

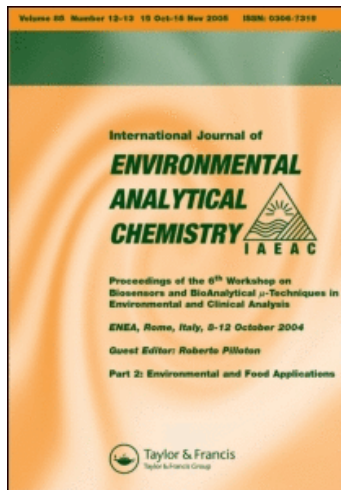
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### Book Reviews

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## Book Reviews

CHEMICAL MODELING IN AQUEOUS SYSTEMS edited by Everett A. Jenne, ACS Symposium Series 93 (1979), 914 pages with many figures and tables, linen, format 230 × 160 mm, published by American Chemical Society, 1155 Sixteenth Street, N.W., Washington, D.C. 20036, U.S.A., \$57.50.

This book is an interesting tentative to clarify our present knowledge about the different models used to try to understand the chemistry of aqueous systems. The introduction of the book, (ch. 1) written by the Editor, E. A. Jenne, is particularly valuable not only for chemical modeling, but for the whole field of environmental chemistry, as it points out some very important problems which should be overcome. As it is discussed by E. A. Jenne a part of these are, obviously, scientific problems; however, in environmental chemistry, in which no real progress can be made without interdisciplinary approaches, the psychological factors related to the organisation of the research teams and the exchange of information are probably at least as important as the scientific ones.

The book is divided into six sections (redox processes, organic ligands, adsorption phenomena, thermodynamic and kinetic data, biological models, comprehensive models) following, more or less, the list given in the introduction about the most important scientific problems to be solved in environmental chemistry. In view of the contents of the chapters of the last section, the separation of these contributions from the other section seems a bit arbitrary, except in the case of the last chapter (No. 38) about the comparison of chemical models for equilibrium calculations. This is a very important contribution to the book as it gives in a condensed form a good comparison of the possibilities of the various computer programs presently available for equilibrium calculations.

Unfortunately, despite the fact that the lack of critical reviews was rightly claimed by the Editor (ch. 1), the above ch. No. 38 is one of the few which tries to present a general critical overview of a given field of environmental chemistry, pointing out the various factors to be taken into account and their relative importance in this field. Such a goal

may be reached either by extensive reviews such as that of Langmuir (ch. 18) or general models not limited to a given type of experiment such as that of Whitfield and Turner (ch. 29). Many of the papers presented in the book deal rather with the interpretation of more or less limited experiments by means of more or less unsolved theory. This is particularly true in the case of the section "organic ligands" where the computation of complexes is most often done on the basis of the very simple hypothesis of the formation of 1/1 complexes. In such case it may be asked if a model is really involved in such studies or if they just try to interpret the experimental data on the basis of general chemistry. This question points out that the word "model" is never explicitly defined. Although it must be remembered that this book is the proceedings of a Symposium and that one cannot expect each participant to make a general critical review, the reader is a bit deceived in that the content of each section, as exemplified by the presented papers, is not synthesized by a concluding chapter giving a good overview of the various aspects of the section.

In spite of the above restrictions, there is no doubt that most of the papers, taken in particular, are very interesting contributions to environmental chemistry and that the whole assembly of these works gives a good idea of the present state of our knowledge about the available theories usable to interpret the data of environmental chemistry problems.

19th February, 1980

J. BUFFLE and W. HAERDI

CHIMIE ANALYTIQUE: APPLICATION AUX MÉTHODES INSTRUMENTALES, RADIOCHIMIQUES ET À LA CHIMIE DE L'ENVIRONNEMENT (Analytische Chemie: Anwendung instrumenteller und radiochemischer Methoden, insbesondere in der Umweltchemie). Denys Monnier et Werner Haerdi (Professeurs à l'Université de Genève), Jacques Buffle (Université de Genève) et Yvonne Rusconi (Oxy Metal Industries S. A.). 293 Seiten mit zahlreichen Abbildungen, Tabellen und Formeln, gute Aufmachung in Leinen gebunden, Format 23,2 × 16,4 cm, SFr 60.-; Georg & Cie S. A., Libraires de l'Université, Genève, Suisse 1979.

Dieses übersichtliche und klare Buch mit vielen nützlichen Hinweisen wurde von den Autoren in französischer Sprache vor allem für Studenten und Praktiker geschrieben. In jedem Kapitel werden praktische Fragen

behandelt, die in einem Anhang zum Werk diskutiert und beantwortet werden. Am Schluss des Buches findet man Hinweise auf wichtige Bücher, ein alphabetisches Sachverzeichnis, ein Abkürzungsverzeichnis und ein Inhaltsverzeichnis. Von den fünf Kapiteln befassen sich die ersten zwei mit allgemeinen Informationen (und Definitionen) und mit der Verteilung der zu untersuchenden Elemente in ihren verschiedenen physikalischen Formen, woraus sich dann die im dritten Kapitel dargestellten Abtrennungsv erfahren ergeben. Im wichtigen vierten Kapitel werden sodann spektrometrische, elektroanalytische, radiochemische und titrimetrische Methoden dargestellt, und jeweils die kritischen Faktoren Genauigkeit, Empfindlichkeit, Selektivität und Kosten verglichen. Dabei geht es nicht nur um die Identifizierung und Quantifizierung von Elementen, sondern auch um das Studium chemischer Reaktionen. Die Theorien und die jeweils sich ergebenden Anwendungsbreiten werden ausführlich behandelt. Im Schlusskapitel über Umweltchemie wird noch kurz die Bestimmung von  $\text{SO}_2$ , von Halogenen, von Cyanid, von Ammoniak, von Sauerstoff und von  $\text{CO}_2$  in der Luft und im Wasser erläutert. Wertvoll sind Tabellen mit vielen Konstanten. Das Büchlein bringt dem Benutzer viele wertvolle Anregungen, wobei allerdings einschränkend festgehalten werden muss, dass es sich mit anorganischer Spurenanalyse befasst, und dass auf das wichtige Gebiet der organischen Spurenanalyse nicht eingegangen wird, was aus dem Titel nicht hervor geht. Auch sind gewisse Verfahren—wie zum Beispiel die Polarographie—aus Platzgründen etwas summarisch behandelt.

Basel, 14.2.80

ERNEST MERIAN

ELECTROANALYSIS IN HYGIENE, ENVIRONMENTAL, CLINICAL AND PHARMACEUTICAL CHEMISTRY, W. Franklin Smyth, ed. 473 pp., price \$70.75, Elsevier Scientific Publishing Company, Amsterdam, Oxford, New York 1980.

This book contains the proceedings of the Conference on the subject mentioned in the title, organized by the Electrochemical Group of the Chemical Society, held in London in April 1979 at Chelsea College, University of London. According to this the book gives a survey of the state of art in reviews on the main topics (plenary lectures) and smaller articles with examples and special applications. Of course a book like this cannot be reviewed as a regular textbook: the contributions are widely different in length and in thoroughness. Yet it can be stated that the book gives a good representation of the progress in the entire field of electroanalysis. The main contributions are from W. Simon and co-workers (new ion

selective electrodes and their chemical and biological application), E. Palecek (polarographic analysis of nucleic acids), J. Bergman (electrochemical gas monitors in occupational hygiene), G. J. Patriarcho and J. C. Viré (modern electro-analytical applications in pharmacy and pharmacology), W. Franklin Smyth and J. L. Davidson (stripping voltammetry of molecules of pharmaceutical importance), H. W. Nürnberg (a critical assessment of the voltammetric approach for the study of toxic trace metals in biological specimens) and J. Davidek (polarographic analysis of pesticides in food products). However, the more than 30 other contributors also help to make the book very valuable. These shorter papers are systematically grouped round the main articles in separate sections. There has been a long period in which at first mainly metals were analysed with electrochemical methods. Since the revival of the electroanalysis by automated coulometric methods, pulse techniques, stripping methods, new electrode materials, flow through cells for HPLC, enzyme containing selective electrodes etc. there is a whole field open for further research in which organic compounds play a dominating role. All these aspects and newer developments are reflected in this book. In spite of the many new devices, techniques and applications only a small number of new books on electroanalysis have appeared. Hence the new book is very welcome, and can be recommended to analysts and workers in hygiene, environmental, clinical and pharmaceutical chemistry, for it gives a lot of new ideas in many different areas of electroanalysis.

*Amsterdam, February 28, 1980*

DR. P. BOS