

BOOK REVIEWS

Encyclopedia of Plant Physiology, Volume 16, Photomorphogenesis: edited by WALTER SHROPSHIRE JR and HANS MOHR Springer, Berlin, 1983 900 pp DM 338

This new addition to the *Encyclopedia of Plant Physiology* represents, as indeed it should, by far the most comprehensive survey of the field of photomorphogenesis yet to appear. The strengths and weaknesses of the *Encyclopedia* are well known by now, through the many previous volumes. This one, like its predecessors, is beautifully presented and excellently produced. The editors, Walter Shropshire Jr and Hans Mohr, have chosen acknowledged experts in their fields and have, for the most part, protected the reader against excessive overlap or contradiction on the one hand, and serious omission on the other. As in previous volumes the price paid for this thoroughness is a lack of the most up-to-date references and at £85 an expensive product that, one imagines, will not find its way on to the shelves of many individual scientists.

The photomorphogenesis volume is dedicated to the late Sterling Hendricks, in acknowledgement of his pioneering work in the field. He died in 1981 after completing the draft of a chapter for the present volume in which he summarises his personal views of the most significant problems of the field. This chapter (completed by his colleague, William van der Woude) opens the volume. There follows a useful 'Introduction to Photomorphogenesis for the General Reader' by the editors. Then come two rather opaque chapters on 'Action Spectroscopy of Photoreversible Pigment Systems' (Schafer, Fukshansky and Shropshire) and 'Models in Photomorphogenesis' (Fukshansky and Schafer). The properties of the photoreceptors themselves are then dealt with in a series of articles by W. O. Smith (Phytochrome as a Molecule), Rudiger and Scheer (Chromophores in Photomorphogenesis) and Pratt (Assay of Photomorphogenic Photoreceptors). I found each of these chapters to be models of their kind, exemplary in clarity even for the non-specialist reader but detailed enough to be invaluable also to the specialist.

With the next chapters the volume moves from photoperception towards photomorphogenesis itself with chapters from Quail (a perceptive analysis of the ever-increasing number of phenomena subject to 'rapid' control by phytochrome) and from Lamb and Lawton, who balance nicely critical discussion with comprehensive bibliography in dealing with the controversial subject of photocontrol of gene expression. The photocontrol of organelle and plastid development is dealt with in chap-

ters from Schopfer and Apel, Virgin and Egneus, Schwartzbach and Schiff, and Kasemir. For some reason not immediately obvious the latter's chapter on photocontrol of chlorophyll accumulation is included amongst 'Selected Further Topics' whereas the more esoteric subject of 'Plastogenesis in *Euglena*' is to be found in the main body of the text, one of several similarly strange editorial decisions.

The first part of the volume (bound but not sold separately) continues with a comprehensive chapter on control of cell growth by light (Gaba and Black), an analysis by De Greef and Fredericq of the intractable problems concerning the involvement of plant growth substances in photomorphogenesis and the relationship between them and the photoreceptor pigments, finally a pleasantly comprehensible review of the photocontrol of seed germination (Frankland and Taylorson).

The second part opens with an authoritative treatment of 'Photomorphogenesis and Flowering' (Vince-Prue). Phytochrome action in light-grown plants is allocated two chapters, not enough for its importance but probably a fair reflection of our present knowledge. The content of H. Smith's chapter (The Function of Phytochrome in Nature) will need no introduction to anyone in the field. A complementary chapter on 'Phytochrome in Light-Grown Plants' (Jabben and Holmes) is unaccountably relegated to the 'Selected Further Topics' section. Similarly the topics of 'Photomorphogenesis in Marine Macroalgae' (Dring and Luning) and 'Photomorphogenesis in Ferns' (Furuya) are to be found in the main body of the text, photocontrol of fungal development (Gressel and Rau) is not! Other chapters included in the final section include 'Photocontrol of Anthocyanin Synthesis' (Mancinelli), 'Developmental Significance of Light-mediated Electrical Responses' (Racusen and Galston), 'Blue-Light Effects in Phytochrome-Mediated Responses' (Schafer and Haupt) and 'UV Radiation in Photomorphogenesis' (Wellmann).

Obviously, not all the chapters are equally informative, nor comprehensive, nor uniformly well written, but overall a remarkably high standard prevails. The volume is essential for libraries of course, containing as it does a genuinely encyclopaedic survey of most of the literature of photomorphogenesis up to the end of 1981, occasionally beyond that. Could it be that the authors whose chapters contain the most recent references (I shall not name them) are responsible for the rather lengthy publication time?

Department of Botany,
University of Reading

C B JOHNSON