

## BOOK REVIEWS

**A MANUAL FOR DETERMINING SMALL DOSAGE CALCULATIONS OF PESTICIDES AND CONVERSION TABLES**, authored and compiled by John W. Neal, Jr. Entomological Society of America, College Park, Maryland. 1974. 72 pp. \$4.00.

This manual is designed primarily as an aid to those concerned with the screening of pesticides in the laboratory, greenhouse, or small field plot. There is an introductory section followed by a section of 24 pages entitled, "Determining Small Dosages and Foundation Problems." For example, one subject is "Preparation of 1 Gal of Spray Solution to Give Equivalent Dosage Rate in 100 Gal or Less." Another example is "Preparation of Micrograms/Microliter in Serial Dilution." The 2nd section consists of 10 "Conversion Problems," such as how to convert parts per million to percent concentration. The appendix provides 34 tables.

Anyone experimenting with pesticides will find this unique publication invaluable, and it will also be helpful to those who apply pesticides routinely. —W. E. Bickley.

**INSECTS AND OTHER ARTHROPODS OF MEDICAL IMPORTANCE**. Edited by K. G. V. Smith. 1973. Published by the Trustees of the British Museum (Natural History), Cromwell Road, London SW7 5BD, England, 561 pages, 217 figures, 12 plates. \$15.60.

This work replaces "A Handbook for the Identification of Insects of Medical Importance" by John Smart, first issued in 1943. The original book was written largely by Smart himself, adapted from specialist literature, with chapters on fleas by Karl Jordan and on arachnids by R. J. Whittick.

The present book edited by Smith has 19 chapters by outstanding specialists of the Department of Entomology, British Museum of Natural History: on mosquitoes by Peter Mattingly, on black flies by R. W. Crosskey, on Phlebotomidae and Psychodidae by D. J. Lewis, on midges by Paul Freeman, on Tabanidae by Harold Oldroyd, on tsetse flies by W. H. Potts, on Muscidae by A. C. Pont, on fleas by F. G. A. M. Smit, and on arachnids by J. G. Sheals.

Dr. Mattingly's chapter includes keys to females, males, larvae, and pupae of all the genera of mosquitoes in the world, with many excellent line drawings. This is one of the few publications with keys to relatively recently described genera of mosquitoes such as *Udaya* and *Galindomyia*. The section with "Notes on the Keys," pages 85 to 101, includes many most helpful comments on affinities and differences between closely related genera. Thus, for Note 24, he writes, "Some authors recognize *Mansonia* and *Coquillettia* as distinct genera, each with two

subgenera. I prefer to include all four subgenera in the genus *Mansonia*." In Note 64, he adds, "Most New World *Aedes* are distinguished from *Haemagogus* either by the longer and more strongly spiculate antennae, position and branching of the head setae, complete saddle or absence of lateral sclerotizations from the barred area at the base of the ventral brush (fig. 79B) or by a combination of these."

In the chapter on Phlebotomidae, D. J. Lewis calls attention to the fact that American phlebotomid sand flies should be classified as *Lutzomyia*, not *Phlebotomus*, as he has recently pointed out in his 1974 article in the Annual Review of Entomology.

The book is intended primarily for identification and as a stepping stone to the specialist literature. The up-to-date bibliographies at the end of each chapter, with many references to Old World literature, will be most useful to many mosquito control workers who have broad interests in vector control, or who teach courses in medical entomology. This book is highly recommended for parasitologists and general entomologists, as well as medical entomologists. There is a wealth of information, and a collection of high quality illustrations, not seen in many American publications.—Harry D. Pratt, 879 Glen Arden Way NE, Atlanta, Ga. 30306.

**MOSQUITOES OF NORTH AMERICA (NORTH OF MEXICO)**. By Stanley J. Carpenter and Walter J. LaCasse. Published by the University of California Press, Berkeley and Los Angeles, California. California Library Reprint Series Edition, 1974. \$28.50.

When this book appeared in 1955, it replaced the much used, but outdated "Handbook of the Mosquitoes of North America" by Robert Mathe-son.

With detailed descriptions, excellent illustrations and much improved keys to 143 species and subspecies of mosquitoes as well as a comprehensive bibliography of 770 references it soon became the "bible" for North American mosquito workers. Within a relatively short time the supply of copies was exhausted and for several years the book has been out of print. Fortunately, this publication has now been reprinted and is once more available to mosquito workers. The quality of the reprinted edition is generally equal to that of the original edition. I noted only a very slight loss of detail on the reproduction of the adult females.

It is unfortunate that this valuable book could not have been brought up to date because many changes have occurred in our knowledge of the biology, taxonomy and distribution of the mosquito fauna of North America in the past 20

years. Most of these changes are summarized in 3 publications. Carpenter has provided 2 valuable supplements to his book which have updated the literature on the taxonomy, distribution and biometrics of North American mosquitoes from 1955 through 1969 (Review of Recent Literature on Mosquitoes of North America, 1968 and Supplement 1, 1970, California Vector Views 15(8): 71-98 and 17(6):39-65). These two publications list a total of 457 papers for the period reviewed.

R. F. Darsie in his 1973 paper "A Record of Changes in Mosquito Taxonomy in the United States of America 1955-1972" (Mosquito Systematics 5(2):187-193) lists 49 major changes which are pertinent to the area covered by the Carpenter and LaCasse book. They include 12 newly described species and subspecies, 5 known species added to the fauna of the continental United States, 5 species resurrected from synonymy, 5 species placed in synonymy, 3 species deleted from the fauna of the United States and a number of changes in supra-specific, specific and subspecific names.

The 3 articles noted above are included after the Preface in the Reprinted Edition, but none of the information has been added to the text.

A number of additional changes have more recently occurred in the taxonomy and distribution of the mosquito fauna of North America. The most notable change has been the revision of the *Aedes communis* complex by Ellis and Brust (Canad. J. Zool. 51(9):915-959) in which a new species *Aedes churchillensis* is described and *Aedes nevadensis* is raised to species status. The report of the presence of *Aedes togoi* Theobald in a tide pool near Victoria, British Columbia by Meredith and Phillips (Canad. J. Zool. 51(3):349-353) is also significant.

The price of the newly reprinted edition of the Carpenter and LaCasse book may discourage some from its purchase. However, it is still the single most indispensable publication on North American mosquitoes and belongs in the library of every serious worker or agency dealing with mosquitoes in the United States or Canada.—Lewis T. Nielsen, Department of Biology, University of Utah, Salt Lake City, Utah 84112.

**THE USE OF GENETICS IN INSECT CONTROL.** Proceedings of a Symposium on Genetic Control at the 14th International Congress of Entomology in Canberra, Australia (1972). R. Pal and M. J. Whitten, Editors, 1974. Published by Elsevier/North Holland, Amsterdam. 241 pp., \$29.10.

Since the screw-worm eradication in the South-eastern United States, attempts have been directed at the utilization of the sterile insect release method (SIRM) for the control of other pest species of insects. Most of the approaches to the use of SIRM have involved the induction of complete sterility by means of radiation or chemicals,

but more recently, other genetic methods have been proposed for autocidal control. Heritable chromosomal rearrangements, conditioned lethals, hybrid sterility, meiotic drive and cytoplasmic incompatibility are some of the mechanisms that are presently under investigation at various locations. All of these possible genetic methods are basically aimed at increasing genetic lethal load in native populations by release of specially synthesized strains that would disrupt reproduction.

This book is based on papers originally presented in a symposium on genetic control at the 14th International Congress of Entomology in Canberra, Australia (1972). The original presentations were expanded, in some cases updated, and an introduction was added to comprise this book.

In the introduction, the editors (M. J. Whitten and R. Pal) discussed some of the ramifications of the current deployment of SIRM and briefly described the principal mechanisms available for use in genetic control. The remainder of the book is split into three sections. The first and second sections are a compilation on some of the species of insects of importance to agriculture and public health, respectively. The third section contains a discussion of ecological methods for assessing the effect of a SIRM program and, also, a consideration of the future of chemosterilants in terms of potential and inherent problems.

The contents of the book do not constitute a complete review of research on genetic control; instead, extensive reviews on species of interest to the symposium participants are presented in the form of descriptions (in some cases quite detailed) of techniques and genetic aberrations isolated thus far. Additionally, most of the authors included an indication of future plans.

Overall, the book is well written, but the complex nature of genetic mechanisms is apparent. In this context, it is obvious that the material was not compiled for the reader who lacks a firm grasp of genetic control concepts, because basic theoretical aspects of possible genetic control mechanisms are not explained sufficiently. Hence the book does not fill the requirements of a general text for teaching purposes. Nevertheless, a review of this type should be extremely useful, especially Chapters 2, 7, 8, and 9, to the investigator planning similar work with other species. This book also is recommended reading for researchers involved in SIRM programs because of the potential application of genetic techniques, e.g., sex-killing systems, in the mass production of quality insects for release and the very good discussion, by M. D. Proverbs, dealing with ecological evaluation of a SIRM program.

There is some redundancy in this book, simply because there are a limited number of genetic control mechanisms, and the comprehensive research programs include all or most of them. In this regard, some of the techniques in the chapters reviewing the work on *Lucilia cuprina* (Chapter 2), *Aedes aegypti* (Chapter 7), *Culex tritaeni-*

*orhynchus* (Chapter 8), and *Musca domestica* (Chapter 9) are similar.

Cytoplasmic incompatibility in *Culex pipiens* is discussed by J. H. Yen and A. R. Barr. Their study of this phenomenon determined it is due to transovarian transmission of microorganisms, as has been the case for most extrachromosomal traits.

Perhaps the appearance of this book will stimulate a greater interest in the development of the tremendous potential to be found in harnessing

the principles of genetics for insect control. An amazing amount of progress (mostly in laboratory studies) has been made in a short period of time with a few species. Although there has been no demonstration of suppression of large, natural insect populations through the use of heritable genetic traits, some of the programs described in this book should prove fruitful in the near future. —Jack A. Seawright, Agricultural Research Service, USDA, Insects Affecting Man Research Laboratory, Gainesville, Florida 32604.

## ANNOUNCEMENT

A short course in Mosquito Identification, Biology and Control will be offered at Ball State University in two 5-day sessions, April 14-18 and June 2-6, 1975. Each instructional day extends from 8 to 5. The first session coincides with peak populations of immature mosquitoes. Trainees spend forenoons in the field and afternoons in the laboratory identifying the morning collections. Each trainee should acquire sufficient skill with the microscope and training manual to identify 10 or more common mosquitoes to species, and to use soil maps in locating sources of mosquito production.

The second session will coincide with peak adult mosquito populations. The same general plan of forenoon collecting and afternoon identifying will be followed. A variety of habitat will be sampled in each session. First-hand observation of mosquito control equipment and procedures will be provided at the close of the second session. Both sessions are under direction of R. E. Siverly.

Tuition rates vary from \$98 to \$198 for the entire course depending on residence and undergraduate or graduate status. Four quarter hours of credit may be earned. Full fees are assessed for auditing. No stated prerequisite. For application forms address: Department of Physiology and Health Science, Ball State University, Muncie, IN 47306