

BOOK REVIEWS

Potts, P. J. *A Handbook of Silicate Rock Analysis*. Glasgow (Blackie) 1987. x+622 pp., 531 figs. Price £128.

Many new books on silicate analysis have been published in recent years—but this monumental contribution is different to anything to date. It attempts to provide a comprehensive coverage of all the major analytical techniques now in common usage for silicate rocks. For one author to write such a book as this is indeed a remarkable achievement. The book is clear, concise and authoritative and the techniques covered benefit from the uniformity of style attained by a single author. The scope of the book is such that it should be useful not only to those directly involved in the day to day analysis of geological samples, but also those seeking an overview of the different analytical methods.

A genuine and successful effort has been made in the book to evaluate all the techniques now practised for silicate analysis. Thus the classical (gravimetric) methods are not overlooked, and the 'rapid' methods of analysis, developed some 20 years ago (using largely colorimetric/photometric techniques) are presented in adequate detail. The bulk of the book however is occupied with accounts of modern instrumental methods of elemental analysis. There are excellent chapters on atomic absorption, inductively coupled plasma spectrometry and X-ray fluorescence spectrometry (wavelength and energy dispersive). Full details of the principles and practice of the various techniques are presented in these chapters. For many readers these will be definitive accounts, with full references to the more recently published material. Detailed analytical 'recipes' are not usually given, but otherwise the coverage for all these important techniques cannot be faulted.

A major difficulty any author faces in a book of this nature is what to include and what to exclude; no way can all prejudices be accommodated. Electron analysis is covered fully and there are also short but useful accounts of the 'Other microbeam and surface analysis techniques' (ion probe, laser microprobe, particle-induced X-ray emission, electron spectroscopy for chemical analysis and transmission electron microscopy). Neutron activation analysis and mass spectrometry (thermal ionization and gas source) techniques are well represented. Overall, the balance between techniques, and the

evaluation of the potential advantages and disadvantages of the methods are the very best that could be attained with present knowledge.

It is not possible in a brief review of a book such as this to do justice to the breadth and scope of the text. There are very many other useful topics included (chapters on ion selective electrodes, ion exchange separation techniques, gold and platinum group analysis, spark source and inductively coupled plasma mass spectrometry). Of real use to practising analysts are the chapters on 'Concepts in analytical chemistry' and 'Optical spectrometry: principles and instrumentation', providing answers to many fundamental questions.

This fine book is well written and presented, with only a few errors. It certainly deserves to succeed. It is by far the most important book published in silicate analysis in recent years, well ahead of any potential rivals.

J. N. WALSH

Thornton, I. and Howarth, R. J., eds. *Applied Geochemistry in the 1980s*. London (Graham and Trotman Ltd), 1986. xiv + 347 pp., 50 maps. Price £38.00.

This book is a collection of 15 review papers [M.A. 87M/2922–2936] presented at a 2 day meeting as a tribute to the pioneering efforts of Professor J. S. Webb in applied geochemistry. The papers cover geochemical exploration in various continental and oceanic environments, analytical techniques, data processing, animal and human health and pollution—an impressive range of subjects which collectively give a valuable overview of the subject. It is generally well written and clearly illustrated and the case histories have been thoughtfully selected. Because of this and the good bibliographies at the end of each paper, the book is also a useful introduction to the subject for students and professionals. Resisting the temptation of a good novel I read much of it during a long plane journey and felt it was time well spent.

Since most current exploration is devoted to precious metals and PGEs, a chapter on gold exploration (I. Nichol) is particularly appropriate. Basic theory, including the vital issue of sample representivity, is discussed in some detail and is followed by an outline of gold distribution in soils,