

## STIMULATING! CHALLENGING!

Here is the ideal supplement for High School Biology. BIO-GRAM offers 50 puzzles that contain 1,110 clues and cover 7 units of work.

Excellent for: Biological concepts, Biological vocabulary, Independent study, Review.

BIO-GRAM has been tested and used in High School Biology classes and has received a high level of enthusiastic student acceptance.



Mail this coupon today for your

**FREE**  
**TEACHER'S EDITION!**

JUELAN PRESS

P.O. Box 583, Merrick, New York 11566

Name \_\_\_\_\_

Position \_\_\_\_\_

School \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_ Zip \_\_\_\_\_

years. The articles by Peter Schrag and Jason Millman offer suggestions: Millman recommends measuring individual status with respect to some criterion, and Schrag proposes that new standards of accomplishment should be developed and that schools should drop the use of diplomas, ranks, and grades. This book provides clear evidence that the proponents of accountability have not come up with satisfactory evaluation procedures essential to the total process of accountability.

Laurence C. Boylan  
Kansas State Teachers College  
Emporia

USING BEHAVIORAL OBJECTIVES IN THE CLASSROOM, by Daniel Tanner. 1972. Macmillan Co., New York. 79 p. Soft-back; price not given.

A book on behavioral objectives without major emphases on performance or competency criteria and accountability is a rather ironic occurrence in 1972. Into a mad labyrinth of literature on accountability, loaded with a few sound ideas, many clichés, and much plain "garbage," Tanner has interjected a timely reminder that man is not merely a mechanistic sum of his atomic parts.

The booklet, which Tanner avers is designed to help teachers and prospective teachers "to make use of a broad spectrum of instructional objectives and to assess learning outcomes more effectively through teacher-constructed tests," is adopted from the author's larger treatise on secondary education. A central theme of the two-part discourse is the "vital interdependence and continuity between cognitive and affective processes." Only fleeting mention is made of what is commonly known as the psychomotor domain.

The section on cognitive objectives turns out to be much more of an analytical argument on conflicting theories of

education than a guide to either prospective or practicing teachers who are woefully confused and in dire need of immediate help out of the accountability maze in which we all find ourselves. The author's invocations of Whitehead and Dewey as educational stalwarts of the past are impressive, but much too much of the discourse is spent extolling them over and against Bloom and other educational taxonomists of the last decade. The historical analyses and the refutations of simplistic mechanistic notions about learning are instructive and convincing for polemicists, but they fall short of the utilitarian evaluative needs of today's prospective and practicing classroom teachers. Although there is a brief extension of the work of Bloom *et al.*, not enough practical examples are given that most teachers can or will use in improving evaluative techniques.

Tanner comes much closer to his aim in the second section of the booklet. In his treatment of affective objectives he not only reviews and extends the work of Krathwohl, Bloom, *et al.*, but also invokes Dewey and other thinkers on the subject in stronger, more relevant terms. Thus his examples and illustrations are more graphic and potentially more useful for teachers.

The strongest parts of the booklet are its impassioned case for a humanistic approach to educational evaluation and the bibliographic sources that are brought to bear in the author's arguments.

The booklet probably will be of limited use in undergraduate and lower-level graduate classes, but it should be required reading for the many committees and groups engaged in the mad rush toward too much of what is presently purported to be performance-based and competency-based education.

Archie L. Lacey  
Herbert H. Lehman College  
Bronx, N.Y.

### Environmental Biology

ESSAYS IN SOCIAL BIOLOGY, VOL. 1: PEOPLE, THEIR NEEDS, ENVIRONMENT, ECOLOGY, by Bruce Wallace. 1972. Prentice-Hall, Inc., Englewood Cliffs, N.J. 265 p. Price not given.

This, the first of three volumes of readings in biology for the nonbiologist, is intended for the college student of elementary general biology. It consists of literary selections from such authors as Jonathan Swift, John Steinbeck, and Henry Thoreau, as well as essays by Bruce Wallace. A broad range of subjects is touched upon: technology, values, air, water, food, pollution, health, energy, community dynamics, and population control. The last-named topic receives considerable and repeated attention, but I was not able to discern a logical organization of selections based on content.

The major intention is to stimulate interest, and this is achieved. The selections provide much-needed historical perspective on social and environmental problems. The essays by Wallace effectively integrate various aspects of biology.

From the standpoint of instruction in the nature of science, a precaution is in order. Wallace is an advocate of certain social positions, and he generally makes this clear. However, he sometimes selects scientific data in support of his arguments without presenting data supporting alternative positions; and in some cases he suggests conclusions without offering supportive data. For example, he says "Green land plants compete with man for living space and, as human populations have swelled in size, forest lands have all but disappeared" (p. 74). The suggested near-disappearance of forests is not documented; furthermore, the suggestion contradicts the usual estimates by

ecologists of the prevalence of forests on earth. His general thesis, in this essay on carbon dioxide, is sound, but the above statement seems designed to serve the thesis rather than to present accurate information.

The biology teacher interested in presenting readings that integrate social concerns with biology should examine this volume. Its proper use will depend on the instructor's presentation of alternate positions and interpretations, incorporating all available data. The readings are appropriate for mature high-school students and college students.

*LeVon Balzer*

Western Washington State College  
Bellingham

**NATURAL RESOURCES: WILL WE HAVE ENOUGH FOR TOMORROW'S WORLD?**, by Reed Millard and the editors of Science Book Associates. 1972. Simon & Schuster, Inc., New York. 189 p. \$4.29.

This little book attempts to answer the question in its title and treats of the following resources: oil, natural gas, coal, nuclear fuel, metal, wood, soil, and water. Included are lists of suggested further readings and sources of information about natural resources. The book might have a wide readership among students from sixth grade through high school. The authors do not adopt a doomsday view of resources, but the difficulties facing the nation with regard to the fugitive resources—

oil, natural gas, coal, metal—are discussed with candor. The authors assert that better practices in exploration, exploitation, substitution, and conservation make predictions of doom unrealistic. If there is anything that might be criticized, it is the authors' too-frequent reference to disturbing forecasts about a resource and their immediate counter to that prediction with a discussion of how the forecast will not be fulfilled: technology always seems to offer a remedy. However, the last chapter does attempt to be more realistic. If a reader reads the whole book, he will get a good, realistic view of resources and their wise management; if, on the other hand, he does not read the final chapter he may be misled into believing there are workable solutions to all of our resource problems.

*H. Seymour Fowler*

Pennsylvania State University  
University Park

**ECOLOGY AND THE QUALITY OF OUR ENVIRONMENT**, by Charles H. Southwick. 1972. Van Nostrand Reinhold Co., New York. 335 p. Softback; price not given.

Ecology can no longer be considered the private domain of the biologist. The integration of ecologic information into the functioning of society must come from politicians, sociologists, economists, and the judiciary, as well as from professional ecologists. Southwick's book has been written to meet the diverse

needs and interests of these nonbiology specialists.

The book has five parts: the relevance of ecology to human affairs, historical aspects of ecology, ecologic principles, population ecology, and community ecology. Part 1 is an excellent interpretation of man in relation to his environment. This is probably the best feature of the book. It includes not only a discussion of biospheric pollution but also a frank ecologic analysis of such current events as the war in Vietnam and the Bangladesh uprising. Of the former, Southwick states, "Ecologically, this conflict should have been resolved by the Vietnamese people. Both the environment and the social values within the conflicting groups were foreign to other nations."

Part 2 traces the development of man and his ideas about ecology from early societies of hunter-gatherers through the agricultural and industrial revolutions and into the 20th century. Of particular interest in this section is Southwick's thought-provoking interpretation of man's role in extending the deserts of the world.

Part 3 is a relatively brief review of the basic principles of ecology, including such standard topics as ecosystem analysis, biogeochemical cycles, energy flow and trophic structure, and limiting factors and tolerance.

Part 4 is by far the most detailed section of the book. The information on population ecology presented here is

## TRY THIS UNITRON STUDENT MICROSCOPE FREE FOR 10 DAYS

MK  
SERIES  
from  
**\$115<sup>90</sup>**  
5-10 quantity

While other manufacturers urge you to "buy", UNITRON places the emphasis on "try". For only by working with a UNITRON under actual teaching conditions can you learn of the advantages of UNITRON Student Models as compared with other brands with seemingly similar specifications. Only by inspecting a UNITRON carefully and leisurely, without a salesman to distract you, can you appreciate the professional quality and workmanship which is usually reserved only for sophisticated research models. Our FREE 10 DAY TRIAL costs you nothing . . . we even pay all shipping charges . . . and places you under no obligation to purchase. Accept our offer and see for yourself why "UNITRON Means More Microscope for the Money".

A COMPLETE UNITRON MICROSCOPE CATALOG IS YOURS FOR THE ASKING.

UNITRON

INSTRUMENT COMPANY

MICROSCOPE SALES DIVISION  
66 NEEDHAM STREET  
NEWTON HIGHLANDS  
MASSACHUSETTS 02161

Please send Model MK for Free 10 Day Trial.

Please send a UNITRON Catalog. No. 7

NAME \_\_\_\_\_

SCHOOL \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

OTHER OPTICAL COMBINATIONS AVAILABLE • PRICE INCLUDES DELIVERY