BOOK REVIEWS

THE PONDICHERRY PROJECT: DEMONSTRATION OF CONTROL OF BANCROFTIAN FILARIASIS IN PONDICHERRY URBAN AGGLOMERATION BY CONTROLLING THE VECTOR *CULEX QUINQUEFASCIATUS*. (1981–1985). P. K. Rajagopalan and P. K. Das. 1987. Vector Control Research Centre, Pondicherry 605006, India. 164 pp.

The Vector Control Research Centre (VCRC) in Pondicherry initiated a demonstration project to develop an integrated vector control strategy to control *Culex quinquefasciatus*. *Culex quinquefasciatus* is the major vector of *Wuchereria bancrofti*, responsible for 98% of the filariasis in India. Options for control were discussed, and an Integrated Vector Management (IVM) program was preferred as more effective than the traditional single chemical method. The project was initiated in 1981 to develop and demonstrate a strategy that could be used in other urban areas.

Major emphasis was aimed at reducing the density of *Cx. quinquefasciatus* by environmental sanitation (correcting sewage and drain problems). Some chemical larviciding was done where filling or channelization could not be done alone. Organizational problems with the various government agencies involved and other problems encountered were discussed. Community education and participation was a major thrust, but bureaucrats and officials often blocked efforts for a variety of reasons. Fish were released in wells to control breeding.

As a result of the project (1981–85) the mosquito population was reduced drastically in VCRC operational areas. The infection index in the age group 0–5 years dropped from 2.39% in 1981 to 0.21% in 1986. The authors stressed that the success of IVM was dependent on environmental sanitation and making vector control a multidepartmental affair.

This book is well recommended for the practical problems encountered in developing an integrated pest management program with community involvement in a country where change does not come easily.

Burton R. Evans
Extension Entomologist
University of Georgia
Athens, GA 30602

BANGALORE MOSQUITO CONTROL PROJECT MASTER PLAN. P. K. Rajagopalan et al. 1987. Vector Control Research Centre, Pondicherry 605006, India. 309 pp.

The Vector Control Research Centre (VCRC) at Pondicherry was invited in 1983 to develop a master plan for control of mosquitoes in Bangalore City. *Culex quinquefasciatus* was the major mosquito pest due to unplanned and rapid growth of Bangalore with improper disposal of solid and liquid waste. Since mismanagement of the environment caused much of the *Cx. quinquefasciatus* problem, the VCRC felt environmental improvement was needed, not just insecticides alone.

The master plan for Bangalore included detailed identification and mapping of problem areas, evaluation of strategies, insecticides to be used, spray schedules, recommendations for environmental changes to reduce breeding, maintenance schedules for cleaning of drains and staffing requirements for each area.

The emphasis on environmental change requires various governmental units to cooperate that are not accustomed to this. This makes for organizational and political problems that must be solved to make such programs work. A central authority was recommended who would be above the rank of department chiefs to be coordinated. The report serves as a model for developing similar types of programs in other urban areas in India.

Burton R. Evans
Extension Entomologist
University of Georgia
Athens, GA 30602

AGRICULTURAL CHEMICALS. BOOK I, INSECTICIDES. 1989 Revision. W. T. Thomson. 1989. Thomson Publications, P. O. Box 9335, Fresno, CA 93791. 284 pp. $16.50.

Mosquito control workers are often asked questions about insecticides which may or may not be used for controlling mosquitoes. This book is the latest revision of a well-known, standard reference which is useful in furnishing answers to questions about insecticides, acaricides and ovicides. Chemicals are listed and described in 7 groups of related compounds. (There are 3 groups of organic phosphates.) The manual is easy to use.

If you forget that diflubenzuron and Dimilin are one and the same, this book is for you—similarly methoprene/Altosid, naled/Dibrom and on and on.

In each chemical group the number of compounds not available in the U.S.A. but used in other countries is impressive. For example, at least 2 synthetic pyrethroids are very useful but not for sale in the U.S.A. There are also several IGRs in this category.

The glossary provides help in sprayer calibration, some very practical conversion tables and useful measurements.

Names and addresses of 143 basic manufacturers are also given.

The statement that parathion is "used by public health authorities for mosquito control" is questionable, but no major criticisms are evident. The author has produced a praiseworthy publication.

W. E. Bickley

A SUPPLEMENT TO THE ANOPHELINAE OF AFRICA SOUTH OF THE SAHARA (AFROTROPICAL REGION). M. T. Gillies and Maureen Coetzee. 1987. The South African Institute for Medical Research, P. O. Box 1038, Johannesburg. 143 pp. R 35.

As the title implies, this book is a supplement to the second edition of the classic, *The Anophelinae of Africa south of the Sahara*, by M. T. Gillies and B. de Meillon (1968). Although the keys in the 1987 supplement may be used independently of the prior work, access to both volumes is necessary since the majority of the detailed descriptions are in the 1968 book. Fortunately, the earlier work is still available.

Fifty-one pages of the *Supplement* are devoted to keys for the identification of adult females, larvae and pupae of Afrotropical *Anopheles*. The keys are essentially the same as those presented by Gillies and de Meillon with the addition of species described since 1968. Although included in the larval and pupal keys, *Anopheles* (*Cellia*) *murphyi* Gillies and de Meillon is omitted from the present adult key. Both adult and larval keys are well illustrated, but the pupal key only refers to a Figure 5 which for some unexplicable reason is not in the *Supplement*. Plate 11 of the 1968 volume does illustrate all the structures mentioned in the pupal key. Gillies and Coetzee evidently intended to include this plate as Figure 5 since their text contains figures 4 and 6, but not Figure 5.

Other portions of the book contain material on malaria transmission, classification, taxonomic changes, morphological nomenclature, distribution, list of species of Afrotropical *Anopheles*, supplementary account of species and references.

Three new species are described. These include *Anopheles* (*Cel.*) *lounibosi* Gillies and Coetzee, *An.* (*Cel.*) *vaneedeni* Gillies and Coetzee and *An.* (*Cel.*) *ethiopicus* Gillies and Coetzee. The first, *An. lounibosi*, is an extremely interesting species as it is the only African anopheline with *Pandanus* axils as the larval habitat. *Anopheles vaneedeni* is a new member of the Funestus Subgroup which may be separated from *An. aruni* Sobti by several morphometric indices. Unfortunately, such an analysis was not done for the immature stages as the authors state: "Pupa, Larva and Egg as in *funestus*." The third species, *An. ethiopicus*, was described from a single female collected in Ethiopia. Since this specimen lacked hindlegs, the species was omitted from the adult key (couplet 2 of the key concerns coloration of the hindtarsi). The practice of describing a new species from a unique, incomplete individual cannot be condoned even if it is a member of a genus of medical importance.

Unfortunately, the terminology still follows the older one used in the 1968 volume. One concession made by the authors is to mention the Harbach and Knight (1980) terminology for larval and pupal setae in parentheses in the keys and text. The naming of wing veins follows the obsolete numerical system, i.e., vein 1 for radius and R_1, vein 2 for radial sector, etc. Even though Gillies and Coetzee cite the current systems for naming wing veins in Table 1, they justify using the older system by saying the *Supplement* is intended for use by field workers. This line of reasoning is difficult to follow as field workers need to be introduced to modern practices.

Illustrations of the 3 new species are minimal: *An. lounibosi*—several larval setae, dorsum of a larval abdominal segment and larval antenna; *An. vaneedeni*—anterior wing tip and portion of male palpus; *An. ethiopicus*—female palpus and wing.

Despite the sophisticated genetic and biochemical studies which have been conducted with the Funestus Subgroup and the Gambiae and Marshalli complexes, the work of Gillies and Coetzee and the earlier volumes of de Meillon (1974) and Gillies and de Meillon (1968), progress on the basic taxonomy of the Afrotropical anophelines lags far behind that of other regions. As an example, of the 121 species and subspecies treated by Gillies and Coetzee, larvae of 12 species and pupae of 16 species are omitted from the keys as these stages are unknown. At present, adequate descriptions of 4th stage larvae, pupae and adults of both sexes of only about 10% of the Afrotropical anophelines exist in contrast to over 50% for the much larger Oriental anopheline fauna.

The greatest impact which this volume will have will be to stress the need for making extensive collections of anophelines throughout the African continent with emphasis upon the preparation of reared series of specimens with associated larval and pupal exuviae. This must be followed by detailed morphological analyses of the species. Until this is accomplished, the role of secondary vectors in the transmission of malaria in subsaharan Africa cannot be ascertained with a high degree of accuracy.

Ronald A. Ward