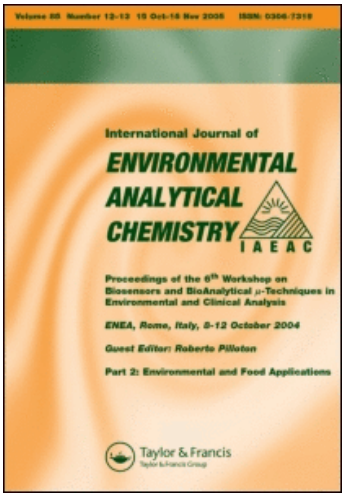

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Book Reviews

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Book Reviews

ENVIRONMENTAL CHEMISTRY (The Earth—Air—Water Factory) by R. W. Raiswell, P. Brimblecombe, D. L. Dent and P. S. Liss, School of Environmental Sciences, University of East Anglia, Norwich, U.K.

184 pages (including a glossary of 18 pages, a bibliography of 4 pages and a subject index of 8 pages), 88 figures, 20 tables and many physicochemical equations, stiff paper cover, format 215 × 138 mm, ISBN 0-7131-2790-2, published 1980 in Great Britain by Edward Arnold, London WC1B 3DQ, £4.95.

Aimed primarily at students of environmental sciences, the booklet will appeal also to anyone interested in how the natural environment operates as a chemical system. The authors want to show the behaviour of natural and man-made chemicals (whose concentrations are presently being increased) which occur in the environment, to give a better understanding of many problems caused by man's agricultural, industrial and urban activities. The model of an earth-air-water factory illustrates the principles. The framework is the hydrobiological cycle and the chemical processes, which occur as water moves from the atmosphere onto the land surface, into rivers, lakes and oceans and eventually into marine sediments.

The book is divided into five chapters: Introduction—The Atmosphere—The Crust—The Oceans—Formation of Mineral Resources in sediments. The oxygen cycle, the nitrogen cycle, the carbon dioxide cycle, the water cycle and their kinetics are first explained, as well as anthropogenic inputs into the atmosphere, such as SO_2 and smog. The composition of the crust, the role of water, the structure of silicate minerals, the weathering processes and the eutrophication of lakes are discussed. The chapter "Ocean" deals with evaporite, carbonate and silica formation and with some interactions. It is not clear, why freons, DDT and PCB's are a part of this chapter in relation to oceanic sink. In the last chapter one speaks relatively intensively about manganese nodules, microbiological processes in sediments and formation of petroleum and coal.

All in all the accent lies on the natural fundamentals of environmental chemistry, and one does not find too many clear informations about

crucial superimposed anthropogenic chemicals and their behaviour. Chemicals are primarily selected in relation to their natural occurence, rather than in relation to effects. In the subject index one finds for instance aluminium, calcium, iron and manganese and their minerals, but no reference to cadmium, lead and mercury. Also for instance the subjects automobiles, car exhausts, traffic, aromatic hydrocarbons, carcinogenic chemicals, aerosols, particulates, waste, waste energy and recycling are not included.

The rapid development of modern analytical techniques is mentioned, without explaining some possibilities and some limitations, and only in context with the statement that it has not gone hand in hand with a commensurate growth in understanding the behaviour of chemicals. It is said that this is partly due to unreliability of many data. The booklet can therefore be recommended to those who look only for a very first introduction in the geochemical and hydrospheric principles.

ECOLOGICAL CHEMISTRY (in German, OEKOLOGISCHE CHEMIE) by Friedhelm Korte, Werner Klein, Harun Parlar and Irene Scheunert, Institut für ökologische Chemie der Gesellschaft für Strahlen- und Umweltforschung mbH München, D-8042 Neuherberg, Germany.

220 pages in German (including a subject index of 17 pages and valuable literature references attached to each chapter), 53 figures and 79 tables, cloth-backed board, format 230 × 156 mm, ISBN 3–13–586701–3, published 1980 by George Thieme Verlag Stuttgart, DM 49.—

This book is a very systematic guide to a two years lecture and practical course for students of natural sciences, medicine, biology, agriculture, ecology, meteorology and physics. It does not want to be complete, but it intends to give an understanding about ecological chemistry and ecotoxicology, and it concentrates also on the prompt recognition of potential risks. Many characteristic examples of the behaviour of substances are given, to illustrate also a longterm concept of this new multidisciplinary science. The chapters deal with

—Introduction and Definitions (including the need for a new way of thinking).

—Material Environment and Related Changes (the natural ooccurrence, distribution and changes—especially of elements and gases—in relation to the history of the earth and the developments of the population, the agriculture, mining and industrialisation are described, differentiating between local, regional and global aspects).

—Criteria in the Ecological Chemistry and the Ecotoxicology (such as production quantities, application, persistence, dispersion, biotic and abiotic changes, ecotoxicology, including some examples).

—Additional Tabulated Information about 15 Characteristic Substances and Their Behaviour (such as mercury, PCB's, and some—mostly chlorinated—agricultural products and industrial compounds).
—Changes in the Air, the Water, the Soil and the Food Quality through Anthropogenic Contamination.
—Critical Evaluation of Humantoxicological and of Ecotoxicological Effects and Limitations.
—Significance of Ecochemical and Ecotoxicological Data, Especially for Other Sciences.
—Methods for Determination of Material Changes in the Environment (modeling of balances and cycles, determination of abiotic changes, sampling, analytical chemistry (for instance separation, chromatography and detection), working with isotopes and biological methods).

The well written and printed booklet can be recommended to anybody who is interested to understand the principles and the background of a multidisciplinary science. One finds also instructive—but somewhat incidental—information about the occurrence and the behaviour of some compounds (an easy access is given in the index). But one cannot expect complete and comprehensive systematic information, for further decisions. For instance for analytical chemistry only six pages are reserved.

ERNEST MERIAN

RECENT DEVELOPMENTS IN CHROMATOGRAPHY AND ELECTROPHORESIS, VOL 10, BY A. FRIGERIO AND M. McCAMISH (EDS.)

X+340 pages, ISBN 0-444-41871-7, Analytical Chemistry Symposia Series, Vol. 3, Elsevier, Amsterdam, 1980, $68.25.

The papers collected in the review book were presented at the 10th International Symposium on Chromatography and Electrophoresis, which was held in Venice, Italy, on June, 19 and 20, 1979. The 34 contributions cover a broad range of topics in such fields as drug analysis (9), electophoresis (5), analysis of endogenous compounds (7), environmental studies (3), fluorometry (5) and insrtumental (5).

The book contains many interesting research papers and, in the field of drug analysis, it is interesting to observe that much attention is devoted to the use of (high-performance) TLC, on both silica and chemically bonded stationary phases (5 papers). In the section on electrophoresis one notes a 30-page review on recent trends in isoelectric focusing by Righetti et al.,

who also presented a review at the ninth symposium; in the present paper, the emphasis is on new methodological trends. Further, mention should be made of two papers (Gfeller et al.; Brinkman et al.) on the use of ion-pair formation and subsequent fluorescence detection, which appears to be an attractive detection principle in HPLC. Another paper is devoted to the value of ion-pair formation in TLC. In the instrumental section there is an interesting contribution, by Kalász and coworkers, on the potential of so-called pressurized TLC, a technique which seems to close the gap between HPLC and classical TLC. A relatively short paper by Schomburg is devoted to the application of glass-capillary GC to difficult samples.

The book, which is well produced, will be useful for research workers in the field of chromatography (particularly liquid chromatography) and electrophoresis. As regards the next symposium, the editors should seriously aim at reducing the "dead time" between symposium (June 1979) and date of publication (June 1980).

U. A. TH. BRINKMAN