

viewer's estimation, that organizational framework is a plus.

Although written with a British audience in mind, the book is highly recommended for elementary and junior high school science methods instructors as a definite resource or an additional textbook for their classes. The book would be extremely helpful for beginning teachers and, especially, inservice teachers. To recommend the book for a teacher's professional library is overstepping this reviewer's parameters. Individual teachers must make that decision. Nevertheless, the book reads well and has a great deal of practical suggestions to offer American elementary and junior high school teachers of science.

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GENERAL BIOLOGY

CONTEMPORARY CLASSICS IN PLANT, ANIMAL, AND ENVIRONMENTAL SCIENCES

ed. by James T. Barret. 1st ed., 1986. Institute for Scientific Information Press (3501 Market St., Philadelphia, PA 19104). 371 p. \$39.95 hardback.

This book is the fourth volume to appear in the series "Contemporary Classics in Science." It is primarily a compilation of all of the commentaries appearing in "This Week's Citation Classic" in *Current Contents/Agriculture, Biology, and Environmental Sciences 1979-1984*. The previous volumes are *Contemporary Classics in the Life Sciences* (two volumes) and *Contemporary Classics in Medicine*.

The purpose and selection of Citation Classics are explained in the foreword, preface and introduction of the book. In essence, authors of some of the most cited papers and books from *Science Citation Index* and *Social Science Citation Index* are asked to write autobiographical commentaries of approximately 500 words that explain the main emphasis of their work, its genesis, the main sequence of events that lead to the publication and reasons why the paper became a Citation Classic.

Many science teachers approach the "scientific method" as a very logical stepwise sequence of events—i.e., question, literature review, hypothesis, testing (controlled experiment), results and conclusions. This is certainly the impression one gets by examining any good scientific paper.

However, the scientific paper omits many of the false starts, uncertainties, intuitive leaps, financial problems, and other aspects of human drama behind the scenes of modern science.

Although *Contemporary Classics* covers only success stories in science, I believe that it does provide the reader with a realistic perspective of the scientific enterprise by adding personal reminiscences by the Citation Classic authors of the actual course of events that took place leading to their outstanding work. These reminiscences often include serious criticisms by reviewers and/or rejection by major journals. Occasionally, the acceptance of a publication by a particular journal is somewhat of a compromise, as was the case for one Citation Classic author who wrote: "Like all good experimental scientists we carefully read 'the literature' after doing experiments that had stimulated our interest. Why not write it up? The editor of *Botanical Review* accepted our manuscript with a pleasing lack of fuss. (We had previously learned that reviews to the *Annual Review of Plant Physiology* are only by invitation.)"

I found the personal accounts in the Citation Classics to be extremely informative and interesting. In my opinion, this book can serve as an excellent resource for any teacher who attempts to help students gain insights into the nature of science.

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THE BIOLOGY COLORING BOOK

by Robert D. Griffen, illus. by Cinthea Vadala. 1986. Barnes & Noble Books, Division of Harper & Row (10 East 53d Street, NY 10022). 227 p. \$9.95 softback.

The Biology Coloring Book is the latest addition to a growing library of similar coloring books dealing with broad areas of the life sciences. The book contains 111 detailed illustrations of basic structures and processes typically included in an introductory course in biology. The illustrations are skillfully and accurately drawn. Each drawing is closely coordinated with the explanatory text on the facing page, and instructions for coloring the illustrations are interspersed throughout the text. The drawings are intended to be colored in as the corresponding text is read. Scientific terms are in italics and defined as they are

introduced. The author's style is clear and precise.

The book treats most of the topics covered in an introductory course in biology. The sequence of topics is the same as most high school and college textbooks with some minor deviations. The depth of the treatment is consistent with an advanced high school or introductory college level. This reviewer, however, has successfully used other books in the series as supplementary material in a tenth grade general biology class and believes that the book may be used to advantage at all levels from junior high to college.

Reading and coloring this book would be an invaluable study aid for those students taking an introductory course who are willing to spend the time using the book correctly, particularly if those students are strong visual learners. The book may be put to more effective use if specific pages are referred to in the lecture and assigned by the instructor as supplementary reading. Also, as an aid in reviewing for either the College Board Achievement Test or the Graduate Record Exam Advanced Test in Biology, this book would be excellent. The author suggests that some knowledge of biology may be gleaned from reading the book and coloring the illustrations independent of formal instruction.

The creators of this book, and others in the series, obviously spurn the notion that minds are passive receptacles for knowledge. The philosophy which spawned this and earlier books in the series is embodied in the Ancient Chinese proverb quoted on the back cover of the book; "I hear, and I forget; I see, and I remember; I do, and I understand." The book provides an incentive for students to study actively, with pencil in hand, rather than passively reading lecture notes or a textbook. If the hand is involved, there is a greater likelihood that the mind will also be engaged. The act of coloring the plate allows time for the mind to focus on and, perhaps further reflect upon, a single concept at a time. It is this time for reflection that allows the mind to make associations with previously learned concepts so that the new concept can be transferred from short-term to long-term memory.

As a student, I found that drawing diagrams in my notebook was an effective tool for learning concepts in biology. This coloring book, if used cor-

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Book Reviews

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rectly, may serve a similar purpose. If these books had been available when I was a student, I certainly would have used them.

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PHILOSOPHY OF SCIENCE

SCIENCE EDUCATION AND ETHICAL VALUES

ed. by David Gosling and Bert Musschenga. 1985. Georgetown University Press (Washington, D.C. 20057), 118 p. \$6.25 softback.

In 1983, the World Council of Churches and the Free University of Amsterdam organized a workshop to discuss the integration of moral and ethical concerns into science education. This book is the proceedings of that workshop.

The introduction states that the speakers were experts on either theoretical questions such as moral reasoning and science methodology or on practical questions such as the training of teachers and the development of new teaching materials. The participants were all involved in science education or related disciplines. The introduction includes demographics about the participants and a preview of each of the papers presented. The next eight chapters are the papers from the workshop. They include presentations about: three models of science education and their implications for instruction; how religious beliefs might be relevant to scientific theories, research and policies; two major defects in science today—no philosophical model of the natural world and the failure to invest facts with value; how science education does and does not contribute to moral education; parallel models of moral reasoning and scientific reasoning; a model for teaching social issues in a science class with possible pitfalls; experiences teaching ethical issues in science classes; and why new ideas about teaching do and do not transfer successfully to the classroom. The next two chapters summarize discussions on science education and society and in universities. The last chapter is a report from the workshop including a summary of the issues surrounding science education and ethical issues,

aims for secondary education, identification of skills and competencies needed to achieve these aims, and implications and recommendations.

Because the book is the written proceedings of a spoken workshop, it has several bothersome aspects. Although each chapter is clearly written, the style of the book is uneven. The authors of the papers represent various disciplines, emphasize theoretical or practical perspectives, and come from different countries. Also, all readers may not have the knowledge base that the authors could assume was common to an invited audience. The summary of each paper in the introduction and in the discussions is redundant. Some statements are not as thoroughly supported as would be expected in a written work and some references are incomplete.

At this time, when the theme of Science-Technology-Society is being emphasized in science education, this collection of papers will not change tomorrow's class but will provide theory, rationale and challenge to those who teach science and to those who teach others to teach science.

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ZOOLOGY

SNAKES OF THE WORLD

by Chris Mattison. 1986. Facts on File Publications (460 Park Ave. South, New York, NY 10016). 190 p. \$17.95 hardback.

This well written, small volume will be an asset to the middle and high school life science classroom as well as the school library. It is in a style easily understood by the informed layman. The author is a member of the British and International Herpetological Societies and has been a lecturer on reptile keeping for more than 18 years. Topics included are snake morphology, reproduction, foods and feeding, defense, snake families, behavior, ecology and snakes and man. Because the book is designed for worldwide distribution, it does not particularly emphasize North American forms. It is not a field guide but rather an introduction to the study of snakes. The 127 photographs, of which nearly half are in color, add greatly to the appeal of the volume. Of particular interest and sometimes not included in such popular books are the simple diagrams of snake anatomy (pg. 45) and vestigial hind limbs of py-

thons and boas. The range maps of snake families will be of interest to the more serious amateur herpetologist. An up-to-date bibliography arranged by section will allow readers to expand their knowledge of snakes.

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