

BOOK REVIEWS

Johnson, W. M., and Maxwell, J. A. *Rock and Mineral Analysis*. 2nd Edition. New York (Wiley-Interscience), 1981, xi + 489 pp., 18 figures. Price £38.85 (\$69.85).

J. A. Maxwell's first edition of this book had the misfortune to appear (in 1968) during a period of rapid change in the world of analytical geochemistry. The book dealt principally with classical and colorimetric methods of rock analysis and devoted only a small section to atomic absorption spectrophotometry, which was at that time sweeping boldly across the geochemistry laboratory and pushing many traditional methods into retirement. The new edition combines those portions of its forebear that are still relevant, with substantial new sections on atomic absorption and X-ray fluorescence, concluding with brief reviews of four other analytical methods. There are three appendices, including a useful compilation of standard reference materials by S. Abbey.

The book is now divided into five parts. Part I follows the first edition closely, covering capably and in some detail such general matters as laboratory equipment, sample preparation and digestion, and the estimation of accuracy. None the less there are a few obvious omissions: for example, tungsten carbide is not among the grinding media whose contaminating properties are discussed. For these safety-conscious times, the discussions of HF and HClO₄ hazards and of fume extraction are perhaps rather sketchy. Part II, likewise mostly inherited from the first edition, describes the supplementary determinations which integrated instrumental schemes cannot accomplish, such as FeO, the volatiles, and phosphorus.

Part III, the most successful part of the book, provides a concise, up-to-date and well-referenced guide to the geochemical uses of atomic absorption spectrophotometry that will be valuable both to the practising analyst and to the newcomer. Complete analytical procedures are given for thirty individual elements of geochemical interest, which succeed in illustrating many of the specific problems that the adventurous analyst will encounter, and the techniques by which they can be overcome.

The description of X-ray fluorescence in Part IV, though providing a well-written summary, is too brief to interest the analyst working in this field, for whom the book professes to have been written. One senses little of that authority, born of years

of practical experience, that one seeks in a book such as this, and there is a lack of critical and expert appraisal of such questions as using a heavy absorber. It is here too that one's doubts about the authors' decision to sidestep theory (and incidentally instrument design) are most acutely felt. Today's instrumental analyst, dependent for success on complex physical processes, cannot afford to divorce his practical procedures from their theoretical foundation. True, the theory is available in other texts, but why then should we buy this one?

The book suffers from a general lack of balance, in which the earlier sections, mainly dealing with older methods drawn from the first edition, have been given space disproportionate to their continuing importance. This tendency becomes most pronounced in the final section, which offers brief summaries of four other methods of analysis. Here the electron microprobe, surely the supreme development in the field of mineral analysis, is dismissed in four pages (written by A. G. Plant), less than half the space lavished on the determination of water content in an earlier chapter! ICP emission spectrometry is likewise compressed into only a few pages, scarcely a fair measure of its future promise.

In summary, there is much that is useful in this book and the standard of preparation and writing is high. The most recent references are early 1980, but the book's utility as a literature source is compromised somewhat by the lack of an author index. It must be said that it provides less than a balanced survey of the field it aims to cover; indeed that field may be too wide for two individuals to encompass satisfactorily.

The price is rather high, particularly when one recognizes that the second edition is a hundred pages shorter than the first; the book is destined for the laboratory bench rather than personal bookshelves.

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Sudot, T., and Shimoda, S., Eds. *Clays and Clay Minerals of Japan* (Developments in Sedimentology, 26). Tokyo (Kodansha Ltd.), Amsterdam, Oxford, and New York (Elsevier Sci. Publ. Co.), 1978. x + 326 pp., 110 figs. Price Dfl. 140.00 (\$60.75).

Undoubtedly this is a book for the clay-mineral specialist, but such specialists must be greatly indebted to the authors for bringing between two