# BOOK REVIEWS

NENDO-KOBUTSU (CLAY MINERALS), by TOSHIO SUDO. No. 178 of the Iwanami Series, 240 pp.+4 fold-in tables, $4\frac{1}{2}'' \times 6\frac{1}{2}''$, cloth bound, 240 yens. Iwanami-shoten, publisher. Tokyo, Japan. 1953.

The book contains six chapters of unequal lengths. Chapter I gives an historical introduction and generalities on clays. Chapter II (77 pp.) describes the laboratory research methods for the study of clays, including their fractionation. It also gives optical properties and $x$-ray diffraction powder patterns. Comparison of various patterns is shown by means of line drawings. Disorder in layer stacking and differential thermal analysis are discussed. The Philips diffractometer is mentioned briefly. The chapter ends with a description of the electron microscope and its application to clays through metallic shadow casting. Chapter III (68 pp.) is devoted to the properties of clay minerals (crystal structure, thermal properties, and colloid chemistry). It contains over 20 neat structural drawings, some showing individual atoms, others showing the tetrahedra as geometrical solids. Particularly noted is a detailed discussion of isomorphous substitutions in the various chemical formulae. Chapter IV (43 pp.) treats the topic of formation of clay minerals, including experimental artificial synthesis, but with emphasis on geological considerations. Chapter V (5 pp.) touches on practical applications. Chapter VI (8 pp.) presents a classification of platy minerals and shows their structural relationships.

The bibliography on clay minerals numbers 11 pages. Four indexes are given: subject matter, names of minerals and other compounds, names of authors (listed according to the Latin alphabet). Appendix I lists 26 chemical analyses of clays from Japanese localities; 13 out of the 26 analyses total $100 \pm 0.50$; most of them are recent (less than 10 years old). Appendix II gives 23 indexed powder patterns. Appendix III presents, for each of 36 analyzed specimens: optical constants, chemical analysis, interplanar distances and cell dimensions in Å, and morphological appearance under the electron microscope.

This book is remarkable in that, in spite of its small size, it succeeds in covering all aspects of the study of clay minerals. Its presentation is also worthy of praise. The second reviewer can recommend the excellent figures to the attention of those mineralogists who do not read Japanese.

NOBUHISA UJIIYE AND J. D. H. DONNAY

THE LITERATURE OF GEOLOGY, by BRIAN MASON, 155 pages, lithoprinted. Published by the author. Price, $2.00, postpaid on order accompanied by remittance and addressed to Brian Mason, The American Museum of Natural History, New York 24, New York.

This little book is not as broad in scope as is a similar one by Pearl (Guide to Geologic Literature, McGraw-Hill, 1951) published recently. It has no general description of library facilities, for example, and it does not discuss local publications, theses, or other forms of unpublished geologic information.

It is divided into two parts: General and Regional. The first part is devoted to reference works of various kinds, abstract journals, and lists of selected references in specific fields. In the regional section countries are listed alphabetically under the respective continents. Under each country the following items are given: (*a*) the publication(s) of the official geological survey; (*b*) important geological serial publications; (*c*) the latest geological map; and (*d*) the most useful and up-to-date source of information on the general geology of the country.

In the absence of an index some cross references would have been in order, especially in Part I. For example, Rice's *Dictionary of Geological Terms* is listed under "Glossaries"

and not under "Dictionaries"; Hey's *An Index of Mineral Species and Varieties . . .* is listed under "Glossaries" but not under "Mineralogy"; and Tröger's *Spezielle Petrographie der Eruptivgesteine,* which is quite as much a glossary for petrographic names as is Hey's book for mineralogical ones, is listed under "Petrology" but not under "Glossaries." The *Minerva Jahrbuch der Gelehrten Welt,* Walter de Gruyter and Co., Berlin, might well have been included under "Directories"; Albert H. Fay, *A Glossary of the Mining and Mineral Industry,* U. S. Bureau of Mines Bulletin 95, under "Glossaries"; and the *Neues Jahrbuch Referate,* under "Abstracts."

Mason's book is intended primarily for students and instructors of geology, librarians, and practicing geologists. It will be of little use to research workers and specialists in geology because of the number and nature of omissions. Part I, of course, is highly selective and makes no pretense of completeness. Part II, however, should contain all geological serial publications of any consequence. Some 20 bulletins and other geological publications of states are omitted, however, and almost twice that number from the Latin American countries. It is disturbing to find publications like the *Transactions of the Edinburgh Geological Society, Geological Bulletins of the British Museum, Proceedings of the Liverpool Geological Society,* and some seven others of similar character omitted from the list of geological publications of Great Britain, when only eight are listed. Other European nations do not fare much better.

In spite of these omissions the volume is very useful for many purposes, especially in finding the latest geological map of each state and country and a general treatment of the geology of each country. The logical and consistent arrangement and almost tabular format make for an ease and security in reference not experienced with books where similar information is largely in conventional text format.

EARL INGERSON,
*U. S. Geological Survey, Washington, D. C.*

STRUCTURE REPORTS FOR 1945–1946. VOL. 10. GENERAL EDITOR, A. J. C. WILSON; SECTION EDITORS: C. S. BARRETT (*Metals*), J. M. BIJVOET (*Inorganic compounds*), J. M. ROBERTSON (*Organic compounds*). Published for the International Union of Crystallography. N. V. A. Oosthoek's Uitgevers Mij, Utrecht. viii+325 pp. (1953). Price 45.- Dutch florins, postpaid. Alternative: Polycrystal Book Service, 84 Livingston St., Brooklyn 1, New York. $12.00.

The gap between the last issue of *Strukturbericht* (Vol. VII, 1939) and current Structure Reports is gradually being filled. With the appearance of the new Vol. 10, there remain only Vols. 8 and 9 to be published. This volume is like the others, with the same division into Metals, Inorganic Compounds and Organic Compounds. Likewise the crystal structure data are so completely reported that usually no reference to the original source is necessary. A valuable feature is the editorial comment, when necessary.

Workers in many fields are finding these reports of great value, and the editors of this international undertaking are to be congratulated for the thoroughness and promptness with which they are carrying out this important task.

L. S. RAMSDELL,
*University of Michigan, Ann Arbor, Michigan*

EINFÜHRUNG IN DIE KRISTALLOGRAPHIE by HANS SCHNEIDERHÖHN, Professor of Mineralogy and Petrology, University Freiburg i Br., large octavo, pp. 360+xvi, atlas of 102 plates containing 456 figures, 2 folding plates, cloth. Verlag Karl Alber Freiburg i Br. (1949), price DM 40.

Professor Schneiderhöhn has written a textbook of crystallography that covers the en-

tire field in a nonmathematical approach. It was conceived with the idea that this subject is of interest not only to mineralogists and physicists, but also to chemists, economic geologists, mining engineers, foresters, and biologists.

The book is divided into seven parts: crystal geometry, crystal chemistry; introductory crystal physics; mechanical, thermal, electrical, and magnetic phenomena of crystals; crystal optics; optical crystallographical methods of investigation with the polarizing microscope; and "Erzwungene Anistropie" that embraces electro-optical and magneto-optical effects, optical phenomena induced by strain, optical anomalies, birefringence in colloidal systems, "form" and "streaming" birefringence, and liquid crystals.

The book is divided into texts and plates, each of which is bound separately. The text is so bound that the plates fit into a recess in the binding. Two tables are also fitted into a flap in the back cover. Table 1 gives the periodic system. Table 2 covers the symmetry properties of the 32 crystal classes and is a very useful summary. The plates are in black and white. However, in the section on the polarization microscope, the various colors are indicated by the use of heraldic symbols employing dots and hatchings. There has been collected in this book a considerable amount of information that heretofore has been available only in scattered sources. Teachers will find this information useful as supplementary lecture material.

Professor Schneiderhöhn treats the subject from the phenomonological approach. There is a very careful integration of the text and the atlas of plates. The figures in these plates are well selected and excellently drawn. The coverage is rather complete and includes such subjects as luminescence, the character of optically active crystals, and brief descriptions of the polarization microscope and accessories.

This book will prove both stimulating and useful to those who add it to their library.

GEORGE T. FAUST,
*U. S. Geological Survey, Washington, D. C.*

THE COMPOSITION AND ASSAYING OF MINERALS by JOHN STEWART-REMINGTON AND WILFRED FRANCIS. Pp. 127+viii, cloth. Published by The Philosophical Library, Inc., 15 East 40th St., New York 16, N. Y. (1953), price $5.50.

The authors have prepared this book as an introduction to the investigation of the chemical composition of minerals. The audiences to which it appears to be directed are those who are concerned with the mining, milling, and utilization of minerals, ores, and rocks.

The book is divided into five parts. Part I deals with methods of qualitative analysis. Dry and wet tests are briefly summarized. This section is designed to help plan the chemical analysis by wet methods. Part II (89 pages) describes the principal metallic minerals and gives qualitative tests and quantitative assays for the major metals. The minerals, with some exceptions, are classified according to the principal metal. This section closes with the quantitative estimation of acidic radicals, viz: chlorine, phosphorus, silica, and sulfur. Part III gives typical assays of ores. Part IV (11 pages) treats the nonmetallic minerals. Three and one-half pages are devoted to a "General Scheme for the Analysis of Silicate Minerals"! The book closes with Part V, which consists of various chemical and mathematical data and a chart giving a "General Qualitative Analysis Scheme for Metals."

The mineralogical nomenclature is decidedly antiquated. Thus "crocosite" is used for crocoite, "alumstone" for alumite, etc. Furthermore, terms not previously in use such as "millorite" for millerite and "calcium uranate" for autunite are introduced.

The book contains a number of typographical errors that tend to confuse the nomenclature. The text itself is not free from errors, i.e., on p. 18, mercury when "frozen is cubic the crystals being octahedral"; on p. 27, tenorite is "very common in the Copper Mines of the Mississippi Valley, U. S. A."

The reviewer would not recommend this book for students; its subject matter is treated with too great a brevity to make it a usable text. Industrial analysts may find some helpful suggestions.

GEORGE T. FAUST,
*U. S. Geological Survey, Washington, D. C.*

IDENTIFICATION AND QUALITATIVE CHEMICAL ANALYSIS OF MINERALS by ORSINO C. SMITH. Second Edition, pp. 385+ix. Published by D. Van Nostrand Company, Inc. (1953), price $7.50.

A review of the forerunner of this book was published in this *Journal* in volume 25, page 767, 1940, and of the First Edition in volume 32, page 253, 1947. The present edition has 34 more pages than the first, which represents a ten percent increase. This expansion is spread over several chapters and includes a new section on the "History of blowpiping." There has been some rearrangement of the contents. The author has endeavored to improve the text on the basis of suggestions from those who use the book in the class and in the field.

The identification tables have not been changed. In the preface to the Second Edition, the author writes:

"Because of the new methods now in use in studying the structure and composition of minerals, it is being found that a number of substances which have been classified as distinct minerals are variations of other minerals, mixtures, etc., with the result that name changes and cancellations are in progress. This checking may take some time, and it is thought inadvisable to attempt to reclassify the minerals until this process is more complete."

Presumably, this refers to the completion of volume 3 of Dana's SYSTEM OF MINERALOGY, seventh edition.

GEORGE T. FAUST,
*U. S. Geological Survey, Washington, D. C.*

recommended to Geol. Lit.

TAFELN ZUM BESTIMMEN DER MINERALE NACH ÄUSSEREN KENNZEICHEN, by H. v. PHILIPSBORN, $7\frac{1}{4}'' \times 10''$, xxvii+244 pp., 10 plates with 289 crystal drawings, and 1 illustration in the text. E. Schweizerbart'sche Verlagsbuchhandlung, Stuttgart, Germany, 1953. Price, Cloth-bound, DM 17.

The first set of tables for the rapid determination of minerals based upon the recognition of their physical properties, such as luster, color, streak, and hardness, was published in 1866 by Professor Albin Weisbach of the Saxon School of Mines, Freiberg, Germany. The Weisbach tables were used extensively and passed through thirteen editions. Friederick Kolbeck was responsible for the sixth to the thirteenth (1923) editions. The main portion of this text, pages 1–167, by H. v. Philipsborn, who succeeded Weisbach and Kolbeck at the Saxon School of Mines, is an extension of their tables, and the volume is very fittingly dedicated to them.

The number of minerals included in the tables is large, for there are 568 entries with few duplications. The tables are subdivided according to luster, color, and streak, and the minerals arranged in order of increasing hardness. Other physical properties, chemical composition, mineral associates, occurrences, and similar minerals are given.

In addition to the main tables, the author has compiled very helpful determinative tables based upon (1) Morphological Features, pages 168–184, supplemented by 289 crystal drawings; (2) Chemical Properties, pages 185–218; and (3) Microscopic-optical Properties, pages 219–236. There are many cross-references in all tables.

The various terms, properties, methods, and reagents referred to in the tables are fully

explained in the introduction, pages xi–xxvii, which also includes a table of abbreviations, an extensive bibliography, and a very helpful listing of equivalent terms and expressions in five languages. There is a very good index.

The author has made a major contribution to determinative mineralogy by incorporating in a single volume so many helpful tables. The book, which is obviously the result of much time and effort, is well printed and reasonably priced.

EDWARD H. KRAUS,
*University of Michigan, Ann Arbor, Michigan*