

## BOOK REVIEWS

**Progress in Botany, Vol. 44:** edited by H. ELLENBERG, K. ESSER, K. KUBITZKI, E. SCHNEPF and H. ZIEGLER. Springer, Berlin, 1982. 444 pp. DM 168 (ca £45).

This useful overview of the contemporary botanical scene contains, once again, a considerable range of review articles, varying both in quality and length. They deal essentially with the 1980 and 1981 primary literature of plant science. To plant biochemists, the most valuable article will probably be that of G. J. Kelly and E. Latzko on the carbon pathway of photosynthesis. These authors subtitle this chapter, "the profound effects of illumination on the metabolism of photosynthetic cells" in order to indicate their chosen emphasis. They cover a considerable area of present day research in an excellent and witty fashion, recapitulating the necessary background of knowledge with well constructed diagrams and other illustrations. They point to the increased number of non-conventional  $C_4$  plants being discovered. One of the most bizarre of these is undoubtedly *Portulaca grandiflora*, a CAM-like  $C_4$  plant with bundle-sheath cells which have both  $C_4$  and  $C_3$  enzymes; thus, the entire  $C_4$  pathway could occur within the one cell. Related articles to this include a review of carbohydrate metabolism, restricted to monosaccharide and oligosaccharide production, by E.

Beck and H. Hopf, and one on ammonium assimilation by T. Hartmann. Nitrogen metabolism is further considered in an account of amines, and of pyrrolizidine and quinolizidine alkaloids by H. R. Schutte.

Physiological topics are headed by an account of recent developments with the three growth substances, auxin, abscisic acid and ethylene, by K. Dorffling and D. Tietz. There is a valuable description of recent methods of hormone analysis, including an evaluation of radioimmunoassay techniques. Other physiological chapters discuss embryo development, stomatal and leaf movements, trace element nutrition and plant–water relationships. Physiological or biochemical aspects occasionally feature in the other sections of the book, which deal with morphology, taxonomy and genetics.

It is not easy to produce satisfactory review articles intended for both specialist and generalist alike. Some of these reviewers are more successful than others in achieving a fluent and informative style. But no one can argue that this review series does not serve an excellent function in alerting the general reader to the more important recent developments in the plant sciences.

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**Hyphomycetes Taxonomy and Biology:** by C. V. SUBRAMANIAN. Academic Press, London, 1983. xiv + 502 pp. £35.

Professor Subramanian is recognised throughout the world as an authority on this group of imperfect fungi. This book, written while he held a Jawaharlal Nehru Fellowship in 1976, is a mirror of his knowledge.

I find it difficult to decide who will use the book: for the specialist the treatment is too shallow, yet the inexperienced will understand little. The specialist will find that, while the author gives a plethora of binomials, there is not the corresponding detail for the biology. As a result the relevance of the taxonomic information is not made clear. Many long lists would have been better tabulated, and this would have helped the advanced reader who will have to return by means of cross-referencing to the primary sources: the organism- and subject-indices, both of which are good. For the inexperienced reader, there is not one drawing or photograph of a fungus. There are inadequate introductions to the complex classification, and the anamorph–teleomorph concept is assumed with

minimal explanation. The formal classification of Hyphomycetes (pp. 79–95) is given without keys and there is no discussion of the reasons for naming nine new families (validated only at the end of this section). Discussion of phenetic classifications is not accompanied by the appropriate phenograms. Generally, summaries of the biological conclusions are not accompanied by data and therefore have to be taken on trust.

The first chapter provides an historical background, but the somewhat irrelevant personal details of the individuals involved intrude to the extent that the historical theme becomes obscured. There follow chapters on taxonomy, distribution and pathology. Of potential interest to phytochemists are the chapters on mycotoxins, metabolites and biodegradation, but here, as elsewhere, the names of the fungi involved take precedence, so that the reader will need to look at the literature cited for the details of chemical formulae or biosynthetic pathways followed in the biological processes discussed. The text throughout is verbose to the point that precision of meaning tends to be lost. My greatest regret is that there is a lack of synthesis of the results quoted: I would have liked some clearly stated personal opinions.

The book is well-produced, and there are few proof-reading errors, but there are occasional signs of lack of care, for example 30‰ salinity is given on every occasion as 30%, and the haphazard spelling of heterokaryon with

a 'k' or a 'c' is irritating.

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**Plant-Atmosphere Relationships:** by JOHN GRACE. (Outline Studies in Ecology) Chapman & Hall, London, 1983. 92 pp. Price £2.95.

This is likely to prove a useful reference book for anyone contemplating work on the radiation balance of leaves. It condenses a large volume of information into relatively little space, though it tends as a result to read a little like a series of lecture notes built up of short factual statements. The book concentrates, as might be expected, almost entirely on leaves and leafy canopies and is not the place to go searching for information about flowers or stems for example. It is liberally spread with abundant examples, and numerous graphs and equations.

The text appears to be concise and free from any major errors, though a few minor points in the layout were annoying, these being essentially editorial problems. For instance Box 3.1 and Box 3.2 are first referred to on pp. 42 and 43, respectively, without any clue as to their whereabouts, and they do not in fact appear in the text until pp. 54 and 55. Equally, the keys to the individual sections of the figures normally have the letters (a), (b), etc. preceding the descriptions, but in Fig. 5.4, they follow the descriptions instead, this being confusing because the descriptions follow on each other consecutively. Printing errors are minimal, and often of little importance, as for instance

the misplacement of the subscript *s* on *r*, at the foot of p. 50.

The diagrams of the sections of a leaf and a chloroplast in Fig. 2.8 are poor, and on the whole I prefer his comparison of chloroplasts with currant buns to his earlier analogy of them to saucers (p. 29), though one is left wondering whether either is necessary in a book which is presumably aimed at an informed readership. Two further minor points, firstly, sulphur dioxide is the only atmospheric pollutant listed in Table 1.4 which is purported to owe most of its global production to the activities of man, yet no man-made origin is given in the 'sources', and secondly, are not responses 'elicited' rather than "illicit" (p. 26)?

Apart from these 'niggles', this book is a useful compendium of information, and, through a good reference list, directs the reader to other relevant literature. Complicated issues, such as air flow over leaf surfaces are explained very clearly, and as a whole the book fills a vacant niche in the 'outline studies' market very well, though the reader at research level will probably have to progress to larger and fuller texts.

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