BOOK REVIEWS

THE ECOLOGY OF AQUATIC INSECTS. Edited by Vincent H. Resh and David M. Rosenberg. 1984. Praeger Publishers, 521 Fifth Avenue, New York, NY, 10175. 638 pp. $35.00.

The two main goals of this book, as stated in the preface, were to present a contemporary overview of aquatic insect ecology and to highlight research needs within the most promising avenues. The first of these goals was met very well within the broad range of topics covered in this book. The second goal was a difficult task but was met with excellent suggestions in most chapters.

The interest in lotic biology has grown dramatically over the last decade. This book deals with aquatic insects of streams, rivers, and lakes with minor references to other aquatic arthropods. It is beneficial to read accounts of both lentic and lotic habitats in one source. The major groups of insects cited are Ephemeroptera, Plecoptera, Trichoptera, Odonata, and Coleoptera. Minor references to Hemiptera, Megaloptera and Neuroptera are included. The primary references to Diptera are Chironomidae, Tipulidae, and Simuliidae with some mention of Culicidae, Chaoboridae, and Ceratopogonidae.

Regardless of which group of insects one is studying, this book has a great deal to offer. Topics include how to obtain information on and factors affecting life histories; trophic aspects such as primary consumers, predation, and secondary productivity; physical factors such as hydrology, substratum, and the hyporheic zone; colonization of aquatic habitats and insects of extreme habitats; design of experiments and hypotheses; and response to pollution and management of the aquatic insect habitat.

The chapters on life histories provide a wealth of suggestions for future research. Current knowledge is well delineated and the terminology is clearly defined. The chapters on trophic concerns are excellent in their analysis of current knowledge of feeding mechanisms, nutrient cycling, predator-prey behavior, and fish predation behavior. Methods of secondary production such as Actual Cohort (Allen curve, Removal-summation, increment-summation and instantaneous growth), P/$\bar{B}$ utilizing the Cohort Production Interval (CPI) and the Size-Frequency are compared.

The editors are to be commended on the range of topics included in this book. For instance, researchers should find the chapters on hydrology, substratum, and the hyporheic zone a good resource for methods, terminology, basic information, and current references. Also, the chapter on small and large aquatic habitats is informative for terminology and methods of sampling (i.e. this chapter has some good references to the Culicidae). Furthermore, management of aquatic insect habitats is an area this reviewer has not seen in the literature and this chapter provides numerous thought provoking ideas that should be considered. The last chapter on aquatic insects and mankind seems a light note on which to end the book. It provides a potpourri of different interactions of man and insect.

The chapter on colonization includes mathematical models and suggestions for study. The hypothesis testing chapter discusses hypothesis formulation, transformations, and sample size determination. This is only an introduction and as the writer indicates, one also needs Elliott (1977) and Green (1979). The chapter on responses of aquatic insects to environmental pollution brings one up to date on the current knowledge of the effects of sediments, temperature, heavy metals, oil, and acidification. This reviewer found the outline of the phases of acidification especially instructive.

References appear at the end of each chapter and should be an invaluable resource. An author, subject, and taxonomic index is also included in the book. Only a few typographical errors appeared along with several type blurs and smudges in the text. Reference to more of the minor Diptera groups, some of which are marginally aquatic, would be an improvement. Some research areas and researchers have been omitted, but in general, the authors have included a reasonable review of the literature from 1970 to 1983. Many authors included earlier classic papers.

This book should be required reading for all graduate students in aquatic entomology. All involved with this book certainly further the cause of research with aquatic insects.—E. C. Masteller, Division of Science, Engineering and Technology, The Behrend College, The Pennsylvania State University, Erie, PA 16563.

MALARIOLOGY WITH SPECIAL REFERENCE TO MALAYA (Second edition). By A. A. Sandosham and Vijayamma Thomas. 1983. Singapore University Press, Kent Ridge, Singapore 0511. xxvi + 382 p. Price, Singapore $30.00 (approximately US $15.00).

This volume represents a revised version of Sandosham's 1959 volume of the same title. The contents are essentially the same in both volumes despite the passage of 24 years. A page-by-page comparison indicates that approximately 70–75% of the material has been reprinted verbatim. In the preface, Dr. Sandosham mentions that the nomenclature and bionomics of the anophelines has been updated; information has been added on malaria control programs, the physiology, ultrastructure and *in vitro* cultivation of parasites and the malaria parasites of nonhuman primates in Malaysia. The black and white plates for the identification of malarial parasites in blood films have been replaced by color plates.

The chapter headings provide a good overview of the book: Introduction, Some basic biological information, Natural history of malaria, Natural history of anophelines, Malaria surveys, Control and eradication. These are followed by six appendices (Microscopical, Haematologic and Entomologic techniques, Aids to the identification of malarial parasites, Keys to the common anopheline mosquitoes (larvae and adult females) and Malaria of non-human primates) plus a glossary and index.

In general, the material on parasitology tends to be more up-to-date than the portions concerning entomology. As an example, on p. 112 it is stated that the genus *Anopheles* is divided into four subgenera; this is contrary to the six currently recognized. Fortunately, the classification of John Reid is adopted with the modifications of B. A. Harrison and J. E. Scanlon; so for the most part, the nomenclature of vectors is current. Since changes were not made in the morphological terminology used in the keys and descriptions, another generation of students will be exposed to an outmoded system for naming structures. The outline figures for the identification of anopheline larvae are of such poor quality that they cannot be used to identify the species. It is hoped that the publisher will replace these in a subsequent printing or include reprinted pages with future copies. The portions on insecticides and repellents do not appear to show any change from the last edition.

The book is attractively bound with a hard paper cover and printed on a good quality of paper. As the color plates of the malarial parasites and black and white plates of adult mosquitoes were reproduced from the first edition, the rendition is not quite as crisp as might be desired. Despite what has been said, this will still be a very useful reference for students and workers in Malaysia and adjacent areas.—R. A. Ward, Department of Entomology, Walter Reed Army Institute of Research, Washington, D.C. 20307.

BUGS, FOLKS, AND FUN, by Samuel Breeland. 1984. Published by the author, 7842 Playa Del Rey Ct., Jacksonville, FL 32216. 93 pp. $5.00.

Entomologists say to each other, "We'll never be millionaires, but we have a lot of fun." Breeland's little book, subtitled "The fun and humor of a career in entomology," reinforces this philosophy. He has assembled a large number of humorous stories during his 35-year career which began, after his graduation from the University of Georgia, at the Emory University Field Station or Newton Field Station where malaria investigations were supported by the U. S. Public Health Service. Subsequently, his professional work took place at the University of Tennessee, in the Panama Canal Zone, in Alabama with the TVA, in El Salvador, in Atlanta at CDC headquarters, and in Florida where he was formerly an administrator with the Florida Health Services. Most of the time the author was engaged in mosquito and malaria control and research. For the layman he explains briefly some of his entomological activities such as water management procedures on TVA reservoirs, studies of installment hatching of *Aedes* eggs, ULV treatments, and the use of the sterile male technique; but for the most part, there is little entomology. Many readers will enjoy Breeland's reminiscences and will recognize some of the characters who are not named or who are identified only by a first name. A few participants in various adventures are fully identified.

Readers who lack a sense of humor will find this book boring. This reviewer appreciated all the anecdotes and sometimes doubled up with laughter. Here is an example of the type of tale the author tells: ". . . a young girl has applied for a clerical job with the TVA, and on the employment application regarding her sex, she wrote, 'Once, in Moulton.' Moulton is a little town in north Alabama . . ."

There are a few minor errors, and in the spirit of nit-picking, the reviewer reminds the author that that famous train, *The Tennessean*, pulled into New York's Pennsylvania Station, not the Grand Central. The author has refreshingly related many human interest stories without derision. It is to be hoped that other entomologists will follow Sam Breeland's example in recording interesting experiences.—W. E. Bickley, 6516 40th Avenue, University Park, MD 20782.

THE MOSQUITOES OF BRITISH COLUMBIA. Peter Belton. British Columbia Provincial Museum Handbook 41. 189 pp. 1983. Available from Publications, British Columbia Provincial Museum, Victoria, British Columbia V8V 1X4, Canada. $5.00 (Canadian).

This is the type of mosquito booklet that we seldom see today. It is written, not for the professional entomologist, but for those who are interested in the biology and wish to be able to identify the British Columbia mosquito fauna. It is not a highly technical work, but with careful study, anyone will be able to identify most of the larvae and female mosquitoes of the area. A good discussion of the life zones found in British Columbia explains why this province has a rich mosquito fauna.

There is an excellent introduction which covers biology, management, collecting and preserving and how to use the keys. In British Columbia there are only five genera of mosquitoes: *Anopheles, Aedes, Coquillettidia, Culex* and *Culiseta*. Easily workable keys to adult females and fourth instar larvae plus descriptions of species are given. In addition there are good line drawings to aid in the identification of the larvae. There is a good glossary and an excellent list of references.

The book is limited to British Columbia which has a rich mosquito fauna. However, it should be carefully studied by anyone who is considering writing a work on the mosquitoes of a specific area. Peter Belton has produced a work that should be in the library of anyone who is interested in northern mosquitoes.—William F. Rapp, 430 Ivy Avenue, Crete, NE 68333.

SCANNING ELECTRON MICROSCOPY OF MEDICALLY IMPORTANT ARTHROPODS, by Viqar Zaman. 1983. Maruzen Asia Pte. Ltd., Singapore. 175 pp. $60.00.

This aesthetically pleasing book, a collection of scanning electron micrographs and associated legends, is designed to give both students and professionals a three-dimensional visualization of the external anatomy of some medically important arthropods. The book is divided into 14 chapters containing micrographs of the adults and immature stages of selected species belonging to various families of Diptera, Siphonaptera, Anoplura, Hemiptera and Acarina. Each chapter begins with a short synopsis of the group (two paragraphs in most cases) which in-