of those colleagues who have contributed to this book.

The way instructors take the information from this source book and use it in their classes would vary with the nature of their course.

I would recommend this book for college plant physiology instructors.

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PLANT REPRODUCTIVE ECOLOGY
by Mary F. Willson. 1st ed., 1983. John Wiley & Sons (605 Third Ave., New York, NY 10016). 241 p. $35.00.

This small volume consisting of an introduction, 4 chapters, epilogue and summary, and index, is useful chiefly for botany (biology) teachers, graduate students, and an occasional alert and advanced undergraduate, but it is not recommended for high schools. The four chapter headings are: (1) life histories, (2) sexual systems, (3) mating, and (4) offspring. The various genetic, physiological, and ecological factors involved in plant reproduction are discussed in a way which indicates their mutual impact on the cost and success of the reproductive effort.

Discussions are imaginative, succinct, and often include suggestions for following up provocative ideas and unsolved problems. It could be a very useful source of ideas for research on various facets of plant reproduction.

The extensive bibliographies cited at the end of each chapter are excellent, and one of the most valuable attributes of the book.

The price seems high for the size of the volume, but in view of its limited market and inflation, it is justifiable to publish a discussion of this quality at a somewhat greater cost.

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ECOLOGY

OUR NATURAL RESOURCES
by Harry B. Kircher and Donald L. Wallace. 5th ed. 1982. Interstate Printers and Publishers, Inc. (Danville, IL 61832). 412 p. $12.50 hardback.

This fifth edition starts with the premise that natural resources have been the foundation of America's greatness. Recent resource shortages and ecological disasters have awakened us to the continuing dependence of our entire economy upon the natural resource base. The schools, therefore, are committed to train our nation's youth as custodians of their natural resource heritage.

Addressed to the high school or undergraduate student level, the book also appeals to any individual with an interest in this topic. It analyzes the basic resource position of the United States, suggesting future alternatives. It appraises with authority the past, present, and future of the entire spectrum of natural resources—the variety of kinds of energy sources, the nonfuel minerals ("muscles of the iron age"), forests, soils, and human resources. This edition retains the emphasis on agriculture since two-thirds of all businesses hinge upon agribusiness. The book enhances the technical presentation with interesting historical perspectives on origins, early uses, and the evolution of more efficient production and exploration techniques.

Constructive and realistic, the book delineates principles and practices of resource management through restoration, conservation, and improved or expanded exploration and resource recovery. It conveys none of the hopeless desperation which characterized typical books on resources in recent decades. It acknowledges signs of recent progress in relation to man's requirements.

Inviting and attractive, the concise organization of a comprehensive coverage enhances its potential as a textbook. More than 120 photographs capture the appeal of the natural world. Study questions and problems follow each chapter. It offers an effective vehicle for teaching long-range resource use and management.

The book is easily readable with quotable persuasions supported by interesting, convincing statistics. It also recognizes the technological, economic, and social problems that ensnare industrial development in specific areas, such as the use of nuclear energy. In this book, the authors improve upon the prior edition, which had become a classic in schools and libraries across the nation.

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THE FATE OF THE EARTH
by Jonathan Schell. 1982. Avon Books, a division of the Hearst Corporation (959 Eighth Avenue, New York, NY 10019). Avon paperback $2.50. Knopf hardback $11.95.

The threat of nuclear weapons to the security of mankind has been present since the first test of an atomic bomb on July 16, 1945. It is a menace which most prefer not to discuss or even think about, but which Jonathan Schell addresses directly in his book, *The Fate of the Earth*.

Schell's book is divided into three sections, each of which covers a different aspect of the nuclear peril. The first, "A Republic of Insects and Grass", is a well written, factual, and detailed explanation of the history, physical principles, and past effects of nuclear weapons. It begins with the simple concepts of the energy of the atom. Subsequently, the history of atomic weapons is discussed, and the two known uses of nuclear bombs against human populations, Hiroshima and Nagasaki, are presented in gruesome detail. Finally, the possible effects of a full scale attack are examined. Schell offers data of the fatal doses of radiation for various organisms, and shows that those with the highest radiation tolerance level are the insects and grasses. This leads to his conclusion that after a major attack, these would be the only surviving forms of life.

In the second section, entitled "The Second Death", Schell moves into the purely philosophical realm, discussing extinction and the "modest hopes of human beings which would be nullified by a nuclear holocaust." This section is verbose, considerably slowing the rapid pace set by the preceeding chapter. Often it seems as if Schell is simply redefining extinction on each page. In fact, I found that when I read a paragraph in this section and turned 40 pages ahead, I found essentially the same statements. The book insists on our present "obligation to unborn generations," yet gives little reasoning for this except that since our generation was brought forth on the earth, we should in turn assure future generations a similar opportunity.

The final section, "The Choice," discusses primarily the political and social problems manifested by nuclear weapons. Deterrence, a major factor in preventing nuclear holocaust in the present world, is analyzed in detail. Schell speculates on the future with and without arms limitations, and the possible effects on escalating arms production on a worldwide scale. The most important concept in this section is the altered complexion of war in modern society. This may be the most valid argument in the entire book, stating that formerly war was a

struggle between conventional forces with the stronger contestant the usual victor. Schell intimates that war no longer contains any notion of "stronger," since both sides can annihilate each other, and in fact, he maintains that even the word "war" is in effect obsolete.

Among the strongest points of the book are Schell's directly facing a threat that most people are reluctant to consider and his demonstration that although self-interest is beneficial to a certain extent, there is a point when self-interest becomes self-destruction. His theme—the difficulty of social adaptation to scientific development—is also important.

The weak features include his often wordy writing style, and his overwhelming emphasis on extinction. The argument which I found most difficult to accept was his proposed solution to the nuclear issue. He claims that the only way to solve the conflict is essentially to reinvent modern politics. This overlooks the fact that except in early revolutionary stages, politics results more from tradition than from contemporary attitudes.

The book, while not recommended for the classroom, could be a good reference for science and social studies teachers alike, because it presents basic emotional and philosophical attitudes toward nuclear weapons.

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THE GREEN PLANET: THE STORY OF THE PLANT LIFE ON EARTH

ed. by David M. Moore. 1982. Cambridge University Press (32 East 57th Street, New York, NY 10022). 288 p. $27.50 hardback.

Several years ago, a Pennsylvania college offered the graduate biology course, "Plant Ecology and Physical Geography." *The Green Planet: The Story of the Plant Life on Earth* is an excellent textbook or reference book for such a college course. The publisher states:

> *Green Planet* is an illustrated encyclopedia of plant ecology and geography. It demonstrates the diversity of the world's plant life, describes how it arose and has changed through geological time and considers the factors governing its occurrence and distribution today. . . . *Green Planet* describes the development of the disciplines of plant ecology and plant geography, reviews the historic and continuing dependence of Man on plants and assesses his impact on the world of plants so essential to his survival.

Although the publisher indicates that this single volume encyclopedia is written for the general public, it is doubtful a layman would be able to grasp fully the wealth of technical and scientific information it presents. However, this book is so clearly illustrated with photographs and color diagrams that it becomes a valuable source for these reasons alone. The book's related topics are formed into seven chapters instead of the usual alphabetical format for an encyclopedia. Chapters one and two, and an appendix containing biographies of some of the major figures in the development of plant ecology and plant geography, present a complete historical record of botany. However, many scientific methods discussed here are too detailed for general reading and are more suited for technical research. Chapter three offers an excellent section on the geological record of plants, but its discussion and its subtopic, adaptation, could have been expanded. Chapters four through seven contain excellent articles on various environmental factors, vegetation zones, biomes, distribution patterns, and man's domestication of plants and his impact on vegetation types.

The book, in the editor's opinion, has an international flavor, with photographs taken in West Germany and Canada and art production done in Italy and England. The entire book was printed and bound in Japan. Fourteen of the 30 contributors were from England. Nine are from the University of Reading where David Moore chairs the Plant Sciences House Committee and is deputy director of the Plant Science Botanic Garden. To the reviewer, this choice of authors does not show a true international group as the editor indicates.

The book is printed on quality stock, making its photographs and diagrams very brilliant, its text easy to read, and its shelf-life long. This volume is highly recommended for senior high school and college reference, as well as professional use. However, a standard encyclopedia would still be more useful to the general public.

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MEGATRENDS; TEN NEW DIRECTIONS TRANSFORMING OUR LIVES

by John Naisbitt. 1982. Warner Books, Inc. (75 Rockefeller Plaza, New York, NY 10019). 252 p. $15.50 hardback.

The structure of society changes constantly with time. In some periods, the direction of reorganization becomes difficult to understand much less predict. We are in such a time of transition and uncertainty. Through detailed analysis of America today, John Naisbitt, an experienced social forecaster, speaker, and advisor, makes predictions for the future. He does so in a positive manner that dispells apprehensions and fears so often associated with change by clearly explaining the forces that are reshaping society.

"Trends, like horses, are easier to ride in the direction they are already going." This quotation captures the essence of the entire book. By understanding our societal shifts, we are better able to alter present lifestyles to accommodate the changes rather than resist the inevitable.

Chapter one begins with the major transformation occurring now in our society: the shift from an industrial economy to one based on information. There is no escaping the computer revolution. Directly following is the movement from forced technology to high tech/high touch. As increased amounts of technology become installed in society, human interaction will take on a new value and importance.

The next trend examined is the expansion of our economic horizons from a national to a world level. I found this chapter particularly enlightening. It stresses the fact that the U.S. has lost its industrial dominance to Japan. A helpful analogy puts this into perspective. Japan is number one, but that status is like a new world champion in a declining sport. In addition, the section welcomes the increased economic interdependence with other countries as a means for achieving peace. Any global problems are likely to be solved with reason instead of weapons.

The next area of focus is from a short term to a long term outlook. No longer will the future's health and prosperity be sacrificed in order to capitalize on present opportunities.

The ensuing four trends concern the movement toward individualism. Centralized structures are becoming decentralized. In politics we are moving from a representative democracy to a participatory democracy. The most powerful government bodies are now found at the state and local level. The decision making process involves