

# Book Reviews

## An Entomology

**The Insects of Australia.** A Textbook for Students and Research Workers. Sponsored by the Division of Entomology, Commonwealth Scientific and Industrial Research Organisation, Canberra, Australia. Melbourne University Press, Melbourne, 1970. xii, 1029 pp., illus. \$19.80 Australian.

Ayer's Rock, 5 miles in circumference and 1100 feet high, near the center of Australia, is regarded as the world's largest monolith. This book is something of an Ayer's Rock of entomology, surely the largest monograph on the insects of any region. It is over 7 centimeters thick and weighs 3 kilograms. There are over 1000 pages and some 2400 illustrations, including 8 colored plates and a colored frontispiece. There are 37 chapters by 30 authors. The price is rather large too (about \$22 American), but one shudders to think what the book would cost had it been produced in the United States.

In fact, this book is indispensable at any price to anyone even peripherally interested in insects or in Australia. Simply to browse through the pictures is an adventure in esthetics and in scientific craftsmanship. Considering the multiplicity of artists, it is remarkable how uniformly excellent the figures are. Frank Nanninga is responsible for the colored plates and many of the black-and-white drawings, and I have never seen better.

But of course this is much more than a picture book. The first nine chapters form a concise and up-to-date introduction to the study of insects, often refreshingly unlike other textbooks, especially in the chapters on physiology and on cytogenetics. The remaining 28 chapters each cover one order of insects. In each instance one finds information on structure, life histories, and economic importance as well as keys to families and some subfamilies; this is followed by a brief discussion of each family. Many of the chapters were written by members of the CSIRO staff, others by authorities at other institutions in Australia, Britain, and the United States. The volume was edited by one of Australia's most accom-

plished entomologists, I. M. Mackerras (whose name does not, however, appear on the title page), and was produced under the general guidance of D. F. Waterhouse, Chief of the CSIRO Division of Entomology.

Persons unfamiliar with the Australian insect fauna may be surprised to find that it is a good deal less "far out" than the mammal fauna. Nevertheless it has many peculiarities. Some major groups are wholly absent, for example the bee family Andrenidae, a large group in the Northern Hemisphere. Other families occur in Australia and nowhere else, for example the Eurymelidae, a group of showy sucking insects associated with eucalyptus. As in most groups of plants and animals, there are many structurally primitive taxa. Some of these have markedly disjunct distributions, such as the scorpionfly suborder Protomecoptera, with one species in eastern United States and one in western Australia (the latter known from two specimens). Others exhibit circumantarctic distributions, such as the Peloridiidae, small moss-inhabiting sucking insects that occur only in eastern Australia, Lord Howe Island, New Zealand, and southern South America.

Distribution patterns such as these pose tantalizing problems. In chapter 9 Mackerras presents a lucid but all too brief summary of current thoughts on the origin of the Australian insect fauna. He believes that Northern Hemisphere zoogeographers have tended to underestimate the circumantarctic or "southern Gondwanaland" element in the fauna. He may be right, though it appears to me that there is a tendency in the book to discuss these admittedly fascinating elements at some length while saying a good deal less about taxa having a different origin. I also feel that some of the contributors may have underestimated the Eyrean fauna, that is, that of the dry interior. My own experience suggests that this fauna is not so much "impoverished" as unstudied, largely because travel in much of the outback is difficult and because all the research centers are in the more habitable parts of the continent. Certain genera have undergone a marked

proliferation of species in the interior in spite of the lack of physical barriers and in the absence of any history of recurrent glaciation. The origin of these species poses some real problems which are not explored here.

But this does not pretend to be a treatise on zoogeography, and I suppose it is inevitable that some readers will find that despite the book's length its coverage of their favorite topic is overly brief (but the 27 pages of references should permit one to expand on almost any topic). Specialists will also succeed in finding imperfections in the parts dealing with the groups they know best. In the areas in which I am competent to judge, most shortcomings result from a genuine lack of knowledge rather than any lack of thoroughness on the part of the authors. In the foreword, D. F. Waterhouse suggests that "the amount still to be achieved . . . may well be more than has been accomplished." This is an understatement, at least when one considers life histories and behavior as part of desirable knowledge. Australia has some excellent entomologists, but it needs a good many more. This book should do much to create a public image of the science such that new positions will be created, and at the same time provide a sound basis for training persons to fill those positions.

I do not mean to imply that only Australian students will benefit from the book, however. There is a mystique in this book that is often lacking in American texts: the assumption that what is important is the living, interacting organism, and that when control measures are necessary one looks first to the animal rather than to promulgators of new insecticides. Australians have done distinguished work in insect systematics, ecology, and behavior, and have used this information in several successful programs of biological control of insects and weeds. It is curious that in the United States, where there are so many more entomologists, control measures are largely in the hands of chemical engineers. But the handwriting is on the wall, and students would do well to absorb what they can of the slightly subversive attitude that basic entomology, not industrial chemistry, holds the key to the future. That attitude is implicit throughout *The Insects of Australia*.

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