

BOOK REVIEWS

INTEGRATED MOSQUITO CONTROL METHODOLOGIES
Volume 1, edited by M. Laird and J. W. Miles.
Academic Press (London). 1983. 388 pp. US\$56.00,
34 British pounds.

As stated in the Preface, this book is the first of two volumes and is subtitled "Volume 1. Experience and components from conventional chemical control." The promised second volume will deal with "innovative" approaches to mosquito control. The editors state (p. x) that they "consider *integrated mosquito control methodologies* as comprising chemical, biological and environmental procedures used conjointly or sequentially against the background of an exhaustive ecological understanding of the selected target pest or vector so as to maximize efficacy, and be fully acceptable from health and environmental standpoints." Therefore, it is strange that the two volumes divide the subject into chemical and so-called "innovative" approaches.

Volume 1 is comprised of 15 chapters each by different authors with the usual unevenness that is common in edited works. There is an appendix presenting the WHO program for evaluating and testing new insecticides. A 2-page glossary of abbreviations includes a miscellaneous list, the rationale for which is hard to discern. One interesting one is IPM = *Insect Pest Management* which even one of the editors (Laird) uses properly in the Introduction (p. 2) as *Integrated Pest Management*. Laird, however, uses the term in stating that he thinks IPM is "inapplicable" to medical and veterinary entomology primarily because an extremely high level (99%) control is claimed to be needed. There have been contrary views and examples of the management approach in medical and veterinary entomology, however, but those are not presented. Some of the chapters by contributors to this book discuss programs comprising management methods and include the hope that the mosquito control programs put in place will continue to *maintain* a respectable, although less than desired, level of mosquito control (for example 80% in Rangoon—Chapter 11).

The brief history of mosquito control in the Introduction (Laird) is pleasant reading. Chapter 1 (Akesson) on principles of insecticide dispersal is quite detailed but surprisingly has only 7 references among which is *not* the recent bulletin issued by the AMCA (and authored by Akesson!). Chapter 2 (Pant) on space sprays is a concise summary with a "modest" list of references. Chapter 3 (Fontaine) on residual insecticides is quite detailed and with an extensive list of references. It is surprising, in view of the book title, that there is no chapter on using insecticides as larvicides.

Chapter 4 (Luh and Zhu) presents a very informative discussion on mosquito control in the People's Republic of China. Chapter 5 (Kurihara) reviews mosquito control in Japan (except Hokkaido which is discussed in Chapter 6 (Hatori)). A review of chemical control in the southwest Pacific region is given in Chapter 7 (Sweeney).

Chapter 8 is the most comprehensive one being a review of mosquito resistance to insecticides by A. W.

A. Brown. It is thorough, well written, and documented with 11 pages of references! It easily can be considered the most valuable chapter in the book. It is, therefore, a shock to next encounter Chapter 9 (Jukes) on "DDT-retrospective comments." A balanced scientific review of DDT would have been useful but Chapter 9 is not that. The views of "anti-DDT" extremists of yesterday are presented and refuted in an extreme manner even to the extent of implying that there is no such thing as biological magnification of pesticides in a food chain.

The next part of the book is subtitled "Problem Solving Under WHO Leadership" and contains Chapter 10 (Mathis) on larval *Aedes aegypti* control in Bangkok, Chapter 11 (Mathis) on *Culex quinquefasciatus* control in Burma, Chapter 12 (Shaw) on *Anopheles aconitus* control in Indonesia and Chapter 13 (Rishikesh) on field trials of residual insecticides in Nigeria. These chapters bring together facets of the WHO programs in a useful way which helps to show the complexities and problems in organizing and managing mosquito control activities. From these chapters one learns about the scientific approaches while getting a feel for the socio-political and management problems (often by implication and not precisely stated).

The final two chapters deal with problems in commercial development of insecticides for mosquito control using the examples of fenitrothion (Chapter 14, Hattori) and bendiocarb (Chapter 15, Goose). The shortage of new insecticides and the increasing costs of development for the narrow market of mosquito control is a growing concern and threatens the future of integrated mosquito control.

Although the chapters in this book vary greatly in quality and scope, there is a wealth of useful information. It is, however, information on specific aspects of chemical control and not a balanced presentation on the use of chemicals in an integrated approach to mosquito control as one might assume from the title. Libraries should have a copy of this book and the companion volume. As is so often the case these days with edited books, the price of \$56.00 (for volume 1) in relation to the content makes it difficult to recommend for the individual to purchase. The book is hardbound with high quality paper and printing. Why can't books of this type be issued in a lower priced edition on less expensive paper and with soft binding for the individual to purchase?—R. C. Axtell, Department of Entomology, North Carolina State University, Raleigh, NC 27650.

ANNUAL REVIEW OF ENTOMOLOGY. Volume 29, 1984.
Thomas E. Mittler, Editor. Annual Reviews, Inc.
Palo Alto, CA 94306. 521 pp. \$27.00 USA, \$30.00
elsewhere.

In Volume 29 of the Annual Review there are 20 articles dealing with a variety of subjects with some emphasis on ecology and IPM. Of especial interest to readers of *Mosquito News* is a paper by R. A. Wirtz, "Allergic and Toxic Reactions to Non-stinging Ar-

thropods," pp. 47–69. Wirtz emphasizes public health problems and occupational hazards associated with exposure to insects. Entomologists working with mosquitoes sometimes report allergies attributable to wing scales. The cause of the allergic reaction to the bite of *Aedes aegypti* is known to be a high molecular weight protein present in saliva, but the nature of the salivary gland secretions, including antigenic materials is known to differ among species. There is evidence that females of *Ae. stimulans* have an anesthetic in their saliva which reduces the pain of the bite. This review lists 142 references.

A second review in this volume relevant to mosquito control is by Y. S. Balashov and is entitled "Interaction between Blood-sucking Arthropods and their Hosts, and its Influence on Vector Potential" (pp. 137–156, 120 references). The author points out that haematophagous female mosquitoes are free-living, and mosquitoes cannot be considered true parasites. However the mosquito-vertebrate relationship evolutionarily is an ancient one. A good many systems for classifying host-parasite relationships have been proposed. Beklemishev has written extensively on parasitism among insects and acarines. Balashov's generalization that "Host specificity if present [in mosquitoes] is usually ecological in nature" is too broad. Balashov mentions defensive behavior of mosquito hosts but fails to quote Edman. In the review are discussions of nest-burrow bloodsuckers, temporary and permanent ectoparasites, parasitism and vectorial capacity, and coevolution and vector-host adaptive interaction. The author concludes that knowledge of host-parasite relationships between vectors and vertebrates is limited.

This volume lists chapter titles with authors for Volumes 20–29.—W. E. Bickley, 6516 40th Avenue, University Park, MD 20782.

THE BLACKFLIES (DIPTERA: SIMULIIDAE) OF THE PHILIPPINES. Hiroyuki Takaoka. 1983. Japan Society for the Promotion of Science, Tokyo, Japan. 199 pp. \$68.00.

Chance has located the Philippines in the interesting zoogeographical transition zone between the Australasian and Oriental regions. These large islands, isolated and diverse, have been the setting for a rather spectacular speciation in the family Simuliidae, or black flies. Delfinado, in her earlier work, recorded 20 species of black flies, two of which remained unnamed until now. Little else had been done on Philippine simuliids either before or since. The present, essentially taxonomic, work reports on collections of simuliids made over a 6-month period. It is an up-to-date species list for an area of the world where little is known about these important insects.

The most striking feature of this work is its demonstration of the endemicity of the Philippine species—in itself not an unusual finding for large

isolated islands. Dr. Takaoka, following a conservative classification, places all the Philippine species in the genus *Simulium* with 5 subgenera, *Eusimulium*, *Wallacellum*, *Gomphostilbia*, *Morops* and *Simulium*. *Wallacellum* is a new subgenus limited to the Philippines and Ryukyu Islands while the remaining genera are shared with the Oriental and Australasian regions. At the species level the fauna is almost unique in that of the 57 species reported (39 new to science) only one occurs outside of the Philippines. Even the four main islands show marked endemicity with each having an exclusive set of species. In a region of the world where endemism is common (Australia, Papua New Guinea and the Melanesian island groups share this feature), the island-to-island speciation is equally interesting and diversified.

The author has described an avalanche of valid new species based on his type-descriptions. That this group had been inadequately surveyed previously and that the present work consists of only 6 months of collections make it likely that more species remain to be described. Although keys are given to the known stages of all species, the author often remarks that the adults in particular of many species are nearly indistinguishable, a common problem in simuliid taxonomy. In most cases much weight has been placed on pupal characters, particularly the respiratory filaments. These are good, readily observable characters (when intact) and somewhat facilitate the problems of identification. Not all species reported are endemic to specific islands. One species, *S. (S.) ballazare*, is widespread in the Philippines, difficult to differentiate in the adult stage and variable as a larva. Thus like simuliid faunas throughout the world, identification is still difficult and further compounded in that not all life-stages of all the described Philippine species are known.

Although the above problems weaken the reliability of the identification keys to some extent, the keys are otherwise quite good. The characters chosen appear to be straightforward and clearly described. We would have liked to see specific page references once species or genera had been keyed to avoid searching every page to find the appropriate description. The illustrations, drawn by the author for each species, show all important taxonomic features. They are excellent and well-produced as is the book itself. Hardcover, with a colorful map of the Philippines as a dust-jacket and good quality 'easy-read' paper, this book is as valuable outside as it is inside. This may in fact be the only major flaw in this important and timely book, i.e., its price. Appealing to the rather limited audience of medical entomologists in the Philippines and to black fly taxonomists with a world view, this book is expensive at \$68. It's a pity really because Dr. Takaoka's monograph on the black flies of the Philippines deserves a wider audience among biologists.—Joseph Mokry and Murray Colbo, Department of Biology, Memorial University of Newfoundland, St. John's, Newfoundland, Canada. A1C 5S7.