those readers who may not be familiar with matrix calculations. The apparent purpose of this section is to acquaint the reader with the geometrical representation of lattices and dislocation properties, and in this sense it forms the foundation for what is to follow.

The second section (chapters 11–14) is the book's 'raison d'être'—the development of the coincident lattice (O-lattice) concept of crystalline interfaces. The section commences with a general discussion of sub-grain boundaries (chap. 11), followed by the mathematical development of the O-lattice concept (chapter 12), which involves the extensive use of linear algebra. Applications of the concept to actual crystalline interfaces are demonstrated in chapter 13. It is shown to predict the observed dislocation structure of grain boundaries in metals and the stability of exsolution lamella boundaries in moonstone. In the final chapter (chapter 14) the theory is further extended to more complex, non-linear boundaries. The many derivations in these chapters are dealt with in depth. Sets of transparent 2-d grids, with which moiré patterns can be constructed, are included at the back of the book. These help the reader to appreciate the mathematical development of the O-lattice concept, as the theory of coincident lattices is based upon these patterns. Although the O-lattice representation of crystalline interfaces is attractive, it is by no means the only possibility; however, the alternative models are not discussed, let alone compared with the author's theory.

The book is well written, well illustrated, and contains few errors, misprints, etc. The reproduction of the included photomicrographs is excellent. The overall understanding of the text is aided by the regular inclusion of summaries and discussions.

The book is not suitable as an introductory or general text on defects and interfaces for undergraduate or graduate mineralogists and geologists. Its appeal is, at present, limited to researchers studying the structure and properties of solid–solid boundaries. However, as the study of solid state reactions by electron miscroscopy becomes more universal in mineralogy, the need for a specialized book such as this will increase amongst mineralogists. S. White

Chizhikov (D. M.) and Shchastlivyi (V. P.). *Tellurium and the tellurides*. Transl. from the Russian by E. M. Elkin. London and Wellingborough (Collet's), 1970. xii+296 pp., 102 figs. Price £8·50.

Interest in chalcogen chemistry has always been considerable in Russia, so it is not surprising that this comprehensive monograph on tellurium and its compounds is by Russian authors. It is an English translation of the original Russian version, which appeared in 1966.

The book is divided into two parts. Part I (Chapters 1–6) deals with elemental tellurium; Part II (Chapters 7–18) deals with inorganic tellurides.

In Part I, the first chapter describes in detail the physical and chemical properties of elemental tellurium; Chapters 2 and 3 deal respectively with geochemical aspects and the distribution of tellurium in various ores. Chapters 4 and 5 describe in detail the methods for production of tellurium. Where the extraction processes are complicated, they are illustrated by flow sheets. Chapter 6 deals with the purification of the element.

In Part II, Chapter 7 deals in a general way with lattice parameters and semiconductive properties of the tellurides, whilst Chapter 8 deals with general preparative methods for the tellurides and purification techniques. Methods for producing single crystals and thin films of tellurium and tellurides are discussed in Chapter 9. Chapters 10–17 occupy a large part of the work and are devoted to physicochemical properties of the tellurides. Each chapter is allocated to the particular group in the Periodic Table in which the other component of the telluride lies. Phase equilibria, thermodynamic properties, mineralogy, and magnetic and optical properties of the compounds are discussed. Chapter 18 deals briefly with the toxicity of tellurium and its compounds.

For use in the electronics field, tellurium and tellurides of very high purity are required. This necessitates the use of techniques such as zone refining, and preparation of single crystals by the Czochralski or Bridgman methods. These techniques feature in the work, and apparatus for two-temperature zone purification and high-pressure crystal growing are illustrated. The energy gap, and electron and hole mobilities are perhaps the most important parameters for characterizing semiconductors, and such data for the tellurides are provided where possible.

There are many misprints, and errors are particularly prevalent where thermodynamic quantities are concerned. For example, the high heat of vaporization for liquid tellurium (p. 6) cannot be related to the vapour-pressure equation of Brooks, which is also given; the heat of vaporization of hydrogen telluride (p. 145), which presumably refers to the liquid, appears to relate to the sublimation equation. Thermal data for the formation of antimony telluride (p. 225) are inconsistent. Nevertheless, the authors have produced a comprehensive book containing nearly 1300 references, which is well illustrated and in which the data are presented systematically.

This work will serve as a useful source book for those whose interests lie in mineralogy or solid state chemistry. E. H. BAKER

STRAKHOV (N. M.). *Principles of lithogenesis*. Vol. 3. Transl. from the Russian by J. P. Fitzsimmons and edited by S. I. Tomkeieff and J. E. Hemingway. Edinburgh (Oliver and Boyd) and New York (Plenum Publ. Corp.), 1970. xii+577 pp., 240 figs. Price £10·50.

The translation of the third volume of Strakhov's work on lithogenesis deals with the products of sedimentary processes in arid regions. It completes a trio that covers the realm of sediments in a way not only of interest to the sedimentologist but also to workers in many other fields of geology.

Strakhov's theme in this volume is that it is the authigenic and diagenetic minerals that are diagnostic of sediments deposited in arid regions, because they reflect the chemistry of the waters from which they were deposited. One's thought turns naturally to the evaporites as being the norm of arid zone sedimentation: but, as Strakhov emphasizes, saline deposits are the record of the extreme condition and there are all