*Phytochemistry*, 1978, Vol 17, p 173 Pergamon Press. Printed in England.

# BOOK REVIEWS

**Progress in Phytochemistry**: edited by L. REINHOLD, J. B. HARBORNE and T. SWAIN. Volume 4. Pergamon Press, Oxford, 1977. 289 pp. £16.50

The fourth volume in this series contains 8 chapters. Like its predecessors, it caters for two kinds of phytochemists: those who are chemically oriented and those who are biochemically minded. To some extent, the needs and interests of the two are mutually exclusive. However, some of the chapters bridge the gap between the two interests. The first article by Miflin and Lea deals with the pathway for nitrogen assimilation via glutamine, with glutamine synthetase and glutamate synthetase. It is admirably clear, and the fact that it has already been published verbatim in *Phytochemistry* does not detract from its value. The article by Smith on the plant amines is encyclopedic in nature and as such is a mine of information. The number and type of amines is very large indeed but the function of many of them still seem rather unclear. The chapter by Seigler on the cyanogenetic glycosides deals primarily with the chemistry of these widespread and interesting compounds. Means for their identification and isolation and many NMR spectra are given. It is a little disappointing that their possible function and their biosynthesis are hardly discussed. The discussion by Lea and Norris on *t*RNA and aminoacyl-*t*RNA synthesis is important because it emphasizes the knowledge of these systems in plants, which are systematically ignored by other biochemists. The progress made in this area in the last few years is impressive, and the coverage by Lea and Norris is very complete indeed, even if this chapter is not always very easy to read. An evaluation by the authors of the free vs *t*RNA cytokinin debate would have been greatly welcomed.

Camm and Towers review phenylalanine ammonia lyase. This enzyme has been extremely fashionable in recent years. Nevertheless, the outburst of papers has been somewhat unrewarding. As the authors say. . . . . "all these point to a special role for PAL. This role still remains a mystery."

The presence of flavonoid sulphates in many species is unexpected and presents a challenge for further research. Harborne discussed this newly discovered group of compounds, their distribution, chemistry and possible function. Due to their discovery, the number of substances containing sulphur in the oxidized form has greatly increased. The apparent correlation between salinity tolerance and the appearance of flavonoid sulphates is interesting. Why flavonoid sulphate should appear under the saline condition is unclear, and their possible adaptive value seems dubious. Quantitative data on their appearance are clearly needed.

The sesterterpenes are reviewed by Cordell. This is a complex diverse group of compounds derived from isoprene. Neither their distribution, function or biosynthesis are clear at present. Although there is a hint about their pharmacological properties, this is not amplified and left this reviewer puzzled.

The last chapter by Heftmann deals with the function of steroids in plants. Although Heftmann early on rejects the thesis that secondary plant metabolites function as protective agents, later on he returns again and again to this possible function for them. He also goes on to speculate that since steroids act as hormones in animals, it is very likely that they so function in plants—how could they fail to do so since they must come in contact with the relevant sites. I feel this is dangerous ground for a phytochemist to tread on. Too often the search after analogies with animal systems has bogged down plant biochemists. After all one of the points of plant biochemistry is to determine why daisies and elephants differ—not why they are the same. The possible function of steroids as plant hormones seems at present to be doubtful. However, I agree that much more precise, reproduceable work is needed.

By and large, this volume is well presented and printed. However, the publishers at times have gone to extremes to save space. The table on p. 171 is virtually illegible because of the minute print. In the chapter on the sesterterpenes, space is saved in the various biogenetic and chemical schemes by referring one back to structures shown many pages earlier. The chemistry of these compounds is complex and the structures should have been shown again. If space had to be saved, perhaps Table 2 could have been omitted. Since the policy is to have references arranged in running order rather than alphabetically, an author index is badly needed. This volume continues the tradition of the earlier ones very well. Certainly it is a book which most phytochemists would wish to have on their shelves to browse through and use as a work of reference.

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**Plant Biochemistry**: Edited by J. BONNER and J. E. VARNER. Academic Press, New York, 1976, 3rd edn, 925 pp. £18.10.

The appearance of the 3rd edition of this well used and popular textbook is very welcome since the 2nd edition was published in 1965 and much has happened in plant