

## BOOK REVIEWS

**Encyclopedia of Plant Physiology, Vol. 7, Physiology of Movements:** edited by W. HAUPT and M. E. FEINLEIB. Springer, Berlin, 1979. 731 pp. \$108.90.

Whereas in the first edition of this series, the volumes on plant movements represented a comprehensive coverage of published work in this research area, the editors of the present volume have set out to emphasise those aspects of the research where substantial progress has been made. They acknowledge that in this respect the overall coverage is not as complete as before. In a way this incomplete coverage is a great pity since it detracts from the original encyclopaedic nature of this famous series but on the other hand, it is understandable and realistic in the light of the vastly increased amount of information now available.

As any good review volume should do, it raises a wealth of important, unanswered questions. Inevitably, most of these questions are posed in physiological terms but to the plant biochemist they also highlight the many areas of biochemical ignorance that exist with respect to the cellular mechanisms involved in plant movements. One contributing author to this multi-author volume observes that the literature of plant movement is replete with fruitless, or even misleading, discussions of terminology and although on the whole such preoccupation with semantics has not been allowed to obscure the clarity of the present volume for the non-specialist, there are one or two sections where this does tend to occur.

The strategy of the volume begins with the 'perception' and 'reception' of stimuli and passes, through discussion

of endogenous rhythms in the movements of plants, to intracellular movements as such. The role of microtubules and the involvement of actomyosin are considered, followed by discussion of cytoplasmic streaming and the migration of chloroplasts and nuclei. Locomotion in microbial plants is covered by sections on flagella, cilia, chemotaxis and the now classical story of movement in the slime molds. Other aspects of plant movements reviewed within this volume include the movements of leaves, tendrils and stomata, growth movements and those associated with light and gravity. Circumnutation and epinasty are also included in the survey.

Like its forerunners, the volume is beautifully produced and the diagrams and plates are excellent. The book will undoubtedly be of great value to specialists in the field of plant physiology but it is also the sort of volume into which plant biochemists will profitably and pleasurably browse even if made uncomfortably aware of vast tracts of cellular chemistry as yet unexplored and uncharted. There is not a single chemical structure to be seen affording reassurance to the phytochemist. This observation is not intended as a criticism but merely as an indication that phytochemists will find little impulse or need to add this expensive volume to their personal libraries. Like the reviewer, however, they may well enjoy dipping into a copy, even if borrowed.

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Phytochemistry, 1980, Vol. 19, p. 1569. Pergamon Press Ltd. Printed in England.

**Transport in Plants:** by U. LÜTTGE and N. HIGINBOTHAM. Springer, New York, 1979. 468 pp. DM 58 (ca £16).

This book originated as an English translation of 'Stofftransport der Pflanzen' (1973), by Lüttge. In their preface the authors tell us that after the literal translation had been made the many advances in the field prompted extensive revisions and additions to the text. The result is a well written, authoritative account of knowledge in this field by two of its leading workers. There are 13 chapters consisting of an Introduction and 12 chapters organised into four sections. The sections deal with: the biophysical background, transport in cells, regulation and control, intercellular and inter-organ transport. There is a progression from simple to more complex transport systems and, in general, from more primitive organisms to those having a greater division of labour.

The strength of the book is that it covers the subject matter of the first three volumes of the recent *Encyclopedia of Plant Physiology* (Springer, 1976) much more succinctly and in some places more comprehensively. For example, the treatment of transport across the root in Chapter 12 is excellent, being the clearest and fullest account of this problem that I have read. The biophysical basis of transport dealt with in Chapter 2 is also very well

done although the questions and answers at the end seem inappropriate for such an advanced text.

If the book has a weakness it is that in covering so much ground in only 369 pages of text the depth of the treatment is rather variable. This the authors admit. They say that they have tried to strike a balance between the style of a textbook giving representative treatment of selected problems and that of a comprehensive reference book. There is a danger in this approach of falling between two stools. They have come close to this in their treatment of sieve tube translocation. They have considered it as a special case of symplasmic transport. This is an interesting approach but the coverage is thin and fails to reflect the attention this topic has received from researchers over the last 20 years.

However, where it succeeds is in the coverage of the research interests of the authors and there it succeeds very well. I suspect that it will remain the standard text on this subject and a valuable source of information and ideas for the rest of the decade. It is well illustrated and free of typographical errors. There are over 1200 references.

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