lished in a single volume, the size of either of the two, had the publisher used thin paper like that used for some of the standard manuals of the floras of regions and states. This would have made the book easy to carry in the field but would have had the disadvantages inherent in the use of thin paper. Heavy paper makes a book that is easier to use indoors, even though the bulk is greater. Either procedure has its advantages.

This treatise will take its place with the outstanding regional floras and manuals and with the best sourcebooks on ecology and plant geography.

LYMAN BENSON
Department of Botany,
Pomona College

Nematology

Soil and Freshwater Nematodes. T. Goodey. Rewritten by J. B. Goodey. Methuen, London; Wiley, New York, ed. 2, 1963. xvi + 544 pp. Illus. $16.

As the author stated in the preface of the first edition, this book is selective with respect to the material covered; the marine nematodes are omitted, and only a few brackish water species, which are also found in brackish soils, are included. This preface also states that symptoms and pathology are covered in the previously published book by T. Goodey, *Plant Parasitic Nematodes and the Diseases They Cause.*

This revised edition follows the general pattern of the first edition, but the class Nematoda is directly divided into ten (included) orders. Evidence of the great recent expansion of nematology is indicated by the inclusion of 2166 species in the present edition, compared with 1299 species formerly listed. These species are distributed in 394 genera, 87 subfamilies, 48 families, and 18 superfamilies. Many new grades are recognized and new combinations abound, but only two new genera and a few new specific names are given. Following the "Contents," "Illustration," and "Prefaces" (pp. i–xvi), there is an eight-page introduction which is subdivided into sections entitled "Plan," "Technique," and "General structure of a Nematode." An outline of the classification of included taxa through subgenera requires 16 pages.

The text begins with the order Tylenchida, followed by lower grades (with brief statements), followed by the genera. Each genus includes a definition, description, and illustration of type or representative species, a listing of species recognized, with synonyms, and bionomics. Other orders follow. The orders Teratocephalida and Trichosyringida are recognized for the first time, the first having been previously recognized as a family, the second as a suborder. The Trichosyringina Ward, 1917, is listed as a synonym; Ward used the spelling Trichosyringata. No reference is made to the orders Diplogasterata Paramonov, 1952, and Cephalobata Paramonov, 1956, presumably regarded as synonyms of the Rhabditida. Typographical errors are extremely rare for so comprehensive a publication; hence I must mention the consistent citation of *Mononchoides* Rahm, 1928, which is cited as "*Monochoides* Rahm, 1928/29."

Most users will welcome the inclusion of 87 tabular keys to genera and higher taxa and the list of genera placed in the Mermithidae. The retention of the three-page appendix listing the "Hairworms" of the British Isles, however, seems unnecessary.

Many nemic parasites of invertebrates have free-living stages, and to the extent that they are included, they follow the taxonomic scheme. However, some inconsistency in the genera that are listed may be due to lack of descriptions of free-living stages for members of the Drilonematidae, Ungellidae, Tetradonematidae, Sphaerulariidae, Allantonematidae, and Daubayliinae.

The original plan of the book was so selective and, as a result of the growth in taxonomy, the need for a new edition so urgent that little change was made in the scope. Some attempt might have been made to provide means of obtaining more information on species than names, authors, and dates. Instead, reference is made to the *Zoological Record, Helminthological Abstracts*, Stiles and Hassal's (1920) *Index Catalogue of Medical and Veterinary Zoology: Roundworms* (with its accompanying author index), and Tarjan's (1960) *Check List of Plant and Soil Nematodes.* Inclusion of references to descriptions of all species mentioned would have tripled or quadrupled the list of references. This, with a slight expansion in the treatment of Bionomics and an increase in the chapter on general structure of a Nematode might be considered for future editions.

B. G. CHITWOOD
Department of Biology, Western Washington State College, Bellingham

Entomology

The Insects. Url N. Lanham. Columbia University Press, New York, 1964. 240 pp. Illus. $6.95 *(to be published in May 1964; reviewed from galleys).*

The author, Url Lanham, has assembled a mass of interesting, significant, and thought-provoking information about insects in general. To grasp the full significance of this compilation, the reader should possess some knowledge about arthropods and know the essential facts about many common insects found among the more important orders and families. For a beginning student in entomology, the author's presentation of this sort of information (in chapter 2, "Diversity of insects") is inadequate and lacks references to the illustrations.

The organization of the 20 chapters, and especially the titles of many chapters, differs from most general textbooks on entomology. This creates for the reader a new look at insects. In some chapters the subject matter is presented in an excellent manner; this is especially true of chapter 1, "The place of insects in nature"; chapter 4, "Flight"; chapter 7, "Sense organs and behavior"; chapter 12, "Insects without wings"; and other chapters. Two chapters, 12 and 16—"Insect life in waters" and "Ancient aquatics"—might have been combined. Chapter 11, "Insects versus insects," presents a brief but an incomplete summary of this important subject.

Many of the significant statements throughout the various chapters come from sources with which most readers are not familiar. For a professional

The clubbed antennae, characteristic of butterflies, are shown in this series of a South American species. These butterflies are called "88's" by commercial collectors. [From U. N. Lanham, *The Insects* (Columbia Univ. Press, New York, 1964)]

entomologist the value of this compilation would have been increased many fold if definite references to literature cited had been incorporated. At the end of the 20 chapters there is a "bibliographical appendix," a list of some of the more important books and publications in entomology.

In general, the information presented produces fascinating reading. For the average biologist, who is not too familiar with insects, more and better illustrations would have been most helpful. The 70 or more figures are fair to good, with the line drawings superior to the photographs.

The author is to be commended on his effort to cover such a wide scope of knowledge about insects. His presentation of numerous thought-provoking questions, with suggested answers for many of them, adds much to the value of the book. I can recommend this book to anyone who has a moderate knowledge of entomology.

ALVAH PETERSON
Ohio State University, Columbus

Livestock and Poultry

Livestock and Livestock Products. Theodore C. Byerly. Prentice-Hall, Englewood Cliffs, N.J., 1964. x + 422 pp. Illus. $10.

Theodore Byerly drew on his vast experience and training in writing his book *Livestock and Livestock Products*. In addition to several academic posts, he has for many years headed important programs related to the livestock industry for the U.S. Department of Agriculture.

This is but one of a relatively large number of books of this sort that have been published recently. However, the author has condensed a tremendous amount of information into a rather small book. For example, history, breeding, feeding, management, disease and parasite control, and marketing are dealt with in a comprehensive manner. Byerly should be complimented on his free and interesting style of writing. He begins with a very readable and fascinating history of livestock production in the United States and then proceeds with a logical development of the rest of the subject matter. Although it is condensed, the book is very factual and exceptionally well organized. The detailed table of contents is most helpful, and the clear and informative tables and graphs are excellent. Qualifying statements frequently stress the importance of the industry.

Byerly clearly brings out the rapidly changing field, with the marked trend toward specialization and the shifting centers of production in merchandising. He emphasizes the fact that the decrease in the number of farms with the corresponding increase in the size of the operations requires more managerial skill. Science has eased but not removed the burden of husbandry, although it has helped us to understand the task.

In the discussion of swine breeds, it is rather surprising that the Maryland No. 1 is not mentioned or listed, since it was developed in cooperation with the U.S. Department of Agriculture and has now attained breed status. And in the chapter "Insects affecting livestock" Byerly does not mention the face fly that has been so annoying to cattle in the East during the past 5 years. The seemingly inevitable typographical and printer's errors occasionally appear in this treatise.

In summary, *Livestock and Livestock Products* should be a valuable addition to the other books that deal with this important subject.

JOHN E. FOSTER
Department of Animal Science, University of Maryland

Notes

Plant Diseases

This little paperback book, **Les Maladies des Plantes Maraichers** (Institut National de la Recherche Agronomique, Paris, 1963. 153 pp. Illus. F. 21), by C. M. Messiaen and R. Lafon, was designed as a handbook to aid growers, teachers, extension personnel, and research workers in identifying and controlling the most important diseases that attack vegetable crops. Chapter 1 contains very brief but very good descriptions of the major groups of fungi, bacteria, and viruses that cause plant diseases. Nonparasitic diseases are given very brief descriptions under the respective crop headings. The treatment of bacteria is so brief that it de-emphasizes their importance as plant pathogens. Although one form of bacteria can be distinguished from another only by microscopical and clinical tests, a text should list some of the basic differences—flagellation, color and growth characters on selected media, and the like. The major methods of disease control are described and illustrated in chapter 2.

The remaining chapters describe and illustrate diseases of tomato, eggplant, and pepper; cucurbits; bean, pea, and broad bean; celery and parsley. The material is factual, but many of the illustrations, particularly those of virus diseases, are hand drawings and leave much to be desired. It is difficult to understand why specimen photography was not used throughout. Presumably diseases of potato, onion, crucifers, and spinach will be treated in a second volume.

GLENN S. POUND
Department of Plant Pathology, University of Wisconsin

Annual Review of Pharmacology. vol. 4, Windsor C. Cutting, Ed. Annual Reviews, Palo Alto, Calif., 1964. xxxii + 453 pp. Illus. $8.50. There are 21 essays: "Outlines of a pharmacological career," by Ernst Rothlin; "Biochemical mechanism of drug action," by J. R. Cooper; "Receptor mechanisms," by R. F. Furchgott; "Modern concepts in relationship between structure and biological activity," by F. N. Fastier; "Mechanisms of drug absorption and excretion," by Ruth R. Levine and E. W. Pelikan; "Metabolic fate of drugs," R. T. Williams and D. V. Parke; "Antibacterial chemotherapy," by Mary Barber and E. B. Chain; "Cardiovascular pharmacology," by D. M. Aviado; "Effect of drugs on the inotropic property of the heart," B. H. Marks; "Pharmacology of reproduction and fertility," L. Fridhandler and G. Pincus; "Effect of drugs on contractions of vertebrate smooth muscle," by E. E. Daniel; "Toxicology: Organic," by H. W. Gerarde; "Toxicology: Inorganic," by G. Roush, Jr., and R. A. Kehoe; "Drug Allergy," by M. Samter and G. H. Berryman; "Kinins–A group of active peptides," by M. Schachter; "Composition and mode of action of some invertebrate venoms," by John H. Welsh; "New substances of plant origin," T. A. Geissman; "Excerpts from the pharmacology of hormones and related substances," José Ribeiro do Valle; "Effects of drugs on the central nervous system," H. Grundfest; "Pharmacology of the autonomic nervous system," by E. Zaimis; and "Review of reviews," by Chauncey D. Leake.