Phytochemistry, Vol. 24, No. 11, pp. 2781–2783, 1985.
Pergamon Press Ltd. Printed in Great Britain.

BOOK REVIEWS

Metabolites and Metabolism: by EDWIN HASLAM. The International Series of Monographs on Chemistry, No. 12. Clarendon Press, Oxford, 1985. 161 pp. £15.00.

Whilst the natural products chemist has been well served with 'state of the art' reviews on progress in biosynthetic studies, notably through Chemical Society Periodical Reports and now Natural Product Reports, there has been a shortage of more general literature suitable for introducing the subject to undergraduate and postgraduate students. As an undergraduate I was fortunate in having available J. D. Bu'Lock's then recently published *Biosynthesis of Natural Products*. This was followed in 1969 by T. A. Geissman and D. H. G. Crout's most excellent *Organic Chemistry of Secondary Metabolism*. Today these two volumes are still arguably the best for introducing and stimulating an interest in biosynthetic processes, the latter for the range and clarity of its explanation of the mechanisms of secondary metabolism and the former for the insight it gives into the methodology and practical problems of biosynthetic studies.

In this context Haslam's book is a most welcome addition to the literature, providing a concise, easily readable and up-to-date replacement for Bu'Lock. It is divided into seven chapters, of which the first is a general introduction dealing with definitions and the methodology of biosynthetic studies. This is followed by four chapters discussing specific aspects of the biosynthesis of polyketides, alkaloids and other nitrogen-containing amino acid metabolites, plant phenols and terpenes and steroids. Any system that tries to condense a survey of biogenetic pathways under four major headings is bound to produce anomalies in the placement of groups of compounds which involve precursors of more than one type, and although that is certainly the case here the progression works well and does not cause the reader confusion. Chapter 6 deals with the general characteristics of secondary metabolic pathways, addressing important areas such as enzymology, regulation, autotoxicity and storage of metabolites as well as touching on the thorny problem of just why plants go to the effort of producing them anyway. Their *raison d'etre* is also the subject of the final chapter, in which the author explores the hypothesis that they are formed as an overflow mechanism through which the plant taps off superfluous primary metabolites. This hypothesis has many attractions and does not necessarily run counter to the numerous observations made in recent years regarding possible defense roles for secondary metabolites. However, it remains difficult to see how or why such a safety valve would have led *per se* to the enormous diversity of metabolites we are faced with today, even given that the appearance of these compounds is often consolidated through a positive selective pressure due to their beneficial effects against predation or competing plants.

There are always minor points to quibble about in a book of this type. For example, it is difficult to understand why neither erythrose-4-phosphate nor shikimic acid can find a place in Scheme 1.1 which is entitled 'Major intermediates in secondary metabolism', the aromatic amino acids all appearing to derive from phosphoenolpyruvic acid alone. More importantly the numbering of structures in Schemes and Figures seems to have gone rather sadly awry in some places, with numbers difficult to find, out of sequence and, on a few occasions missing or assigned to the wrong structure. This problem could be partially overcome by setting the structure numbers in bold-type to make them more visible. As it is the thread of an argument was often lost in the hunt for structures, a most annoying feature in an otherwise well put together book. Despite these drawbacks, this is certainly a book to be recommended. It should definitely be on the library shelf and probably in the personal bookcase of anyone with a particular interest in secondary metabolites and their biosynthesis.

PETER G. WATERMAN
Phytochemistry Research Laboratories,
University of Strathclyde

Allelopathy: by ELROY L. RICE, second edn. Academic Press, Orlando, 1984. 422 pp. £48.

The view that secondary constituents protect higher plants from herbivory or microbial invasion is now fairly widely accepted, although there are still some dissenters. However, the idea that the same substances may be loosed into the environment from one plant and then be responsible for stimulating or inhibiting a second plant growing in close proximity is still controversial. Some ecologists, such as J. L. Harper in this country, claim that the experimental evidence so far available is insufficient to prove that these chemicals have a significant role in natural communities. They believe that competition is sufficient to explain the negative or positive effect of one plant on another. Other ecologists, such as the author of