

deserves a place in college and high school libraries and on the instructor's shelf. It merits consideration among possible texts for introductory zoology courses in the classic mold.

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THE WORLD OF DRAGONFLIES AND DAMSELFLIES, by Ross E. Hutchins. 1969. Dodd, Mead, & Co., New York. 127 pp. \$3.75.

Entomologist Ross E. Hutchins has written a most provocative account of these two closely related groups of insects. Not quite as familiar to most people as the butterflies and moths, dragonflies and damselflies are beautiful insects and most deserving of attention. The book is written for junior high school to adult readers and is profusely illustrated with photographs and diagrammatic sketches by the author.

Beginning with a look at the dragonfly and the damselfly in history and folklore, the book gives detailed accounts of anatomy, life cycle, and flight patterns—always comparing and contrasting the two suborders. Along the way many unusual details are introduced; for example, the voracious dragonfly nymph's use of its greatly elongated, hinged lower lip to secure its prey and the application of the principle of jet propulsion to escape from its enemies. Unique among insects is the alternating wing motion of the dragonfly: when the fore wings are rising, the hind wings are beating downward.

The book closes with interesting chapters on the 300-million-year evolution of the damselfly and the dragonfly and on the collecting, classifying, and study of these insects. A list of references for further study is included, as is a combination index of topics and illustrations.

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INTRODUCTION TO ZOOLOGY, by T. H. Savory. 1968. Philosophical Library, New York. 239 pp. \$6.00.

After brief introductory material on zoological classification and nomenclature, this book is devoted to a systematic account of the animal taxa, from Protozoa to Mammalia. The chapter headings are all systematic (referring to phyla or classes), and there are no "horizontal" accounts—that is, sections devoted to genetics, reproduction, metabolism, chemical composition, ecology, or geographic distribution. The index is limited to morphologic and nomenclatorial entries. An animal as important to the advancement of zoology as *Drosophila* is given two lines.

In short, *Introduction to Zoology* is an updated 19th-century book and is

reminiscent of J. Arthur Thomson's *Outlines of Zoology* of that period. And yet it is also reminiscent of a zoological work far more modern: if the late Libbie Hyman's unfinished multivolume work on the invertebrates were extended to include the vertebrates and then were condensed into one small handbook, it might be not unlike the volume under review.

The information presented is interesting and the writing is concise and a pleasure to read. I noticed a few dubious statements—for example, the cobras are placed in the Colubridae, whereas most systematists place them in the Elapidae; and dorsal crests are considered attributes of male breeding salamanders, though in fact they are limited to one or two groups of salamanders—but such departures seem to be rare exceptions.

I would not recommend this book as the text for an introductory course (which, I feel, should be organized on entirely different principles). I would, however, recommend that a student majoring in zoology obtain a copy of this book and refer to it often, for it helps provide a framework for the many exciting ideas that a student meets as he enters into serious study of the zoological sciences.

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TROPICAL FISH AS A HOBBY, by Herbert R. Axelrod. 2nd ed., 1969. McGraw-Hill Book Co., New York. 300 pp. \$7.95.

This is an excellent guidebook for both beginners and serious hobbyists. In addition to general how-to-do-it chapters covering rules for a healthy aquarium, plants, food, and medications, aquarium appliances, and maintenance of salt water aquaria, there are discussions of representative tropical aquarium fishes by categories (meaningful to the fancier) such as live bearers, egg layers, and scavengers. Axelrod writes clearly and effectively and has presented many interesting facts and valuable hints derived from his very extensive knowledge of tropical fish both in nature and in culture.

An unusual feature in this book are three chapters, written by persons other than the author, that are more theoretical and less pragmatic than those normally found in a guidebook. One of these, by James Atz, is a delightful historical account of the myth (seriously taught as fact by many elementary school teachers) of the balanced aquarium. The other two, by the late Myron Gordon, consider the genetics of tropical fish and some fundamentals of zoological nomenclature. Both of them, I am sorry to say, struck me as being rather dated, and I wish they had been more substantially revised prior to publication.

There is a valuable appendix which is essentially an annotated checklist of about 120 kinds of tropical aquarium fish, a selected bibliography, and an index. The book is illustrated with black-and-white photographs and diagrams.

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LABORATORY ANATOMY OF THE WHITE RAT, by Robert B. Chiasson. 2nd ed., 1969. Wm. C. Brown Co., Dubuque, Iowa. 81 pp. \$1.95.

This is more nearly an atlas than a dissection guide: dissection directions are cursory and superficial, and the text is mainly descriptive of the structures to be seen. The first 34 pages are devoted to the skeletal and muscular systems, but beginning with what would be page 36 all left-hand pages are blank, and the remainder of the book devotes only 23 printed pages to the digestive, respiratory, circulatory, urinary, reproductive, and nervous systems. The endocrine system is not included as a separate section.

Many words are misspelled on the drawings but correctly spelled in the text. In fig. 44, vertical is spelled "verticle" and Eustachian is spelled "Eustacian." In fig. 40, geniculate is spelled "geneculate." The text uses the term "atrium" (in relation to the heart) but fig. 30 uses the term "auricle." In fig. 34, of the male reproductive organs, neither the testes nor the urethra is labeled and epididymis is spelled "epididymus." In fig. 10 the infraspinous fossa is misspelled "infraspinus" and the superspinous fossa is not labeled.

Strangely enough, many of these misspellings and labeling errors are carried over from the first edition of this work. They appear to have escaped the notice of users and author alike—which is perhaps indicative of the sad state of anatomy teaching these days.

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ANIMAL BEHAVIOR

ETHOLOGY OF MAMMALS, by R. R. Ewer. 1968. Plenum Press, New York. 418 pp. \$26.00.

The price is startling, and one cannot honestly say the book is worth it for biology teachers, however interesting and enlightening it may be to read. However, for the specialist it should be invaluable.

The author, a professor at the University of Ghana, relates a great many personal observations and correlates them with published material. The range of animals covered is from domestic cats and dogs to African animals (heavily emphasized). This wealth of material is taken up under the following chapter titles: basic concepts, expression and communication, food, so-