

port of chloride ions into the aquatic plant *Elodea* concludes the studies.

Carefully written introductions with clear, concise, theoretical background information should help to maximize student performance. The rationale for each experimental design is an added plus for both teacher and student. This is one laboratory manual that deserves attention from the teachers of cell biology.

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INTRODUCTION TO BIOCHEMISTRY
by John W. Suttie. 2nd ed., 1977. Holt, Rinehart and Winston (383 Madison Avenue, New York 10017). 434 p. Price not given.

This textbook fulfills its stated intention well. Designed for a one semester course in beginning biochemistry, it will admirably aid the essential but sometimes exasperating memorization of biological macromolecular structure, metabolic chains, and regulatory mechanisms. It does not, to my eyes, introduce any novel way to accomplish this task; explanations of difficult concepts such as free energy and electron/proton transport are standard. The author intends the exhaustion of the textual material within the time span of a course, rather than the availability of further reference material. As such, the text might form the basis for self-paced learning aided solely by question and quiz sections.

The design of the book is pleasing; significant points and structures are effectively highlighted with copious figures. The graphs are clear, appropriate, and use published data. The suggested further reading in books and journals are well chosen. I especially applaud the problem answers at the back of the book.

A biologist is always fascinated with the location of chemical reactions within the cell and organism. Consequently, the juxtaposition of biochemistry and physiology is especially helpful in considering, e.g., membrane composition and permeability, vitamin structure and role in specific reactions, oxidative phosphorylation and mitochondrial structure, and DNA structure and genetic code. Similarly, electron micrographs of cellular structure, the use of data from the experimental literature, and the illustration of isolation techniques for cellular fractions adds to the interest and ability of the student to bridge to more advanced courses with laboratory procedures.

The stated audience is the beginning chemistry, biochemistry, and biology major who may apparently have had organic chemistry but not physical chem-

istry, introductory biology but not genetics, algebra but not calculus. The varying level of background knowledge that students bring to a biochemistry course remains a problem not entirely solved in this standard and useful text book.

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CELLS AND ENERGY

by Richard A. Goldsby. 2nd ed., 1977. Macmillan Publishing Company (866 Third Avenue, New York 10022). 162 p. \$4.95.

The dynamic field of biochemistry has expectedly produced much new information and many new concepts. This second edition is a recognition of the past decade of progress in molecular biology and chemistry.

Much of the new material is found in chapters entitled "The Nature of Cells" and "The Origin of Life." A discussion of cells and the cellular basis of life is a useful preamble to a treatment of the production and use of energy by cells.

The rest of book is organized around the concepts of energy production and use, which provide a unifying framework for discussions of metabolic control, conservation and expression of genetic information, enzymology, and protein structure and synthesis.

The book summarizes biochemical topics without losing a basic understanding of cell chemistry. The author shows considerable expertise in discussing biochemistry at an informed layman's level of understanding.

The book is very valuable for use in advanced high school or college level biology classes. It could be used as a textbook for a cell biology course. The book is highly recommended.

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BIOLOGY OF THE CELL: AN EVOLUTIONARY APPROACH

by William DeWitt. 1977. W. B. Saunders Company, (West Washington Square Philadelphia 19105). 568 p. \$13.95.

This book offers students an alternative to the bioenergetics theme organizing the descriptive and experimental knowledge of cell biology. The theory of evolution and the cell are presented throughout this book. Concepts of compartmentalization, bioenergetics and the integration of structure function are

closely tied to the origin and evolutionary development of the living cell. While the textbook contains recent information, the book refreshingly is not overburdened by such knowledge. Cell structure, photosynthesis, respiration, membrane structure and function, cell division and the expression of genetic memory are the topics offered in the text. These topics are preceded by an introduction to the evolutionary theme and background information in the field of bio-organic chemistry.

This book will probably be of limited use at the freshman-sophomore undergraduate college courses in general biology or cell biology. For those beginning students who are mentally ready, the book offers a rewarding challenge. An excellent laboratory manual written by W. DeWitt and E. Brown, *Biology of the Cell: Laboratory Explorations*, contains a number of experiments illustrating the conceptual ideas present in this book.

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Ecology and Environmental Biology

WAYS OF WILDLIFE

by Eleanor Horwitz, ed. The Wildlife Society 1977. Citation Press (50 West 44th Street, New York, 10036) 176 p. \$7.95 hardback, \$2.95 softback.

This book is the collective effort of several wildlife managers and biologists. Unfortunately, the writing is poorly edited, with unit headings not always indicative of what follows and lapses of unity within the chapters themselves. A single black-and-white photograph graces each chapter with a few charts and pen-and-inks appearing periodically. The factual information, though accurate, includes the same information as the ecology section of most standard biology texts. Therefore, at first, I was very disappointed.

Then I re-read the book in view of its stated purposes: to provide elementary teachers with "basic principles of the wildlife science" and to serve as "a source book for wildlife." I realized that for teachers with limited biology background, this book provides the most fundamental concepts of animal ecology, furnishes a few interesting examples for the major points that could be used in the classroom, and suggests many different types of activities allowing students to take active roles in learning about wildlife. Re-evaluated in this light, the book has substantial value.

The introductory chapter tries to show the traditional ties between humans