

this book. The major areas of coverage include astronomy (18 pages), earth science (24 pages), and the various phyla of plants and animals (about 700 pages).

Fowler suggests that there is a gulf of misunderstanding between (i) scientists and technologists and (ii) these professionals and the laymen who depend upon their wares. He hopes that this book will help all to better understand themselves and the environment in which we live, without requiring the nonscientist to learn a vast new vocabulary of technical terms. The index includes both scientific and common names of organisms as well as entries from the nonliving universe. This book could serve as a valuable reference and also a stimulus to more careful observation of the world around us. I recommend it for high school and college libraries as well as science teachers and the public in general.

One criticism of the book is that most of the print is so small (6 point) that many students will probably not put forth the extra effort required to read it for pleasure. However, the drawings of organisms are quite good and should be very helpful in identifying the plants and animals. The black-and-white photographs of various rocks and minerals are of limited value for identification purposes, but the textual descriptions should be helpful.

Walter Cory
Indiana University
Bloomington

MAN KIND? OUR INCREDIBLE
WAR ON WILDLIFE, by Cleveland
Amory. Harper and Row, (10 East
53rd St., New York, 10022). 372 p.
\$9.95 hardback.

I do not recommend this book.

Amory writes well and has great love and compassion for wild animals. He deplores hunting for sport. He condemns cruelty to animals. He is against the use of the furs of wild animals for fashion clothing. He supports humane treatment of animals. I am in full agreement with all of those positions.

The reason I cannot recommend his book is not because it is an emotional book, which it is, but rather because it is an uncritical book. In pursuing his major goals, to which I fully subscribe, Amory throws his net far too broadly. Most importantly for readers of this journal, he appears to reject the use of animals for educational purposes. Thus he quotes, with apparent approbation, a statement condemning "the taking of specimens for zoos ... and large scale research" (p. 228).

It seems to me that in man's relationships to animals there are a series of continua. For example, many persons in the Middle East would find an appropriate place for themselves on a continuum involving man's relation to animals as sources of food. That con-

tinuum might include diets of (i) vegetable matter only, (ii) vegetable matter and fish, (iii) vegetable matter, fish, and/or eggs, (iv) vegetable matter plus fish, eggs, and poultry, (v) vegetable matter plus animals other than cattle, or (vi) no restrictions.

In an analogous way, another continuum reflecting man's relationships to the use of wild animals could be recognized. One such continuum might be (i) all wild animals should be left undisturbed; (ii) wild animals may be taken for educational purposes such as displays in zoological gardens and museums and for study purposes in museums and schools; (iii) wild animals may be killed so that their flesh and pelts can be used for food and clothing; and (iv) wild animals may be hunted and trapped for sport and pleasure. The problem with the book under review is that it leaves the impression that Amory is not willing to move one inch from the first position on that continuum. I think it appropriate and reasonable to occupy a more intermediate position.

I have found that the attitudes of biology teachers towards wild animals are humane and thoughtful and, further, biology teachers have a better understanding of, and concern for, conservation and the proper role of mankind in the living world than do most other groups of people.

All of these considerations lead me to believe that this book would be of little value to biology teachers or their students.

Arnold B. Grobman
University of Missouri
St. Louis

Education and Professional Concerns

MEASUREMENT FOR EDUCATIONAL EVALUATION, by Clinton I. Chase. 1974. Addison-Wesley Publishing Co. (Reading, Mass. 01867). 312 p. Price not given.

This is a textbook designed for a course in educational measurement and evaluation. The author's purpose is to provide a discussion of basic concepts needed by teachers to use and interpret standardized tests and to prepare better tests of their own. The book presents a good, simplified overview of most traditional issues in educational measurement as well as some discussion of differences between norm referenced and criterion referenced evaluation.

As with most books on educational measurement, this one fails to present adequately how evaluation can influence what students will learn and how knowledge can be organized for an understanding of concepts in a discipline. This shortcoming derives in large part from the lack of foundation in learning

theory, which Chase acknowledges, a deficiency that is likely to be remedied in the future as the learning theory of David Ausubel becomes better known. For biology teachers, I would recommend Nedelsky's *Science Teaching and Testing*, although Chase's book would be a useful supplementary reference.

Joseph D. Novak
Cornell University
Ithaca, N.Y.

TEACHER EDUCATION: THE SEVENTY-FOURTH YEARBOOK OF THE NATIONAL SOCIETY FOR THE STUDY OF EDUCATION, PART II, by The Yearbook Committee and Associated Contributors, ed. by Kevin Ryan. 1975. The National Society for the Study of Education, distributed by the University of Chicago Press (Chicago, Ill. 60637). 352 p. \$10.00 hardback.

Many science educators are familiar with the National Society for the Study of Education's renowned *Forty-Sixth Yearbook 1974, Part I—Science Education in American Schools* and *The Fifty-Ninth Yearbook, 1960, Part I—Rethinking Science Education*. In a similar vein *The Seventy-Fourth Yearbook, Part II* should be referred to for many years to come. While it is not concerned with science education, per se, it is concerned with the training of teachers on the primary and secondary levels.

The yearbook begins with the history of teacher education; then it examines such topics as why people become teachers, what various teacher training institutions are like, and how they reflect society. Research in the area of teaching education is reviewed as well as some contemporary concerns such as performance-based teacher education, unionism, certification, and inservice training. The yearbook concludes with various views of the future.

As the chapters are authored by different writers, so the style tends to vary. There is some overlapping and some omissions of problems, but this does not detract from the valuable information forthrightly presented. The book is highly recommended.

Monroe Cravats
York College of the
City University of New York
Jamaica

READINGS IN SCIENCE EDUCATION FOR THE ELEMENTARY SCHOOL, ed. by Edward Victor and Marjorie S. Lerner. 3rd ed., 1975. Macmillan Publishing Co. (866 Third Ave., New York 10022). 475 p. \$6.95.

This book, intended to be a resource book for both preservice and inservice elementary teachers, is a revision of an

earlier edition by the same authors. They state that approximately a third of the articles in the second edition have been replaced by ones dealing with newer, innovative practices. However, only ten of the included articles have been published since 1970, and the three most current ones (1975) are all authored by one of the editors. The inevitable publishing lag is the major criticism of the book. Surely the editors could have surveyed their colleagues in order to have included more current articles.

The book is divided into eight sections, each dealing with a major facet of elementary science education. Prior to each section, and to each article, the editors provide a succinct, informative description of the major points of the articles, or article. These descriptive passages are particularly helpful for the preservice elementary teacher; they relate each topic to the whole concept of elementary science teaching.

In light of the concerns of most preservice elementary teachers, the more practical articles probably are the ones of greatest value. Among the outstanding practical articles are a detailed paper on the logistics of team teaching; a summary report of the National Assessment of Educational Progress in Science; two articles on the availability of ERIC and the variety of its services; an excellent checklist for assessing a science program; and a useful article, complete with many sample items, concerning evaluation procedures in elementary science.

The main concern about this book is that most of the included articles were written prior to or during the major national curricular projects for elementary science. Therefore, the readers are not exposed to detailed information about the theoretical bases for, or the practical problems of, the new elementary science curricula. Only one brief article compares ESS, SAPA, SCIS, COPEs, and several smaller projects.

With the exception of the curricular area, the book is a fairly thorough compilation of articles concerning elementary science. It should be useful to both preservice and inservice elementary teachers as well as to their university and college instructors and supervisors.

Jane Butler Kahle
Purdue University
West Lafayette, Ind.

Evolution

COEVOLUTION OF ANIMALS AND PLANTS, ed. by Lawrence E. Gilbert and Peter H. Raven. 1975. University of Texas Press (Austin 78712). 246 p. \$12.50 hardback.

This collection of papers, originally presented at the First International Congress of Systematic and Evolu-

tionary Biology in 1973, addresses itself to a number of topics: terrestrial seed plants and their relationships with insects; leaf-feeding animals and their impact on plant evolution; ant-plant relationships; seed dispersal and ecological modeling; insect courtship and plant pollination, to name only a few. The flow of energy as the currency of plant-animal coevolutionary relationships is a common thread of many articles. The studies presented in this volume are concerned with the dynamics of evolutionary relationships that have led to a given situation and to the reciprocal modifications that have taken place in the participating organisms. Emphasis is placed on the processes rather than products of evolution.

The book will be extremely valuable as a reference because it is the only available presentation of the current research in this field. Complete bibliographies at the end of each article will provide the reader with avenues to more in-depth study. I recommend the book for the advanced high school or college student who has particular interest in plant-animal interrelationships.

Claudia B. Douglass
Purdue University
West Lafayette, Ind.

CONCEPTS OF EVOLUTION, by Everett C. Olson and Jane Robinson. 1975. Charles E. Merrill Publishing Co. (Columbus, Ohio 43216). 272 p. \$4.50 softback.

Opinions, theories, and concepts animate this otherwise standard textbook for nonbiology majors. The introductory chapters give a view of organic evolution in its relationships to, and with, society and philosophy. This method helps the student place some kind of organization on that which is subjective and that which is objective. In other words, the text enables the student to understand that life is organization, and it is that organization which can extend and propagate itself by imposing the same self on other suitable matter. Thus, through growth and replication, organization creates organization.

In various other books, more attention is directed toward the history and meaning of the ideas behind evolution. These efforts, however, tend to fall short of the needs of students who desire an understanding of how evolutionary concepts, in biology and other fields, relate to human events and spheres of knowledge beyond the scope of science. This book is designed to meet such a need, but without sacrificing a sound understanding of the biological basis for evolutionary theory.

In the last chapter of the text, the full circle of ideas begun in chapter 1 nears completion. First, dealing with what evolution is; then, the history of life and how it can be explained; and from there, the constant progression of the

theory of organic evolution; like a tractor-tread, all these give movement to one of the great conceptual achievements of man. As with the links of the tractor-tread, systematically repeating its course of action, it is the same with ideas. They have a way of feeding back into the society that generated them and becoming the basic thought patterns by which its members live. The problems of all men become the problems of philosophers, and their writings, in turn, influence the society which generated them. Thus evolution has had an immense effect on everything we do, and even on the way we look at life. As we return to this point, now with a full background, we can see how evolutionary thinking has become entrenched in modern life and what some of its major consequences are and might be. In final analysis, a look at the past with an objective eye to the future is where any integrated study must come to rest.

The book is knowledgeably written, with artistic illustrations and important concepts summarized at the end of each chapter.

Barbara A. King
Christian Brothers High School
Memphis

BIOLOGY AND SOCIETY: THE EVOLUTION OF MAN AND HIS TECHNOLOGY, by Andrew McClary. 1975. Macmillan Publishing Co. (866 Third Ave., New York 10022). 320 p. \$7.95.

Perhaps the greatest compliment a teacher-reviewer can render a book is to adopt it for a course. I have adopted McClary's excellent presentation for my course in "Social and Ethical Issues in Biology," offered to undergraduate biology majors as well as nonmajors. It is also ideally suited to a senior-level high school course.

The author evaluates our technological and social dilemmas from an evolutionary perspective. He divides the book into three parts: Past, Present, and Future. The "Past" begins with a comparison of the organismic level of life (hydra) and the ecosystem level (a pond). There follows a simplified, but adequate, survey of human biological and cultural evolution.

The "Present" begins with a history of domestication and its impact on the development of Western technology. Although McClary does not fully elucidate the thesis that "Domestication brought a series of social and technological changes of the greatest significance," this section is outstanding. It acquaints the reader, in a well-written and logically outlined sequence, with the rise of specialization and of scientific thought, the interaction between machine and nature, the price of the human "cultural ecosystem" ("... it takes 850 acres of Canadian timber to publish a single Sunday edition of *The New York Times*"), the impact of genetic se-