

layman, but is also technical enough to be used as a guide for fern study. It is suitable for a high school library.

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SHORE WILDFLOWERS OF CALIFORNIA, OREGON, AND WASHINGTON, Philip A. Munz, 122 pp., \$4.75, University of California Press, Berkeley, 1965.

This is the fourth book in a series by P. A. Munz on California wildflowers. This is the first to extend the range of plants covered to the neighboring states of Oregon and Washington. Included in the treatment are five ferns, one equisetum, and nine trees common to the shore community. Shrubs, as well as herbaceous wildflowers, are included in the remaining 258 plants described in the text of the book. These flowering plants are divided into four main color groups. There are 177 excellent line drawings and 96 kodachrome reproductions. Many of the latter have suffered in the reproduction or showed so little detail in the original that they are of minimal help with identification.

Shore flowers was written for the layman; however, anyone who has had no formal work in botany would find the descriptions difficult reading. There is no glossary so he would have to depend on matching color and picture to his specimen.

The book will prove more useful to the student of botany as a supplement to Munz's more technical work, "A California Flora," or, "A Manual of Flowering Plants" by Jepson.

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SPRING WILDFLOWERS OF THE SAN FRANCISCO BAY REGION, Sharsmith, 192 pp., \$2.25, University of California Press, Berkeley, 1965.

This is a pocket sized book, eleventh in the series of California Natural History Guides. Most of the books in the series were written specifically for the San Francisco Bay Region but are also useful in other parts of the state. These are books for "the student, traveler, camper, or sportsman who wants to know more about outdoor California."

Spring Wildflowers is a key to the identification of 300 common flowering plants. Spring is defined as January to May; wildflowers as native, annual and perennial herbs, with obvious flowers; the "Bay Region" as extending from Sonoma and Napa counties through Santa Cruz and Santa Clara counties. Within the limits set by the author, the book should prove useful to anyone who has the most elementary under-

standing of flower structure. The introductory chapters, especially those on how to use the key are clearly written and should prove most helpful. High school students should be able to use the book with very little help.

The descriptive list is arranged by families. There are 8 color plates with 58 flower photographs and 144 excellent line drawings. Common names and the scientific names with derivations, the habitat, biotic communities occupied, as well as usual time of flowering, is given in each description. There is frequent mention of horticultural facts or folklore about many of the plants. *Spring Wildflowers of the San Francisco Bay Region* should have wide usage by the serious amateur in the study of natural history in the season and the area for which it was written.

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OUR PLANT RESOURCES, Frederick L. Fitzpatrick, 162 pp., \$1.28, Holt, Rinehart and Winston, New York, 1964.

Another paperback in the Holt Library of Science Series. What this book does is to give the reader an interesting view of economic botany in its broadest terms. The usefulness and the influences of plants as they affect man are described in detail yet breadth. For example, the chapters tell of cereals, vegetables, and condiments; fruits and nuts; drugs, chemicals, and beverages; fibers, oils, tobacco, and rubber; and wood products. The illustrations are quite adequate. This reviewer is a little confused as to the readership intended for the book. On the one hand, there is an elaborate description of the chemistry of photosynthesis, while on the other hand, in close juxtaposition, is a description of binomial nomenclature which one can assume most readers would know, especially if the photosynthesis treatment is taken up with this much detail.

But the book is very interesting to read and is a real mine of information. A very fine supplementary book for biology student and teacher.

Zoology

ATLAS OF GENERAL ZOOLOGY, Stephen G. Gilbert, 88 pp., \$4.00, Burgess Publishing Company, Minneapolis, 1965.

This publication is an atlas of the structure of forms from the single celled to vertebrate levels of cellular organization. This coverage includes the paramecium, hydra, obelia, gonionemus, planaria, tapeworm, roundworm, mussel, squid, annelids, crayfish, grasshopper, fruitfly, and star-

fish. The shark, frog, pig, rat, and human are the vertebrates included. From these several representative forms the author has taken the drawings directly from his own dissections. The results are original and outstanding.

This atlas will be invaluable to any student or teacher of animal structure. The drawings are excellently reproduced, some in color. All of the important details are included but drawn in such a way that each is separately shown without the usual clutter and overlapping. The drawings are published in paper back, so that the price is quite reasonable, making this Burgess publication even more of a bargain.

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BUDONGO: AN AFRICAN FOREST AND ITS CHIMPANZEES, Vernon Reynolds, 253 pp., \$4.95, Natural History Press, Doubleday and Company, Inc., New York, 1965.

A delightful and informative account of the life and behavior of the African chimpanzee, as reported by the English Anthropologist, Vernon Reynolds. He, with his wife Frankie and an African tracker, Manueri, virtually lived in the forest with these animals for a period of eight months. The vivid accounts of their observations leads the reader to feel that he is following their trail through the dramatic African forests, and sharing their experiences with them.

Much insight is also gained as to the living habits of the natives of the Budongo area and the little concern of these primitive people, for the independence granted them in 1962.

Descriptions of the chimpanzee carrying out his daily routines are fascinating. Their acrobatics at altitudes up to 150 feet in the forest canopy, their modes of communication, the carnivals, and their feeding habits are all dramatically described.

Especially interesting is the fact that no evidence was found to indicate, during the study, that chimpanzees go in family groups. This is in direct contrast to gorilla behavior as the author observed in another area.

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A NEW DICTIONARY OF BIRDS, A. Landsborough Thomson, Ed., 928 pp., \$17.50, McGraw-Hill Book Company, New York, 1964.

This volume, compiled by the British Ornithologists' Union, is a major reference encompassing the entire field of ornithology. Its significance and excellence may be indicated by the fact that one cannot challenge the strong claims

made for it by its American publisher on its dust jacket. It really "may well be the most important general publication in ornithology in this generation, and one of the most comprehensive references on birds ever published." It is a thorough and handsome book that will interest and inform any bird student, beginner or professional, and that will be useful even to the general reader. It would seem to be as necessary an item to a good high school biology library as are the familiar encyclopedic reader's "companions" and references in the fields of literature.

The book is an alphabetically arranged encyclopedia to which numerous ornithologists have contributed. A few examples will best convey the scope and nature of the work: Under "B" are included, among many other entries, the following: A several-page illustrated article on the old-world birds, the babblers; short, dictionary-like definitions of the structures, barbels, barbules, and bastard wings; cross-references to articles on distributional barriers and barriers contributing to reproductive isolation; a lengthy entry on the development of behavior in birds; a list of birds referred to, by chapter and verse, in the Bible, with their present vernacular and scientific names; an entry naming some principal bibliographic works in ornithology; articles on bills and blood; and short, identifying references to bluebirds, Bobolinks, and Bob-whites. Two more examples from other parts of the book: A five-page discussion of extinction lists all avian forms known to have become extinct in historic times, with the chronology, geography, and supposed causes of these events. Learning in birds is discussed in an entry of four pages; here, as usual throughout the work, the writer is one of the world's distinguished students of the subject of his contribution. At the conclusion of all article-type entries are citations to references for additional reading.

In short, it is difficult to imagine a more authoritative, useful, and convenient way in which to present a summary of existing knowledge of birds. Both the book's attractiveness and its informational content are very much enhanced by its illustrations. There are over 300 line drawings and 32 pages of splendid black and white photographs, and to these are added 16 color paintings and photographs. As examples of these color plates, one depicts instances of polymorphism, one portrays characteristic Australian birds, and one illustrates geographical variation in two species.

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