their associated electron-diffraction contrast effects is presented. Illustrative examples of deformation microstructures observed in quartz, the pyroxenes, and the olivines are provided, and the review article includes an extensive bibliography. Among the research contributions in this section is included an account of deformation in the olivines of peridotites, which is likely to be of particular interest and significance to petrologists.

The final section of the book deals with special applications and techniques and includes a review on the origin of contrast effects in amorphous materials.

This book shows evidence of careful planning and the figures and illustrations are of a very high standard. I believe that the objectives defined by its authors have been largely successful since it does summarize current achievements, provides in most parts a good introduction to the topics of interest, and will certainly provide good selected reading for students of advanced mineralogy. The authors and publisher are to be congratulated.

J. D. C. McCONNELL

Nicol (A. W.), Editor. *Physicochemical methods of mineral analysis.* New York and London (Plenum Press), 1975. xvi+508 pp., 151 figs. Price $41.76.

This book is aimed at the mineralogist or mineral technologist who wants to know something of the potentialities and limitations of modern instrumental methods of mineral analysis and the principles underlying them. The term 'mineral analysis' is used broadly, to include a good selection of methods for various aspects of mineral investigation. After an introduction by Nicol and Lakshmanan, the next four chapters deal primarily with methods for bulk elemental analysis. Lawson deals with optical spectrometry, including optical absorption, flame emission, and atomic absorption, and Hendry with X-ray fluorescence. Lakshmanan and Lawson cover radiotracer methods, including neutron activation and isotope dilution analysis, while Nicholls and Wood deal with mass spectroscopy. In the next chapter, Carr-Brion describes the adaptation of X-ray fluorescence and X-ray diffractometry as on-stream methods for process control. The next four chapters deal with methods for the identification, investigation, and quantitative determination of individual phases: X-ray diffraction (Nicol), electron microscopy, including selected-area diffraction (Loretto), infra-red spectroscopy (Farmer), and thermal analysis, including differential thermal analysis, thermogravimetry, and evolved gas analysis (Mackenzie). Southworth deals with the electron microprobe, scanning electron microscope, and related techniques. In the final chapter, Bennett reviews the various methods, mainly for elemental analysis, and summarizes the merits and demerits of each.

The chapters are well written and, unlike too many edited works, the book hangs together well. Inevitably in a book of this type and length, the space given to any one method will probably rarely be sufficient to meet the needs of the person who has already specialized in it. The chief use of the book is probably for the person who wants to know what a particular method is capable of, or whether it will satisfy his own requirements; it should also be useful as a reference book for advanced undergraduate students. For these and perhaps other classes of users it can be heartily recommended. It is expensive. H. F. W. TAYLOR

Baumann (L.). *Introduction to Ore Deposits.* Edinburgh and London (Scottish Acad. Press: Chatto & Windus), 1976. viii+131 pp., 65 figs. Price £6·00.

Based on a course of ten lectures given in 1969, this book is intended to convey basic knowledge on ore deposits to students in various branches of earth science. Its three major divisions

are—the formation of ore deposits by magmatic processes (57 pp.), by sedimentary processes (41 pp.), and the metamorphic transformation of ore deposits (10 pp.).

Unfortunately the period between conception and publication of the book has been one of rapid progress in this field, so that the treatment is somewhat outdated in part and topics such as plate tectonics and isotopic studies receive no mention. More seriously, the student is given little indication of the relative importance of various deposits—gold placers of California are mentioned but there is no reference to Malaysian tin—and the brevity of treatment is in some cases misleading. Thus, Fig. 47 does not indicate that large areas of thick overlying younger beds must be removed to give this picture of the Witwatersrand basin. The critical evidence for placing deposits in a given category is commonly not given, nor is there any indication of controversy on the genesis of various important deposits.

The book does, however, refer to a number of European deposits not covered by other available texts and would be useful reading for the more advanced undergraduate who has (or wishes to develop) a critical faculty.

The bibliography contains references up to 1970—53 in all, of which 27 are to German-language publications. R. PHILLIPS

Ridge (J. D.). *Annotated bibliographies of mineral deposits in Africa, Asia (exclusive of the USSR) and Australasia.* Oxford and New York (Pergamon Press), 1976. viii + 545 pp., 8 figs. Price £16·50.

This is the second of Professor Ridge's trilogy of bibliographies of magmatic and hydrothermal deposits, and covers 102 deposits in Africa, Asia, and Australasia.

The layout follows the same pattern as the first volume (*Annotated bibliographies of mineral deposits in the Western Hemisphere.* Geol. Soc. Am., Mem. **131**, 1972) [M.A. 72–2798] with the basic information, age, metals produced, and classification of the deposit according to the modified Lindgren classification, being followed by the bibliography. The descriptions, however, have been substantially enlarged and cover location, local geology, age, mineralogy, form and relationships of the mineralization, conditions of formation, and evidence for the position in the modified Lindgren classification.

Out of the 102 deposits, 40 are Australian and 20 are South African, so coverage of deposits in other countries is distinctly sparse. Whether this is due to a relative dearth of literature about minor deposits in these continents or whether this is a matter of policy allowing more comprehensive description of major deposits is unclear, but the result is a book only slightly reduced in size, compared with the first volume, containing fewer than half the number of deposits.

As in the previous volume, the author has rather stretched his imagination to include deposits that are not usually thought of as being hydrothermal. In particular, the reviewer was surprised to find that the Witwatersrand gold deposits and the Zambian Copperbelt, both having been the subjects of acrimonious debate as to their hydrothermal or sedimentary origin, were included. The description of the Witwatersrand is comprehensive and considers both arguments but the Copperbelt is considered to be hydrothermal and the arguments for sedimentary origin are briefly dismissed. Although one might well take issue with the inclusion of these mineral provinces and with the conclusions reached the book would be the poorer for their omission.

However, to place undue emphasis on such controversial points is to do the book an injustice. It is another work of herculean proportions. With 2,060 references in the bibliographies