

New Books . . .

Organic Insecticides, Their Chemistry and Mode of Action

ROBERT L. METCALF, Interscience Publishers, Inc., New York. 1955. x + 392 pages. \$8.50. Reviewed by S. A. HALL, Agricultural Research Service, USDA, Beltsville, Md.

IT IS NO SMALL tribute to the author's versatility as an entomologist that he has so competently handled a subject which is largely in the province of the chemist. The presentation of the subject matter is logical and generally follows a chronological order commencing with the older naturally occurring insecticides—nicotine and related alkaloids, rotenoids, pyrethroids together with their synergists and with theories on their modes of action. The reader is then introduced to the earlier synthetics such as the thiocyanates and dinitrophenols. There follows a very good chapter on DDT and its analogs and a shorter chapter on acaricides, many of which are structurally related to DDT. The chapter on BHC emphasizes (as does the entire book) the question of structure as related to toxicity and mode of action. The rest of the chlorinated hydrocarbon insecticides are conveniently grouped as the cyclodiene insecticides. There is an especially good chapter on the organic phosphorus insecticides, which includes a discussion of the systemics. A short chapter on the carbamates and a "catch-all" chapter on miscellaneous insecticides pick up the compounds not treated earlier in the more logical development.

A great deal is known about the synthesis of these organic insecticides but actually very little about their modes of action. The synthetic procedures are quite well covered in outline form while the various theories and sometimes contradictory evidence on the modes of action are well presented. The author's consistent emphasis on the study of mode of action is a laudable effort to get away from empiricism. Thus the book unquestionably tends to evoke the further curiosity of chemists, entomologists, insect physiologists, and other scientists working in the field. The author is not content with the empiricism that produced these remarkable insecticides. He obviously wants to know why they function in the way they do and why they have limitations.

This approach inevitably leads us to the urgent question of insecticide re-

sistance, a topic which is well presented in the last chapter of this challenging book. The references at the close of each chapter are extensive and will aid the reader in pursuing further studies of any one of the many facets of insecticides.

If this treatise is to be improved in a future edition it is suggested that more use be made of page numbers when referring in the text to tables and figures which are often many pages removed from their explanations. But this is a relatively minor annoyance. The book is by far the best that has appeared on organic insecticides.

Applied Entomology

HENRY T. FERNALD AND HOWARD H. SHEPARD, McGraw-Hill Book Co., Inc., New York. ix + 385 pages. \$7.00. Reviewed by THOMAS C. WATKINS, Cornell University, Ithaca, N. Y.

THE GENERAL ARRANGEMENT and balance of material in the 34 chapters of the new fifth edition of "Applied Entomology" are about the same as in the fourth edition which appeared in 1942. The first four chapters are designed to give the novice in entomology a working knowledge of the development of insects, what they are like in structure, and how their systems function. The next four chapters deal with the importance and types of control of insects, including materials and equipment. Twenty-five chapters are devoted to the classification of insects, discussions of the various orders the most commonly encountered families, and brief accounts of the biology and control of selected species. The final chapter of the work deals with the recognition and control of animals other than insects which run counter to man's welfare.

The book apparently is intended for use as a text in economic entomology. For such use the book might have been improved by better balance in the amount of discussion of mouthparts, in the chapter on external structure, where most of the discussion deals with chewing mouthparts. More than one page seems justified on insect benefits, while no mention is made of vitamin, enzyme, or hormone research or the use of insects in bioassays of insecticide residues. Two very grave problems which deserve more attention are the development of resistance to insecticides and the legal aspects of

insecticide residues on harvested products. The discussions of individual active ingredients used in insecticidal formulations are unduly brief. The most disappointing shortage of discussion is that on application equipment—approximately one page.

The section of the book devoted to the classification of insects and the examples of pestiferous species is well done although one might raise the ever-possible question of names and scopes of taxonomic groups such as orders and suborders. Still included are some orders, families, and species which are of practically no direct importance, consuming space which could have been used on some of the too-briefly covered phases of the applied field. The footnotes showing pronunciation of names should prove useful to the beginning student who usually has some difficulty learning a new entomological vocabulary.

In general, this edition is a decided improvement over earlier ones. However, one is still left with a feeling that particularly the first portions are not sufficiently detailed to do justice to the subject indicated by the title.

Handbook of Food and Agriculture

Edited by FRED C. BLANCK. Reinhold Publishing Corp., New York, 1955. vii + 1039 pages. \$12.50. Reviewed by FRANK APP, Seabrook Farming Corp., Bridgeton, N. J.

THE TITLE of this book is an excellent description of its contents. The editor, by training, experience, and professional interests, is exceptionally well qualified for the selection of the contributors who are outstanding in their respective fields of activity. The subject matter is well organized. Any handbook on agriculture and food must omit much that would be desirable to include. However, the references indicate where additional information can be obtained.

The comprehensive index provides easy access to the large amount of information contained in this handbook. Research workers as well as operators in the food field from farm to the consumer will find it useful.

Dr. Blanck's long and distinguished career, beginning with soils and later including activities in various fields of food, such as health and food research, provided a background that contributed greatly to the editing and preparation of this handbook.