

Book Reviews

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Guest Book Review Editor

ATMOSPHERE-BIOSPHERE INTERACTIONS: TOWARD A BETTER UNDERSTANDING OF THE ECOLOGICAL CONSEQUENCES OF FOSSIL FUEL COMBUSTION

by the Committee on the Atmosphere and the Biosphere, Board on Agriculture and Renewable Resources, Commission on Natural Resources, National Research Council. 1981. National Academy Press (2101 Constitution Avenue, N.W., Washington, DC 20418).

Man is indisputably a geological force of global proportions. Interactions of the atmosphere and biosphere are so widespread that there is evidence of accumulated heavy metals in arctic plants and elevated lead levels in the snow and ice of the antarctic regions. This report by a blue-ribbon panel of the National Research Council composed of experts in limnology, soil science, geochemistry, botany, ecology, atmospheric sciences, hydrology, and air-pollution engineering attempts to document that evidence and raise concern over what to do about air pollution.

The report is valuable because it is concise and based on very broad literature; the bibliography alone is about 20% of the body of the report. After explaining the fossil fuel scenario and giving an historical overview, the report devotes separate chapters to biogenic emissions to the atmosphere, anthropogenic sources, atmospheric transport, transformation and deposition, biologic accumulation and the effect of atmospheric contaminants, general areas of research, and finally, acid precipitation. Each chapter has a short but valuable summary.

National polls show that Americans are very much concerned about air and water pollution and have been concerned for more than a decade. They continue to place a very high value on clean air and water. The Committee on the Atmosphere and the Biosphere shows us just how difficult it is to define ex-

PLICITLY what cleanliness means in a global sense although they are able to define pollutants in a narrow sense. The report of the committee does not give specific solutions to the dilemma of industrial progress and clean air. They do say that pollutants must be reduced, but they do not say how we should go about achieving those reductions.

This report probably is not valuable as a classroom book because it is highly technical and not meant for laypersons. The best students should find it a useful starting place for entering the rather sizable and confusing literature on air pollution. It would be valuable to any teacher trying to increase the background of knowledge needed to present the technical and scientific aspects of air pollution.

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ACID RAIN: A PLAGUE UPON THE WATERS

by Robert Ostmann, Jr. 1982. Dillon Press, Inc. (500 South Third Street, Minneapolis, MN 55415). 208 p. \$12.95 hardback.

Robert Ostmann is a journalist who specializes in environmental reporting. He spent two years doing research for this book and many more covering acid rain for the *Minneapolis Star*. Ostmann has written a very readable and understandable introduction to acid rain. *Acid Rain* is directed toward the average reader and as such has little scientific-technical language. The journalistic style is both a strength and weakness. On the strong side, I found the book easy reading. It flowed well, had interesting facts and figures, and made excellent use of analogies. Use of a leaking basement faucet as a means of thinking about different groups' proposed solutions to acid rain was superb use of metaphor. For example, some groups wish to wait until the water is up to the first floor; some will let the

faucet run and pump the basement; some see the leak, but claim it is not their problem; and so on.

On the weak side, some of the discussion was sensational. While it held one's interest, there was a feeling that very complex issues were being presented with a simplicity and trendiness. While on the topic of weaknesses, the diagrams and charts were not very good. Their production was poor and several had little or no explanation.

Ostmann's orientation is clear from the first chapter—"A Threat to Planet Earth." He makes the point that acid rain is not new, but public awareness of acid rain is new. Along the way he introduces some of the researchers and concepts important for further reading. The second chapter continues with introductions to the destructive processes of acids and the various effects of acid rain on plants, trees, humans, and materials.

There is a chapter I thought extremely interesting, and a new dimension among books and articles on acid rain. "The Acid Rain Pioneers" is a fascinating chapter concerning the dilemmas faced by scientists studying acid rain. (I imagine that the discussions would generalize to scientists studying other environmental problems as well.) Should the scientist make public his/her results and advocate remedies, or should the scientist publish his results in scientific journals and leave the advocacy to others? Ostmann interviewed scientists such as Gene Likens, Svante Odén, Eville Gorham, and William Lewis for the book, and the manner in which these individuals resolved the dilemma provides far more than interesting reading.

The last chapters of the book chronicle the political dimensions of acid rain. "A Test of American Will" should be insightful to anyone who ever wondered how things do and do not get done in Washington. The last chapters on the politics of acid rain and

on the pioneers are the strongest in the book.

Acid Rain is a good introduction. Most high school students could read the book. This alone should be of interest to biology teachers and school librarians.

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ACID RAIN: THE DEVASTATING IMPACT ON NORTH AMERICA

by Ross Howard and Michael Perley.
1982. McGraw Hill Book Co. (1221 Avenue of the Americas, New York 10020). 206 p. \$6.95 softback.

Acid Rain is written in a style intended to provoke action. To be sure, all the details of acid rain—what it is, where it comes from, where it goes, what it does to plants, animals, people and materials—are all included. The authors do a good job of presenting the basic science and social science in the flow of discussion. From a beginning with specific examples of “dead lakes” to an ending of political reluctance, the reader develops a tension between what is known and what should be, but is not being done. As a result, one could be provoked to action.

Ross Howard is an environmental journalist. Michael Perley is Director of the Canadian Coalition on Acid Rain. Both are Canadians and subsequently the book is written from this perspective. The authors relate well the Swedish fight against acid rain in their country. In a sense they take the Swedish saga as an example for Canada. With any political will, both the Swedish and Canadian experience will provide sufficient warning for the United States. While the Canadian bias is evident in statistics, examples, and reports, the facts suggest that it may be worthwhile for U.S. citizens to review Canada's problems with acid rain. However, the essential level at which to view the problem of acid rain is not the national level; it is revealed in the book's subtitle: North America.

As mentioned, the book has a journalistic style. As a result, there are many interesting dates, facts, and figures, e.g., “a typical 12 miles-per-hour wind can carry a mass of air 870 miles—from Chicago to Montreal—in as little as three days” (p. 54); forceful examples, e.g., “South of the border, the total American emissions of sulphur dioxide are five times greater than the Canadian—28 million tons in 1978 versus 5.5 million, and two thirds of this

comes from electric power plants, versus one-sixth in Canada” (p. 47). There are also interesting quotations from scientists and industrialists. Eville Gorham, an ecologist and acid rain researcher, is quoted as supporting the social and political responsibility of scientists:

In something (acid rain) of this magnitude, I can't see the sense of sitting isolated in some ivory tower reporting what has already happened, if it can be prevented by some reasonably-based prediction and advocacy. (p. 92-93)

William Poundstone of Consolidation Coal Company is quoted:

It is not clear that acid precipitation does in fact cause acidification of lakes. . . . It is also unclear that coal burning by utilities is a major cause of increased acid rain. . . . It would be unwarranted, unjustified and unwise for the nation to embark on a course of regulatory controls based on scant, conflicting and inconclusive data. (p. 185)

What is particularly intriguing about this book is the description of political tensions between scientists and industrialists and, on a larger scale, between the United States and Canada. While the tensions will undoubtedly increase, the long-term benefits to North America must be the goals.

The book is comprehensive and generally well written. Interesting as they are, I thought that some of the facts, figures, and rhetoric were sometimes detracting. The book is not well illustrated. It has only four pictures and eight figures/tables. They are all located in one section. *Acid Rain* is a very good comprehensive introduction to the problem. Biology teachers will find the book a useful resource.

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ACIDIFICATION TODAY AND TOMORROW

A Study Prepared For The 1982 Stockholm Conference On The Acidification Of The Environment. Available from Liber Forlag, Forgeagssorder, S162 89 Stockholm, Sweden. 232 pages, \$8.00 softback.

Our generation does not own the lands and water amidst which it lives. We merely have them on loan, and we must therefore set ourselves to pass them on, unspoiled, to coming generations.

With these sentences the Swedish Ministry Of Agriculture Environment '82 Committee concludes an extraordinary guide to acid precipitation. Us-

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