

BOOK REVIEWS

Progress in Botany, Volume 41: edited by H. ELLENBERG, K. ESSER, K. KUBITZKI, E. SCHNEPF and H. ZIEGLER. Springer, Berlin, 1979. 356 pp. DM 119.

In scanning the latest volume in this annual review series, one is astonished yet again by the breadth and depth of literature coverage achieved by the present team of 25 contributors. While the major aim is a comprehensive survey of the current botanical literature, the reviews are perforce critical since considerable selection is always necessary. Thus, N. Amrhein in a review of the gibberellins and cytokinins had to limit himself to mentioning only some 300 references from among nearly 3000 papers that had accumulated on these topics during the last 3 years. At least all the really important papers do get referred to. Critical selection of topic is also essential; in this issue, under developmental physiology, M. Bopp restricts

himself to seed storage processes and seed germination. His review nicely complements Amrhein's article, since developmental aspects of cytokinins and gibberellins are included in it.

Biochemical topics that receive consideration in Volume 41 include the photosynthetic membrane and chlorophyll-protein complexes (J. Amesz), nitrogen metabolism (E. Kessler, T. Hartmann) and phenylpropanoid biosynthesis (H. R. Schütte). There is also excellent coverage of plant water relations by O. L. Lange and R. Lösch. Finally, under taxonomy, one should mention an extensive review by J. Grau on the systematics of seed plants, which includes useful sections on biochemical systematics and pollination ecology.

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Secondary Plant Products: Encyclopedia of Plant Physiology, New Series Volume 8: edited by E. A. BELL and B. V. CHARLWOOD. Springer, Berlin, 1980. 674 + xvi pp. DM 198 (ca £50).

The format and aims of the encyclopedia are so familiar as not to require description. The first volume has been staring at us from library shelves, rather formidably, since 1955. The 18-odd volumes are now being completely recast, and issued, to the relief of all linguistically crippled Englishmen, completely in English.

Volume 8 of the new series replaces the old volume 10 and concerns secondary plant products. Professor Mothes introduces it and puts the term 'secondary' into a helpful historical perspective. A distinction between metabolites that are essential to almost all cells, and those that are less essential and more restricted was clear a 100 years ago; the description 'secondary' was used by Kossel well before the turn of the century. Perhaps the distinction was drawn a little too clearly, and almost certainly, in view of the techniques available, prematurely. Attitudes have had to change and soften since then as some 'inessential' compounds have been shown to be key metabolites, and as the 'turn-over' of metabolic 'end-products' has been demonstrated. Nowadays, no one would dare write off the most inert compound as a bit of 'flotsam on the metabolic beach' without very carefully considering its environmental implications as well as its physiological role; they would have to consider whether for instance a 'functionless' phenol will decay to soil humus that is beneficial to a plant's progeny, or whether an alkaloid, present in leaves in small traces, effectively repels an unidentified predator. Such changed attitudes are obvious

between the two versions of the encyclopedia, even though comparatively few pages of the second version are specifically devoted to the possible significance of secondary compounds (E. A. Bell).

More groups of compounds are reviewed in the new volume than were in the old, reflecting a deliberate attempt to get a better balance. Phenols, especially tannins and lignins, get less space than previously, although they are very adequately reviewed by J. B. Harborne. The same is probably true of isoprenoids, now reviewed by D. V. Banthorpe and B. V. Charlwood (terpenoids), C. Grunwald (steroids), D. R. Threlfall (polyprenols and quinones) and B. L. Archer (polyisoprene). Prof. T. W. Goodwin reviews the carotenoids and thus has the distinction of being the only contributor common to both old and new volumes. Topics introduced for the first time include alkaloids, classified according to biosynthetic origin and reviewed by E. Leete, by G. B. Fodor, by D. Gröger and by J. G. Roddick; amines reviewed by T. A. Smith; non-protein amino acids reviewed by E. A. Bell; glucosinolates reviewed by E. W. Underhill; cyanogenic glycosides reviewed by E. E. Conn; lipids of taxonomic significance reviewed by G. A. Thompson, and carbohydrates reviewed by A. M. Stephen. Just how the work of the past 25 years has made it necessary to revise the encyclopedia is indicated by the admirable 17 page article on betalains by T. J. Mabry. The earlier volume had just two sentences in the article on flavonoids, drawing attention to "the occurrence of the 'nitrogenous anthocyanin' betanin from red beet, which proved to be a very sensitive and labile pigment... whose structural formula has not been elucidated yet"! Moreover, much of the article on the expression and control of