

BOOK REVIEWS

Chloroplasts and Mitochondria by M. TRIBE and P. WHITTAKER. Edward Arnold, London, 1982. 84 pp. Paperback, £2.75.

Written in the Institute of Biology's series 'Studies in Biology', this is the second edition of a previously well-received introductory monograph on the structure and function of chloroplasts and mitochondria. The new edition has been necessitated by the numerous developments in this field since the previous edition appeared in 1972. In addition to outlining fundamental concepts of free energy changes in biological systems, it sets out to summarize the major advances made in the study of organelle genetics and biogenesis, and of the arrangement of components within organelle membranes. For example, the new edition covers Mitchell's chemiosmotic model of coupled electron transport. The final section provides practical suggestions and references to facilitate simple laboratory investigation of mitochondria.

The monograph is essentially an introduction to the subject area and, as such, is suitable for first-year university biologists. It is well written and, as a book of this type should be, easily understood and digested. I fully endorse the authors' view that it is necessary for students to have some appreciation of the antecedents of present day concepts so as to be able to see the present state of knowledge in perspective. In this context, they devote section 4 of their book to providing a well-balanced evaluation of historical events in chloroplast and mitochondrial research.

Although this book is too elementary to interest the more biochemically orientated readers of *Phytochemistry* directly, it is undoubtedly a useful little monograph for recommendation to appropriate first-year students. They will find it good value at £2.75.

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The Plant Cuticle: edited by D. F. CUTLER, K. L. ALVIN and C. E. PRICE. Academic Press, London, 1982. 461 pp. £48.40.

The all embracing title and the luxurious appearance of this volume might suggest that it is a definitive plant science monograph produced perhaps to replace the excellent, but now somewhat outdated, 1970 text on the cuticles of plants by Martin and Juniper. In fact, a quick glance at the contents page reveals that it contains the proceedings of a symposium held on this topic by the Linnean Society of London in September 1980. As such, it concentrates on the research efforts of the last five years but there are several excellent review chapters which will ensure that it will have lasting value.

The scene is set in an opening chapter by P. J. Holloway, who provides a valuable overview of the contrasting nomenclatures that have been proposed for the various structural layers of the cuticular surface. The same author later reviews recent advances in the chemical analysis of cutin while his Long Ashton colleague E. A. Baker discusses in a separate chapter the chemistry and morphology of epicuticular waxes. An interesting review by E. Wollenweber describes the various flavonoid aglycones found in fern surface exudates; regrettably there is no detailed account of *Primula farinas*, although this same author has contributed much to this area, too. Most of the remaining contributions concentrate on the fine structure of the cuticle, its penetration by pesticides and

the analysis of fossil cutins. The role of cuticular characters in systematics is also mentioned in several chapters, but there is unfortunately no general assessment here of the taxonomic significance of leaf surface characters.

The combination within the same book of both review articles and research papers is often unsatisfactory to the general reader and in this case some of the short papers are relatively trivial or only report negative findings so that they reduce the overall impact of the review contributions. Such shortcomings in the text are, however, more than counterbalanced by the superb SEM photographs of leaf surfaces which profusely illustrate almost every one of the 27 contributions. I particularly liked the splendid leaf surface micrographs of *Aloe* leaves in the account by D. F. Cutler of the relationship between cuticular sculpturing and habitat in this genus; there are a fascinating range of stomatal types as well as many other remarkable structural features among these plants. The beautiful colour plate of leaf glands on *Drosophyllum lusitanicum* in the chapter by Joel and Juniper on carnivorous plants also deserves special mention. In addition, the micrographs of stigmatic surfaces by the Heslop-Harrisons are quite stunning. The chief merit of this book is, therefore, its capacity to reveal to our gaze many close-up views of the architectural splendours of plant surfaces.

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