

SOCIAL IMPLICATIONS OF BIOLOGICAL EDUCATION

Edited by
Arnold B. Grobman

Teachers and students of life sciences are forced to consider the social implications of biology. The important issues can not be avoided and deserve a full and balanced discussion.

Recognizing this need, the National Association of Biology Teachers invited distinguished biologists to address themselves to a variety of social issues. The result has been a volume ideally suited as a resource for class discussion and as a reference for the teacher of either life sciences or humanities.

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Medicine

by Michael and Lois DeBakey

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by James V. McConnell

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by Bruce Wallace

Population

by Garrett Hardin

Evolution

by Claude A. Welch

Additional statements are given by Vincent Dethier, Martin Schein, Haven Kolb, David Denker, Lawrence Mann and others. This book is available now from the National Association of Biology Teachers for only \$1.95.

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use in courses in European and American history and in the history of biology. It will not be easy reading for those lacking a background in history or biology, but it admirably synthesizes material for those who are knowledgeably drawn to the subject.

Garland E. Allen
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Laboratory Manual

INVESTIGATIONS INTO BIOLOGY, by Robert W. Korn and Ellen J. Korn. 2nd ed., 1971. John Wiley & Sons, Inc., New York. 512 p. \$5.95 (softback).

Preparing a laboratory manual that addresses both the knowledge and the process of biology is a difficult task. The authors have attempted it, and by stated intention the manual is weighted toward the process side ("experimental in nature"); but in fact the manual is little different from other manuals of prescribed directions for accumulating the knowledge of biology in the laboratory.

"To comply with suggestions that the first edition contained too much demonstration, we have incorporated more student work," the authors say. These changes are clearly evident in the second edition, but the decrease in demonstration is simply replaced by more fill-in-the-blank exercises. At no place in the manual does the student actually prepare data for presentation, nor does he ever really design his own experiment; rather, he places data in inadequately prepared tables and figures and follows directions for each step in the experiment. This is followed in every instance by several questions, and all too frequently each succeeding question reveals the answer to the previous one. Communication of experimental work receives scant treatment except in the appendix, with no reference to any style manual or basic format used by any journal. Some basic knowledge of statistics is presented in part I, but its use is extremely limited in the rest of the manual.

The information of biology has good basic coverage (chemical energy and biologic systems, the cell, growth and cellular differentiation, evolution, ecology, phylogeny, and the mammal as a product of evolution). But a great deal of this information probably could be presented better elsewhere (text, lecture, programs, etc.) and prior to the student's involvement in the experimental part of the manual. The manual needs more emphasis on the real problems in biology today rather than only on the ones we have already solved.

The authors have attempted to solve a difficult problem in their manual: what is the purpose of the laboratory

in undergraduate instruction? This manual is a sort of answer, but it falls short of involving the student responsibly and creatively in the spirit of investigation.

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Physiology

LABORATORY EXPERIMENTS IN PHYSIOLOGY, by B. H. Levedahl, A. A. Barber, and A. Grinnell. 8th ed., 1971. C. V. Mosby Co., St. Louis. 183 p. \$5.25 (hardback).

A more apt title would be "Exercises in Vertebrate Physiology": with the exception of the use of the insect eye, all of the material is vertebrate. Contemporary techniques in nerve, muscle, and endocrine studies are included among the 31 exercises. With the exception of using the frog skin to demonstrate transmembrane cation transport, the rest of the exercises—in digestion, physicochemical studies, circulation, and respiration and metabolism—have been standard for many years.

The book is easily read and is well illustrated. Clear directions for the preparation of animals and reagents and for the use of all the required equipment allow both the student and teacher to rely almost entirely on this manual for laboratory instruction. Either electrical transducers or kymographs can be used to perform the exercises devoted to muscle. An oscilloscope and an electronic stimulator are required for most of the nerve demonstrations. Human subjects are used frequently.

The book is aimed at college undergraduates but could be used in advanced-biology courses in secondary schools.

The book contains no hypotheses to be tested; that is, it is a collection of exercises rather than experiments. Perhaps the next edition will include a section on experimental design in relation to the investigative process—thus justifying its being called a collection of experiments.

Donald L. Wise
College of Wooster (Ohio)

ELEMENTARY HUMAN PHYSIOLOGY, by A. B. Taylor, John S. Willis, and Mary F. Ruh. 4th ed., 1971. Burgess Publishing Co., Minneapolis. 125 p. \$4.25 (softback).

The authors claim that this laboratory manual will give the beginning student in human physiology an idea of the scientific method, an insight into experimental physiology, and an opportunity to observe firsthand some of the important functional concepts in a

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WANTED

A biologist with considerable teaching and/or administrative experience to develop with present staff a science curriculum and to teach in a private coeducational school (grades K-12). Research experience and graduate degree(s) desirable. This position is for a flexible and vigorous experimentalist who understands and can articulate the role of teaching biology in an integrated and open innovative science program. Salary open. Send references and resume to:

Dr. William J. Alston
Science Department
The Maret School
3000 Cathedral Avenue, N.W.
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dynamic science. For the most part the manual does fulfill those claims. I do have some reservations about how much insight into experimental physiology the student will gain as a result of completing the exercises.

The experiments and demonstrations are representative of an elementary course in human physiology. There are alternate experiments for the instructor to select from, and some of the experiments can be modified so that they can be used with other equipment; for example, in some experiments that are described in terms of the physiograph a kymograph could be used. Some of the experiments require surgery on rats, such as the removal of the thyroid or the adrenal glands; others require injections. There is a demonstrator's manual available that will give directions on how to prepare for every demonstration and experiment, and I assume that this manual gives specific directions for the performance of the required surgery.

Each experiment has prepared data-sheets, which are well organized. For some of the more empirical experiments there is a sample data-sheet with sample calculations. The sample calculations should prove extremely helpful to the student, as well as to the laboratory instructor who may have forgotten the details of such calculations. The appendices include representative class data for selected experiments obtained from previous classes.

The manual is well written and is organized so that it can be used in any sequence desired by the instructor. The directions in each experiment are clear, and if the student follows the directions he should have no difficulty in setting up the exercise. I can recommend this laboratory manual to instructors teaching human physiology in community colleges.

Frank M. O'Kelley
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Whittier, Calif.

Radiation Biology

IONIZING RADIATION AND LIFE, by Victor Arena. 1971. C. V. Mosby Co., St. Louis. 547 p. \$13.50 (hardback).

A textbook for advanced students; a handbook for the radiation biologist; a sourcebook for the researcher who wishes to use radiation as a tool: Arena has given us a well written, comprehensive book that is all of these.

His systematic presentation is built on a review of the physics and chemistry of radiation. The chapter on the electromagnetic spectrum is a classic. The various kinds of ionizing radiation are covered in great detail. His descriptions (with diagrams) of the x-ray machine and the nuclear reactor are complete yet easy to follow. The chapter on

dosimetry considers mechanics and procedures as well as theory.

About half the book is devoted to radiation and its effects on man. The dangers from exposure, the medical uses, and the physiologic effects are treated extremely well; in addition the effect on human life of using radiation and radioactive materials as research tools and the knowledge gained by this means in many fields are covered very well. Arena points up the humane qualities of those who have contributed to research in radiology, especially in the early years.

The important fields of research are covered in sufficient depth for the general student, and the material presented could easily lead to further study. The references are well chosen, and the appendices are pertinent. The book is accurate and easy to read. The chapter outlines should be very helpful. The author carefully explains terms and abbreviations. The format is pleasing; print and diagrams are clear. The book is well worth its reasonable price, and the author is to be congratulated on his ability to include so much excellent material in a single volume.

Sister Rosemary Connell
Fontbonne College
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Textbooks

BASIC BIOLOGY: A FIRST COURSE, by Stewart M. Brooks. 1972. C. V. Mosby Co., St. Louis. 298 p. \$8.90 (hardback).

The author's experience has been in the teaching of basic science to junior-college and nursing students; one assumes that this textbook has been prepared for similar students. The author strives for what he calls "readable and enjoyable English." He includes an excellent annotated list of persons who have made significant contributions to biology. There is an extensive bibliography, but the entries are not tied to specific passages in the book. Another feature is a review of basic chemical and physical principles.

In all other features, including general organization, appearance, and reliance on black-and-white illustrations, this book reminds me of the traditional general-biology textbooks. A detracting feature is the small print, which makes reading rather difficult. Brooks emphasizes taxonomic biology and the products of science; he pays little attention to the processes of scientific thought and the interaction of conflicting ideas. He evokes the personalities of biology as historic benchmarks rather than as catalysts for student discussion and debate. The relationships among the biologic sciences and today's social and environmental issues have been omitted in favor of taxonomic objectivity.