

out the rather small common element in the native faunas (at any rate at the species-level) on opposite sides of the Atlantic, and the growing force of invasions made possible by shipping in modern times. There are some good maps, but the book could have been more cheaply printed without loss of usefulness and with more likelihood of being read by students.

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EUROPEAN ORTHOPTERA

Die Geradflügler Mitteleuropas

Von Kurt Harz. Pp. xxiii+494+20 plates. (Jena: Gustav Fischer Verlag, 1957.) 69.20 D.M.

THERE has been no book on the Central European Orthoptera since 1901, when the first edition of Tümpel's brief, and now quite out of date, "Die Geradflügler Mitteleuropas", was published. Indeed, with the exception of France, no single country in Europe has its grasshopper fauna covered at all comprehensively, even at the present time. Kurt Harz's book has thus been presented to an entomological public which conspicuously lacks an authoritative work on the Orthoptera of Central Europe. It is true that our knowledge of such aspects as the biology and distribution of European grasshoppers is still little better than rudimentary, but this must be due in no small way to the absence of a publication presenting an up-to-date picture of what facts have so far been established.

The area covered by this book extends east to west from the Rhine valley to the Carpathians, and north to south from the north coast of Germany to the Alps. More strictly, the author regards the following countries as being in Central Europe: Germany, Switzerland, Liechtenstein, Austria, Poland, Czechoslovakia, Hungary, and Roumania. The author, however, recognizes that the Central European fauna has little respect for political boundaries, and he does not therefore exclude Belgium, Holland, Luxembourg, and a strip of northern France. In his introduction, he makes the interesting point that, of the 200 species of his group which occur in the area thus delimited, only 45 occur in Hungary or Roumania or south of the Alps.

Included under the heading "Geradflügler" are the Orthoptera in the widest sense, and the Dermaptera. Following the modern trend, the Blattodea, Mantodea, and Saltatoria are treated as separate orders. Also conforming to recent practice, though less justifiably, many of the groups generally regarded as subfamilies have been given family status.

The arrangement of the book is very systematic and makes for great ease of reference. Even very minor subdivisions of the subject-matter, some occupying no more than two or three lines of print, are given separate sub-headings, and all these, very commendably, are listed in the contents—which occupies a dozen pages. Under each order there is first a general account of the morphology, anatomy, physiology, embryology, and behaviour of the insects included; notes on capture and preservation are also given. Although the information on many of these topics is very brief, the wide coverage of the subject-matter is commendable and greatly increases the value of the book.

Identification keys are given at every level of the classification. A certain amount of ease in identifica-

tion must therefore have been sacrificed in order to show the natural relationships of the members of each group. For example, the user is obliged to make a critical examination of the subfamily characters (frequently microscopical and often difficult to appreciate) in order to identify a species which may have obvious spot characters.

Under each species the author gives a brief description and notes on the biology of the insect. For the Saltatoria quite comprehensive accounts are also given of the various types of stridulation of each species. The treatment of each insect concludes with a fairly detailed account of its distribution.

The book is profusely illustrated: there are 255 text-figures (including a number of photographs) and 20 colour-plates. Many of the text-figures are redrawn from previously published works but a large proportion is original. These, the photographs, and the colour-plates, are all apparently the work of the author. The standard of the drawings in the text is poor; the intention, evidently, was not to present a high degree of accuracy or to give the illustrations artistic finesse. Difficult points which arise in the identification keys are, however, adequately figured, and a drawing of the whole insect is given for almost every species. The colour-plates are again not of the highest quality, but nevertheless form a most useful supplement to the text-figures. Pictures of some of the different colour-varieties of a few species of Acrididae are wisely included among these plates.

The book concludes with a short glossary of technical terms, a list of abbreviations of authors' names, a comprehensive bibliography including some 500 titles, and indexes to both German vernacular names and Latin names of taxonomic categories.

It should be emphasized that this book is not written for the casual nature lover and is too advanced for even the most ardent schoolboy enthusiast. It is rather aimed at serious naturalists and specialists in entomology, and is sufficiently authoritative and comprehensive to be quite indispensable to any keen student of European Orthoptera. The author has clearly devoted many years to the study of his subject and the literature relating to it; his object in writing the book—to present an up-to-date basis for further studies and to show where the biggest gaps in our knowledge lie—will surely be realized.

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MICRO-ORGANISMS IN MILK AND MILK PRODUCTS

Dairy Microbiology

By Prof. Edwin M. Foster, Prof. F. Eugene Nelson, Prof. Marvin L. Speck, Prof. Raymond N. Doetsch, and Prof. Joseph C. Olson, Jr. Pp. xvi+492. (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1957.) 5.65 dollars.

THERE are few books on dairy microbiology and their usual pattern is a description of microbial defects in milk or milk products, the naming of the causal organisms and suggested measures for control. The authors of "Dairy Microbiology" attempt first to provide for the reader a foundation of basic information on microbes of importance in the dairy industry, which will enable him not only to have a little insight to taxonomy, but also to appreciate why specific