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conception and publication of the book has been one of rapid progress in this field, so that the treatment is somewhat outdated in part and topics such as plate tectonics and isotopic studies receive no mention.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

this is an invaluable source book for the economic geologist and with the comprehensive descriptions the student has an up-to-date précis of the essential details of the deposits. Although the price may discourage many from acquiring their own copy this is a book no library should be without. R. J. L. COLVINE

Heimann (R. B.). *Auflösung von Kristallen: Theorie und technischen Anwendung* (Applied Mineralogy: Vol. 8). Vienna and New York (Springer-Verlag), 1975. xiv+270 pp., 172 figs. Price S795.00; DM 115.00; $47.20.

This book is a monograph on the dissolution of crystals in two different aspects. In the first and larger part, called 'micromorphology', the author gives a good survey of current and older theories on the formation and shape of etch pits and on the influence of 'poisons' and adsorption. Thereafter various etching techniques, methods of observation, and instrumentation are dealt with. Many applications in technical systems are given. This part ends with a chapter on etch figures and crystal symmetry, especially important for semiconductor research.

In the second part, called 'macromorphology', the irreversible dissolution of crystals is considered. It starts with a historical approach of the term 'Lösungskörper', now called 'L-form'. Since most experiments were carried out on spherical crystals, devices to form these are described. After a short review of earlier theories the author describes the theory developed by Franke, Lacmann, and himself. It starts from the concept of the equilibrium form (G-form) and then describes its transition to the L-form for four different models of the dissolution process. Computer simulations are presented and compared with experimental results on Ge, Si, MgO, spinel, quartz, and corundum.

Three appendices complete the book: a listing of results on 41 substances, a list of dislocation etching agents, and a list of polishing solutions. There are separate indexes for symbols, names, subjects, and substances, while the reference list has 681 entries.

The literature is almost exhaustively covered. The subject-matter has not always received the desirable critical attention, since sometimes rather speculative explanations of observed phenomena are recorded without comment. Although the etching theories are well presented, the systematics could have been better. Certain subjects are treated at unexpected places. Apart from these remarks it is the authors' merit to have given a detailed survey of our present knowledge about the very complicated phenomena of dissolution and etching, of which the latter is a very important characterization method for grown crystals.

The book is of interest not only for mineralogists, but for anyone working in the field of growth and morphology of crystals. It is a pity that the high price will be prohibitive for some potential buyers. P. HARTMAN

O'Keefe (J. A.). *Tektites and their origins* (*Developments in Petrology*, *4*). Amsterdam, Oxford, and New York (Elsevier Sci. Publ. Co.), 1976. xii+254 pp., 44 figs., 21 pls. Price Dfl. 95.00 (approx. $36.50).

The origin of tektites has been a subject of controversy for many years and the author of this book is well known for his preference for a lunar source over a terrestrial one. Indeed this book is, in part, a reply to an article by S. R. Taylor (Earth Science Reviews (9), 1973, pp. 101–25) in which it is suggested that the chemistry of the returned lunar samples excludes a lunar origin for tektites. Dr. O'Keefe is not convinced. In the first half of his book he reviews the