

**Environmental Remediation—Removing Organic and Metal Ion Pollutants:** G. F. VANDEGRIFT, D. T. REED and I. R. TASKER (editors), American Chemical Society, Washington, 1992. Pages xii + 275. ISBN 0-8412-2479-X.

This volume presents a number of papers presented at an ACS conference in Atlanta, in April 1991, together with a few contributions added by the editors to improve the comprehensiveness of the collection. At a time when much is being said and written about the state of the environment, and when there is so much interest in environmental chemical analysis, it is refreshing to read these essays on both laboratory and field attempts to put chemical engineering principles into action to clean up contaminated sites. The editors contribute an introduction on Environmental Restoration and Separation Science, which would be an enlightening final section for any university taught course on separation techniques, just because the ones which are important for large-scale use are not those used in the laboratory. In fact, it is this aspect which proved most fascinating to the reviewer—low-energy processes such as adsorption on charcoal, ion-exchange, transfer through membranes, acid and chelate stripping, bubble stripping. One unusual topic concerned the separation steps in polymer recycling, considering the feasibility and economics of the process. Indeed, there is much food for thought in this volume, and stimulation surely will be found in the conclusions from many of the chapters, indicating that much remains to be done in this unglamorous but vitally important field. Useful bibliography is included in many chapters. Readers looking at the various calls for proposals to the European Community Environment Programme would do well to read this book and then join forces with their colleagues in chemical engineering and environmental sciences.

I. L. MARR

**Molecular Luminescence Spectroscopy—Methods and Applications, Part 3:** S. G. SCHULMAN (editor), Wiley-Interscience, New York, 1993. Pages: xii + 467. £81.00. ISBN 0-471-51580-9.

This is a book (vol. 77) in the Chemical Analysis series edited by J. D. Winefordner. It is an impressive, well written, well presented, informative book. It covers all the current major methods and applications of molecular luminescence spectroscopy, *e.g.*, chemiluminescence, fluorescent probes, photochemical fluorometry, spectral hole burning, near-infrared luminescence and laser-excited fluorescence. All chapters follow a similar pattern in presentation—introduction, an explanation of the basic principles and theory involved in the given method(s) and then, with the aid of a very comprehensive list of references, the present and future applications potential of each method is indicated. The last (and longest (120 pages)) chapter on the use and the potential uses of lasers in fluorescence is particularly to be recommended. Here, for methods such as LC chromatography, Capillary Electrophoresis and Flow Cytometry, the authors give their own personal experiences on the practical use of lasers—information which is most relevant to the practising spectroscopist and unique to this text. There are one or two typing errors/spelling errors but nothing to detract from the worth of this textbook as an informative, valuable, reference source for the methods and applications of molecular luminescence spectroscopy.

R. R. MOODY

**The Analysis of Natural Waters:** T. R. CROMPTON, Oxford University Press, Oxford, 1993. Volume 1 (Complex-Formation Preconcentration Techniques), pages xi + 216. Volume 2 (Direct Preconcentration Techniques), pages xi + 249. £75.00 (as a set). ISBN 0-19-855752-3.

The first volume of *The Analysis of Natural Waters* presents a review of the preconcentration techniques which involve the formation of a complex followed by either solvent extraction or adsorption on a column. The second volume covers direct preconcentration techniques using solid materials such as resins, polymers, metal oxides, metals and carbon followed by desorption with a suitable desorbent. The author begins by describing the many factors which influence the efficiency of the various preconcentration procedures, and theoretical aspects of these procedures, and then provides an account of their application to the analysis of saline and non-saline waters.

In the preface to volume I, the author states that the books are written with the interests of water chemists in mind, and that they will serve as practical handbooks for this section of the analytical community. In providing a readable and comprehensive review of the practical application of preconcentration procedures to the analysis of trace metals and organics in natural waters, the author has certainly provided material which will be of interest to analytical chemists in general, and to students of analytical chemistry in particular. However, he has not produced a handbook which would meet the requirements of water analysts in their day to day work. For such guidance, they must continue to rely on the series of recommended analytical methods which are developed and published by the U.K. Department of the Environment's Standing Committee of Analysts (SCA). Unfortunately, for the uninformed reader, it is regrettable that the author has only made reference to a fraction of the SCA methods. Also, given the current concern over the quality of analytical data, I was disappointed that the author had not included a section on analytical quality assurance, particularly the role of certified reference materials for validating the measurements of trace constituents in natural waters.

G. TOPPING