BOOK REVIEWS


This, the first volume of a series, is intended to bring together in a comprehensive form the widely scattered methodology used in virology. Four volumes will be published at this time, with others to follow as needed. The two editors have been assisted in the preparation of the series by an advisory board of distinguished virologists, each a specialist in some area of virus research. The series is intended to give research workers and graduate students an awareness of the methods used in areas of virology outside of their own special interests.

Volume 1 deals with methods for the study of virus-host relationships, both in the field and in the laboratory. Methods for sampling field populations to determine the natural hosts and the extent of viral infections in such populations are discussed. Other chapters deal with the problems involved in establishing and maintaining experimental hosts in the laboratory and with their use in laboratory studies. The methods for the purification and investigation of the viruses themselves are to be given in later volumes.

The subject matter of this volume can be divided into several sections each containing one or more chapters. The first section covers the general aspects of virus-host relationships and contains chapters on virus and host ecology and the effects of the host genetics in the development of virus diseases in individuals and in populations. The second section concerns the study of the virus-animal relationships. It contains chapters on mosquito- and tick-borne viruses and describes methods for both field and laboratory study. A third chapter describes methods for laboratory propagation and study of other viruses pathogenic for animals. The largest section of the book contains those chapters dealing with plant viruses. In addition to a chapter on the use of plants in virus studies, individual chapters are devoted to the transmission of plant viruses by each of the commonly used procedures, e.g., mechanical, insect, and grafting. Single chapters are devoted to insect viruses and to bacteriophages. There are also single chapters on the use of animal, plant, and invertebrate tissue cultures for virus studies.

According to the editors, the series is intended to provide the virologist and the graduate student a chance to broaden his knowledge and appreciation of the scope of the methods now used in virology. In keeping with such a goal, emphasis is placed on the range of application of the methods described and their advantages and disadvantages in different situations. As a result the book is not a methods manual. Some methods, e.g., for the field sampling of mosquitoes and the construction of facilities for rearing mosquitoes, ticks, and mites in the laboratory, are described in considerable detail. In the chapters on the use of embryonated hen's eggs and on the performance of post mortems on laboratory animals the methods are not only well described but well illustrated. However, the style of the individual authors varies and many chapters do not contain as detailed descriptions as do those just mentioned. As an aid to those desiring more detail on any of the methods each chapter contains a bibliography. Some, especially those on bacteriophages, virus culture, and insect transmission, contain clearly identified references for most methods. In others there is not always a clear identification of the reference given with a particular method. The series uses the style of bibliography in which the title of the article is omitted, which also decreases its usefulness.

The book is generally quite well written and the descriptions given are easily understood. It contains a complete author index and a good subject index for use in locating information on specific topics. Various chapters contain tables of useful information, e.g., plant species suitable for various testing procedures, animal viruses associated with Acarina, methods for the study of phage-host relationships or representative tissue culture media. The overall impress of the book was favorable, and it adequately fulfills the purpose the editors had intended.

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This is a classic exposition on fossil aphids. It reviews and synthesizes previous work on fossil aphids and their present-day relatives, and combines this with new knowledge gained by the author through his intensive study of the subject. It adds substantially to the knowledge of fossil insects.

The volume consists of five major and five minor divisions. Following the Introduction is a chapter entitled Previous Works on Fossil Aphids. Here it is indicated that of the 66 fossil aphids mentioned and 58 named before 1966, when the present manuscript was prepared, the majority were from the Tertiary period. It is stated that through the synonymizing of older names and the description of new species in the present volume, 61 fossil aphids are presently recognized from the Tertiary period.

The third and largest portion of the volume is devoted to Aphids from Baltic Amber in the Copenhagen Collection. Thirty new species are described and named, and four are given generic names only. From this source, the author studied 138 specimens which he assigned to 39 species in 18 genera (17 are new), three families, and one uncertain group. There is a key to all the genera in the Copenhagen Collection except the new genus Baltica-maraphis, which could not be included because of faultiness of the material. Unfortunately, references to pages on which the genera are discussed are omitted from the key.

Under the treatments of genera there is a key to species if more than one species is included, a description of the genus with indication of its type-species, and notes that include available knowledge of known species, their food plants, distribution, and other relevant information. Under the species, there are bibliographic citations for described species, a statement on the material studied, a description of available material, a photograph or line drawing of the body or some part of it, and extensive notes on the specimens or the species, or both.

The fourth major portion of the volume concerns Other Fossil Aphids (than those found in Baltic amber). This portion redescribes and illustrates aphids from the Triassic, Jurassic, Cretaceous, and Tertiary periods. Two new species from the Tertiary are described and named, and one is described briefly but is not named to species.

The fifth and last major section of the volume is devoted to Systematic and Phylogeny and is a fascinating discourse. Its subheadings are Introduction, Previous Work on Phylogeny of Aphids, On the Special Evolutionary Mechanism of Aphids, and Contributions of Palaeontology to the Understanding of the Course of Evolution.

There follows a Summary in both English and Danish, a Bibliography, and an Index of Generic and Specific Names of Fossil Aphids. The volume concludes with the Addenda in which the author states that his manuscript

139

This is an outstanding work on mealybugs. It presents the most advanced knowledge of the California Pseudococcidae, gained by the author through years of concentrated study. The book is well organized, interestingly written, and beautifully produced. Even its covers are attractive. Its dust jacket is a composite of diverse mealybugs on brightly colored plants, and its green buckram binding is decorated with an embossment of the giant mealybug. The print is unusually legible, the line drawings are definitive, and the color photographs and watercolors provoke excitement and admiration. Because of the diversity of the topics covered and the completeness and detail of the taxonomic discussions, the study will be helpful to persons with the remotest, or the most acute, interest in mealybugs.

The contents of the volume are well described by the publisher as follows:

"This book presents the most comprehensive treatment of mealybugs yet attempted. It contains chapters on taxonomy, morphology, ecology, biology, cytology, field and laboratory methods, and control of these pests in the field, nursery and home gardens. There is a key to the North American genera of mealybugs, and an exhaustive description of 193 species (along with their common names) presently known to occur in California. Specific keys for their recognition, host plant associations, and distribution tables are included along with a separate host index and bibliography. In addition there are 21 water colors by Mary Foley Benson, 36 color photographs showing individual colonies of the more important California mealybugs, as well as diagrammatic illustrations depicting in detail every known mealybug species in California."

The systematic treatment, which comprises most of the volume, is based on adult females, and is arranged alphabetically by genus and species. Fortunately the keys include all genera and species known in North America, although only those occurring in California are described. The individual accounts include pertinent citations and synonymy, if any; type-locality and host; North American distribution; additional hosts; external features and habitat; recognition characters; notes on relationships and unusual features of genera and species; and California records. For each species there is also a full-page pen-and-ink drawing, with enlargements of minute diagnostic structures, a county map indicating distribution in California, and for some species there is a color photograph or watercolor showing greatly enlarged insects on their host plants.

The distributional table gives the distribution by counties in California of each pseudococcid species, and records the total number of species for each county. The host index, a most useful part of the volume, lists the plants alphabetically by scientific and common names, with the common names referred to the scientific names. The families to which the plants belong are indicated after scientific plant names. The pseudococcids are listed alphabetically by scientific names under the technical names of the plants. The text pages on which each plant and insect appears also is given. The general index, which is separate from the host index, lists both the scientific and common names of the mealybugs as well as the numerous subjects mentioned in the volume. References to literature are cited at the end of each major section, and this placement, immediately after the subjects to which they relate instead of at the end of the entire volume, provides a very convenient arrangement.

The volume concludes with an addendum on Pseuderococcus comstocki (Kuwana), Comstock mealybug, a species that was discovered in California in August 1967. Since this species was unknown in California when the manuscript for the book was prepared, it is not described or illustrated, but it is included in the key to species of Pseuderococcus.

With the noteworthy characteristics of this volume, it is regrettable to have to point out that page numbers referring to text discussions are omitted from the keys. For example, the key to genera of North American Pseudococcidae appears on pages 44-47, and the treatment of genera and species runs from page 51 to 491. In this case and in almost all of the keys, it is necessary to either look through the volume or examine the index to find the page one needs to see. The inclusion of the text pages would have been of great assistance to frequent users of the book. Also, it is surprising to find "genotype" used instead of "type-species," since the International Code of Zoological Nomenclature (Art.67(a)) clearly indicates that type-species is the term that should be used.

The author states, "There are many taxonomic problems associated with the genera composing the Pseudococcidae of North America." And he indicates further that some concepts may change drastically as knowledge about certain groups increases. Regardless of future disclosures in this or other areas, the author merits the highest commendation for this fine contribution to the knowledge of the Pseudococcidae. 

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A subject seems to take on added meaning once it is presented in book form, especially when the subject is expertly conveyed to the reader by recognized authorities in the field. Such has certainly been accomplished as a result of this book concerning insect chemosterilization. The book represents a very comprehensive coverage of the subject and was written by nine scientists who are among those most responsible for the initiation and development of this potential means of controlling insect pests.

A brief but interesting introduction to the subject of insect chemosterilization (A. W. Lindquist) points out three problems associated with the use of insecticides that exemplify the need for additional methods of insect control. Insecticide use constitutes a potential health hazard, a possible hazard to fish and wildlife, and may result in insects becoming resistant or tolerant to the insecticides. It is not contended that chemosterilants would not present similar problems, but it is suggested that their potential usefulness presents an intriguing area for research.

The remainder of the book is composed of six major subject areas, the first of which considers in detail the potential of insects for control (E. F. Knipling). This section deals mostly with the basic principles and requirements that govern the ultimate use of chemosterilants. It is slow and deliberate reading because of