

Function Together; Artistry in the Classroom; Personalized Teaching; and the Biologist in His Community.

Part 2 of the book concerns the environment which promotes creative biology teaching. There are cogent chapters on *Planning a Science Center*; and *Planning a Science Laboratory*. Both are superb!

Part 3 outlines how to go about *Selecting Useful Tools*. There are successive chapters on *Ways to Use Basic Materials; Planning Field Trips; and Shaping Biology Units*.

Part 4 is a series of Appendices, giving a wealth of useful information on *Teaching Aids; Working with Protists; Techniques Using Animals; Books, Magazines and Journals; Sources of Materials* (very useful and practical); and *Projects and Class Studies*. There is also a modest index.

Generally the authors have scrupulously avoided one of the pitfalls—being encyclopaedic—which they warn against in their suggestions on selecting (or writing) a textbook. If anything, they appear to be too brief—and the reader is left with the feeling of “tell me more, teacher!”

The book is wise, witty, informed, and informative, pithy, and encouraging (but discouraging where pertinent!). It makes use of many effective quotations from the wisdom of others to accentuate its points.

The book is simply, but attractively bound, with its title effectively and boldly displayed on the front cover and the spine, with otherwise little decoration—proclaiming it to be (as it is) a utilitarian book. The printing is in two easily read columns per page, newspaper-like, on high quality gloss paper. Chapter and section headings are in crisp bold-face print. There are numerous excellent sketches and photographs which add many thousands of exective unwritten words to the volume. You can't miss the page numbers at the upper outer corner, very bold, in 18 point type. The type face of the text is clear, readable, and large enough that even the tri-focalled may read it easily.

The book is written for the young teacher—especially for the teacher who wants to stay energetically young in his biology teaching. Hence it is a book for the modern age, for a teacher of any age.

I have only a few minor quarrels with the book. Whereas the chapters of Sections 1 through 4 in the main body of the text have good references at the end of each chapter for its amplification, The Appendices have reference lists which are all too brief. In Appendix A the list of “Leaders and Scientists Who Contributed to the Biological Sciences” overemphasizes contributions to the treatment of human ailments, and thereby denigrates the biologist *per se* while elevating unduly

the contributors from the area of medical research. There isn't an ecologist in the list, and modern taxonomy and systematics are virtually absent, as if they don't exist. Most of the scientists who have ever lived are alive and productive today, yet only a very few of them—mainly Nobel prize winners—are mentioned. Gravest of all, in a handbook for teachers, is the omission in the listing of any mention of the great teachers of biology, past or present. Some great writers of biology, who teach through their writings as well as in the classroom ought to be there; Julian Huxley, or Rachel Carson, or Loren Eisely are some who come to mind. The list seems to have been abstracted rather hastily from a few science history texts.

Another area in the book which needs prompt revision is the Appendix on *Using Protists in the Laboratory*. While generally good, the techniques for culturing protists are largely an out-of-date assemblage. Some modern, simple, and effective culture methods have been overlooked, as well as have some staining and preserving techniques, and some effective laboratory experiments.

These complaints are easily adjustable for the second edition—which the authors are (or should be) diligently preparing. This is a book which should and will grow through a series of editions—with the danger of becoming encyclopaedic.

I hope the authors continue to avoid that pitfall. They will better enjoy and profit from polishing the many facets of the diamond they have so expertly prepared and set.

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SCIENCE EDUCATION INFORMATION REPORT, GENERAL BIBLIOGRAPHY SERIES, No. 15, ACHIEVEMENT, 21 pp.; No. 17, SCIENCE AND SOCIETY, HISTORY OF SCIENCE EDUCATION, SCIENCE HISTORY, GENERAL STUDIES AND SURVEYS, 20 pp.; No. 18, LEGISLATIVE ACTS AND REPORTS, ADMINISTRATION AND SUPERVISION, SCIENCE FACILITIES, 10 pp.; No. 19, EVALUATION AND EDUCATIONAL OBJECTIVES, LEARNING THEORIES AND PROCESSES, RESEARCH AND METHODOLOGY, 43 pp.; December 1968; No. 20, TEACHER CHARACTERISTICS, STUDENT CHARACTERISTICS, 19 pp., January 1969, ERIC Information Analysis Center for Science Education, Columbus, Ohio.

Products of the ERIC operation at Ohio State University which specializes in information retrieval of science education materials. In each of these there is a clear exposition of the retrieval science's expertise and methodology. The objectives of such an operation are quite important indeed, and the benefits of it can be great.

However, this reviewer was frankly

disappointed in these publications. Most of the citations are from theses catalogued by University Microfilms of Ann Arbor and from *Science Education*. Some include citations from books and pamphlets. Of course, other periodicals are also included. This reviewer's disappointment was primarily because of what is not included and a deep suspicion of some of what is included. On the latter point, a career pamphlet is included under “Student Characteristics.” An inspection of it does not clear up the mystery of why it is included and not a host of other available pamphlets. On the first point, there are significant articles not included which are in journals such as *Science* and this one, and there are books omitted, especially under “Science and Society.” This leaves a nagging suspicion that a lot of editing out of articles was accomplished which inevitably must reflect the biases of the selectors or at best, the criteria of selections, whatever they may be.

This review is being written with great regret and perhaps out of ignorance; but these publications are simply not adequate for the titles they use.

PROJECTS: ZOOLOGY, Doreen Tampion, 294 pp., \$.75, Washington Square Press, New York, 1969.

A companion paperback to an earlier one on botany. It is extensive and includes a great variety of ideas for the teacher and student interested in this approach to learning. There is not much which is unfamiliar to most biology teachers. However, its strength is in the clear directions and the fact that it is all brought together under this heading. There are many dissection type projects and on animal behavior. Some caution should be noted which is not described in the book, and that is the requirement of sterility in those which involve living organisms, including man. For example, the blood sample experiment does not provide this caution.

For its price, this book can be purchased in multiple copies to good advantage for pre-college biology classes.

HEALTH RESEARCH LABORATORY DESIGN, U. S. Department of Health, Education and Welfare, National Institutes of Health, 83 pp., \$1.25, Superintendent of Documents, U. S. Government Printing Office, Washington, D.C., 1968.

A valuable booklet for all those in the business of designing biological laboratories. Although designed specifically for research installations, its value is also apparent for those interested in teaching. It is detailed yet succinct. Fully illustrated.

SCIENCE FOR BETTER LIVING, U.S. Department of Agriculture, 386 pp., \$3.00,