

older versions is misleading. Since numerous diagrams, illustrations, and figures are identical and the material appears basically unchanged, the conclusion can be drawn that the new edition is merely a cosmetic revision. It is not.

This book is well written and retains the good qualities of earlier editions. It, like its predecessors, will well serve the junior high school to college student of biology. A ten-page reference section will provide the more serious individual valuable leads to more detailed writings. I encourage individuals and libraries to discard the older editions and replace them with this updated interpretation of vertebrate evolution.

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General Biology

AQUATIC SCIENCE: MARINE FISHERIES BIOLOGY

by James T. Davis and Deborah Lightfoot. Sea Grant College Program, Texas A & M University (College Station, TX 77843). 18 p. (Single copies available at no charge, 2 to 10 copies available for \$.50 each. When ordering, request publication TAMU-SG 79-405.)

One of the initial problems encountered while reading this booklet is to discern whether it was written for the novice or budding expert in the field of marine aquatics. The authors focus on the Texas Gulf Coast with four intentions: (1) identification of organisms that inhabit that area; (2) developing an understanding for the area's physical and biological features; (3) initiating an understanding for proper management of species commercially valued; and (4) providing suggested activities for exploration and specific-interest projects designation.

The major shortcoming of this booklet is that the presentation of each of the aforementioned topics is shallow, limited, and vague. More specifically: (1) Both the dichotomous and descriptive identification keys used are too brief in description and species identification (molluscs, oysters, crabs); however, one dichotomous key (shrimp) and pictorial/descriptive key (Food and Game Fish) are quite adequate. (2) The handling of physical (waves, tides, estuaries, etc.) and biological (shoreline organisms, food chain/webs) features are inadequately covered

to provide any meaningful use. (3) The topic of "proper management" is restricted to a few paragraphs of any valuable resource content. The remainder of that section provides proposed activities intended to guide the reader through a self study of the topic. (4) Many of the activities are too brief in description, guidance, or procedures to follow. Only the well-informed student could provide an in-depth compliance of the activity's suggestions. The novice would require significant, additional guidance. However, the activities in the Level III section of "Life History and Management" are detailed enough to be considered above average suggested activities.

In summary, the authors must either expand the text of the booklet for content improvement and detail, or submit a more extensive reading list for the student. A teachers' guide would prove very useful, also.

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EXPERIENCES IN BIOLOGY

by Penelope Hauchey Bauer, Michael A. Magnoli, Armand Alvarez, Dorothy Chang-Van Horn, and Delilah Taylor Gomes. 1981. Laidlaw Brothers, Division of Doubleday and Company, Inc. (River Forest, IL 60305). 831 p. Price not given.

This is a modern and up-to-date high school textbook. It follows the current trend toward easy reading, although no reading level indicator is given. When scientific words are used, a phonetic pronunciation is given in parentheses. The glossary also shows pronunciation as well as definition.

The book is divided into eight units. The first two units are the customary introductory material covering five chapters. The next two chapters seem out of place: chapter six is a brief overview of plants, nonvascular and vascular; chapter seven previews the animal kingdom. In a later unit the "World of Animals" is covered in five chapters; however, an entire unit of microbes and fungi separates the first introduction to animals and the continuation of the animal kingdom. If I were using this book, I would cover chapter seven and then jump to chapter thirteen to keep the sequence of the material on the animals intact.

Chapter eight, "Neither Plant or Animal," which is also introductory, precedes the unit on "Microbes and Fungi." The authors suggest the possibility of

dividing living organisms into six kingdoms but actually use five: Animalia, Plantae, Protista, Monera, and Fungi. The higher algae have been returned to the plant kingdom. There is merit in the authors' classification, although it differs from most of the current textbooks used in secondary schools.

Beyond the survey chapter in unit two only three chapters are devoted to plants. One of these is concerned with plant physiology.

"Reproduction and Heredity" follows the plant unit with five chapters, thus giving fairly good coverage of elementary genetics. A small section on recombinant DNA is included at the end of the unit under the heading "Pros and Cons." (Each unit has this "pros and cons" segment as well as a page on careers in the area covered by the unit.)

The seventh unit covers "The Human Organism" in five chapters. One glaring error is present in an illustration in the teacher's edition, in a full-page diagram of the circulatory system. A question is asked, "Which ventricle pumps blood to the lungs?" and in this edition the answer, printed in blue, reads "The left ventricle."

A final unit entitled "Interactions in the Living World" completes the book. Much of the material in this unit is included in earlier chapters in other textbooks.

Throughout the book, each chapter begins with a paragraph or two of introduction and four or five behavioral objectives. Within the chapters, questions are asked to help reinforce the material covered. A review of important ideas is given at the end of each chapter. About twenty questions that cover vocabulary, facts and concepts, and application and critical thinking are included. Throughout the teacher's edition, there are marginal notes. However, it became irritating to read constant repetitions of "you may wish to tell the student" or "you may wish to mention," and so on. One of the marginal notes states "the amount of ATP produced by complete cellular respiration . . . is only 36 ATP according to current evidence." Because this information is contrary to what is contained in over a half dozen textbooks I have read and does not agree with the views of several scientists with Ph.D. degrees whom I have consulted, the statement should be supported by some evidence.

Although there is a chapter focusing on taxonomy and how the various groupings are determined, there is no classification presented below the phylum level, except for the use of the complete classification of *Homo sapiens* as an illustration of how "lumpers and splitters" (taxonomists) work. Classification could at least be explained in the appendix for those who are interested.

If a teacher wanted to complete an entire book in the school year, I believe this book would lend itself to such an accomplishment.

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SPBE: SELF-PACING BIOLOGY EXPERIENCES

by James L. Kelly and Alan R. Orr.
1980. Iowa State University Press (South State Avenue, Ames, IA 50010). 21 packets, \$11.50.

Self-Pacing Biology Experiences, having the appearance of a laboratory manual, is a basic biology program consisting of 21 packets each devoted to a different biology topic. The materials are suitable for biology classes at the high school, junior college, and vocational school levels, as well as for some junior high school courses. The publisher states that it may be used with any biology text or in any course of study at the introductory level. The authors intend for the 21 units to offer individualized and self-pacing opportunities for the student in a course without formal lectures. Emphasis is on the student doing, seeing, listening—and of course, reading—the commentary and laboratory instructions in each of the self-paced experiences. Much effort is directed towards honing the student's powers of observation and using these observations in interpreting and explaining biological phenomena.

Each of the 21 packets consists of a basic part that everyone is to do, plus optional exercises of varying degrees of difficulty, but in most cases drawing upon the knowledge acquired in the basic material.

The topics are standard for introductory biology; they include "The Microscope," "Cellular Membrane," "Histology of Plants," "Fetal Pig Dissection," "Chemistry for Biology," "Energy and Enzymes," "Photosynthesis," "Genetics, RNA, and DNA," and "Basic Ecology." One packet is devoted to "Plant and Animal Diversity," but organic evolution is not considered.

The approximately 200 8½-by-11 inch sheets are unbound and punched for a three-ring binder. The commentary is easily understood and many drawings are included. Space is provided for student responses and the recording of data.

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THE BIOLOGY OF HUMAN ACTION
by Vernon Reynolds. 2nd ed., 1980.
W.H. Freeman (660 Market Street,
San Francisco, CA 94104). 315 p.
Price not given.

The central theme of this book is to identify the appropriate role of biology that has in the last twenty years joined psychology, anthropology, sociology, philosophy, and the humanities in explaining human action. Because the author assumes a certain familiarity with some books on ethology, anthropology, psychology, and sociobiology, it is an advanced book that could be used as a textbook in the second or third year of college. Some examples of the books that are analyzed by the author are the following: Konrad Lorenz's *On Aggression*, Desmond Morris's *The Naked Ape*, Robert Ardrey's *The Territorial Imperative*, Tinbergen's *The Study of Instinct*, Wilson's *Sociobiology: the New Synthesis*, Jane van Lawick Goodall's *In the Shadow of Man*, John Pfeiffer's *The Emergence of Man*, Lucy Mair's *Introduction to Social Anthropology*, and G.H. Mead's *Mind, Self and Society*.

This book provides a marvelously broad, critical, and balanced assessment of the ideas expressed by many recent authorities. It can serve as a single sourcebook for the whole biology-sociology debate. The titles of the five parts of this book well describe the great issues that are considered: I. Biological Determinism and Human Action, II. The Evolution of Human Action, III. The Physical Mechanisms of Human Action, IV. The Psycho-social Development of Human Action, and V. Human Action in Cultural Context. Human ecology is not considered.

The first edition published in 1976 predated the immense impact of sociobiology on the interpretation of human nature. The second edition contains a new Chapter 3 that attempts "to clarify some of the current confusions in human sociobiology." The author presents arguments against the "central claim of sociobiology, that our evolved, inherited, organic nature is the driving force underlying our behavior and the forms of our societies." He notes that E.O. Wilson himself has more recently anticipated that anthropology will profoundly influence and mix with sociobiology in forming explanations of the really important qualities of human social behavior.

This scholarly book contains three pages of suggested further readings and sixteen pages listing the references. Words are not wasted in the concise analysis of the ideas presented by the leading authorities of many disciplines. The author has accomplished the very difficult task of bridging the gulf between the famous two cultures of the sciences

and the humanities, through concentrating on the common problem of explaining human action. Although the biological interpretation is given the highest priority, the insights of the other disciplines involved in explaining human action are clearly presented and fully respected. A study of this book will probably prevent enthusiasts of simplistic biological generalizations from blundering into inappropriate statements about the nature of humans. I recommend this book as one that will certainly help biologists to move toward an interdisciplinary, scholarly, and accurate understanding of human action.

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A GUIDEBOOK TO BIOCHEMISTRY

by Michael Yudkin and Robin Offord.
4th ed., 1980. Cambridge University Press (32 East 57th Street, New York, NY 10022). 272 p. \$44.50 hardback. \$15.95 softback.

The authors present succinctly a wealth of information that reads easily at an introductory level. Their principal theme is to describe proteins, nucleic acids, carbohydrates, and lipids in terms of the forces that determine their architecture, and relate the structure of these compounds to their functions. In doing so, the reader can easily integrate new information presented in the textbook with that from earlier parts of the book.

The section on metabolism includes respiration, photosynthesis, synthesis of polysaccharides, fats, and amino-acid metabolism. Molecular genetics and protein synthesis are combined in a section that contains the synthesis of purines and pyrimidines, as well as a fairly detailed account of protein synthesis. The authors also introduce membrane structure, membrane permeability, appropriate aspects of thermodynamics, and the control of enzyme synthesis and activity with some reference to the metabolic effects of hormones. Unfortunately, this book does not include enzyme kinetics, which would be beneficial to the intended audience.

This textbook is more detailed than Lehninger's *Bioenergetics*, but less comprehensive than standard texts in biochemistry. It should be considered as a supplement to the readings in undergraduate courses in cell biology, microbiology, cell physiology, and plant physiology. Illustrations are numerous and well done. The index is extensive.

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