

Reviews

ENVIRONMENTAL CHEMISTRY AND CYCLING PROCESSES. D. C. ADRIANO AND I. L. BRISBIN JR. (Eds.). (Available for \$15.00 from National Technical Information Service, Springfield, Virginia 22161 Request CONF — 760429)

This book contains 61 papers which were presented as a symposium in South Carolina. The categories treated are:

Design, Sampling, and Modelling	(10 papers)
Analytical Techniques	(11 papers)
Soils and Sediments	(14 papers)
Plant and Animal Uptake	(13 papers)
Terrestrial and Aquatic Ecosystems	(13 papers)

The editors have recognized the classical concepts of the physico-chemical separation of metallic elements, their concentration or depletion by geochemical processes and the modification of these cycles by organic activity. Unfortunately the preface and forward of the edition I reviewed were inextricably mixed up and the sequence and topics of papers didn't do much to relieve the confusion.

The first section (Sampling, Design, and Modelling) outlines the diverse sampling methods possible, and cautions against using linear models to study non-linear phenomena (most natural phenomena are non-linear). Release of trace metals during coal combustion and their subsequent redistribution in soil and plants, storage of nutrients in tundra ecosystems, and the cycling of nitrogen in a Douglas fir forest are all documented. There is a mathematical model to describe cycling processes and a model to simulate the geochemical behaviour of mercury.

The section on Analytical Methods contains case studies on arsenic and papers on methods of chemical analysis in the field or laboratory. Claims of detection of 10^{-15} to 10^{-19} gms for microbeam techniques are totally unrealistic. There are also papers on analytical techniques for radionuclides.

The soils and sediments section contains mostly case histories of accumulation and movement of metals in soil/sediment systems in tidal flats, swamps, lakes, estuaries and river beds. There are some interesting "before and after" studies which involve industrial installations. One study indicates that so called "safe" geothermal power may severely affect water quality because of the very high dissolved solids content of geothermal brines. The presence of "natural" sources of pollution (cesium in granitic rocks) is noted. Most studies show that soils, especially soils rich in clay minerals, have a tremendous capacity to absorb metal pollutants.

The section on Plant and Animal Uptake is concerned with the uptake, primarily by plants, of metal pollutants. The effects on plant growth of incorporation of fly ash in soils has also been studied. An interesting study uses the radioactive tracer technique to estimate the amount of caribou consumed by wolves in Alaska.

The final section deals with Terrestrial and Aquatic ecosystems. Some of the papers attempt to document the path of metal pollutants through a specific ecosystem, others deal with the rates of accumulation, decay, and dispersal of organic matter. The last three papers are experimental studies of oil spills, radionuclides contamination, and mercury pollution in aquatic environments.

While this volume contains some interesting studies, many of the papers are case histories which may not have broader significance. A few more papers with some fundamentals of both geochemistry and mathematical modelling would give the volume more universal appeal, allowing a researcher to design experiments and sampling programs relevant to his particular study area. The breadth of topics covered is impressive, reflecting the multidisciplinary approach of environmental sciences, but the separation of papers within the five topic areas seems somewhat arbitrary. The book does represent a very useful source volume for references up to 1976, but the rapidity of change in this field would require further searching for the latest information on a particular topic.

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THE GANNET. By BRYAN NELSON; *Buteo Books, P.O. Box 481, Vermillion, South Dakota, 57069, U.S.A. (Original publisher, T. & A.D. Poyser Ltd., 281 High St., Berkhamstead, Hertfordshire, England). ISBN 0-931130-01-8. 336 pp. 62 Figs., 32 plates, 32 tables. \$25.00U.S.*

To many, the Atlantic Gannet is our most magnificent northern sea bird. Its large size, dramatic facial appearance, densely-packed colonies and spectacular plunge dives stir the blood like few other birds. Now the Gannet has a fitting natural history to place it in proper pre-eminence. Bryan Nelson's book is a splendid account of over seventeen years field work on Gannets and their relatives. The book treads the fine line between excessively detailed presentation and unsupported