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BOOK REVIEWS

Physiological Plant Ecology III: edited by O. L. LANGE, P. S. NOBEL, C. B. OSMOND and H. ZIEGLER. Encyclopedia of Plant Physiology New Series, Volume 12c, Springer, Berlin, 1983. 799 pp. DM 298 (*ca* £80).

This third volume of four on physiological plant ecology is subtitled 'Responses to the Chemical and Biological Environment'. It covers an area of ecology with which I am particularly familiar and my overall response may be unfairly critical. Generally speaking, I found it, like the curate's egg, good in parts but it did not produce for me the special impact that I would have expected from the line up of distinguished contributors. Perhaps the field is too diffuse anyway or perhaps some authors have written too many times on similar themes and find it difficult to produce new things to say or new ways of saying them. For example, I found Professor Woolhouse's contribution on toxicity and tolerance in the response of plants to metals disappointing and below his usual highly scintillating form. Nevertheless, this is an extensive, thoroughly-referenced review in which he considers almost every possible type of metal contamination or stress that plants may suffer.

One of the highlights for me is the chapter by S. Vogel on Ecophysiology of Zoophilic pollination, which includes some fascinating new examples of bizarre pollination mechanisms. Dr. Vogel writes in a curious germanic English which the editors should surely have revised, although fortunately his meaning is usually perfectly clear. The sentence "zoophilic pollen is selectively directed to its target by animal intercourse from flower to flower" is not exactly the way that an Englishman would put it, unless he were referring specifically to pseudocopulation of orchids by bees and other insects!

There are some other very good things in this volume. U. Lüttge has written a useful and interesting account of the ecophysiology of carnivorous plants, while D. H. Janzen and S. J. McNaughton dwell on different aspects of animals feeding on plants. Other topics covered include plant–plant interactions and various host–parasite relationships and there are well-conceived chapters on osmoregulation, plant halophytes and the halophilic bacteria. As always, the production is excellent and there are three extensive indexes. This volume must be an essential purchase for any well stocked plant science library.

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Protoplasts 1983: edited by I. POTRYKUS and five colleagues. Experientia Supplementum No. 45, Birkhauser-Verlag, Basle, 1983. 366 pp. 122 Sw fr.

This is something of a new venture in the publication of symposia proceedings, since it is based entirely on the posters presented at an international gathering on protoplast research held in Basle in August 1983. Normally, poster sessions are regarded as informal parts of the meeting, the presentation of a poster providing an opportunity to develop discussion with like-minded colleagues or to show some new results not yet ready for proper publication. It is not clear here whether publication has inhibited or otherwise the contributors to this poster session. To an outsider at least, this considerable collection of no less than 158 posters does provide a birdseye view of current research on plant and microbial protoplasts.

What is in fact provided for each poster is a single page reproduction, photo-reduced from the original, with a snap of the senior author, an abstract and various diagrams, micrographs, schemes and tables. In addition, each author was asked to provide a page of text, which is reproduced facing the poster. The advantage of this system is that conciseness and simple statements are at a premium, the authors having been forced to summarise their findings within the limited space provided.

The contributions are presented in a logical sequence beginning with plant protoplast culture and hybridisation, continuing with clonal variation, physiology and cytology and concluding with a section on microbial protoplasts. There is some chemistry, since biochemical markers are sometimes needed to assess the degree of somatic hybridisation taking place between related species. Thus plants regenerated from protoplast fusion between *Petunia hybrida* and *Lycopersicon peruvianum* were shown in one poster to contain a new large subunit of RuBP carboxylase not present in either parent plant. In another, the study of DNA–DNA hybridisation was utilised to show that two interspecific somatic hybrids in *Datura* lacked the plastids of one of the parental species. Additionally, protoplasts have been employed in plant biochemical studies and some examples are included in these pages.