

books differ in their choice of subject matter, and to my knowledge a revelation clearing the question has not been received. Dowben's book certainly is as good as any other as judged by content, but it does not reflect the choice I would have made.

The first two chapters introduce the macro- and ultra-structure of cells. The illustrations are good. But the next seven chapters are about aspects of biology covered in detail and well in textbooks of biochemistry, molecular biology, and genetics. Energetics, cellular biophysics, amino acids and proteins, enzyme systems and metabolic pathways, DNA and its replication, ribosomes and protein synthesis, and regulation of metabolic processes are the subjects of these chapters. It is not entirely clear why the author tried to cover such a wide range, especially with so many excellent books (such as Stent and Watson) available as supplements to students of cell biology. He states in his introduction that his book "follows closely the recommendations of the Panel on Undergraduate Major Curricula of the Commission on Undergraduate Education in the Biological Sciences"; having served on the commission I can say with some confidence that the intention was not to include the full scope of biology in one book.

Chapters 10 through 16 are more to the point of cell biology: they cover lysosomes and protein regulation in eukaryotic cells, organization of biological structures, mitochondria and chloroplasts, cell permeability, excitation and nerve impulse, contraction in skeletal muscle, and primitive motile systems. In my teaching of these aspects of cell biology I have found it both easy and informative to introduce the more biochemical processes (of the previous seven chapters) as they become intellectually relevant to the grosser cell processes. My reasoning is based on the empiric observation that beginners seem to grasp the grosser processes more readily—which, if true, makes it somewhat easier to rationalize at a later time the more chemical processes. This reasoning is invalid for classes from which have been excluded those students whose analytic abilities are underdeveloped.

Dowben's book is very well illustrated, and it is written in a style acceptable to most professionals. It is not a book for the beginner or for the student who is not strongly motivated. If it is used in classes with students who are not afraid of molecular processes and are not repelled by jargon and a condescending style, it is as good as any book on the market.

Val W. Woodward
University of Minnesota
St. Paul

Ecology

UNDERSTANDING ENVIRONMENTAL POLLUTION, ed. by Maurice A. Strobbe. 1971. C. V. Mosby Co., St. Louis. 357 p. \$5.95.

The editor, in compiling the selected readings and adding the appendices, says he had two major objectives: to provide a "text reference" to support biology courses and "to provide a source of information on the current status of the science and technology of environmental quality for students of the sciences and humanities." To this end, Strobbe divides the book into two parts.

The first set of articles is most readable. The lay readers as well as the science students will have a greater appreciation of specific environmental problems and will see how important it is that problem-solving should be interdisciplinary. Strobbe provides a good balance of view points on pesticide and water-pollution problems; this helps students to understand that not all scientists agree.

The selection of articles in the second section is more variable in both readability and significance. In this sense it is a true reflection of the scientific journals. The assignment of specific articles from this set, however, can be very useful.

The appendices vary in value from a most useful set of "standard" environmental tests to a rather useless, because nonevaluative, list of environmental films.

Martin Borko
Orange County Community College
Middletown, N. Y.

ENVIRON/MENTAL: ESSAYS ON THE PLANET AS A HOME, ed. by Paul Shepard and Daniel McKinley. 1971. Houghton Mifflin Co., Boston. 317 p. \$4.50 (softback).

Environ/mental is a collection of articles, many of which are drawn from sources the typical biologist would not normally read. There is a good deal of emphasis on the social and psychologic effects of overpopulation and of the destruction of the natural environment on humanity. By dealing with these matters—often overlooked or ignored by biologists—the book can certainly broaden the reader's perspective of the dilemma we are facing. There are also a number of excellent articles from *Science* and the book ends with a 22-page bibliography of additional reading. Each article is prefaced with comments by the editors; these are often more interesting than the articles.

In general, the articles are not well integrated sequentially: the book seems

somewhat disjointed. However, I found it interesting and thought-provoking. Some of it would be difficult for the typical student, but there is much good supplemental reading here for courses in biology, sociology, and psychology.

Charles M. Schlanke
Jefferson College
Hillsboro, Mo.

THE CHEMICALS WE EAT, by Dr. Melvin A. Bernarde. 1971. American Heritage Press, New York. 208 p. \$6.95.

Much has been written about chemical additives to food; but *The Chemicals We Eat* is not just another book on the subject. It is a well-written, fresh, realistic view of the ever-expanding, often frightening chemicals-in-food industry.

The technical chapter on chemicals found in natural foods and food additives may be difficult for the layman; the other six chapters are not. Bernarde explains that many natural foods contain chemicals toxic to man but in amounts insufficient to damage one's health. Perhaps he is a bit optimistic when he views chemical additives in the same way. He points out that it is the consumer who has demanded convenience foods. Furthermore, the only hope of feeding an expanded population is by increased yields, which necessitate chemical aids and additives.

Even after the dramatic cranberry and cyclamate announcements, little has been done to educate the consumer. *The Chemicals We Eat* is an attempt in this direction. It explains why food additives are necessary, provides information about strengths and weaknesses of the U.S. Food and Drug Administration, and explains what FDA does in the interest of the consumer. Furthermore, the book deals with the food of the future, including preservation of natural foods and the manufacture of foods from nonfood materials.

This book does well what it intends to do: allay fears about many food additives. It is easily read, is factual, and should be of interest to every consumer.

Kenneth J. Thomas
Lynn View High School
Kingsport, Tenn.

GLOBAL ECOLOGY: READINGS TOWARD A RATIONAL STRATEGY FOR MAN, ed. by John P. Holdren and Paul R. Ehrlich. 1971. Harcourt Brace Jovanovich, Inc., New York. 303 p. \$4.50 (softback).

This selection of papers does not deal with global ecology as these words are usually defined but, rather, is concerned with the future of mankind and the quality of the planetary ecosystem. For the editors, there "are no panaceas

for the mess we are in." To salvage the future there must be "a revolution in human behavior, one which embodies fundamental reforms in our economic and political institutions, coupled with the wisest technological enterprises, the necessary ingredient of population control, and a new perception of man's place in nature"—in short, an "ecological revolution."

The 31 papers are grouped into seven sections, each with an introduction that promotes continuity and unity and affords the editors the opportunity to state their views clearly. The authors, mainly scientists and economists who might be categorized as liberal-progressive, wrote originally for such journals as *Science* (about a third of the selections), *Saturday Review*, and *Bulletin of the Atomic Scientists*; their works vary in purpose, quality, style, and information content. The views of some are generally accepted and those of others are controversial, but all are expressed in an interesting, often provocative manner.

The past year has produced a large number of books and collections of papers on environmental problems (paper pollution?), including a set from *Scientific American* by these same editors. This one, although its appeal is sometimes overly visceral and despite the inevitable inclusion of a number of previously reprinted articles, is above average. It will provide additional information and, perhaps, new viewpoints for the informed student. As the supplement to courses in the biologic and social sciences and in human ecology for which the book was designed, it will be informative, stimulating, and convincing, but it is necessary that the reader be made aware that the spectrum of rational viewpoints is broader than that presented here.

Gerson M. Rosenthal, Jr.
University of Chicago

THE SURVIVAL EQUATION: MAN, RESOURCES, AND HIS ENVIRONMENT, ed. by Roger Revelle, Ashok Khosla, and Maris Vinovskis. 1971. Houghton Mifflin Co., Boston. 525 p. \$5.50 (softback).

Perhaps a better subtitle for this collection of 38 articles, mainly reprinted from other sources, would be "Population, resources, and the environmental crisis." The first third of the book includes two major groups of articles: the first on determinants and consequences of population growth, the second on controlling human fertility. The discussion is comprehensive, and the articles range from the statistical treatment found in an article by Roger Revelle through a detached treatment of the abortion debate by Ralph B. Potter, Jr., to a poignant, emotional exchange in an article entitled "Poor Black Women."

Authors represented in the second third of the book, called "Resources, Food, and Development," are also preoccupied with overpopulation and the problem of enough food and resources for all. Only one short section deals with minerals and energy. Frequent mention of Pakistan evokes haunting images of the present political, food, and health crises there. An article by William and Paul Paddock proposes that a system similar to triage (sorting of the wounded in military field hospitals) may have to be adopted in the future to distribute increasingly small food surpluses to countries that can still be "saved." The problem of having to cross some countries off as too far gone to be saved is gory but may well arise if present trends of population versus resources continue.

The last third of the book is devoted to the environmental crisis. It juxtaposes doomsday ideas, such as those expressed by Paul Ehrlich, against the arch-conservative views of John Birchler Gary Allen, who would turn the entire environmental problem over to private initiative for a solution. Action plans for creating a better environment form the last group of articles. The book ends with a plea for environmental education, written by Robert S. Morison, who says, "The choice of what to do is . . . our most important problem and . . . the ultimate basis of choice is aesthetic."

In addition to providing a provocative and well-organized set of articles complete with substantial bibliographies to facilitate further study, the editors have also done a masterful job of selecting the photographs. These, inserted without captions, provide a visual counterpoint to the text. Some evoke a hopeful, whimsical, or humorous mood; others induce feelings of sadness, horror, or hopelessness. The editors are to be congratulated for the inclusion of these forceful visual metaphors.

I intend to recommend this book to colleagues and to undergraduate and graduate students.

William D. Romey
Environmental Studies Project
Boulder, Colo.

MAN'S IMPACT ON ENVIRONMENT, ed. by Thomas R. Detwyler. 1971. McGraw-Hill Book Co., New York. 731 p. \$5.95 (softback).

The current proliferation of paperback books focusing on environmental problems may be doing more harm—through increased demand on paper pulp and other resources—than good. But occasionally one comes along that has provocative impact . . . and *Man's Impact* is certainly one of these.

Detwyler, a University of Michigan geographer, has put together a pertinent anthology that covers the environmental field: atmosphere and climate,

waters, land and soils, spread of organisms by man, destruction and extinction of animals and destruction of vegetation by man, and man as maker of new plants and animals. In addition, there are fitting prologue and epilogue selections, including an initial overview and summary by the editor himself. Each article—and they have been derived from a variety of published sources and written by a diversity of authorities—is introduced with an appropriate review by Detwyler; and concluding each article is a list of further readings.

Man's Impact should prove an invaluable reference for concerned students and teachers who want well-chosen, literate, and factual considerations of our species' manifold relations with its environment. Use of paper pulp for this particular publication may, in the long run, prove to have been a good investment.

Richard G. Beidleman
Colorado College
Colorado Springs

MAN AND THE ECOSPHERE: READINGS FROM Scientific American, ed. by Paul R. Ehrlich, John P. Holdren, and Richard W. Holm. 1971. W. H. Freeman & Co., San Francisco. 307 p. \$11.00.

This compilation of some of the more outstanding articles published in *Scientific American* over the past 15 years should serve the biology teacher well as he prepares for instruction, and it should also serve as a reference for his students. It has the added feature of commentary by three of the more outspoken and farsighted of present-day ecologists. At the outset it may appear that the authors are doom-saying; but I view the book as one of the more optimistic treatments. It not only tells us what we have done wrong but what we must do to correct our errors.

John D. Withers
American Institute of
Biological Sciences
Washington, D.C.

Education

SHOULD STUDENTS SHARE THE POWER?, by Earl J. McGrath. 1970. Temple University Press, Philadelphia. 124 p. \$2.45 (softback).

This is a brief but substantial introduction to the question of student participation in college and university governance. The result of a study the author made for the American Academy of Arts and Sciences, it presents data on existing practices (in the appendix), opinions on their effectiveness, and "proposals concerning desirable policies." Included is a bibliography of more than 100 titles, all but a few of which were published within the last