

BOOK REVIEWS

Phytochemistry and Angiosperm Phylogeny: edited by D. A. YOUNG and D. S. SEIGLER. Praeger, New York, 1981. 295 pp. \$21.95.

This volume contains the eight review lectures that were presented at a Symposium held in Stillwater, Oklahoma in August 1979 under the aegis of the Botanical Society of America and opens with an introduction by Dale M. Smith. As the title indicates, the book is concerned mainly with the application of phytochemical data at the familial and ordinal levels of angiosperm classification; the first paper of Belford, Thompson and Stein on DNA hybridisation techniques is exceptional in that it only covers variation within a single genus, *Atriplex*.

The last major symposium concerned with chemistry and botanical classification was that organised by the Nobel Foundation in Stockholm, Sweden, the proceedings of which appeared in 1973. It is interesting and instructive to observe that the major topic of discussion then, the distribution of betalain pigments in the Centrospermae, is not included here in any detail and indeed, surprisingly little new has emerged on this theme since 1973. While the systems of phylogeny mainly in evidence at the Nobel meeting were those of Cronquist and Takhtajan, in the present volume we have those of Dahlgren and Thorne, both of whom are much more sympathetic towards phytochemical data than the former systematists. Here, in separate chapters, these two authors discuss at length revisions of their angiosperm systems in the light of the continually improving phytochemical data that amasses year by year. It is particularly valuable to have two different viewpoints and two distinctive systems, since it helps to emphasise once again that no single phylogenetic tree can yet adequately express all the available information on family relationships within the flowering plants. Much still depends on personal interpretation; for example, while Dahlgren's system includes the idea that the iridoids are of monophyletic origin, that of Thorne

rejects such a view. Another contrast between the two systems is that Dahlgren has many more families than the conservative Thorne; for example, Dahlgren names 98 monocot families, while Thorne only accepts 49 distinct families.

The remaining five chapters of the book are by phytochemists, who discuss the phylogenetic significance of amino acid sequence studies (R. Scogin), glucosinolates (J. E. Redman), cyanogenic glycosides (S. G. Saupe), terpenoids (D. S. Seigler) and flavonoids (D. A. Young). These chapters all include useful up-to-date summaries of presently known distribution patterns of many secondary substances. It is clear that many, perhaps most, classes of chemical appear as yet to be randomly distributed, in several or more unrelated family groups. Such a random picture may be illusory and only reflect the fact that our knowledge for many classes of compound is extremely sketchy. The chapter by Young on flavonoids, for example, is particularly helpful in indicating which particular parts of the angiosperm system require attention from flavonoid phytochemists in order to fill in the gaps.

In summary, while this book does not pretend to provide a comprehensive coverage of the phytochemistry of angiosperms, it does provide a valuable working account of present trends in plant chemosystematic research. It should be of interest to a wide audience. In general, the editors have done an excellent job but the absence of any index is especially unfortunate since it makes cross reference between chapters difficult. On the bonus side, however, there is the inclusion of two alternative synopses of angiosperm families, laid out according to the latest views of Dahlgren and Thorne. These alone should ensure that this book becomes available in all phytochemical and botanical libraries.

Plant Science Laboratories, JEFFREY B. HARBORNE
University of Reading

Biosynthesis of Natural Products: by P. MANITTO. Ellis Horwood, Chichester, 1981. 548 pp. £35

Until recently there were three main textbooks on biosynthesis: *The Biosynthesis of Natural Products* by J. D. Bu'Lock (1965), *Organic Chemistry of Secondary Plant Metabolism*, by T. A. Geissman and D. H. G. Crout (1969), and *Secondary Metabolism in Plants and Animals* by M. Luckner (1972). The first is lightweight but very readable, while the other two are comprehensive with good indexes and research references. All are now rather out-of-date, at least in

some respects. In 1978 *Secondary Metabolism* by J. Mann appeared (with a second, revised edition in 1980), to be followed in 1981 by the book under review. The former text, like others in the 'Oxford Chemistry Series', is meant to provide a readable introduction to the subject, while the book by P. Manitto claims to provide a comprehensive introduction to the subject.

This claim is substantially correct, at least in some sections of the book, and it also has long sections on enzyme reactions (64 pp), primary and intermediate metabolism (41 pp), and shorter sections on several