

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, Forgeagorder, 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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ing research on the Scandinavian countries, the authors describe the discovery and extent of chemical and biological changes resulting from lowered pH in various forms of atmospheric deposition.

Obviously designed for the general public, the text is complemented with outstanding color illustrations of such acid-damaged features as architectural ornamentation, agricultural lands, and the liming of lakes. Of special interest for students of science is the clear portrayal of data in a variety of graphs, drawings, and maps. Maps include the distribution of sulfur deposition across Sweden, the sulfur interchange among European countries, and susceptibility of Swedish forestland to acidification. Drawings feature clear explanations of techniques like fluidized bed combustion and turnover of aluminum in soils of varying acid loads. Several graphs show the distribution of heavy metals in soil profiles and lake sediments.

Noteworthy for the combining of a visually appealing text, clear graphics and scientifically current information, *Acidification Today and Tomorrow* concludes with an assessment of the need and opportunities for change. Texts of comparable quality should be published by governments of other nations threatened by acid precipitation and included in school curricula. Lacking such specific publications, students worldwide can benefit from the Swedish Environment '82 Committee's example.

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STILL WATERS: THE CHILLING REALITY OF ACID RAIN

by Sub-committee on Acid Rain of the Standing Committee on Fisheries and Forestry. 1981. Minister of Supply and Services Canada. (House of Commons, Ottawa, Ontario, Canada) 150 p. Free upon request.

Still Waters is a report written for the Canadian House of Commons. The charge to the committee was to study

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all aspects of acid rain. The committee spent a year reviewing information and hearing testimony on all aspects of acid rain.

If you think this is "just another report" you are wrong. *Still Waters* is not a typical report. It is well written and well illustrated. The report was designed for the public, not to be buried in governmental archives. Color photographs, tables, and graphs are used throughout the report. The quality of the report demonstrates the seriousness with which Canada views the acid rain problem.

All of the basic information such as pH, buffering, liming, sources, effects, and remedies are discussed. *Still Waters* has a distinct policy orientation. The reader first encounters 38 recommendations to reduce acid rain. Recommendations range from installation of the best available emission control technology to public awareness. Recommendations are directed toward the governmental agencies, utilities, industries, and legislative bodies in the provinces. There is a refreshing "tell it like it is" approach to the problem.

The emphasis on Canada may be distracting for some readers. Personally, I did not find this to be the case. I found the Canadian view to be a nice comparison and contrast to past and present policies in the United States. On balance, I would say there is a good, and much-needed, international discussion that may challenge some readers. If one has a basic understanding of the acid rain problem then *Still Waters* provides a good overview of national and international policies directed toward ameliorating the problem.

I found sections on the legal context, acid rain in the U.S. and economic aspects of acid rain to be the most informative.

Acid rain is an international problem—it respects no national boundaries. The Canadians are more recipient than donor to the Canadian-United States acid rain problem. They have produced a very readable and balanced discussion of a common problem. Considering the cost, the book is a must for biology teachers.

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