

Book Reviews

• Readers' comments on reviews should be addressed to the Editor.

Biochemistry

INTERMEDIARY METABOLISM AND ITS REGULATION, by Joseph Larner. 1971. Prentice-Hall, Inc., Englewood Cliffs, N.J. 308 p. \$7.95.

On the assumption that biochemistry is the "overlap" between biologic and physical sciences, most introductory courses in biochemistry appeal to a broad spectrum of students. Because of this heterogeneity Larner presents his material in several units that are meant to maintain flexibility—a flexibility that should allow the instructor to develop his course without the use of a comprehensive textbook. In this the author apparently has succeeded: his book is not encyclopedic but it does set forth important principles in some depth.

This book is one of four published by Prentice-Hall on major aspects of biochemistry; the others have to do with (i) molecules and structures found in living cells, (ii) their biologic functions, and (iii) their synthesis and breakdown. Thus, Larner's book is a part of the picture but not the total picture; nor does the author intend it to be other than just this.

I found the book readable and, with the proper science background, understandable. The illustrations are lucid, appropriate, and self-explanatory. And the book is as contemporary as anyone could expect.

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BUILDING BLOCKS OF LIFE: PROTEINS, VITAMINS, AND HORMONES SEEN THROUGH THE MICROSCOPE, by Roman Vishniac. 1971. Charles Scribner's Sons, New York. 62 p. \$6.95 (hardback).

31 beautiful, good-quality color photographs of basic biologic substances—proteins, vitamins, and hormones—make up most of the book. The pictures are of little scientific value; in Vishniac's words, "Rather they demonstrate the startling similarities between living cells seen through an interference microscope and the canvases of an abstract painter." In taking these photographs Vishniac has expressed himself more as an artist than a scientist.

The short text gives an historical sketch of the study of proteins, vita-

mins, and hormones as well as some interesting bits of information about them. A short bibliography is included.

Abstract-art enthusiasts should enjoy this book; so should biologists who happen to like abstract art.

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Botany

AN ILLUSTRATED STUDY GUIDE TO PLANT BIOLOGY, by James W. Geis and John Morrison. 1971. Burgess Publishing Co., Minneapolis. 150 p. \$4.95 (softback, spiral-bound).

This manual lends itself to a one-semester introductory course in which both innovative and traditional teaching methods are used. Each of the 14 subject units represents one week's work. Some units may be taught by autotutorial methods; others may be taught by traditional laboratory methods. The manual could, however, be adapted to a course in which autotutorial methods are used for the entire course.

Modification and substitutions of materials will be necessary in those parts of the country where suggested materials are not conveniently available or where they are unfamiliar to students. There is a good selection of drawings and other illustrations; from them, students can identify structures and record observations of processes.

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PLANT ANATOMY: EXPERIMENT AND INTERPRETATION, PART II, by Elizabeth G. Cutter. 1971. Addison-Wesley Publishing Co., Reading, Mass. 349 p. \$7.95 (softback).

This second part of a two-part series by Cutter concerns the organs of plants. (Part I [1969] dealt with cells and tissues.) The book is printed on good paper; the illustrations, including the electron micrographs, are sharp, with clearly labeled parts; and the text is augmented by well-chosen graphs and line drawings. Cutter's style is lucid. The bibliography, including 589 items referred to at appropriate places in the text, is most useful and up-to-date. A list of major books for additional reading is included. I found the index quite detailed and useful.

The book is conventionally divided into discussions of the major organs of

seed plants. It differs from most current anatomy textbooks in having much more emphasis on the development of organs; at the same time the description of mature structures is not slighted. One of the best features is Cutter's frequent reference to experimental studies supporting and adding interest to her accounts of structure in relation to function in the treatment of organogenesis. The role of auxins and growth regulators is often brought into the discussion of stem, leaf, and root development and maturation. Factors affecting cell division and differentiation during organ formation are discussed in detail. One of the last chapters treats of plant embryos; although too brief, this is an important part of the book because we have so little, in collated form, on embryogenesis and embryo structure since the work of Maheshwari in 1950. The instructor will be interested in the outlines of experiments, adapted for class use, on the control of cambial activity.

This refreshingly modern, relatively inexpensive treatment of plant anatomy should be attractive to biology teachers and to students of structural botany. It appears to be intended for the beginner, but there is much information and interpretation of value to the serious student of anatomy.

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TREES: STRUCTURE AND FUNCTION, by Martin H. Zimmerman and Claud L. Brown, with a chapter by Melvin T. Tyree. 1971. Springer-Verlag. New York. 336 p. \$18.50.

The authors define the book's scope as "devoted largely to those aspects of structure peculiar to trees." They state that processes basic to all green plants are left to textbooks on biochemistry and on general plant physiology. The preface also states: "This text emphasizes the relationships between structure and function." The book is thus defined as covering developmental anatomy and growth physiology in trees and the anatomy and physiology of translocation. Within these limits, the book is successful.

Of the seven chapters, three, by Brown, are on aspects of growth. The descriptions of primary growth of vegetative stems and roots are succinct and accurate. The descriptions of secondary growth are somewhat more detailed. There is good coverage of experimental anatomy. Brown's discussion of experiments on the effects of plant hormones on growth and his deductions about the role of hormones are sufficient to support an understanding of developmental anatomy of stems and roots.

Zimmerman's three chapters are on transport in phloem, transport in xylem, and storage and transport of assimilates. He has written very clear

summaries of experiments, reported in recent years,

Tyree's chapter, "The Steady State Thermodynamics of Translocation in Plants," concentrates the essentials of a biophysical description of transport into 23 pages. This chapter is difficult to read.

The book's primary utility is for plant anatomists and plant physiologists. If a reader does not wish a broad treatment of plant development and is content to leave problems in flower induction and initiation, leaf development, and wound responses to another book, then this book is excellent.

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Cell Biology

THE LIVING CELL, by Oliver Gillie. 1971. Funk & Wagnalls, New York. 216 p. \$6.95.

The author presents an excellent account of the origin of cells from simple inorganic molecules. Recent experimental data are evoked in support of the heterotroph hypothesis. Gillie uses the theory of evolution as a unifying theme. The processes of mitosis and meiosis are clearly described. The fact that the breeding of unrelated organisms is advantageous is pointed out. Gillie describes hereditary defects and the possibility of their repair by genetic "surgery." The role of enzymes is described very efficiently. This book is well illustrated, in color and black-and-white.

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Environmental Biology

WILDLIFE AND PLANTS OF THE CASCADES, by Charles Yocom and Vinson Brown. 1971. Naturegraph Publishers, Healdsburg, Calif. 286 p. \$3.95 softback, \$5.95 hardback.

This eighth volume of the "American Wildlife Region" series will be welcomed by all naturalists interested in the higher mountains of southern British Columbia, Washington, Oregon, and northern California. It is a valuable contribution to the inadequate supply of readily available regional guides.

The book has three parts. The first describes the 29 plant communities that the authors recognize in the region. Along with each description is a photograph of the community and a list of typical plants (by common name). Two accompanying elevation profile diagrams show the distribution of plant-community zones. These are interesting for a comparison of changes in elevation of the zones, but a vegetation

map giving more accurate geographic locations would have been more useful. Also of use would have been a listing of actual locations of one or more typical examples of each community type.

The second part of the book is given over to descriptions of 288 plant species, which, the authors say, "will include at least 90% of the individual plants seen. . . ." This may be a bit ambitious, but it is quite likely that this section does describe and illustrate most of the readily noticeable plants of the region. The drawings vary in quality of detail. Those of the detail and arrangement of conifer needles, for instance, are poor. The species are arranged into seven broad categories: freshwater plants, coniferous trees, etc. Beyond this simple key, identification is a matter of comparison with the drawings. The section on how to identify plants gives a brief description of leaf and flower characteristics used in identification. Species are listed by common name, with the scientific name following; the latter does not show the authority—something the more serious naturalist might find desirable.

Descriptions of the mammals, birds, reptiles, amphibians, and fish make up the third part of this work. Within each class the grouping is by order. The section on birds takes up more than half of this part and is probably the most useful. Again, common names are used, with the scientific name following. Most descriptions have accompanying drawings of good quality. This section has eight color-plates; four illustrate some 25 species of birds and would be useful in identification, but the four plates of large mammals add little to the usefulness or quality of the book.

Although the book has general appeal, it could best be used in the field by persons familiar with the language of biology. A knowledge of the region and its plants and animals also would help in knowing what to look for and where to turn. Most important: the relatively small size and comprehensive coverage make this a handy book to take along on hiking trips into the Cascades.

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NATURE STRIKES BACK, by John G. Navarra. 1971. Natural History Press, Garden City, N.Y. 224 p. \$5.95.

Natural disasters bring death and destruction to thousands of people each year. We refer fondly to Mother Earth, but "when you think of the forces of nature that reach out to engulf man," Navarra says, "you begin to visualize him hanging precariously to an earth that is anything but motherly." The book describes earthquakes, volcanoes, thunderstorms, hurricanes and typhoons, floods, landslides, avalanches, heat waves, snowstorms, and tsunamis.

Navarra, a professor of geoscience, sees little possibility of controlling these forces of nature. "What we can do is learn to predict when they will be unleashed. Then we must learn how to warn people and how to help them to protect themselves," he says. To that end he cites historical records of natural disasters and discusses their frequencies, their causes, the places where they are most likely to recur, and the safety rules to be followed in the event of their recurrence. The 86 photographs from various parts of the world add interest to the presentation; however, diagrams would have been helpful in clarifying the patterns of prevailing winds, which often have a part in the formation of hurricanes and typhoons.

Of special interest to ecologists is the suggestion that cleaning up the debris on the forest floor could dramatically reduce the destruction caused by the 13,000 lightning-caused forest fires in the United States each year. But the same debris that spreads forest fires is described as being an integral part of the forest ecosystem. It seems that an attempt to avert one kind of disaster could create disaster of another kind.

This book will find interested readers in biology and earth-science classes in upper-elementary schools and in junior and senior schools.

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THE WORLD'S POPULATION, ed. by Quentin H. Stanford. 1972. Oxford University Press, New York. 346 p. \$5.95 (softback).

Stanford says that his purpose is "to offer an organized approach to a complex and often very controversial subject." The book is indeed well organized: facts are presented logically and clearly, without hysteria or scare tactics.

The book is a collection of articles on the population problem. The first series of articles presents basic information on population and demographic studies; the second series examines the historical roots of the population dilemma; and the final series discusses possible solutions. Each chapter is prefaced with a brief explanation by the editor that puts the chapter in perspective and proposes thought-provoking questions. The book also contains many tables, charts, and graphs, which enhance and clarify the subject matter.

I strongly recommend *The World's Population* as an excellent source of material on the population problem. It can be used quite effectively in discussions in senior high schools and colleges.

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