7th Edition, which may at least occasionally occur as fibres; and a further appendix lists over 200 types of synthetic inorganic fibres and whiskers.

The third and final chapter on health effects arising from fibre inhalation covers the characterization and etiology of asbestosis, pleural diseases and mesothelioma, and lung cancers. The human respiratory and lymphatic systems are described in detail and are shown in a number of clear diagrams. Much of the experimental approach since 1965 to our understanding of the biological effects of asbestos is covered, although the references appear to cut short at 1980, leaving out some important work since that date. The epidemiology of asbestosis and other fibre-related diseases is well summarized up to 1985, particularly with regard to exposure levels and the debate on a safe threshold level.

Bearing in mind its theme, this is a useful, well written and well presented book which should be of wide interest to the producers and users of industrial minerals, to those involved in environmental mineralogy, and the medical researchers who wish to know more about potentially hazardous mineral particles. For those non-medical readers who may be drawn into dialogues (sometimes litigative) on the biological effects of respirable fibres this compact publication is worthy of a place on the bookshelf for its final chapter alone.

The book has a few typographical errors, but an unfortunate one in Table 1–2, page 14, shows fibre tensile strengths in terms of $kg/cm^2 \times 10^{-3}$ instead of $kg/cm^2 \times 10^3$.

A. A. HODGSON

Halbach, P., Friedrich G. and von Stackelberg, U. *The Manganese Nodule Belt of the Pacific Ocean.* Stuttgart (Ferdinant Enke Verlag), 1988. x + 254 pp., 190 figs. Price DM186.00.

This book is largely, but not entirely, an overview of German efforts in manganese nodule studies in the NE Pacific ore-grade nodule belt (Clarion–Clipperton zone) in the 1970s and very early 80s. As such, much of the material in it has already been presented in more detail in the scientific literature, but this book brings it together in an easily accessible and readable format.

The book starts with a vigorous promotion of the nodules as a future mineral resource. Doubters of the viability of future nodule mining should read this. Chapters 3 and 4, with one exception, largely deal with nodule nature and distribution, and present a useful overview of these subjects. The exception is a detailed paper on the structural chemistry of manganese and iron minerals and synthetic model compounds, which represents a significant advance on previous papers on this topic. Had this paper been published when written, it would have significantly influenced several subsequent studies and its delay in publication is to be regretted.

Chapter 5 concerns the environment of formation of manganese nodules and goes well beyond the confines of the C.C. zone in its scope. It represents an excellent synthesis of mostly sediment studies related to nodule development and as such is essential reading for all serious students of 'noduleology'.

Chapter 6 concerns the growth processes involved in the formation of nodules, and presents a useful overview. There is a certain amount of repetition of material presented in previous chapters, but this is perhaps inevitable in a volume with so many authors.

The remaining chapters present a concise summary of some of the exploration, mining, processing, assessment, legal and environmental considerations relating to future nodule exploitation. Much of this is fairly straightforward, but the legal chapter is somewhat dated, as events have moved on since it was written.

Dealing as it mainly does with the C.C. zone, this book largely ignores work on nodules done elsewhere in the Oceans. Even its title is something of a misnomer, as there is not one but several manganese nodule belts in the Pacific ocean. There is little mention of the Japanese work on nodules in the Central Pacific Basin, nor of nodule studies in the EEZs of the South Pacific island countries which has been the subject of much attention in the past few years. Likewise, there is no mention of the nodules of the Central Indian Ocean, similar in many respects to the C.C. zone nodules, on which work was commenced independent by British and German workers in the 1970s and has since been ably taken up by Indian workers. Nevertheless, in spite of these limitations, this book represents an excellent synthesis of a very important body of knowledge on nodules.

D. S. CRONAN

Jones, M. J. (ed.) *Silver—Exploration, Mining and Treatment.* London (Institution of Mining and Metallurgy), 1988. 344 pp. Price £40.00.

The recent spate of intense exploration for, and development of, gold deposits has resulted in a large number of publications related to gold. By contrast, silver deposits have remained relatively neglected. It is thus of interest to see a publication

which is solely devoted to recent studies of silver deposits and their exploitation.

This volume contains the proceedings of a conference on silver which was held in Mexico City in November 1988 and was jointly organised by the Institution of Mining and Metallurgy, the Silver Institute, and the Camara Minera de Mexico. There are 31 papers covering a variety of topics related to the geology, mining, and treatment of silver ores. Five main categories are included: (1) The geology and mineralogy of silver deposits (9 papers); (2) Case histories of deposit development (4 papers); (3) Extraction of silver from complex sulphide ores (5 papers); (4) Flotation methods (4 papers); and (5) The extraction and refining of silver ores (9 papers). The content of the book is more biased towards the mining and exploitation of silver deposits, and in particular those with 'epithermal' characteristics which are located in the western US and Mexico.

This is a well-produced publication containing an interesting series of papers. It is recommended reading for all who are interested in silver deposits of North America, and the mining and metallurgical treatment of silver ores.

D. H. M. ALDERTON

Collins, J. H. *Observations on the west of England mining region* (Facsimile of 1912 edition). Redruth (Cornish Mining Classics, 11a Glenfeadon Terrace, Portreath, Redruth TR16 4SX), 1988. 683 pp., 18 figs. Price £17.95.

J. H. Collins was an experienced geologist who worked in south-west England during the latter part of the nineteenth and early twentieth centuries. During this period he published more than fifty papers on the igneous rocks and mineralization of the region and these observations were brought together in 1912 to form volume 14 of the Transactions of the Royal Geological Society of Cornwall. In this monumental work he described the diverse mineral deposits of the province and summarized the current thinking on their genesis. Unfortunately this text is not particularly accessible and thus not consulted as often as it should be.

Essentially there are three sections to the book. The first is a discussion on the geology of the region and the characteristics of the ore deposits (mineral content, ore controls, relative ages of mineralization and magmatism, form). This is the most valuable aspect of the book, as Collins was able to study numerous mineral deposits whilst they were still in operation. Furthermore, this was a time when there were no mining geologists as such, and it is interesting to note how many of the essential characteristics of the deposits were derived from mining experience and successfully applied in mine development. The second part describes the individual mining districts and presents historical accounts of the more important mines. Finally there is an alphabetical list of the more important mines with historical data on production. Several line drawings are also included but, unfortunately, Collins' artistic ability did not seem to match his powers of observation, and many are of doubtful value.

This work is of extreme importance for anyone who is interested in the mineral deposits of the region, and granite-associated mineralization in general. It has been faithfully reproduced and the publishers must be congratulated for making this important work available once more, and at a reasonable price. It is hoped that other 'mining classics' will follow soon.

D. H. M. ALDERTON

Federmann, D. and Hammid, T. *Modern Jeweler's Gem Profile: the First 60*. Shawnee Mission, Kansas (Vance Publishing Corporation), 1988. 131 pp., 60 colour pls. Price $39.95.

This book presents a collection of market overviews of both traditional and less traditional gemstones from an American standpoint. Although coloured gemstones have been important in Europe and elsewhere for centuries, the diamond has always been the main interest in North America; however, the situation has been changing over the last twenty years with coloured stone imports increasing dramatically. *Modern Jeweler*'s monthly column 'Gem Profile' has been appearing since 1983, and here the first 60 of these profiles, revised and updated, are gathered together in one volume, each giving information on supply, demand and price as well as a description of what each species possesses at its best in terms of colour, appearance and cutting. Each essay is accompanied by a colour plate of a high-quality example of the gemstone being discussed.

R.A.H.

Taucher, J., Postl, W., Moser, B., Jakely, D. and Golob, P. *Klöch: ein Sudoststeirisches Basaltvorkommen und Seine Minerale*. Graz, Austria (J. Taucher, Kaiser-Franz-Josef Kaisss, A-8010), 1989. 160 pp., 200 colour photos. Price: Austrian Schillings 1080.00.

This work presents an unusual combination of scientific mineral descriptions and aesthetically inspired mineral photography. More than 70