



BOOK REVIEW

Plant Biochemistry: edited by P. M. DEY and J. B. HARBORNE, Academic Press, London, 1997, 554 pp., £49.95. ISBN 0-12-214674-3.

The editors see this text, aimed at students and researchers, as a successor to the 1976 edition of *Plant Biochemistry* by Bonner and Varner. It is a multi-author volume in which each of the 15 chapters has been written by invited specialists who have been given the freedom to choose the extent and style of their individual contributions. The editors, who have also written some of the chapters, have aimed to integrate and where necessary to augment the coverage without changing the nature of individual contributions. Chapters cover the metabolism of carbohydrates, lipids, nitrogen, phenolics and isoprenoids. There are also sections on the cell, photosynthesis, molecular biology, ecology and biotechnology. Except for 'Storage carbohydrates' and 'Photosynthesis' which each comprise about 60 pages, the chapters average 30 pages in length. Those on 'Biochemical ecology', 'Biochemical plant pathology', and 'Plant cell biotechnology' are much shorter, with 12–15 pages.

Several of the chapters are written in a readable, enjoyable style. I particularly liked those on 'Primary nitrogen metabolism' by P. Lea and on 'Plant lipid metabolism' by J. Harwood. Unfortunately, some others have sought to cram an encyclopaedic quart into the proverbial pint pot, and in consequence are a little reminiscent of lecture notes. To attempt to cover, for example, the metabolism of non-protein amino acids, monoamines, polyamines, cyanogenic glycosides, glucosinolates, alkaloids, auxins, cytokinins, purines and pyrimidines, nucleotides, and cofactors in some 40 pages, of which the equivalent of 30 pages is given up to figures and tables, neither makes for easy reading nor does justice to the individual topics. In this respect also, I cannot help feeling that the space taken up by the 30 pages devoted to glycolysis, the pentose phosphate pathway, the tricarboxylic acid cycle, respiratory electron transport and oxidative phosphorylation, could have been better employed. The perennial question faced by would-be authors of

plant biochemistry texts is whether to cover the basic biochemistry that is largely common to plants and animals, or to concentrate on plant-specific topics. At present, there are a number of excellent textbooks of general biochemistry and it may well therefore have been better to refer the reader to them rather than to duplicate some of their sections in depth and at the expense of plant-specific topics.

In terms of stimulating the interest of students in the biochemistry of plants, the chapters on modern applications of plant biochemistry are excellent but could usefully have been extended. Thus, I would have liked to have seen a bigger slice of Jeffrey Harborne's expertise on 'biochemical ecology', and more substantial chapters on 'plant cell biotechnology' and 'biochemical plant pathology'. There are relatively few errors in the book although some peculiar bits of teleology occur, e.g. the glyoxylate cycle is described as 'this ingenious new pathway', and some micro-organisms are said to have developed strategies to facilitate specific processes. Students will be confused by the claim in Chapter 8 that many steps in nucleotide biosynthesis are exothermic, and in Chapter 3, the statement that Krebs was the first to isolate the enzymes of the citric acid cycle is erroneous.

Despite the errors and perceived omissions, perhaps inevitable in any large textbook, it represents a major contribution to plant biochemistry at a time when there are few, if any, rival volumes. It is certainly a 'must' for any biochemistry library and will be of substantial use to plant molecular biologists, and others with interests in the biology and chemistry of plants. The references at the end of each chapter provide an excellent entry into the individual subject areas and overall the volume is very good value for money. For these reasons, I shall not hesitate to recommend it both for personal and for library purchase although I suspect that as a distillate of current plant biochemistry, it is more likely to be in demand by researchers rather than students.

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