Meteorology for Biologists

Weather and Life. An Introduction to Biometeorology. WILLIAM P. LOWRY. Academic Press, New York, 1969. xiv + 306 pp., illus. $5.95.

Potential readers of this book will be better guided if they heed the subtitle rather than the title, for the author in fact follows the conventional approach of a meteorologist addressing himself to biological problems. Weather, as the net effect of numerous and variable meteorological factors, is dealt with only by implication; individual factors, by contrast, are treated in some detail. The individual factors that are stressed are those that contribute to the energy balance; integration, one with another, is in terms of this concept. Important though the energy balance is in dealing with biometeorological relationships, it is hardly synonymous in most minds with weather.

As a presentation of the way in which the selected meteorological factors contribute to the energy balance of living organisms and their immediate environment, this book represents a worthy effort by a meteorologist to communicate with his biological counterparts. But it is still on his own terms. The biologist will need to make a matching effort at understanding the physical approach and at translating its input into biologically significant terms. With a somewhat different style this task could have been made easier.

The treatment is sound, but tends to the pedantic; an occasional happy phrase or illustration does not entirely offset a generally heavy approach. Nevertheless, until such time as a more felicitous text emerges, this volume provides a very necessary and timely exposition of the significance of environmental energetics for the living organism. Radiation, temperature, moisture, and air movement are discussed in physical detail, replete with equations, in the first two sections. With these matters expounded, the third section deals with the impact of the energetic states upon plants, animals, man, and their immediate surroundings, in terms that will be more appealing to the biologist concerned with the ultimate outcome for productivity and for human welfare. The book concludes with a discussion of meteorological factors in city and air pollution problems.

This volume should be very useful for those who are involved in studies under the International Biological Program, and as a text for meteorologists, already familiar with the physical approach, who are seeking application to biological problems. But it will require supplementation by others who can match it with equal biological sophistication.

To a certain extent the book reflects the unfortunate fact that biometeorology has not yet fully forged the desirable link between its component disciplines. There are still too few biologists sufficiently versed in meteorological concepts and too few meteorologists who know biology. While this is less true at the agricultural end of the spectrum, it is patently so at the human end. In the meantime, much of the relationship between health and climate is left to the mercy of treatments that are little more than descriptive associations and carry analysis only to shallow depths.

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Diptera

The Flies of Western North America. FRANK R. COLE, with the collaboration of Evert I. Schlinger. University of California Press, Berkeley, 1969. xiv + 694 pp., illus. $25.

Cole aimed to produce a "general guide to the study of western flies." He systematically treats the families, genera, and species (about 8000) of Diptera known from the United States and Canada west of 104° West and from Baja California. Recognition of adults, natural history, and distribution are emphasized; supporting sections include a discussion of the external anatomy of the adult fly (basically a good condensation of Crampton's 1942 work), a glossary, and a "selected bibliography." Keys to the adults of the genera, but not species, are provided. Much space is allotted to enumerating the species and their distributions, but comparatively little and often no space to recognition notes; consequently specialized literature will still be essential for recognition of most of the species.

This book originated as an expansion of Cole and Lovett's 1921 list of Oregon flies. For over 40 years Cole compiled and condensed descriptive and biological data from the literature and from his own observations, modified and improved keys, selected and prepared figures (his own illustrations of whole flies are perhaps the best feature of the book), and repeatedly revised sections of the manuscript. The preface states that the literature was catalogued "through 1957" and that an attempt was made "to keep in line with recent findings in the 1965 Catalog" of American flies north of Mexico. Actually, the bibliography includes 61 entries for 1958–1962 and two for 1963, and the classification often differs from that of the 1965 catalog.

The long period of preparation, the difficulties in coordinating data from numerous and often conflicting sources, and no doubt other factors have resulted in many errors. For example, *Boletina* and some other sciophiline genera trace to Sciophilinae in the key on page 117 (if the exits of couplet 8 are reversed) but are included in the key to mycetophiline genera on page 121 because Cole used different classifications on the two pages. The many muscoid flies lacking setae on the "hypopleura" cannot be traced through couplet 47 on page 43. The account of sciomyzid biology seems to imply that little has been done on American species; the extensive work by Berg and his students is not mentioned.

Cole has produced a useful general guide to the study of western flies, but it should be used with regard for its shortcomings.

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Immunity and Heredity

Immunogenetics. W. H. HILDEMANN. Holden-Day, San Francisco, 1970. x + 262 pp., illus. $13.95.

Immunogenetics of Tissue Transplantation. ALENA LENGEROVÁ. North-Holland, Amsterdam; Interscience (Wiley), New York, 1969. xvi + 272 pp., illus. $17.50. Frontiers of Biology, vol. 16.

Although the hybrid specialty of immunogenetics began very shortly after the refounding of genetics at the beginning of the century, it is only relatively recently that it has emerged as a major discipline—one that is intimately re-

lated to many of the most pressing biomedical problems we are currently faced with, from the utilization of spare parts and aging to overpopulation. It is therefore not surprising that two books have recently been devoted to this subject.

One of these (*Immunogenetics*) is intended as a general introductory text on all aspects of the field (including the inheritance of immune response capacities, serum allotypes, and various genetic aspects of tissue transplantation) for advanced undergraduate, graduate, and medical students; the other (*Immunogenetics of Tissue Transplantation*) is a more specialized account of one of the major areas of immunogenetic investigations. Both books are based on graduate courses which the authors have given.

Writing a general text about a subject as specialized as immunogenetics is a much more formidable challenge than writing one on a subspeciality of this field, and because of this it is not surprising that Lengerová's book fulfills its mission better than Hildemann's. Indeed, in many ways Lengerová's text, because it is able to deal with its subject at length, serves as a better introduction to the field. Thus, in spite of the facts that a few erroneous and contradictory statements are made in the course of the book and that the edition contains numerous misspelled words and some sentences that as a consequence of word omissions are incomprehensible, it covers the subject of the genetics of tissue transplantation remarkably well. If any criticism can be levelled at this effort it is that inasmuch as Lengerová has written such a masterly account of her subject—namely, the genetics of tissue transplantation as related almost exclusively to mice—it is too bad no attention is given to the immunogenetics of tissue transplantation in man. Such an inclusion would have increased the appeal of her efforts enormously, especially since there is now abundant evidence to suggest that mammals, in general, have very similar histocompatibility systems.

While one cannot help being impressed with the scope and depth of Hildemann's knowledge of and contributions to the field he is writing about, his treatment will probably be found too advanced for the beginner and not satisfying to the expert because it is not documented with references. Indeed, the book leans more toward being a comprehensive review of immunogenetics (sans references) than an introductory textbook. This is especially the case since superficial attention is devoted to many investigations some of the findings of which have yet to be confirmed and which therefore may be more confusing than illuminating to the uninitiated. One attractive feature of the book is that at the end of every chapter there is a bibliography, the contents of each entry of which are briefly described. Moreover, it does supplement the Lengerová text remarkably well in that it presents a very good account of the genetics of tissue transplantation in man. This book, in sharp contrast with the Lengerová text, is also adequately indexed.

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Multiple Sclerosis

Pathogenesis and Etiology of Demyelinating Diseases. A symposium, Locarno, Switzerland, May–June 1967. KRYSTINA BURDZY and P. KALLOS, Eds. Karger, Basel, 1969 (U.S. distributor, Phiebig, White Plains, N.Y.). xii + 704 pp., illus. $34.80. Supplement to International Archives of Allergy and Applied Immunology, vol. 36.

The etiology of multiple sclerosis is one of the most fascinating and important enigmas in medicine. This symposium concentrated almost exclusively on the virological and immunological theories. Despite this restriction, the 52 contributions include a bewildering variety of studies. This is not detrimental, however. On a subject as difficult and frustrating as the demyelinating diseases, it would be unreasonable to expect uniformity, logical sequence, or any other tidy quality. Indeed, I could not escape a feeling of excitement over the plethora of viral techniques, studies, and proposals which are exposed in these reports and discussions. Admittedly, much space is devoted to diseases that are unrelated to multiple sclerosis and are not in themselves demyelinating, but this also must be expected. Because of the breadth of subject matter and the forays into remote territories, this volume is not likely to become a widely quoted "milestone" book like the 1957 Bethesda conference on allergic encephalomyelitis or the 1964 New York Academy of Science symposium on demyelinating diseases. But these same features should make it interesting to a fairly wide variety of scientists. There is an abundance of useful speculation, both in the reports and in the discussions. The discussions are lively and easily comprehended, and the reader cannot fail to be stimulated by them.

In addition to direct viral invasion of the brain and immunologic reactions directed against viral or associated viral-host antigens, considerable space is devoted to encephalitogenic components of the nervous system and their role in elicitation of allergic inflammation. Classical morphology, electron microscopy, tissue culture, epidemiology, and other disciplines are represented.

A few faults must be mentioned. A number of immunological and morphological papers are divorced from others of their type and included in a potpourri group under a heading referring to virology. A few papers are so completely remote from the subject as to be out of place. Papers have been discussed in groups, with discussions printed at the end of the group. Therefore contribution and comments are often separated, and one must hunt for the location of pertinent discussion. In view of the special value of the discussions, this feature is particularly unfortunate. There seems to have been little effort to eliminate duplication or achieve cross-referencing and correlation, which in a book of this size would have been helpful.

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Endocrinology

Recent Progress in Hormone Research. Vol. 25. Proceedings of the Laurentian Hormone Conference, Mont Tremblant, Quebec, Aug. 1968. E. B. ASTWOOD, Ed. Academic Press, New York, 1969. viii + 696 pp., illus. $32.50.

This volume lives up to the high standards set by its predecessors in this series by providing thorough, up-to-date reviews of a potpourri of topics of interest to endocrinologists. The 14 diversified chapters can be grouped into several broad categories: familiar themes viewed in a new light (systems