

form this system from within. We have come to this crisis juncture not because what we have been doing is all "bad" or all "good" but because, as in all other ages and with all other peoples, we are human and fallible.

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MEASUREMENT AND EVALUATION IN THE CLASSROOM, by Clarence H. Nelson. 1970. Collier-Macmillan Ltd., London. 138 pp. \$2.25.

The author intends this book as a convenient source of practical procedures for the novice classroom teacher confronted with problems in measurement and evaluation. Indeed, it does contain many informational tidbits. Since the text is brief and the narrative generally fluid, a once-over-lightly treatment by the teacher could have some positive results. The test items furnished as examples deal primarily with science content. The author claims that the principles implicit in the items are transferable to other content areas. Chapter headings include the nature of measurement and evaluation; the objective test; composing, duplicating, administering and scoring the test; and standardized tests and classroom performance.

The opening chapter presents a clearly delineated list of frequently occurring problems in the areas of measurement and evaluation. Unfortunately, these problem areas are not referenced in the text, nor is an index provided. This greatly reduces the value of the book as a teacher resource.

Nelson's book has no special value for the science teacher. It does not reflect the most recent trends in evaluation in science teaching. Evaluation in the affective domain is given very limited consideration. Emphasis on item construction stresses the knowledge level. The chapter on the role of instructional objectives lacks substance, is misleading, and is devoid of concrete examples representing either the cognitive or affective domain.

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EFFECTIVE COLLEGE TEACHING: THE QUEST FOR RELEVANCE, ed. by William H. Morris. Published for American Association for Higher Education by American Council on Education, Washington, D.C., 1970. 162 pp. \$3.50.

This is a compilation of chapters on college teaching, most of which focus directly on classroom concerns. It is the direct descendant of an earlier study, *The Quest for Relevance: Effective College Teaching*, sponsored by the

Joint Committee on College Teaching of the American Association for Higher Education.

Most of the chapters deal with the teaching of certain disciplines, but there is a chapter dealing with the problems, issues, and conflicts of higher education as a profession and another chapter on campus administration and politics. The writers have been objective and realistic and have provided highly pertinent considerations for the beginning college teacher in such areas as campus governance, research and publications, committee work, and activism.

In regard to college classroom teaching, the most valuable chapter is by Stanford Erickson, who provides an excellent discourse on student interest and motivation, relevance, goals and change, and evaluation. Although some of these sections should be more specific, the treatment is effective and the selection of topics highly appropriate for the teacher who is concerned about his teaching effectiveness.

There is a chapter on the teaching of science, and scientific literacy as a major goal of science-teaching is argued. Nevertheless, in this reviewer's opinion this is not the most valuable chapter for the college science-teacher. Rather, the entire volume is appropriate reading for any college teacher who is interested in improving his classroom effectiveness.

As a whole, the volume is excellent. It should be among the basic readings required of all prospective college teachers before they assume full instructional responsibilities.

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BLACK PIONEERS OF SCIENCE & INVENTION, by Louis Haber. 1970. Harcourt, Brace, & World, Inc., New York. 189 pp. \$4.50.

This book points up the contributions that black Americans have made to industry, medicine, and agriculture. The personal and professional lives of 14 men are described in 10 to 15 pages each (with portraits). The well-known George Washington Carver is here; so are the less celebrated Benjamin Bannaker, Granville T. Woods, Charles R. Drew, and Percy L. Julian.

From this book students will learn of advances made by black men, even in the face of unequal opportunities. In addition, they will see how scientists are trained and how science progresses through interaction with government and society. The comprehensive bibliography encourages further study. I strongly recommend this book for addition to secondary-school libraries.

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Heredity

THE ORGANIZATION OF HEREDITY, by Kenneth R. Lewis and Bernard John. 1970. American Elsevier Publishing Co., New York. 250 pp. \$11.75 hardback, \$5.95 softback.

Probably no area of biology is better served by a diverse array of textual materials than genetics: there are encyclopedic compendia on things hereditary and there are succinct introductory texts; there are paperback series and there are selected and annotated collections of original papers. The volume under review does something quite different from any of the foregoing.

In nine tightly organized chapters the authors present a selective review of heredity. This is done by examining the chemical, genetic, and functional organization of the genotype. Throughout, the emphasis is on microorganisms and fungi, with various references to *Drosophila* and occasional ones to higher plants and mammalian genetics. A student viewing genetics from this perspective would be directed to biochemical and microbial genetics with a limited awareness of the genetics of higher organisms. This bias is further reinforced by the fact that the following subjects are omitted from treatment in this volume: probability, karyotypes and changes therein, genetics of domesticated forms, human genetics, and population genetics.

What does such an emphasis achieve? One very positive answer is, "A very pure view of genetics." That means the user of this book would learn what genetic material is, how it is organized chemically, something of its chromosomal organization, and how it controls protein synthesis; and he would learn this in terms of those key organisms that contributed the most to these studies over the past three decades. This no-nonsense point of view is reinforced by a style of writing that is appropriate to technical review articles: spare and humorless.

What does this approach not achieve? Fundamentally it lacks flexibility. It does not present enough detail to invoke the excitement of exploration through experimentation, nor (except for an excellent prelude) does it have the intellectual range to embed genetics in its parent science of biology. It is not a beginner's text. Furthermore, there are no problems to aid the student in the practice of genetics, and references are given as in a technical article and, hence, give little guidance to an inexperienced user. Most important: beyond the rhetorical gesture on the final pages—quoting Bateson, who says that "an exact determination of the laws of heredity will probably work

more change in man's outlook on the world, and his power over nature, than any other advance in natural knowledge that can be clearly foreseen"—there is no explicit treatment of man's responsibilities in using our current genetic knowledge. The authors' piety before the god of scientific knowledge is hollow and deserving of the scathing criticism that critics of irresponsible technology are also addressing to science today.

At most, this well-made book can be a supplementary text for advanced undergraduates or a useful reference for teachers wanting a solid, brief review of microbial and biochemical genetics.

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History

SIR CHRISTOPHER WREN, by Heywood Gould. 1970. Franklin Watts, Inc., New York. 226 pp. \$3.95.

This is essentially a short history of 17th-century England as reflected in Wren's life. The style is low-keyed, and the author avoids much of the bias often found in books about the period. This muted approach may make the book less interesting to children (grade 7 and up).

In the introduction, Gould points out the 17th-century criteria of an educated man and shows how scholars were concerned with many kinds of learning. He then traces Wren's early interests: in geometry, astronomy, sun-dial mechanics, and anatomy. Wren was one of the first practitioners of the "new philosophy," which called for experimentation. Early in life he became highly skilled in developing models for testing hypotheses and for use in explaining ideas to nonscientists. At age 29 Wren was appointed Savilian professor of astronomy in Oxford—just when he was losing interest in the subject.

With the restoration of the monarchy (1660) many new public and university buildings were being erected. Wren—not a professional architect but England's foremost geometrician—was commissioned to design several new buildings at Cambridge and Oxford. So, at about age 30, this former child prodigy, skilled model-builder, associate of scientists, and charter member of the Royal Society began a new career. His designs and finished buildings gained him permanent recognition as one of England's greatest architects. His mastery of geometry and astronomy contributed to the spatial relationships found in his designs. His scientific training and skill in model-building enabled him to serve as construction engineer as well as designer on many of his buildings, including the best-known—St. Paul's Cathedral.

Wren lived, and prospered, under six monarchs and the military dictatorship of Oliver Cromwell; yet there was never a hint of court intrigue connected with him. Artful in apparent compromise, he was able to live outside the turmoil of the time.

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Immunology

BIOLOGY OF THE IMMUNE RESPONSE, ed. by Peter Abramoff and Mariano La Via. 1970. McGraw-Hill Book Co., New York. 508 pp. \$12.95.

The authors, with the help of eleven other contributors, have assembled a comprehensive textbook of fundamental and applied immunology. Their attempt to produce an integrated book has met with reasonable success, although there is some overlapping of content among the 15 chapters. Major chapters deal with the physical and chemical properties of antigens and antibodies; the nature of immunity and the development of the immune response; the induction, regulation, and sites of antibody biosynthesis at the cellular and subcellular level; immunologic memory (for example, the fact that positive response to booster injections is faster and greater than to initial injections); external factors affecting the immune response; the nature of the antigen-antibody reaction; immunologic protection and injury, including the nature of autoimmune diseases; and transplantation immunity.

When differing theories are presented to explain observed phenomena a fair allocation of space is provided for them. Most of the current problems in immunology are touched upon and discussed. The authors make good use of figures and tables, and these prove to be very helpful. This textbook is recommended for biologists whose work involves aspects of immunology, to graduate students, and to physicians.

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Marine Biology

OCEANOGRAPHY: AN ENVIRONMENTAL APPROACH TO MARINE SCIENCE, by Alan Rabinowitz, Toby Bates Sutton, and Edward M. Taylor. 1970. Oceanography Unlimited, Inc., Lodi, N.J. 216 pp. \$7.00 (softback).

Basically, this manual is an introductory curriculum guide for teachers who wish to design a course centered on local marine life and oceanography

in general. It is a compilation of activities that have been used with Florida and California secondary students. It has material for both the teacher and the student.

The introduction describes some elementary techniques and provides the general background needed for collecting or maintaining organisms for study. The next 15 chapters center on the taxonomy and anatomy of common organisms found in the sea. The final 10 chapters treat of a variety of topics, including the tides, instrumentation, physiography, and chemical oceanography.

Most of the activities involve laboratory observation, identification, measurement, drawing, and the preparation of specimens. Each chapter presents the rationale of its topic, explains student objectives, describes materials and procedures, and contains a vocabulary, questions for discussion, and a bibliography. Thus the book resembles many classical textbooks, but it presents far more information and in less space. The teacher doesn't need to be a specialist in marine biology to get along.

The book may have been put together rather hurriedly: frequent grammatical errors and inconsistencies distract the reader from the content by drawing attention to syntax. And the authors seem to address the teacher and then the student, off and on, without a specific pattern. Some of the references are rather old; in particular, the most recent editions are not always cited.

Appendices include a sample examination, a master word-list, tables, lists of films and periodicals, instructions for writing a term paper, and procedures for diagramming biologic specimens. The manual is suitably illustrated with diagrams, charts, maps, and photographs of oceanographic instruments.

Marine biology and oceanography are being taught increasingly throughout the United States. This is one of the first commercially published outlines a teacher could use without having to do a lot of personal spadework or having to start from scratch in designing his own course.

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EXPLORING THE OCEAN WORLD: A HISTORY OF OCEANOGRAPHY, ed. by C. P. Idyll. 1970. Thomas Y Crowell Co., New York. 288 pp. \$14.95.

Oceanography is a young and extremely diversified science consisting of branches of many disciplines, including marine geology, physics, chemistry, and biology. This book covers the history, modern developments, and interrelationships of these branches in 10 chapters, each written by a well-known