

Brownlow (A. H.). *Geochemistry*. Englewood Cliffs and London (Prentice-Hall Inc.), 1979. xii + 498 pp., 112 figs. Price £15.00.

Recent years have seen a number of geochemical books, many of them on specialized topics, come on to the market, but there is still a need for a wider choice of introductory texts. This book goes some way to satisfying that need. In the space of nine chapters, a wide range of topics is discussed from the origin of life to regional metamorphism and plate tectonics.

The author's approach is one that has tended to keep the account of chemical principles distinct from that of petrology. Three of the nine chapters deal with the topics of thermodynamics, crystal chemistry, and water chemistry. These are followed by three chapters on petrology discussed mainly in terms of chemical compositions or reactions, but with little reference to the principles discussed earlier. Many opportunities to integrate these two parts of the book have been lost. Petrological 'case histories' are given but often each is a *précis*, without addition or further review, of published accounts. Some aspects are dealt with in such a superficial way that one fears student readers may well become confused and would be better off reading an introductory text devoted to petrology.

The three other chapters are: an introductory one on topics such as the periodic table, and abundance of the elements; on isotope geochemistry, giving the principal dating methods as well as a short account on stable isotopes; and a useful chapter on organic geochemistry.

The chemical chapters are concisely and well written and are presented so that readers need not have much mathematical knowledge. They are in a traditional mould and much of the material can be found in existing introductory texts. Indeed, the problem of what is best incorporated in, and what may reasonably be omitted from, an introductory geochemical text must be a serious one for any author. However, for a book of this title it is a pity that there is rather little, or no, discussion on a number of aspects of present day geochemistry. These include the kinetics of geochemical processes; the modelling of fractional crystallization and partial melting processes in magma generation; and the geochemistry of ore deposits.

Each chapter ends with a list of selected references and a good number of problem questions with the answers provided. It is a well-produced book that can be recommended for its chemical chapters to students wanting an introduction. It will take its place alongside the other available introductory texts but is unlikely to become the leader.

PAUL HENDERSON

Grove (E. L.), editor. *Applied atomic spectroscopy*, Vol. 1. New York and London (Plenum Press), 1978. xviii + 313 pp., 122 figs. Price \$47.40. Vol. 2. 1978. xx + 344 pp., 23 figs. Price \$47.40 (set of two: \$90.00).

This two-volume set attempts to cover the basic principles, instrumentation, and methodology of atomic spectroscopy. Although no rigid definition of the procedures covered is given, the two volumes cover most of the currently used spectroscopy techniques and discuss their application to specific types of materials in some detail. The authors and chapter titles have been given in M.A.79-2013.

It is inevitable in such a collection that the usefulness of each chapter will vary considerably from reader to reader. Nevertheless the two books contain a great deal of valuable information, although much is not of direct relevance to geological materials. The first chapter on photographic photometry for example contains much detailed information and a comprehensive collection of references, although photographic techniques are not now widely used for the analysis of geological materials. The chapter on laser emission spectroscopy is of great interest but the practical applications of this method of excitation have yet to be demonstrated. The account of electrode material and design gives valuable information on a somewhat neglected area of emission spectroscopy.

The chapter on the behaviour of refractory materials in a direct-current arc plasma is of more direct relevance to geological materials. A considerable amount of background theoretical information is given and specific analytical methods for apatites and silicates discussed. This account could perhaps have been improved by a fuller coverage of the more recent literature (of the 155 references quoted only a handful are post 1970), also the methods used to obtain the quoted detection limits should have been clarified.

The last chapter in Vol. 1 gives an excellent and concise account of the present state of knowledge of sea-water chemistry, covering both established and recent methods of analysis.

In Vol. 2, the chapters on precious metals and the petroleum industry applications refer specifically to the analysis of geological samples, although in a somewhat generalized way. The chapter on the petroleum industry does include some interesting information on the metallic elements found in crude petroleum and a valuable assessment of burner design and interferences in atomic absorption work.

The books contain a lot of valuable information; the accessibility of this information would have been greatly improved with a more comprehensive index.