

THE INSECTS: STRUCTURE, FUNCTION AND BIODIVERSITY.By **Dunston P. Ambrose**Kalyani Publishers, Ludhiana, India. 2004. 820pp.
(infokalyanipublishers.com). ISBN 81-272-1853-7.

An excellent textbook of general entomology has just been published, from India, a part of the world where entomology is of enormous importance, yet where education and training in basic entomology have not been sufficiently emphasized. This book, "The Insects: Structure, Function and Biodiversity," is by one of the pre-eminent student of the assassin-bug family, Reduviidae (Hemiptera). Its title, not (I believe) by coincidence, is reminiscent of the American R.F. Chapman's "The Insects: Structure and Function"; and indeed the first is to some extent modeled on the second. The first 400 and the final 120 (of 820) pages of Ambrose's book, like Chapman's entire book, eschews the usual insect order-based organization, and instead is organized by system ("Excretory," "Muscular," etc.). Most of these chapters are devoted to physiology and, to a lesser extent, to biochemistry (and endocrinology). But there is a long chapter (50pp.) on behavior, two others on phylogeny and systematics (50pp.), and 50 pages more on ecology and conservation. The book ends with nearly 70 pages on collecting insects, and on studying them in the field and in the laboratory. Many of the topics here are not mentioned in other texts, and some of the topics mentioned elsewhere are not covered in nearly the detail as they are here. These two chapters are excellent, should inspire and guide young entomologists, and are of value everywhere, not in India alone.

This universal value is true of the book itself. This is by no means a regional or parochial text. Many of the examples chosen are of Indian insects to be sure, but most are not. The world literature has been scoured and used, as has of course the author's own extensive work on Indian reduviids (systematics, biology, ecology, physiology). The many references are mostly from the last few decades of the last century, indicating the years spent by the author on the book. As further indication of the universality of the book, the 100+ pages devoted to the groups of insects do not emphasize the Indian groups, but give brief accounts of all major (and the more interesting minor) families (somewhat on the model of the various Borror *et al.* editions).

Coverage of topics is remarkably complete. For example, the chapter "Excretory System" covers in 8.5 pages these topics (subheads): Malpighian Tubules; Other Organs; Other Functions of Malpighian Tubules; Diffusion, Absorption and Resorption [of salts and water]; Diuresis and Insect Urine; Gut Motility; Nitrogenous Excretion; Storage Excretion; Diet Influence; and Detoxification. These 8.5 pages include three figures and two tables, and are followed by 28 references (including research papers from 1965 through 1994).

Here and there in the book a few passages mention the literature,

or merely refer to it (e.g., in "Cytogenetics"), rather than discussing or explaining it. But this cursory treatment is very much the exception.

This book will be followed by another on the economic aspects of entomology. However, the present volume stands alone as a remarkable text - remarkable in the number of subjects covered, in the depth to which those subjects are treated, in the clarity of the writing, and in the aptness of the figures and tables. This book rivals some American texts, and surpasses others. It would be a fine text for serious entomology students anywhere. This achievement is all the more remarkable when one considers the difficulties with time, support (financial and local), and materials (library especially) that its author has, so successfully, overcome.

The book is divided into five sections, as follows: Structure and Functions (13 chapters, ~230pp.), Behaviour (1 chapter, 54 pp.), Biosystematics (7 chapters, 200pp.), Ecology (2 chapters, 64pp.), and Experimental Entomology (2 chapters, 65pp.). It concludes with a 67-page (!) Glossary (which alone rivals several dictionaries of entomology), a 45-page Subject Index, and a 33-page Taxonomic Index. And the book opens with a comprehensive Introduction that lays out the importance of insects, and provides a quick overview of the book itself.

I recommend this book for browsing, for closer reading, and, indeed, for teaching.

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