

Book Reviews

Botany

THE MUSHROOM HUNTERS FIELD GUIDE

by Alexander H. Smith and Nancy Smith Weber. 1980. The University of Michigan Press (Ann Arbor, MI 48106). 316 p. \$14.95.

This is an excellent field guide for the introductory study of mycology because it is easy to read. The introduction, for example, explains the anatomy of mushrooms. It also describes when and where they can be found and covers identification and collection techniques. The authors state at the beginning of the guide that it can be useful throughout the United States and Canada, but it does not include all the species nor all the regions of the United States.

There are excellent taxonomic keys and a chapter on how to use them. The descriptions of the various species in the guide are easily followed, but the excellent color photographs make the process of taxonomy fairly simple for a beginner in the field of mycology. Another chapter in the guide has information on where selected mushrooms may be found according to season, edible mushrooms, mushrooms associated with certain trees, and microscopic characteristics. At the end of the guide is a glossary of the scientific terms used in the descriptions of the species discussed.

A bibliography is included for those individuals wishing to pursue the study of mycology further. Due to its size, the guide can be taken to the field; therefore, individuals can key out specimens on location. I, therefore, would highly recommend the guide to be included in secondary and college introductory mycology courses and as a reference book on secondary and college library shelves.

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TERRESTRIAL PLANT ECOLOGY

by Barbour, Burk, and Pitts. 1980. Benjamin/Cummings Publishing Co. (Menlo Park, CA 94025). 604 p. \$18.95.

This basic undergraduate text is divided into four sections: a historical overview of plant ecology; a section on the response of plant population to their environment (autecology); a section on synecology (community attributes); and a section on environmental factors such as light and soil. The information given in this text will provide students with an excellent overview of the topic of plant ecology. Numerous references are provided for the student interested in going to the original source of information (twenty-nine pages of literature cited). The various charts, tables, and photographs help to clarify the written material.

Instructors will find this book has adequate material for introductory courses; but because it is an overview of the topic, it does not provide in-depth coverage needed for advanced courses.

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Ecology and Environmental Biology

ENVIRONMENTAL SCIENCE: THE WAY THE WORLD WORKS

by Bernard J. Nebel, ed. assistance by Edward J. Kormondy. 1981. Prentice-Hall, Inc. (Englewood Cliffs, NJ 07632). 732 p. \$17.95.

This college-level textbook is designed primarily for nonscience majors. But it should appeal to science majors who wish to gain a broad and up-to-date background in this field, to lay people who might desire to become better informed about conservation and environ-

mental science, and to science-minded high school seniors.

The first paragraph of the Introduction serves to set the tone of the text:

One of the most valuable features of human intelligence is the ability to relate the past, present, and future. Looking back, we can see how one event has led to the next and how the present is a product of what has occurred in the past. Even more importantly, by recognizing how one event leads to another, we can extrapolate current trends and thereby gain some insight into what the future may be like. What can be foreseen for the next 10, 20, or more years?

Throughout the text, one is constantly reminded of this first paragraph as the author guides readers through past and present events, and suggests future events that we may all come to know, whether we like it or not.

The book is well organized. Each chapter begins with necessary background and helps students understand basic principles. It then continues to build on these principles in a logical manner that leads to an understanding of complex environmental issues and concerns. A concept framework at the beginning of each chapter focuses on specific learning objectives. An up-to-date list of suggested readings follows each chapter.

Major chapter topics are: "Ecosystems Defined;" "Ecosystems In and Out of Balance;" "Atoms, Nutrients, and Cycles;" "Soil, Ecosystems, and Agriculture;" "The Water Cycle and Human Activities;" "Domestic Wastes;" "Industrial Wastes;" "Pests and Pest Control;" "Resources;" "Land Use;" "Energy;" and "Population." Each chapter is broken down into numerous titles and subtitles.

The author deals with many controversial environmental problems with refreshing clarity and lack of bias. Among these are industrial growth and air pollution, lack of population control and overpopulation, energy supply and demand, killing of predators and overgrazing by wildlife, clearcutting and selective cutting of forests, water consumption and shortage, nuclear energy, waste disposal, and safety.

One section deals with human attitudes and the tragedy of the commons, and addresses the question of *why* humans pollute.

The book is amply illustrated with useful graphs, charts, line drawings, and black-and-white photographs. Each illustration enhances the text to which it relates and aids in reader understanding.

I believe this book fills a serious void in curriculum materials for this level of study. Perhaps it should be in everyone's library.

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FIELD AND LABORATORY EXERCISES IN ECOLOGY

by Stephen D. Wratten and Gary L.A. Fry. 1980. University Park Press (233 East Redwood Street, Baltimore, MD 21202). 227 p. \$29.50.

The aim of this book is to show how modern numerical techniques in plant and animal ecology can be used practically at the undergraduate college level to demonstrate many of the fundamental principles of the subject.

The 227-page softback written by two British ecologists consists of 56 dual exercises organized into five sections: Sampling, Spatial Pattern, Population, Population Interactions, and Community Analysis.

The exercises begin with a one- or two-page discussion of the principle to be illustrated. The first study of the pair of exercises is to be done in the laboratory, often as a simulation. The second study is designed to be done in the field. As an example, the title of dual exercise 3-4 is "The Effects of Quadrat Size." Exercise 3 is a lab study of "the effects of quadrat size on plant associations." It is done as a simulation. Exercise 4 is a field study on "the effect of the diameter of point quadrats on cover estimation in herbaceous vegetation."

The exercises are designed to take three hours or less in most cases. Extensive use is made of the mathematics of statistics. Some of the studies are relatively simple, but others are rather involved and would require extensive preparation by the instructor and/or lab assistant. Organisms suggested in the exercises all occur in Britain, but related species in other temperate regions can be substituted without affecting the fundamentals of the methods.

The text is clear, well written, and nicely organized. Simple line drawings,

charts, and tables illustrate the text. There is no color. References and index are adequate.

Some of the exercises might be adapted for advanced biology courses on the secondary level, but most are suited for college plant or animal ecology courses.

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Evolution

DARWINIAN IMPACTS: AN INTRODUCTION TO THE DARWINIAN REVOLUTION

by David R. Oldroyd. 1980. Humanities Press (Atlantic Highlands, NJ 07716). 398 p. \$12.75.

Recent litigation in the state of California regarding evolution and creation, which was suggested in the press as "being a victory for both sides" illustrates the timeliness of materials pertaining to Charles Darwin. While Oldroyd suggests that the "majority of Christians have finally come to terms with the evolutionary doctrine," it is obvious that controversy exists. Where then does this book fit into the materials already written about Darwin?

Darwinian Impacts was developed from materials Oldroyd has taught for years in the School of History and Philosophy of Science at the University of New South Wales. Covering 24 chapters, his writing is much in the format of classroom lectures and presents a very tight, scholarly, documented argument for each specific area being covered. The text itself is divided into three major sections: 1) Antecedents of Darwinism, 2) Darwinism, and 3) Consequences of Darwinism.

In tracing the antecedents of Darwin, Oldroyd leads the reader through chronological events in the emergence of theories of the origin of life. He purports to show relations and perhaps ultimate effect on the thinking of Darwin and his predecessors. Certainly, it is true that one better understands history when a conceptual frame is gained for the intellectual/scientific/historical environment that was present at the time that the theory pertaining to the origin of life was first presented.

The second section highlights Neo Lamarckian ideas with Darwin and the

works of Wallace and Mendel. Oldroyd attempts an objective presentation as he continually utilizes negative replies to Darwin and how, in answering these comments, the theory of evolution continued to be clarified. Scientists often receive their information about evolution from classic studies but in a disjointed manner, thus this basic chronological approach permits the reader to amalgamate his/her own thinking with that of the giants of the era.

Part three is the longest section and presents the impact of Darwin. Interestingly, graphs and tables document the questions raised about evolution immediately after the publication and dissemination of Darwin's theory. Further, the consequences of Darwin and politics, theology, philosophy, psychology, anthropology, literature, and music are presented in separate chapters.

Darwinian Impacts can easily be read by both the evolutionist and the creationist; it will give each a better historical perspective on evolution. The evolutionist will be supported in his/her understanding and the creationist may find more questions to ask about evolution.

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EVOLUTION OF THE VERTEBRATES

by Edwin H. Colbert. 3rd ed., 1980. John Wiley & Sons, Inc. (One Wiley Drive, Somerset, NJ 08873). 510 p. \$25.00.

The first edition of this contemporary classic was first published some 25 years ago. Developed as a concise summary of the generally accepted evolutionary relationships of the vertebrates, the 479 pages were readable and interesting. A second edition was released in 1969 that included updated information, new interpretations of the fossil record, and other minor changes. Although increased to 535 pages, the book retained the qualities so useful to the neophyte interested in vertebrate evolution.

The third edition has been developed in the aftermath of discoveries of fossil reptiles and amphibians in Antarctica. In addition, the modern theory of plate tectonics has gained stature. Colbert has updated *Evolution of the Vertebrates* to take these and other paleontologic advances into account. With the addition of new information, old and perhaps irrelevant discussions were excised. I wish to emphasize this point. A casual comparison of the new edition with the