Theory and practice of micrometeorology

Vegetation and the Atmosphere. Edited by J. L. Monteith. Vol. 1: Principles. Pp. xx+287. £10. Vol. 2: Case Studies. Pp. xix+439. £15. (Academic: London and New York, June 1976.)

THIS book attempts to give an up-to-the-minute account of the theory (volume one) and practice (volume two) of micrometeorology with special emphasis on its application to problems in plant ecology. On the whole it succeeds admirably.

I was disappointed with volume one. Although all the articles were individually very good, there was a lack of correlation between them. If the purpose of the introductory chapter, (Micrometeorology and ecology) was to encourage ecologists to use micrometeorology, then it would confuse rather than enlighten. It is unrealistic to expect the interested reader to appreciate the sections by Ross (Radiative transfer and plant communities) and Thom (Momentum mass and heat exchange of plant communities) without a general introduction on micro-

meteorology. Ross in the opening paragraphs suggests that up to 28% of total solar radiation may be stored in photosynthetic products. Are Russian plants more efficient?

Chamberlain's article (Movement of particles in plant communities) is interesting but doesn't fit in with the general theme; I also felt there was a need for another chapter on "What, where and how many measurements should be made", before Szeicz's paper on instruments.

Volume two should find a place on the bookshelves of all micrometeorologists, crop physiologists and ecologists. It is a very useful collection of articles on the micrometeorology of various crops; temperate cereals, maize, rice, sugar beet, potatoes, sunflower, cotton, pasture grass, and citrus orchards; and natural communities: coniferous, deciduous and tropical forests, swamp, grassland and tundra. Although the treatment varies from author to author, the editor has imposed a common set of symbols, which is of great assistance to the reader. The contributors to the second volume have, in many cases, included their own theory sections, although this has been adequately covered in the first volume (even a table is duplicated; p39 and

p41, respectively). I would recommend the newcomer to the subject to read the second volume first. He will gain a basic understanding of the subject, its limitations and its applicability; he would then be prepared for the detailed theory of volume one.

The tabular index of volume two is useful, but as it requires a good knowledge of the subject it should have been complemented by a general index. The index in volume one is not comprehensive—for example, Momentum flux, which merits a chapter sub-heading, is omitted; and Respiration, which occurs several times, is only listed once.

Despite its faults, *Vegetation and the Atmosphere* is a most useful contribution to the subject. It is a landmark in micrometeorology for the methods to have become well enough established and sufficiently used to justify a work of this size.

Professor Monteith is to be congratulated both for editing the volumes and introducing the common symbols table which could usefully be adopted by all other workers in this subject.

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Chalones not proven

Chalones. Edited by John C. Houck. Pp. xiii+510. (North-Holland: Amsterdam and Oxford; American Elsevier: New York, 1976.) Dfl. 165; \$63.50.

CHALONES have been proposed as diffusible messenger molecules responsible for a negative feedback mechanism controlling cell division. They are, it is claimed, tissue specific but not species specific. Experiments designed to show that tissue extracts contain such inhibitors of cell division have provided controversy for over a decade, principally because of the technical problems associated with the assay of partially purified crude tissue extracts. The preparations themselves must not be inherently cytotoxic, nor contaminated with bacterial products producing cytotoxic or cystostatic effects. *In vitro* assays based on the incorporation of radiolabelled thymidine, although they can measure decreases in mitosis, could also indicate alterations in thymidine metabolism unrelated to cell replication. As a further complication, *in vivo* studies could involve the immunological ramifications of injecting foreign substances.

The majority of the chapters in this book, including several by the editor and his colleagues, are reviews of the current state of research on chalones

in particular tissues. In some of these, but not all, the assay problems outlined above have been carefully considered. The remaining chapters contain more general information, and cover such topics as the control of cell division, the assay of proliferation inhibitors and the history of chalones, this last a comprehensive and entertaining review by O. H. Iverson. *Chalones* is therefore a *pot-pourri* both in the selection of contents and the views expressed, which range from the speculative and optimistic to the factual and cautious. Although the workers whose views are recorded in the book cannot be faulted for their lack of enthusiasm, they, like many others working on tissue extracts, have still failed to come to grips with the formidable problems of biochemical isolation. As the editor points out in his introductory chapter, in 1970 "most biomedical scientists felt that if a name were granted to a functional material, then that material should be . . . isolated, reasonably purified, and certainly characterised as far as to its composition". This book records the points in the case for chalones. There is some progress, but in the circumstances the only judgement yet possible is "not proven".

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