Purines and Pyrimidines and their Derivatives by D. Wang contains much useful information, but I personally never expected "Derivatives" to include Nucleic acids! What is wrong with calling the chapter "Nucleic acids and Related Compounds" and stressing, as Dr. Wang does quite adequately, in view of the time of writing, the variations between different plant taxa in their nuclear and ribosomal organization. (And, please, Drs. Watson and Crick, give no one else permission to use your 1953 "ribbon" diagram of the double helix again—it must be the world's most regurgitated scientific figure). The next chapter on Alkaloids by D. W. Hughes and K. Genest suffers from lack of organization. The necessary material is there, but it has been arranged in a chemical instead of a biosynthetic way. For example,

we start with the ornithine engendered pyrrolidines and tropanes, then turn our attention to the pyridine and piperidine alkaloids (stressing more the importance of nicotinic acid rather than lysine as a biosynthetic "baustein"), wander via polyketides (γ-coniceine) mevalonic acid (actinidene) to the lycopodium alkaloids (lysine again) We then turn to the necines, and thus back to ornithine as a precursor! Then on to the lupin alkaloids (with lysine) and so on In the biosynthesis of phenylalanine/tyrosine based alkaloids, mescaline is described as a "simple isoquinoline" and we go directly from mescaline to morphine (almost as forecast by the Drug Squad!). Confusing to me and probably much more so to the student The final chapter, Miscellaneous Volatile Plant Products, by H. J Nicholas, is another ragbag apparently loved by the Editor I'm sorry for the author, except to point out to him that to mention phenols such as caffeic acid (m.p 223 dec), hesperidin (m p 258) and alizarin (m p. 290) in a chapter on volatiles is downright misleading to the uninformed reader (unless we are thinking of sunflower products!) However, as I said before, I personally am glad to have this book, but I hope that there will be an opportunity for its revision when a second edition is called for

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Plant Physiology by MEIRION THOMAS, S L RANSON and J A RICHARDSON Longman, London, 1973 Fifth Edition, 1062 pp £7 95

THE FIFTH edition of such a well known textbook as this one needs little introduction to an audience of plant scientists Earlier editions have been widely used in University Biology departments for many years It is a text that provides the student reading Honours Botany with all the biochemistry and physiology he needs in his 3-yr course It emphasizes the biochemical approach to physiological studies and indeed contains more biochemistry than physiology, while chemistry is included in several appendices Among its particular merits are the excellent coverage of plant respiration, the depth of historical background, the many literature references and the careful attention to detail in all aspects of the writing

The fourth edition was published in 1956 so that extensive rewriting has been necessary to bring the book up-to-date It now runs to over a thousand pages and has nearly 1500 references The price, although a very reasonable one, must limit its sales to students, although clearly it will still sell well to libraries The considerable increase in length and price raises the question of whether this type of textbook, in spite of its many excellent qualities, has a future as a student text For one thing, plant biochemistry and plant physiology are now such enormous subjects that there is much to be said for treating them separately For another, there is a growing trend towards briefer outline texts, which can be supplemented by the use of short specialized booklets (e g the Studies in Biology series) covering a range of individual topics A further factor is the very considerable burden placed on the authors in keeping a text of this length up-to-date with the latest scientific discoveries in the field