electronic aspects of chemistry, is reviewed at the beginning as a basis for more detailed considerations with specific types of compounds. Special attention is given to the interactions of organophosphates with cholinesterase and the ion permeability of insect nerve, areas of special interest to the author and of general importance. The author has sifted the literature into firm and tentative findings, fact, and opinion. Metabolic pathways are mentioned for representatives of each class of compounds, with no attempt at completeness.

Eleven chapters of the book deal with the metabolism and mode of action of each major group of insecticide chemicals, as well as some related compounds of interest. Six additional chapters concern general aspects; physical toxicants; synergism, antagonism, and other interactions; resistance; selectivity and penetration; environmental health. The coverage, in the context just discussed, is good but, of necessity, not complete. Literature citations are voluminous, with excellent author and subject indices. Unfortunately, inaccuracies, in large part because of errors in proofreading, are common in the text, formulae, and literature citations; this realization is important if the reader is unfamiliar with the literature and the current state of progress. The style and brevity lead to overgeneralizations, which require reevaluation by the reader who intends to use this book as a basis for studies on the mode of action and metabolism of insecticide chemicals.

Professor O'Brien has succeeded in presenting, in extraordinary form, a wealth of knowledge on insecticide chemicals useful to casual readers, students in courses in this and related areas, and people new to the area of study. The style is that of a general survey with, in certain cases, specific treatment of a critical, interpretative nature. This book is recommended reading for people dealing indirectly with insecticides, such as biochemists, physiologists, and pharmacologists. It is a necessary addition to the library of all concerned directly with the fundamental aspects of insecticidal mode of action and related biochemistry and toxicology.

John E. Casida
Division of Entomology
Berkeley, California


The appearance in recent years of arthropod pests resistant to insecticides has stimulated an enormous amount of work on the cytology and genetics of disease vectors. This field, because of its rapid proliferation, is quite bewildering to all but the specialist. In an effort to draw some order out of chaos the World Health Organization convened a scientific group to study the problem in 1963 and a second one in 1965. The present volume grew out of presentations made at these conferences, although contributions were solicited from some workers who did not attend either of the conferences.

The volume is divided into 23 chapters of which the first 14 are on genetics of various groups of arthropods: mosquitoes, muscoid flies, cockroaches, mites, etc. The remaining nine chapters are on applied genetics, genetical control, and techniques. The reports of the W.H.O. conferences in 1963 and 1965 are reprinted in two appendices. (These were originally published as WHO Tech. Rept. Ser. no. 269 and Bull. WHO, 34: 437-60.) Finally there is a subject index of 27 pages but no author index. References are in most, but not all, chapters, given in full and these are placed at the end of each chapter rather than as a body at the end of the volume.

The individual contributions vary widely in scope and in concept, as is customary in edited works. Some of the contributions are quite extensive and others rather brief. Some include much new information while others are merely compilations, useful though these might be. Some of the contributions have been carefully edited while others have not.

More than a third of the book is devoted to mosquito genetics. Of the eight chapters in this section three are on Anopheles, two are on Culex pipiens, and one is a general treatment of mosquito cytogenticists by J. B. Kitzmiller. The chapters on Anopheles include an extensive treatment of the formal genetics of Anopheles by Kitzmiller and G. F. Mason; a detailed discussion of the A. maculipennis complex based mostly on chromosome banding, by Kitzmiller, G. F. Frizzi, and R. H. Baker; and an account of the A. gambiae complex by G. Davidson, H. E. Paterson, M. Coluzzi, G. F. Mason and D. W. Micks. The chapter on A. maculipennis represents much substantially new material, since it presents a synthesis of a large number of published studies. The chapter on A. gambiae is a welcome summary of a great deal of previously published but fragmentary information.

The Aedes chapters are on A. aegypti by G. B. Craig, Jr., and W. A. Hickey; and the genus Aedes by L. A. H. McClelland. The chapter on A. aegypti is a more complete account of the genetics of this species than has previously been published and it contains much previously unpublished information. McClelland's contribution includes, among other things, a summary of hybridization experiments in the A. saltatorius complex, a review of the status of A. maculipennis, and a model for the explanation of "cytoplasmic incompatibility" by nuclear genes.

The two chapters on Culex pipiens are by H. Laven. The first of these, on genetics, is largely a rehash of his 1957 paper; most workers who have used this German language paper will welcome the updated treatment in English. His second paper contains a fairly brief treatment of the systematics of this species and of cytoplasmic incompatibility. Laven's evolutionary approach on A. maculipennis is quite bewildering to all but the specialist. In an effort to draw some order out of chaos the World Health Organization convened a scientific group to study the problem in 1963 and a second one in 1965. The present volume grew out of presentations made at these conferences, although contributions were solicited from some workers who did not attend either of the conferences.

The second section of the book is on muscoid flies. The three chapters comprising this section are on, genetics, by R. Milani; cytology, by J. W. Boyer; and the genus Musca, by G. Sacca. These chapters all contain useful summaries of a large number of fragmentary studies. Sacca's chapter deals with the systematics of forms related to house flies, especially as shown by hybridization.

The third section of the book is a melange of assorted bits of information on vector genetics. A short chapter by D. G. Cochran and M. H. Ross is devoted to cockroach, chiefly Blatella, genetics. J. H. Oliver has a chapter on cytology of mites which contains chiefly his own work on ticks, most of which has been unpublished. A final chapter in this section by G. Schreiber, H. C. Carvalho, and H. N. Espinola reviews known information about the genetics of triatomids, bedbugs, Phlebotomus, lice, and fleas.

The section on applied genetics is comprised of five chapters: population genetics, by A. Spielman and Kitzmiller; physiological genetics, by H. A. Bender and K. E. Gaenslens; insecticide resistance, by A. W. A. Brown, genetics of behavior, by P. F. Mattingly, and genetics of susceptibility to infection with disease agents, by W. W. Macdonald. The chapters on physiology and behavior are necessarily brief and rather general. Those on population genetics and genetics of susceptibility to infection are fragmentary, which fact reflects our state of knowledge rather than the comprehensiveness of the reviews. Brown's extensive review on inheritance of resistance to insecticides appears to be more complete yet more succinct than any yet published.
The section on genetic control deals only with the sterile-mite technique. E. F. Knippling's chapter reviews the principles involved in the use of sterile males, and ends with short reviews of the applicability of these principles to various pests. The following chapter by L. E. LaChance is a rather thorough treatment of dominant lethals for insect control and their induction by ionizing radiation or by chemicals. It is unfortunate that no chapter was included on aspects of genetic control other than the use of sterile males.

Finally, the section on techniques includes a chapter on mass rearing by C. N. Smith in which are discussed some of the difficulties which arose during the development of techniques for rearing large numbers of Cochliomyia, Aedes, and Musca, and a chapter by K. S. Rai on techniques used for studying the genetics and cytogenetics of vectors.

The two appendices, as was previously mentioned, are not new but were previously published by W.H.O.; the second appendix discusses strain development and breeding systems for the maintenance of strains, which is not covered elsewhere in the book.

For those who are working in the rapidly expanding field of vector genetics this volume will be essential. Those with a less demanding interest will find the volume an interesting source of information as well as a reliable guide to the state of development of the field. Unfortunately the excessively high price of the volume will keep it off many shelves where it rightfully belongs.

A. RALPH BARR
School of Public Health
University of California
Los Angeles

COMMON NAMES OF BRITISH INSECT AND OTHER PESTS.

This bulletin was first published in 1957, based on lists developed by the Association of Applied Biologists. The present edition contains 3 sections listing alphabetically the scientific names of arthropods, slugs and snails, and earthworms (nematodes), and 3 sections listing the same groups alphabetically by common names.

As would be expected, these lists of arthropods and those in the Entomological Society of America's "Common Names of Insects" differ in both the species included and the common names applied to those species included in both lists. Examples of the latter include: black cutworm (ESA) vs. dark sword grass moth, curled rose sawfly vs. banded rose sawfly, and bean weevil vs. American seed beetle.

The bulletin is a useful supplement to the ESA "Common Names of Insects."

RALPH W. BUNN
Entomological Society of America
College Park, Maryland.


The appendix is a separate volume to be used as a supplement to his book entitled "Pests of Crops in Warm Climates and Their Control" (Reviewed Bull. Entomol. Soc. Amer. 9(4) :280 (December 1963)). The second edition is to update the control measures for the insects listed in his book.

This appendix is subdivided into five major categories:
Table of Active Ingredients, Precautions, First Aid Measures, Mixing Tables, and Recommendations for Control Measure.

The listing of active ingredients has increased considerably because of new compounds now being recommended for control of insect pests. The compounds are listed by chemical classification and then alphabetically according to the chemical name, common name, or other name used. This information is particularly valuable to workers in the United States in identifying the common names used by foreign workers in their research papers. Names are cross indexed so that common name and chemical names can be easily related. The recommended insecticides, acaricides, rodenticides, nematocides, molluscicides, activators or synergists, chemosterilants, repellents, and attractants are included.

The sections on Precautions and Mixing Tables have not been changed from the first edition. The category First Aid Measures has been altered slightly to bring it up to date.

Recommendations for Control Measures are listed under general headings: Beverages (coffee, tea, etc.); food crops (maize, sorghum, rice, etc.); fruits (pineapple, date palm, etc.); oil plants (olive, coconut, etc.); tobacco, pyrethrum, spices, and drugs; rubber and fibres; locusts; termites; ants; and snails and slugs. Insect pests are listed for each crop. The scientific names of the insects are the same as printed in the first edition, and the control measures are designated by a number in bold type found in the table of active ingredients. Formulation, dosage, and instructions for application of the material are also given in detail.

The information for control recommendations is based upon findings of experiment stations, universities, and private industry throughout the tropics.

This book is of general value to agricultural workers in the Temperate Zone who will find many pest control measures for little-known crops, and of particular usefulness to those of us in the tropical world where ready reference is especially difficult to obtain. Difficulties will arise in relating the scientific names of the insect pests with the latest classification. No attempt was made to update their scientific names.

WALLACE C. MITCHELL
Department of Entomology
University of Hawaii
Honolulu, Hawaii

ENTOMOLOGICAL EXCERPTS FROM SOUTHEASTERN CHINA (Fukien Province) ABORIGINAL: ('Peoples' on accompanying sheet describing book) SILKWORMS, HONEYBEES AND OTHER INSECTS, by Claude R. Kellogg. 1968. 89 fig., 2 pl. Privately published. For sale by author, Claremont Manor, Claremont, Calif. 91711. Bound: $2.00

When I was a student at the University of Massachussetts in the early 1930's, my teacher of apiculture was Claude Kellogg, then back in the United States after many years of teaching zoology and entomology in China, chiefly at Fukien Christian University, Foochow. When conditions in China permitted, he returned there to carry on what had become a work of dedication. As a teacher, he told us many interesting things about agriculture in China and the life of the Chinese people. Now, during his retirement in California, he has written this small book to bring together many of his observations, briefly but clearly, and with much of the enthusiasm he first took to China 57 years ago. It is an interesting