

## COCKROACH ECOLOGY

### The Biotic Associations of Cockroaches

By Louis M. Roth and Edwin R. Willis. (Smithsonian Miscellaneous Collections, Vol. 141, whole volume). Pp. vi+470+36 plates. (Publication 4422.) (Washington, D.C.: Smithsonian Institution. 1960.) n.p.

**D**URING the past decade the researches of Drs. Roth and Willis have contributed very greatly to our knowledge of the biology and behaviour of cockroaches, particularly those of economic importance. Not only have they published the results of much painstaking original work, but they have also brought together in the form of comprehensive compilations the fruits of the work of hundreds of other workers in this field. The present work is a compilation of this kind and its bulk is an indication of the thoroughness with which the authors have undertaken their task.

As the title of the book suggests, the authors are primarily concerned with the animals and plants associated with cockroaches; but, as a chapter of some eighty pages is devoted to the physical environment of these insects, the compilation may fairly be said to cover the whole subject of cockroach ecology. In classifying the cockroach's associates the authors begin, commendably, by defining their use of the words symbiosis, mutualism, commensalism, parasitism, and predatism. They then set out a comprehensive biological classification with page references to the account of each category in the text.

After a brief chapter on mutualism, most of the remaining plants and animals associated with cockroaches are dealt with group by group; they are classified down to the level of family and are then listed alphabetically under the generic name. The cockroaches associated with each organism are listed as natural or experimental hosts, vectors, or prey. Then follows a most useful check-list of the naturally occurring symbiotic associates of cockroaches arranged alphabetically under the cockroaches concerned, with page references to the preceding classified section of the book. The remaining few short chapters deal with such topics as commensal and predatory cockroaches, associations among cockroaches, and the biological control of cockroaches.

The bibliography covers more than eighty pages and comprises some fifteen hundred entries; it must include almost every publication having any bearing on cockroach ecology that has appeared up to the end of 1959, and certainly represents the first attempt to bring together the vast literature on this subject.

There are a few text-figures, mostly of Protozoa, and thirty-six half-tone plates showing some excellent photographs of living cockroaches and some of the more important organisms associated with them. These plates include photographs of both sexes of all the major cockroach pests and are a most valuable supplement to the book.

This compilation has achieved a very high standard and is beyond criticism in all important respects. There are, however, a few minor instances of inconsistency: English common names, for example, are given for many but not all organisms that have them, and dates—in addition to authors—are cited for the specific names of helminths, but not for those of any other group (these dates serve no useful purpose in a book of this type and might well have

been universally omitted). In the Contents the page references from p. 308 onwards are all out by two pages.

It may be said in conclusion that this book can be unreservedly recommended to any worker on cockroach biology, and particularly to those concerned with the economic importance of these insects. Together with the two previous monographs by the same authors on the reproduction of cockroaches (1954) and their medical and veterinary importance (1957), it forms a most worthy contribution to the literature of cockroaches.

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## TESTING TEXTILES

**Handbook of Textile Testing and Quality Control**  
By Prof. Elliot B. Grover and Prof. D. S. Hamby. Pp. vi+614. (New York: Textile Book Publishers, Inc.; London: Interscience Publishers, Ltd., 1960.) 132s.

**T**HE control techniques used in laboratories in the textile industries have increased enormously in range in recent years and become more widely and intensively applied. Despite this, text-books on the subject are much as they were ten years ago, with most students having to rely on the *British Standards Handbook* No. 11, which is not a text-book about principles but a series of sets of instructions commended for doing certain tests chosen for their reproducibility. The appearance of Grover and Hamby's book is therefore especially welcome in that it does describe up-to-date instrumental techniques in regular use in the United States.

More than a hundred pages are given to statistical methods, vital in interpreting test results on textile materials and also in the theory of yarn structure. Another hundred pages are devoted to tests on cotton fibres for length, strength, fineness and maturity and other properties. Considerable space is given to yarn tests, including the most up-to-date tests for irregularity and strength. Methods of test for fabric receive less attention, though a chapter on the evaluation of fabric defects is valuable.

The book is thus concerned with physical testing only—methods of fibre identification, or chemical analysis of blends, or estimation of damage or degree of polymerization are not mentioned, nor, oddly enough, are the highly developed methods of test for the abrasion resistance, crease resistance and water repellency of fabrics. The book is strongly oriented towards cotton, and neither wool nor synthetic fibres receive much attention, although much has been published on test methods appropriate to them.

The treatment of the selected subject-matter is thorough but elementary, perhaps too elementary in some parts. An honest attempt has been made to present some difficult concepts in simple terms—as in the chapters on statistical methods and yarn evenness—but parts of the book are taken up with instructions for operating particular instruments that would have been better left to the makers' handbooks. Whether the tests measure the right parameters, their limits of accuracy, the reproducibility of tests made on different instruments or by different operators, their relative convenience—these are matters that might have been given more space in a book on quality control. The bibliographies at the end of each chapter are generally