Book Reviews

STANDARD OPERATING PROCEDURES—ANALYTICAL CHEMISTRY AND METABOLISM. Edited by I. P. SWORD and A. W. WADDELL. Pp. xvi + 295. MTP Press. 1981. Price £39. ISBN 0 85200 371 4.

This is the fourth volume of a series of Manuals on Standard Operating Procedures in use at Inveresk Research International (IRI) where the Editors are, respectively, the Managing Director and Quality Assurance Manager.

The book is divided into sections on general procedures, analytical chemistry and metabolism. The section on general procedures outlines in-house arrangements at IRI for the receipt, documentation and processing of materials received for examination and for use in the analytical procedures. Details and documentation presented in this section are useful statements of daily practice.

The 17 topics comprising the analytical chemistry section give useful guidance on practical procedures required to maintain equipment, making maximum use of manufacturer's literature. The procedures outlined will be of value in a wide range of chemical and biochemical laboratories as the equipment discussed includes balances, pipettes and the various forms of chromatography apparatus, including those operated in association with mass spectrometers.

Procedures in the section on metabolic studies could usefully be studied by safety officers and others responsible for the well being of laboratory workers exposed both to biological and chemical hazards. Topics covered include record keeping, quality assurance procedures and the methods in daily use for the collection, and preparation of biological samples and the disposal of biopsy and autopsy material.

The book will be a valuable addition to the library shelves of laboratories, especially those involved in biochemical work. Assimilation of its contents could well lead to the development of good habits of laboratory safety, a highly topical subject since the introduction of the Health and Safety at Work Acts and more recently the "Howie Code of Practice." C. TOOTHILL

FORMALDEHYDE AND OTHER ALDEHYDES. By COMMITTEE ON ALDEHYDES, BOARD ON TOXICOLOGY AND ENVIRONMENTAL HEALTH HAZARDS, ASSEMBLY ON LIFE SCIENCES AND NATIONAL RESEARCH COUNCIL. Pp. x + 340. National Academy Press. 1981. Price £8.30 (softback). ISBN 0 309 03146 X.

This substantial volume was produced by the United States National Research Council in order to help the Environmental Protection Agency decide on the need for air quality standards for certain environmentally polluting aldehydes. It constitutes an extensive review of the production, properties and analysis of aldehydes, on their toxicology and environmental dynamics and on their effects on plants and aquatic organisms. Emphasis relates to their economic importance, formaldehyde, acetaldehyde and acrolein being prominent. Lesser topics are not neglected and there is interesting information on aldehydes in fruits and flavourings.

For environmental chemists the chapter on Emission, Generation and Transformation of Aldehydes is of particular interest and reflects current concern with the emission of formaldehyde from insulating materials and automobile exhausts. There is extensive discussion of the reaction mechanisms and theoretical models that have been proposed. It is interesting to note the marked reduction in environmental levels of aldehyde that have followed the introduction of catalytic treatment of automobile exhaust gases in the US.

The analytical chapter is a comprehensive review of available methods. It is good to see the emphasis placed on the production of standard atmospheric concentrations for calibration purposes. For a classically trained analyst it was interesting to note the prominence that is still being given to the use of solution colorimetric methods though it is clear that the future will see greater use of more sensitive and specific chromatographic methods.

Two chapters are devoted to health effects, the first to formaldehyde, the second to other aldehydes. There is a very extensive literature review of human and animal toxicity. Understandable emphasis is laid on inhalation effects of current concern, *e.g.*, carcinogenic potential.

A possible criticism is that there is a tendency to ascribe too much importance to poorly defined ailments without the connection with aldehydes having been clearly demonstrated.

It would be difficult to find such a comprehensive source of information on aldehydes in any other single volume. It should be on the bookshelves of all who are concerned professionally with the effects of aldehydes on people and their working and social environment. Like most US Government publications it is excellent value for money at £8.30. D. A. REILLY

CHEMICAL METHODS OF ROCK ANALYSIS. Third Edition. By P. G. JEFFERY and D. HUTCHINSON. *Pergamon Series in Analytical Chemistry, Volume* 4. Pp. xvi + 379. Pergamon Press. 1981. Price £25; $60. ISBN 0 08 023806 8.

This is the Third Edition of a practical reference book aimed at geochemical analysts. The general layout of the book is similar to the earlier edition, but in order to keep down the price of the book the authors have been more selective. They have succeeded in reducing the size from 525 to 379 pages without seriously detracting from the value.

The book consists essentially of three sections, the first dealing with the sample, its preparation, reference materials, and methods of decomposition. Secondly, there are two chapters on classical and rapid schemes of analysis and finally the bulk of the volume is concerned with methods of determining the individual elements.

It is this last part of the book that means that it will find its way on to many bookshelves. All analysts have their own range of expertise, and it is the rare determination of the unfamiliar element that poses the problems. The answers to many of the problems lie within these pages; at least one method is described in full, a method suitable for use in the ordinary laboratory, together with a brief review of other procedures and techniques, for each element.

The authors, in choosing their title, have clearly restricted the contents to chemical methods, so that it is probably invidious to suggest that the book's value would have been greatly enhanced if some indication could have been given of the comparative value of widely used instrumental methods. These sorts of methods are, in fact, recognised by the inclusion of atomic-absorption spectrophotometric methods. Is the true distinction in the authors' minds really a matter of capital cost?

The prime value of the book lies in its being a reference volume, to which the analyst can refer and know that he will find therein a practical method for that unusual element. Definitely a book for the geochemical or ceramic analysts' bookshelves, even though the reviewer regrets that considerations of cost have caused the book to be reproduced from typescript. It deserves better. H. BENNETT

AFFINITY CHROMATOGRAPHY: BIOSELECTIVE ADSORPTION ON INERT MATRICES. *Chemical Analysis, Volume* 59. By WILLIAM H. SCOUTEN. Pp. xvi + 348. John Wiley. 1981. Price £27.05. ISBN 0 471 02649 2; ISSN 0069 2883.

The aim of this book is to provide a general introduction to affinity chromatography. It considers the different matrices and spacer arms that are used and gives detailed protocols for the numerous methods of attaching spacers and ligands to the matrices. The theory and problems in affinity chromatography are considered briefly, followed by a long chapter on the synthesis and use of matrices that contain immobilised coenzymes, cofactors or lectins and therefore are capable of binding whole classes of proteins.

On the same theme, there are chapters on the use of immobilised DNA, RNA and oligonucleotides as well as separation methods that rely on protein - protein interactions, notably immunoaffinity chromatography.

The author also considers hydrophobic chromatography as well as covalent chromatography (an approach in which an immobilised ligand reacts chemically with proteins) and a range of other separation techniques such as affinity phase partitioning, affinity density perturbation and the use of affinity techniques to purify whole cells and viruses.

I found this book to be most informative and enjoyable to read. There are abundant clear illustrations and the references (over 800) include some 1980 papers. It is an excellent reference book for post-graduate researchers. N. J. M. BIRDSALL