

jectives offered are not stated in behavioral terms. The suggested course organization does not seem to encourage a spirit of inquiry in either the teacher or the students. Concept development is indicated as the intent of teaching biology, and a large number of concepts are suggested; there are too many of them, and some are better suited to a college course.

Unit plans are offered in ecology-conservation, the cell, classification, simple organisms, Porifera through Echinodermata, Arthropoda, Chordata, the human body, inheritance and development, and the plant kingdom. In these units all teachers, but in particular the preservice and the new teacher, will find some useful and interesting ideas. At the end of each unit many books, journals, reports, films, and exercises are suggested. The exercises, although good, seem vague. Reference to good laboratory manuals for specific directions for each of the exercises would have been of great value, but such references are offered in only a few cases. I know that it would be impossible to list all the good teaching aids that exist today, but omission of any mention of the BSCS Inquiry Slides or Inquiry Single-Topic Films is unpardonable.

Despite its shortcomings the book contains things that can help make any teacher's classes better. It belongs in the biology teacher's library next to *Biology Teachers' Handbook* and *A Sourcebook for the Biological Sciences*.

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**ON THE THEORY OF ACHIEVEMENT TEST ITEMS**, by John R. Bormuth. 1970. University of Chicago Press. 163 p. \$9.75.

The purpose of this volume is to present an operational approach to the construction of achievement-test items. The author is proposing a method that cannot yet be fully implemented; he indicates that much research and development remains to be done before it can be applied. Therefore, although the book includes some seminal ideas, it will be more valuable to persons doing research on test construction than to those involved in the actual construction of tests. But even for the former group, a problem arises: the illustrations used are primarily in structural linguistics, semantics, and logic, and it is not immediately apparent how the system Bormuth proposes can be adapted to science.

The author's statements about the inadequacies of existing tests and the strengths of his proposed method are made in such dogmatic terms that the reader is almost pleased to find such specific flaws as oversimplification or

inaccuracy ("The well-known case of the modern physics program which resulted in vastly improved achievement in the students taking the course but also in drastically reduced numbers of students taking the course is a case in point") and sloppy scholarship (an incorrect bibliographic reference to a paper by Scriven).

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**DEVELOPMENTAL CURRICULUM PROJECTS: DECISION POINTS AND PROCESSES**, by Hulda Grobman. 1970. F. E. Peacock Publishers, Inc., Itasca, Ill. 261 p. \$8.00.

This book is a result of Grobman's extensive experience with curriculum materials development projects. The point of departure is a description of three such projects: Biological Sciences Curriculum Study (BSCS), Developmental Economic Education Program (DEEP), and Interaction of Matter and Energy (IME). Diversity in modes of operation of these projects is emphasized, but the treatment would have been improved by a tabular listing showing similarities and differences.

Major aspects of developmental curriculum projects discussed are situational and administrative constraints, aims and purposes, work on the developmental curriculum, diffusion of materials, and evaluation. Throughout, Grobman speaks about progress and problems from an "inside" perspective. Real human interactions that influence outcomes are frequently discussed.

The chapter on situational and administrative constraint deals with funding, organization structure, and personnel. It would be of interest to a rather limited audience and seems redundant at times. In the chapter on aims and purposes, Grobman includes major helps for anyone engaged in curriculum work, and she raises major issues and problems that often go unrecognized by educators. This is an excellent section for any teacher or administrator.

"Work on the Developmental Curriculum" includes subchapters on definition of curriculum, role of the teacher, acceptance of existing structure and media, target audience, preparation of materials, and tryout and use of materials. These subchapters often fail to come to grips with the main issues; for example, one might hope for recommendations concerning the concept of curriculum or the roles and behaviors of teachers and implications for curriculum developers. Even so, most teachers will find considerations of value in their own curriculum development. Directors and personnel of developmental curriculum projects should find the considerations highly valuable.

The subchapters of "Diffusion" pertain to format, teacher training, and implementation. The considerations under teacher training are pertinent in that the appropriateness of past efforts is carefully assessed; however, relatively little is provided by way of detailed recommendations, for example, on how to promote inquiry. Most other aspects of this chapter will be of interest primarily to personnel and scholars of developmental curriculum projects.

The last major chapter concerns evaluation. It is an extensive but entirely nonstatistical discussion of alternatives (and, often, pitfalls) in formative and summative evaluation. Again, numerous considerations pertain specifically to developmental curriculum projects, but many of the insights are pertinent to anyone with a curriculum responsibility, including many educational researchers. An implicit point well made is that potential users of materials should demand more evaluation evidence.

The summary chapter somewhat condenses recommendations and thoughts about the future. I believe that a much more specific and extensive pursuit of this task would constitute the greatest single improvement of the volume.

The greatest contribution of this volume to the largest audience is in chapters 3 (aims and purposes) and 5 (evaluation). One would hope that the principles enunciated would already be clear to most people involved in curriculum development; but, as the volume so often points out, observation of results does not warrant this assumption. The entire volume, in spite of seeming too discursive and somewhat redundant at times, is a must for all personnel and scholars of developmental curriculum projects.

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**RETIREMENT SYSTEMS OF THE AMERICAN TEACHER**, by W. William Schmid, in cooperation with the American Federation of Teachers. 1971. Fleet Academic Editions, New York. \$15.00.

This book considers retirement in terms of financial and emotional fulfillment. It reviews the historical and philosophic background of teacher retirement systems in America and then, through a wealth of tabular materials, thoroughly reviews the many aspects of the teaching profession as it relates to retirement. Of particular interest is the geographic survey and description of retirement systems, including their administration and financial operations. Schmid discusses the different systems of state funding; almost universally, he finds, they "favor security at the sacrifice of investment returns" and "have lost far more by inaction than by spec-