the suppression of mosquito carriers of malaria, and of other insect carriers of disease.

While malaria control has monopolized a great part of public and official attention since World War II began, and while introduced malaria will constitute a large part of the immediate nation-wide, and even world-wide post-war hazard, still other insect borne diseases will complicate the problem of meeting this general post-war menace.

Mosquito abatement commissions will shortly be charged with responsibility not only for control of malaria or of pest mosquitoes as the case may be, but, according to local need, also for control of mosquito-borne encephalitis, of flea-borne plague, of tick-borne spotted fever, and the like. Other pest control problems that require community action may also be added from time to time; a further responsibility which should be welcomed by such public agencies.

With a generally recognized health hazard; with a favorably conditioned public opinion; with a leaven of returned service men who will not have to be "sold" the idea of insect borne disease control; and with a reservoir of experienced men trained to do efficient control work; only energetic leadership should be required to bring about an expansion of mosquito control and related work, the like of which has never before been known.

Where such leadership is met by a tardy official response, as it well may be sometimes, the American Mosquito Control Association and MOSQUITO NEWS may be able to lend helpful support through information relating to existing legislation, and to the steps which should be taken first initiating a sound community program for control of mosquitoes and related pests.

REVIEWS AND ABSTRACTS

A MANUAL OF TROPICAL MEDICINE. By Mackie, Thomas T., Hunter, George W. III. and Worth, C. Brooke; XIX + 727 pp., 287 illustrations, 6 in color. $6.00. Published by W. B. Saunders Company, Philadelphia and London, 1944.

This volume is one of a series developed under the auspices of the Division of Medical Sciences of the National Research Council. In the Preface there are these two significant statements: "The importance of insects and other arthropods as reservoir hosts, intermediate hosts and vectors of many important tropical diseases has led us to devote considerable space to Medical Entomology. This has been done advisedly since few physicians have been trained in this field.

Section X, Medically Important Arthropods, comprises 142 pages, nearly one-fifth of the volume. In addition each chapter dealing with an arthropod borne disease contains further entomological information, frequently a repetition in different form of the material in Section X, however, fully justifiable for epidemiological and prophylactic reasons. In this Manual, as in others in the same field, there is the obvious segregation of entomology as something separate and apart in spite of the statements quoted above. There is not yet the wholehearted cooperation in matters pertaining to epidemiology, experimentation, and prophylaxis. Insect surveys and the use of insecticides typify the province of the entomologist. The entomologist perhaps has not yet earned the full confidence of his medical associates—certainly very few deserve being classed as medical entomologists. Surely those who contributed the section on "Medically Important Arthropods" made an excellent contribution adding much to the value of the Manual. According to the acknowledgments much of the section on Medical Entomology was contributed by Major Gordon E. Davis, Sn. C., and Captain Luther S. West, Sn. C., both capable scientists.

Section X begins with an excellent exposition of the role of arthropods as vectors of disease and a valuable table (Table 49) of human diseases so transmitted. This table is divided into the following parts: (1) Helminthic Diseases, (2) Protozoal Diseases, (3) Spirochaetal Diseases, (4) Bacterial Diseases, (5) Rickettsial Diseases, (6) Virus Diseases, (7) Miscellaneous, such as enteric diseases transmitted by houseflies; also human bots. Then follow two other tables: Table 50, Envenomization (including Allergies) and Table 51, Dermatoses of Arthropod Origin. These tables are excellently set up and very useable. For each disease the

etiologic agent is specified as well as the specific vector, distribution, reservoir and diagnostic procedure; also under envenomization and dermatoses the effects on man are briefly described.

For a manual of this nature the Arachnida are unusually well treated; this section comprises 24 pages. A few additional illustrations would have added much to the value of the section, e.g., further illustrative material pertaining to "soft ticks." To gain further knowledge concerning the tick vectors of the spotted fevers and the relapsing fevers one must consult the appropriate sections dealing with these infections. This procedure, of course, avoids repetition and, no doubt, the authors of these sections did consult medical entomologists familiar with the natural vectors.

The section (pp. 541-646) dealing with the Insect is excellent and reasonably well illustrated. Medically important insects in twelve different orders receive consideration. Two Australian species of Collembola are recorded as attacking man resulting in "irritation and papules similar to mosquito bites with pruritus." The authors have succeeded in striking a fairly good balance between the orders with much emphasis on the Diptera, which is as should be. However one feels that not sufficient emphasis is given to important differences in the breeding habits of anopheline vectors. This is not as bad as it seems because a six page table (Table 23) in the section on "Malaria" takes care of this matter very well indeed. Furthermore in a manual of tropical medicine one would expect a more adequate treatise on tsetse flies. The section on Myiasis is very well done and includes an excellent table (Table 65) on "Types of Myiasis in Man."

The chemical control of arthropods of medical importance is excellently summed up in Table 63 covering four pages. The letters "DDT" appear at least 30 times in this table alone and many more times in the text.

To gain a good notion of the importance of arthropods in the field of tropical medicine one would certainly wish to consult this valuable manual. —W. B. Herms

THE ANOPHELINE MOSQUITOES OF THE AUSTRALASIAN REGION. By David J. Lee and A. R. Woodhill. Publications of the University of Sydney, Department of Zoology, Monograph No. 2, December 15, 1944 (pp. i-xii and 1-209, 13 text figures, XXXIV plates, VIII maps).

Except for the work by Swellengrebel and Rodenwaldt on the anophelines of the Netherlands Indies, which included only the northwestern corner of the Australasian region, there has been no adequate taxonomic treatment of these most important mosquitoes of this region. The present work covers the species of *Anopheles* and *Bironella* found in the Moluccas, Ceram, and Timor and those lands of the Pacific south and east from these islands. Thirty-four species or subspecies are treated in detail, with an illustrated description of the female, male and larva as far as these are known. Under each species there is included a discussion of its biology, relation to disease, and distribution, with a map of the latter. In addition, 12 species reported from the western fringe of the area are discussed briefly. The introductory portion includes remarks on the importance of anophelines, their biology and control, and a very sound discussion of superspecies and infraspecific categories. A well-illustrated section on morphology carefully defines the terms used in the descriptions, and by means of diagnoses and tables the tribe Anophelini is defined as well as the divisions within the tribe. Keys are given to the adults and fourth-stage larvae, and to the eggs of a few species. Of particular interest is a map showing the type localities of all the species and synonyms.

The authors are to be congratulated on the care with which every aspect of the subject has been handled, and it is to be hoped that they will do the same with other genera of mosquitoes. In so excellent a work there is very little to criticize, particularly since the authors admit that it should serve only as a basic work to which inevitable revisions should be added as increase in knowledge makes them necessary. We do feel, however, that they were overly cautious in not recognizing *Anopheles farauti* Laveran as a valid name and in not treating it as a species distinct from *punctulatus* Doenitz. —Alan Stone

STUDIES ON THE ANOPHELINE COMPLEX OF WESTERN AMERICA. By Thomas H. G. Aitken, 1945. Univ. Calif. Publ. Ent. 7 (11): 273-364. 277 ref., illus.

Malaria in Europe often does not occur in areas where *Anopheles maculipennis* Meig., an important vector of the disease, is numerous. Investigators, in attempting to account for the spotty distribution of malaria there, discovered that this species is a complex consisting of six or more subspecies, only a few of which are effective transmitters of this disease. Owing to the widespread interest in the subspecies and varieties of anophelines and the need for accurate knowledge of the disease-bearing insects, the author has studied the possibility of such complexes in *A. maculipennis, A. pseudopunctipennis* Theo., and *A. punctipennis* (Say) in this country.

Following the introduction to this extensive paper is a key to all stages of the anophelines of western America. Although much confusion has existed in the American *maculipennis* group, the author believes that the present time three subspecies of *A. maculipennis* in North America should be recognized: *A. m. occidentalis* (D. and K.), *A. m. freeborni* Aitken, and *A. m. aztecus* Hoffmann. Under each of these subspecies may be found the description of stages, distribution, and a general discussion. The morphological distinctions not only between the life stages but also between the male terminalia of *A. quadrimaculatus* Say and the American races of *A. maculipennis* are pointed out in an extensive