

sequence of defence and defence in the ecosystem, then the various types of defence—static and induced—are enumerated and discussed in sequence. Finally, the triggering of defence systems is described and elaborated in many different natural situations.

The editors conclude the volume with a fascinating little chapter, full of quotations and aphorisms, on the philosophy of plant pathology. In concluding this review, it is not inapt to single out one of these quotations,

namely: "the difference between those (scientists) who advance the frontiers and those who merely exist in science is the ability to choose the right problem". Ambitious young plant biochemists could do worse than look for some of the 'right problems' among these pages.

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Chloroplasts: edited by J. REINERT. Springer, Heidelberg, 1980. 240 pp. DM78.

Important developments in plant biochemistry have centred around the study of the chloroplast as a constituent cell organelle rather than simply as a vehicle for carrying out the photosynthetic fixation of carbon dioxide. The structure of plastids, their reproduction and the structural changes which they undergo when they are converted into chloroplasts have been the particular concern of cell biologists and their recent activities have been well summarized in the book under review by E. Schnipf (Types of Plastids: Their Development and Interconversions) and T. Butterfass (Continuity of Plastids and Differentiation of Plastid Populations).

The view that the chloroplast carries its own genetic machinery is now well established and the detailed evidence for this has been critically reviewed by R. G. Hermann and T. V. Possingham (Plastid DNA—The Plastome). Although the plastome is sufficiently large to code for several hundred peptides, chloroplasts are not autonomous and rely on the genome and cytoplasmic translation systems for the synthesis of many key proteins. The way which this concept was established and its implications for plant development is discussed carefully by Wollgiehn and Parthier (RNA and Protein Synthesis in Plastid Differentiation), and by Herrmann, Börner and Hagemann (Biosynthesis of Thylakoids and the Membrane-bound Systems of Photosynthesis). The final

substantial chapter is by Bottomley who covers in detail Fraction I Protein, which is not only probably the most abundant naturally occurring protein, representing about 50 % of the soluble protein of leaves, but also is arguably the most important enzyme in nature in that it catalyses the first steps in both photosynthesis and photorespiration. The fact that it is made up of a large subunit, coded by the plastome, and a small subunit, coded by the genome, is the major concern of Bottomley's chapter. The final two chapters of the book, "Factors in Chloroplast Differentiation" and "Survival, Division and Differentiation of High Plant Plastids outside the Leaf Cell", are, in contrast to the earlier chapters, somewhat superficial and contain no literature references after 1976.

All in all, however, Professor Reinert has collected contributions which represent a good summary of present views on what might be called *The Molecular Biology of the Chloroplast*. The all embracing title *Chloroplasts* is, however, somewhat of a misnomer.

As usual, Springer have produced a Rolls Royce of a book which is a delight to handle. Long may they continue to be able to publish such attractive volumes but, as in the motor trade, quality is expensive and I suspect rather few individual scientists will be inclined to buy *Chloroplasts*, although it should be in the library of all Plant Science Institutes.

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Plant Taxonomy & Biosystematics: by CLIVE STACE. Contemporary Biology Series, Edward Arnold, London, 1980. 279 pp. £8.95 paperback.

While there has never been a shortage of textbooks in plant taxonomy, some are as uninteresting and stuffy to dip into as a herbarium cabinet while others are so burdened with a systematic survey of plant families that they have little space left for anything else. An important break through from tradition occurred in 1963 with the publication of a major textbook on the Principles of the Subject by P. H. Davis and V. H. Heywood. These authors were the first to attempt to incorporate into classical taxonomic practice the new data becoming available at the time through developments in evolutionary theory, cytogenetics, fine structure and phytochemistry. With the burgeoning of both numerical taxonomy and chemotaxonomy during the 1960s and 1970s, this text has become somewhat outdated and a need has developed for a short modern account of the principles of plant taxonomy incorporating all these developments.

This need has now been met by Dr. Stace who with admirable brevity has produced such an account of the subject for the present-day student in a book of no more than 280 pages. The text falls into three sections: the basis of plant taxonomy, the historical development of the subject; sources of taxonomic information, namely structure, chemistry, chromosomes, breeding systems, phytogeography; and taxonomy in practice, ways and means. There is also an extensive bibliography with some 281 references, mostly to the recent literature. What strikes one particularly is the objective, balanced approach of this author; this is very refreshing when so many questions in taxonomy can be dealt with in a misleading and tendentious way. The book also has the great merit of readability and can be recommended to anyone wishing to find out how the subject of angiosperm taxonomy has advanced and flourished over the last two decades.

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