

papers, reviews, and symposia volumes. The approach is quantitative but the mathematics and formulae are straightforward and interpretations of them are aided by useful figures and diagrams. However, one of the few significant errors noticed in the book is in fig. 6.2 in which water in the root is shown to move from phloem to xylem but the water potential data given incorrectly supports the reverse conclusion.

Topics covered are active uptake of solutes across plant cell membranes and movement of them through the cell wall pathway (apoplast) and cytoplasmic pathway (symplast), and the structure in the xylem and phloem and the present ideas of movement of water and solute in them. While it is primarily biophysical in approach, appropriate references are made to relevant plant biochemical pathways and to plant hormones. The bibliography of each chapter is helpfully annotated and the 142 specific references are current. It should be a valuable book for its student audience as well as serving as a useful and inexpensive reference book for professionals working in related areas.

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Cell and Molecular Biology

RECOMBINANT DNA: READINGS FROM *SCIENTIFIC AMERICAN*

Introductions by David Freifelder.
1978. W.H. Freeman and Company
(660 Market Street, San Francisco
94104) 160 p. \$12.00 hardback; \$6.50
softback.

This compilation of *Scientific American* articles proves to be a thorough yet succinct study leading to recombinant research. Due to the current controversy, it is both timely and informative. Presented here is a basic text in DNA research with balanced presentation of the pros and cons of recombinant experimentation.

The high school teacher will find this book a gold mine of information on molecular genetics and a challenge for the gifted student. The excellent bibliographies lead the serious reader further into the literature. *Recombinant DNA: Readings from Scientific American* should prove a valuable addition to college and professional libraries alike.

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Ecology and Environmental Biology

STALKING THE WILD TABOO

by Garrett Hardin, 2nd ed., 1978. William Kauffman, Inc. (One First Street, Los Altos, California 94022). 284 p. \$11.95 hardback; \$4.95 softback.

This collection of thirty-three essays, written between 1959 and 1977, ranges from the undesirability of earthquake prediction to wilderness admission criteria. However, the theme resounding throughout the book is the human population problem. Hardin's ability to focus on mechanisms to avert the catastrophic consequences of uncontrolled population growth is an outgrowth of his basic philosophy, pragmatism. In attacking problems, he sheds not only the robes of the intellectual establishment but those of Judeo-Christian ethics as well. In short, where Hardin stalks the only taboo is the closed mind. The result is a fresh perspective that often leads to disturbing conclusions. Actually, Hardin rejoices in the disturbance and feels that unless contemporary humans are willing to confront unpleasant realities, ecological annihilation is unavoidable.

For example, Hardin rejects the possibility of voluntary population control within the pluralistic society of the United States. Invoking the biological principle of competitive exclusion, Hardin argues that voluntary control will result in one tribe (i.e., any group of people that is perceived as a distinct group) eliminating, via outbreeding, the rest of the population. Hardin cites voter resistance to welfare programs as evidence that the average citizen intuitively grasps this problem. The alternatives he lists to competitive exclusion are occupational differentiation (ecological differentiation), geographic separation, or societal regulation of breeding rates.

The global correlates to this problem are developed in Hardin's now-famous essay "Living on a Lifeboat." Just as local welfare programs focus on rights rather than responsibility (particularly in terms of family planning), international programs designed to alleviate human misery are viewed by Hardin as an extension of the welfare mentality—both good intentions leading to bad consequences. Hardin states that the world food bank program, rather than promoting a "benign demographic transition" will in actuality result in a one-way transfer of goods from rich to poor countries. This transfer will, in fact, exacerbate the population problem. The inevitable result will be the diminishment of the quality of life for posterity. Hardin views this as the

bottom line for evaluating the morality of one's actions.

To be generous with one's own possessions is one thing; to be generous with posterity's is quite another. This, I think, is the point that must be gotten across to those who would, from a commendable love of distributive justice, institute a ruinous system of the commons...the rejection of the commons is still valid and necessary if we are to save at least some parts of the world from environmental ruin.

Certainly the explosive ideas in the book should be explored and discussed by students in biology and environmental science classes. However, I feel that it is imperative that Hardin's work be read in conjunction with works that express other viewpoints (e.g., the September 1974 issue of *Scientific American* that is devoted to Human Population). Hardin, in the preface, indicates that the sections on competition and need may be rejected because the ideas are historically premature. However, the political climate where a Proposition 13 flourishes suggests that Hardin's work could be used as handy rhetoric to support a political ideology rather than explored for its inherent truth. Indeed, that would be the supreme irony to bestow on the master of taboo stalking.

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ECOLOGY OF PESTICIDES

by A.W.A. Brown. 1978. John Wiley and Sons, Inc. (One Wiley Drive, Somerset, New Jersey 08873). 525 p. Price not given.

This compact, highly factual book reviews the literature on the effects of insecticides, fungicides, and herbicides in terms of their impact on worldwide ecology. This is a straightforward, non-interpretive report on these chemicals as they have affected living organisms, from soil microflora to humans and birds, and their ecological niches, wherever they happen to live. Its sixteen chapters cover the entire spectrum of pesticide applications and their effects as reported in the literature; each chapter has an extensive list of references (from 56 to 227 per chapter, total 2,024) to the works of more than 2,300 authors, including reports from various government agencies and private or commercial organizations.

This book will be extremely useful (and I strongly recommend it) to any and all who have need for factual information on pesticides, as reported through 1976. It is also the best single source of referen-