

BOOK REVIEWS

ENTWICKLUNGSGESCHICHTE DER MINERALOGISCHEN WISSENSCHAFTEN.

PAUL GROTH. Julius Springer, Berlin, 261 p., 1926; offset reprint by Dr. Martin Sändig oHG, Wiesbaden, 1970, available from Otto Koeltz Antiquariat, P. O. B. 129, 624 Koenigstein-Ts, Germany (BRD), DM 38 (about \$10).

Probably the most important of the small handful of books on the history of mineralogy, this volume, in my experience, has been impossible to find on the used book market for the past 20 years. The history is organized in terms of specific subjects, such as *Observation of angle constancy and the description of crystal forms*. The history of each subject is followed, with emphasis on the 19th Century. An appendix contains 37 short biographical sketches.

WILLIAM T. HOLSER

LA GENÈSE DE LA SCIENCE DES CRISTAUX. By HÉLÈNE METZGER. Paris, 1918; reprinted 1970 by A. Blanchard, 9 Rue de Medicis, Paris, 248 p. 15 F.

Metzger's history, dealing mainly with Hauy, is still useful for its viewpoint on the development of mineralogy in the 19th Century.

WILLIAM T. HOLSER

CHEMICAL BONDS IN SEMICONDUCTORS AND SOLIDS. N. N. SIROTA (ed.).

Nauk i Tekhnika, Minsk, 1965; Translation by Consultants Bureau, New York, 1967, 293 p., \$27.50.

48 papers from both the first and second All-Union conferences on chemical bonds in semiconductors, including a good general review by the editor, papers on X-ray scattering, emf and mechanical techniques of studying bonding, and a group of interesting papers on lattice dynamics by Tolpygo and others. The last section, on the relation of chemical bonding to physical properties in semiconductors, includes a half dozen experimental papers on compounds corresponding to minerals such as stibnite, sphalerite, and skutterudite.

WILLIAM T. HOLSER

PRINCIPLES OF CRYSTAL STRUCTURE DETERMINATION. By GENE B. CARPENTER. Benjamin, New York, 1969. 231 pages. \$14.50.

This book is primarily intended to teach the fundamentals of crystal structure determination to graduate or advanced undergraduate students in chemistry. The book is divided into four major parts dealing respectively with (1) microscopic and macroscopic descriptions of crystals, (2) the physics of X rays and X-ray diffraction, (3) crystal symmetry, and (4) determination and refinement of structures.

The organization of the book contains one unique feature—the initial treatment of symmetry is limited to unit cell translations; discussion of all other symmetry operations is deferred until the physics of diffraction has been discussed. At this point the treatment of symmetry can be and is very concise. Readers with a geometric viewpoint will probably object strongly but the reviewer finds the order of presentation quite logical.

For mineralogist-crystallographers, the book contains one serious omission. The difficulties and special problems, such as cation ordering, associated with refinement and analysis of members of a solid-solution series are regrettably not discussed, probably because this problem is relatively rare outside mineralogy. However, the clarity of the derivations and plausibility arguments make this book very useful as a reference if not used as a text.

L. W. FINGER
*Geophysical Laboratory
Carnegie Institution of Washington*

WORKED EXAMPLES IN X-RAY SPECTROMETRY. By R. H. JENKINS and B. DEVRIES. Springer-Verlag New York, Inc., New York, 1970. 129 pages. \$5.80

This volume is a worthy supplement to *Practical X-ray Spectrometry*, 2nd edition, written by the same authors [reviewed in *Amer. Mineral.* 56, 645. (1971)], or to any other text on the theory of X-ray procedures. Forty-seven different types of problems are posed and answered in either rigorous mathematical detail or in practical instrumental adjustments needed to solve the particular problem posed. While experienced X ray users will recognize that far more than forty-seven problems can and will arise in X-ray spectrometry, the examples selected by the authors are superb, and they serve as excellent indicators of how to go about solving other difficulties. In all respects this volume is the most practical "how-to" book in the X-ray field.

Examples are grouped into "spectra," "instrumentation," "counting statistics," "quantitative analysis," and "miscellaneous." Within groups examples are subdivided on the basis of difficulty of solution. Both diffraction (16 examples) and spectrometry (21 examples) are considered even though the title mentions only spectrometry. In addition, nine general examples (e.g., Moseley's Law, dead time) are included. All persons using X-ray methods in rock and mineral analysis should find this book of interest and help.

A. K. BAIRD
Pomona College

X-RAY AND ELECTRON METHODS OF ANALYSIS. Edited by H. VAN OLPHEN AND WILLIAM PARRISH. Plenum Press, New York, 1968, 164 p., \$15.00.

The title is slightly misleading. The seven "chapters", selected from invited papers at the 1966 Eastern Analytical Symposia on *X-ray and Electron Methods for Chemical Analysis and Scattering Techniques for the Determination of Surface Area, Porosity, and Particle Size*, are useful critical review papers on X-ray diffractometry, dispersive X-ray analysis, microprobe analysis, small-angle X-ray scattering, and low-angle light scattering.

WILLIAM T. HOLSER

SEDIMENTE UND SEDIMENTGESTEINE. By HANS FÜCHTBAUER AND GERMAN MÜLLER. E. Schweizerbart'sche Verlagsbuchhandlung, Stuttgart, 1970. 726 pages.

This book, which appears as the second part of a three-volume work (Part 1, G. Müller, *Methods of Sedimentary Petrology*, 1964; Part 3, *Sedimentary Processes*, by W. von Engelhardt, in preparation) is in itself a monumental encyclopedic work of impressive scope, which will no doubt become a major reference for all workers in this field. In style and approach it differs characteristically from its Anglo Saxon, Gallic, and Slavic counterparts; this in itself contributes to make it a useful supplement to these sources.

The two introductory chapters deal with the sedimentary cycle and pertinent terminology. The following 116 pages, authored by Füchtbauer, treat sandstones, conglomerates, and breccias, and discuss in a most systematic fashion subjects such as primary components, texture, and their relation to the facies and diagenesis.

In the next 145 page section Müller discusses the silt and clay sediments including paragenetic examples from Recent deposits from the deep ocean, the shelf, the estuarine environment (the North Sea), and large lakes (Lake Constance). Extensive space is devoted to the chemical interaction between water and sediment, diagenesis, and authigenic mineral formation.

The subsequent section on carbonate rocks (by Füchtbauer), in addition to petrological

considerations, deals extensively with the specific roles of fossil assemblages, approached on a taxonomic basis.

The largest section, almost 400 pages, discusses (G. Müller) sediments from environments of special interest such as evaporites, siliceous, phosphatic, ferruginous aluminous, and pyroclastic rocks, as well as bioliths such as peat, lignite, and coal. A final brief chapter in this section introduces for the first time in a monograph of this type the sediments in the oceans of the Moon.

The volume ends with a discussion by Füchtbauer of cyclic sedimentation features.

The systematic aspects of the approach are strongly emphasized, giving this work an encyclopedic quality, enhanced by the thorough index. With the subdivision chosen it has not been possible to avoid some overlap particularly between sections treated by the different authors, but this has in most cases been turned to an advantage. Although some sections go into depth of the subject to the limits of existing knowledge, others which perhaps would be equally important from an encyclopedic point of view, are more lightly treated; the glacial and glaciofluvial sediments would perhaps have deserved more attention. The confusion that exists in the literature between disordered hydromicas ("illite") on one hand and detrital mica of igneous and metamorphic origin on the other has penetrated also into this work. These are, however, all minor deficiencies in a work of monumental scope and of great thoroughness. It is particularly rewarding to notice the success with which the authors have incorporated the results of modern work up to very recent time and with truly international coverage (2511 references). The profuse illustrations are of high quality, diagrams and maps are redrawn to a uniform format, and the extensive microphotographs are mostly of excellent quality.

Since it is hardly expected that the authors' ability to penetrate into the foreign literature will be matched by reciprocity from the readers, one would hope that this book will soon be available also in translated form.

GUSTAF ARRHENIUS
Scipps Institution of Oceanography

RECENT DEVELOPMENTS IN CARBONATE SEDIMENTOLOGY IN CENTRAL EUROPE. Edited by GERMAN MÜLLER AND G. M. FRIEDMAN. Springer-Verlag, New York, 1968, 174 p., \$14 50.

Thirty papers presented at a symposium at Heidelberg, July, 1967, including several on diagenesis of carbonates, and on the distribution of trace elements in carbonates.

WILLIAM T. HOLSER

KINETICS OF REACTIONS IN IONIC SYSTEMS. Edited by T. J. GRAY AND V. D. FRECHETTE. Plenum Press, New York, 1969, 571 p., \$27.50.

Thirty-three papers from the International Symposium on Special Topic in Ceramics, June 1967, at Alfred University, cover all aspects of nucleation, growth, and reaction kinetics in oxides and salts.

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