

and study the behavior of organisms in an environment very different from that of man. Most aquariums contain one or more species of fish—from goldfish to exotic species of tropical fish. Much of the time, the preparation and stocking of an aquarium is by trial and error. The results can become discouraging.

This book is written for those people who want to raise fish in small aquariums. It is divided into two sections. The first section discusses the evolution, distribution, anatomy, life processes, and some ecology of fishes. The second part briefly describes a wide variety of aquarium fishes, their habits, coloration, temperature and breeding requirements, and other points of special interest. A fairly extensive bibliography and glossary-index are provided.

The chapter on general aquarium care is perhaps the most useful. It discusses the location of the aquarium, light, pH, water hardness, and temperature. Many aquarium plants are described, and directions are given for their establishment. Several pages about feeding and fish diseases conclude the chapter.

A large amount of usable information is packed into this book. A scientific approach is used, but it is not too technical. The scientific names of fishes are used extensively. This is not a book to be read from cover to cover; it is a reference book. Although some parts may never be read by some, other parts will be reread many times. It will provide the reader with the background for more technical presentations.

The serious aquarist who devotes much time and resources to his hobby will find this book indispensable. It is a good reference book for libraries in high schools, junior highs, and upper-elementary grades. If a teacher uses aquariums very much, this book should be readily available for the teacher and the students. It is a very valuable reference book in many facets of aquarium fish and their environment.

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NORTHERN FISHES, by Samuel Eddy and James C. Underhill. 3rd ed., 1974. University of Minnesota Press, Minneapolis. 443 p. \$17.50 hardback.

Edition three of *Northern Fishes* is a revised and expanded version of a book which is considered by many as a standard reference. This edition includes information on fish and their environment and new techniques in fishing which have come about since the publication of the second edition in 1947. It remains an excellent reference, not only for the serious fisherman but also the professional biologist.

Although the majority of the book is given to the detailing of the life histories of more than 160 species of fish, an introductory section of ten relatively short chapters adds greatly to the value of the book. Each section is written in a concise style which can be readily understood by the sportsman but is still technical enough to hold the interest of the biologist. Many illustrative examples are used to demonstrate the principles discussed in the chapters. Most of the examples refer to situations in Minnesota but are still applicable to other sections of the country. The topics covered in the chapters range from a review of current fishing techniques to the dynamics and management of aquatic ecosystems to the nutritional, pathological, and physiological relationships found in the fish populations.

The amount of material presented to the reader in the sections on aquatic systems is an example of the quality of this book. Plant growth, light penetration, mineral cycling, temperature stratification, and oxygen levels are shown as dynamic components of the ecosystem, and their relationship to the fish populations is clearly demonstrated. Lake and stream types are also discussed in terms of how their structures may vary the effects of the above factors.

An extensive treatment is given to the anatomy of fish. This is an essential part of a book which deals with fish identification. All major anatomical features are identified and clearly explained. The relationship of structure to function is also discussed throughout the section.

The life-history portion of the text is introduced by a section on the classification and origin of fishes. Artificial keys are used for gaining access to the individual fish life-histories, one for the separation of specimens into families, and individual keys for separation of species within the families. Generalized characteristics are given for each family, including distribution, characteristics, and economic value. Individual life-histories are more specific than the family descriptions and most individual species are accompanied by a line drawing of the specimen. It is the unique information in the life-histories of the various species that makes this book so valuable.

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COLLECTING WORLD SEA SHELLS, by Alan Major. 1974. Arco Publishing Co. Inc., New York. 187 p. \$10.00 hardback.

One has only to observe the many children and adults eagerly picking up almost every shell on the beach to know what a fascination shell collecting has for the seashore visitor. At first,

even damaged shells are taken, but gradually greater discrimination is shown. It is for the discriminating collectors this book has been written.

The explanatory material on how to collect and the descriptions of mollusk anatomy are very helpful, especially the warning about the conservation of living specimens: "NEVER take every specimen you find in the habitat." Each description includes the part of the shore where the animal would most likely be found. There are twelve excellent colored plates, but the remaining illustrations—black-and-white line drawings—make exact identification difficult. There are several less expensive books on the market with colored drawings that can facilitate identification. The scientific name and common names are given for each specimen included, but because only one family name, Veneridae, is given in the entire book, the nonscientist might assume that this is the "shell family." A family name for each group would be recommended.

This book would be a welcome addition to a shell identification library, but it does not cover enough specimens to be the only reference necessary.

Jane W. Lusk
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THE CRAYFISH, by T. H. Huxley. 1974. MIT Press, Cambridge, Mass. 371 p. \$12.50.

This remarkable book was written by the famous Thomas Huxley and published in 1880. Stephen A. Raymond has rediscovered it as a true gem in natural history writing that has amazing insights into the fundamentals of such new sciences as neurophysiology.

The book is elegantly turned out and well worth the purchase by the biology teacher. Illustrated with line drawings, each chapter is written in the interesting style one associates with the English. It is amazing how modern it is, for its depth of scholarship gives one the nagging feeling that we have been reinventing the wheel in the last few decades.

Raymond's "Foreword" gives the reasons why a neurophysiologist has found Huxley's work so fascinating. It's a tremendous book and should spur some others to look for these "lost" works.

Paul Klinge
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• For Young Readers

WONDERS OF A KELP FOREST, by Joseph E. Brown. 1974. Dodd, Mead, & Co., New York. 80 p. \$4.95 hardback.

This book, which is part of the Dodd,

Mead "Wonder Books" series, is a very well written account of one of the most fascinating natural communities of our planet, the kelp forest. The contents include such topics as "The Marine Food Chain," "Creatures of the Forest—the Fish," "Creatures of the Forest—the Invertebrates," and "A Valuable Sea Plant." The author skillfully describes kelp beds and the interaction among organisms within these "giant forests." The concluding chapter, "Kelp's Friend and Enemy: Man," provides the young reader with a brief account of man's efforts to conserve these forests.

Many black-and-white photographs—some, unfortunately, of rather poor quality—and sketches are included, and there is an index. The book is recommended for the middle-school reader.

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SEE WHAT I CAUGHT, by Ann Thomas Piecewicz. 1974. Prentice-Hall, Inc., Englewood Cliffs, N.J. 48 p. \$4.95 (hardback).

The purpose of this small, informative book is to help children understand how to catch, feed, and care for woodland insects, amphibians, and reptiles. Included in the coverage are fireflies, crickets, salamanders, tadpoles, frogs, treefrogs, toads, and turtles. Excellent instructions are given at the beginning of the book on how to make critter-carriers, insect-nets, and cages for each animal. The illustrations that accompany these instructions and the rest of the book are clever as well as visually descriptive.

The author has an excellent knowledge of the habits and behavior of the animals she describes and combines this with a writing style stimulating to young children. However, some of the vocabulary used in the book would be difficult for a young reader to tackle independently. In the frog chapter, more description is needed for the reader to distinguish between the four types of frog mentioned. Also, throughout the book there are subtle references that each of these animals possess human characteristics. This is particularly noticeable in the frog chapter, where the author states that the frogs croak to say they're happy. The chapters could have been better organized so as to present each animal group together rather than scattering insects, reptiles, and amphibians in a random manner.

Despite these minor corrections, the quality of the book is excellent. I was especially impressed with the author's recommendation to set the animals free after a period of observation.

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Index to Volume 36

The index has three parts: *subjects*, *titles*, and *authors*. Alphabetizing is letter-by-letter (not word-by-word); for example, "Educational" would precede "Education theory."

SUBJECTS

- Everything in Volume 36 is covered except filler items.

This is a *multiple* index; that is, an item may be indexed in two or more places, to ensure access. "See also" takes you to related matters.

Entries in the first part are keyed to sections of the **TITLE** index, as follows: A, articles; R, reports; L, letters to the editor; E, editorials; and D, Different Point of View. The number tells the issue (no.) and page in the journal. You may go directly to the page, of course; or you may consult the **TITLE** index to discover whether the item is one you are seeking.

The second part of this subject index groups books reviewed in this volume by title. Authors and editors of books (not the reviewers) are mentioned in parentheses preceding the issue-and-page reference. Initial articles (a, an, the) of book titles have been dropped; that is, a title begins with its first substantive word.

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