BOOK REVIEWS

KLOCKMANN'S LEHRBUCH DER MINERALOGIE, P. RAMDOHR und H. STRUNZ, Fünfzehnte, umgearbeitete Auflage, Kristall- und Mineralkunde, Ferdinand Enke Verlag Stuttgart, 1967, xi + 820 Seiten, mit 582 Textabbildungen und zahlreichen Tabellen. DM 168.-

KLOCKMANN'S LEHRBUCH DER MINERALOGIE, Fifteenth revised edition by PAUL RAMDOHR and HUGO STRUNZ, Ferdinand Enke Verlag Stuttgart, 1967, xi + 820 pages, 582 Illustrations, numerous tables and diagrams, DM 168.-

The fifteenth edition of KLOCKMANN'S TEXTBOOK OF MINERALOGY consists of two parts: I. CRYSTALLOGRAPHY, revised and brought up-to-date by Hugo Strunz, and II. MINERALOGY, revised and supplemented by PAUL RAMDOHR, the editor of the four latest editions. Mineralogy is treated as a fundamental discipline with the following as its branches: crystallography, crystal chemistry, geochemistry, petrology and economic geology. In addition to the classical approach in an attempt to explain the origin and properties of minerals by relating atomic and crystal structures and physical chemistry, the book contains a great wealth of practical information, such as the concepts of diverse scientific disciplines, data on various analytical and X-ray diffraction techniques, flotation, mineral deposits and uses. It is designed as an introductory and fundamental textbook and as a reference work for students and scientists in the fields of physics, chemistry, crystallography, mineralogy, petrology, geochemistry, economic geology, mining, metallurgy, technology, civil engineering, ceramics, soil science and other related sciences.

Condensed contents of the book with the length of the chapters are given below:

Part I. CRYSTALLOGRAPHY (pp. 4–326) Space lattice principle of crystals.

A. Crystal geometry (pp. 9–100). I. Morphology. II. Space lattice geometry. III. Appendix: Calculation of crystals.

B. Crystal chemistry (pp. 101–211). I. Atomic components of crystals. II. Structural types of crystals. III. Phase transitions and phase relations of materials. IV. Appendix: Analytical methods; Chemical formulae; Surface forces.

C. Crystal physics (pp. 211–326). I. Density, specific heat, thermal conductivity, thermal expansion. II. Cohesive properties of crystals. III. Properties of crystals in electric and magnetic fields. IV. Properties of crystals in the field of corpuscular and electromagnetic radiation. V. Crystal optics. VI. X-ray diffrac-

tion studies of crystal structures. History of crystallography. References.

Part II. MINERALOGY (pp. 328–820).

A. Geochemistry; Mineral genesis; Origin of ore deposits (pp. 329–370). I. Geochemistry. II. Origin of minerals and rocks in the earth's crust. III. Concentration of elements and minerals in ore deposits.

B. Systematic mineralogy (pp. 371–775). Classification, species and varieties. Appendix: Famous localities of mineral occurrences.

C. Mineral uses (pp. 776–820). Most important metals. Elements for special uses. Gemstones. List of newer minerals.

Up-to-date (1966) bibliography is given at the end of each part. In the first part, basic principles of crystal structure and properties are discussed. The second part contains principles of geochemistry and origin of ore deposits, as well as a systematic description of about three thousand minerals including chemical formula, data on crystal symmetry, structure, space group, physical and optical properties, and occurrences studied. The characteristic crystal structures, phase diagrams and crystal forms are illustrated in 250 figures, some composed of as many as 9 drawings.

Considering that KLOCKMANN'S MINERALOGY contains extensive fundamental information of several scientific disciplines, the price, equivalent to $40, is quite reasonable.

This up-to-date book is highly recommended to university, scientific and technological libraries, to geologists, geochemists, mineralogists and petrologists, and particularly to those interested in getting a better understanding of the Earth Sciences as a whole.

J. RIMSAITE

MINERAL RECOGNITION, IRIS VANDERS and PAUL F. KERR, John Wiley & Sons, Inc., New York/London/Sydney, 1967, 316 pages, $11.95 U.S.

This publication is an introductory text to the study of mineralogy. It is designed to provide the amateur mineralogist and scientist in other fields with a background in mineralogy as well as a method for rapid visual recognition of common minerals. The text is illustrated by 72 black and white photographs, 286 colour photographs, and 186 figures or diagrams. There are 20 tables of which 10 are devoted exclusively to mineral identification (pages 109 to 153).

The main text consists of eight chapters under the following titles:

1. Minerals Past and Present, 7 pages; 2. Crystal Growth, 29 pages; 3. Crystal Chemistry, 20 pages; 4. Symmetry of Mineral Crystals, 18 pages; 5. Physical Properties of Crystals, 20 pages; 6. Chemical Tests, 12 pages; 7. Mineral Identification Tables, 47 pages; 8. Mineral Descriptions, 146 pages. An appendix on meteorites and an index complete the book. A list of references is given at the end of each chapter except chapter 7.

From the foregoing, it is evident that the major proportion of the book (chapters 6 to 8) is concerned with furnishing information to assist in the identification of minerals—by simple chemical tests and by a methodical observation of such characteristics as physical properties, crystal form, habit, cleavage, etc. To assist the reader in the identification of minerals, 10 determinative tables are given under the following headings: 1. Colour; lustre; streak; hardness; 2. Mineral aggregates; 3. Crystal habit; 4. Cleavage; 5. Specific gravity; 6. Magnetism; 7. Radioactivity; 8. Water solubility-taste; 9. Effervescence in acid; 10. Luminescence. Almost 200 mineral species are described in detail with emphasis on distinguishing characteristics for each species. This section is similar to most standard mineralogy texts except that detailed optical and crystallographic descriptions are wisely omitted since these fall beyond the sphere of the amateur or beginning mineralogist.

The first few chapters in the book provide the reader with an understanding of the more theoretical aspects of mineralogy. This section dwells principally on the chemistry, physics and crystallography of minerals—subjects requiring the reader to have a knowledge of the basic principles of chemistry and physics. The authors have, however, simplified these complex subjects considerably by the use of numerous diagrams and photographs.

The book is written in a fairly simple, not-too-technical style and a special effort is made to explain scientific terms unfamiliar to the untrained mineralogist. A bibliography at the end of each chapter is useful for readers wishing to proceed beyond the scope of this publication. In general, the photographs show very good representations of the crystal form and habit of the specimens and could be used as a guide in mineral recognition. In some cases, however, the colour reproduction is somewhat less than satisfactory and may tend to be misleading. The colour plates showing actual crystals with their corresponding wooden models effectively illustrate the common crystallographic forms and assist the reader in identifying minerals by their crystal form.

For the non-professional mineralogist this book will be a useful source of practical information on mineral identification and general mineralogy.

ANN P. SABINA

CRYSTAL SYMMETRY AND PHYSICAL PROPERTIES, by S. BHAGAVANTAM, Academic Press, London, New York 1966, 230 pages, 14 figures, $9.50.

This book, as the author states in his preface, "is primarily intended to interest students of solid state physics . . .". It is not, as the title might imply, a book from which the mineralogy student might learn crystal symmetry and the effect of symmetry upon physical properties of crystals.

The book begins with four short chapters on the necessary background mathematics, Linear Transformations, tensors, matrices and groups. These are very short (the one on tensors being but 5 pages long) and the author intentionally does not go beyond that "necessary for the reader to understand the main theme of the book". This reviewer feels that it would be very difficult for a student who did not already have an academic knowledge of these fields of mathematics to understand these chapters and proceed with the rest of the text. It is a shame that the author did not provide us with a selected short bibliography at the end of these chapters so that a student might better prepare himself.

The next chapter develops the crystallographic groups, and the remaining chapters, which constitute the bulk of the book, deal with physical properties of crystals and the effect of symmetry upon these properties. Elastic properties, thermal expansion, electrical properties, magnetic properties, optical properties and transport phenomena are all dealt with in detail.

One cannot help but be impressed by the use of mathematic manipulation in the development and handling of the physical properties discussed in this book. Only fourteen times in the entire text has the author found it useful to call upon an illustration to lend visual aid to his explanation.

I doubt that this book will find much use on the mineralogist's bookshelf, but for the solid state physicists for whom it was intended it should have considerable value especially in the extensive discussion of magnetic properties and constants. It will not help the latter in the practical application of crystallography, and we shall still find them haunting our laboratories seeking help to orient their crystals.

A. J. FRUEH, JR.

CATALOG OF THE COLLECTION OF METEORITES, HENRY HORBACK and EDWARD J. OLSEN, Chicago Natural History Museum, Fieldiana: Geology (Volume 15 number 3 pp. 175–319) December 30, 1965. $3.00 U.S. (paperbound).

This is the fourth catalog to be published for the collection of the Chicago Natural History Museum. This collection, covered by approximately 2400 catalogue numbers, includes specimens from 845 finds or falls

which represent about 57% of the known total for the world. This coverage is almost equally divided among the four kinds of meteorites: Irons, Stony-irons, Chondrites and Achondrites.

The catalog lists all cataloged specimens alphabetically under the name of the find or fall, giving the locality and date, a short description including the weight and catalog number(s) of the individuals, fragments, or slabs held in the collection. In some cases many fragments of one fall are cataloged under one number, in others different masses or slabs of one fall have different catalog numbers.

This up-to-date catalog of one of the world's larger collections of meteorites forms a valuable reference for those presently active in meteorite research.

L. G. BERRY

MARBLE IN ISRAEL, by ASHER SHADMON, State of Israel, Ministry of Development, Department of Mines, P.O. Box 884 Jerusalem, Israel 1965, 56 pp., 1 map, 4 colour plates, 17 plates. Obtainable on request.

This publication is mainly a technical report on the occurrence and utilization of marble in Israel. Notes on the history, local terminology and geological and geographical setting are given in the introduction followed by more detailed descriptions of the marbles quarried in six principal districts. A typical description includes: location, geology, properties—chemical, mineralogical, fossil content, density, strength, absorption, finish—and production. Israel marble is widely used in slab form as a building stone, its beauty and use is well illustrated in the numerous plates.

The technical qualities of Israel marble are described along with the various technical tests, quarrying and fabrication methods. Appendixes give a glossary of technical terms and trade names, polishing agents and a classification according to colour and locality.

L. G. BERRY