
NEW BOOK

Identification and Qualitative Chemical Analysis of Minerals. By O. C. SMITH, Petroleum and Chemical Technologist. D. Van Nostrand Company, Inc., 250 Fourth Avenue, New York, N. Y., 1946. 351 pp. Illustrated. 15 × 23 cm. Price, \$6.50.

This book is divided into seven chapters: the first describes approximate methods, some of which can be used in the field, for determining specific gravity, hardness, fusibility, solubility in hydrochloric acid, color, streak, luster, cleavage, fracture, crystal system, index of refraction; the second discusses the use of ultraviolet light and fluorescence in mineral location and identification, describes available apparatus, and outlines methods for its use; the third, after a very brief outline of the chemical classification of minerals, lists reagents and apparatus to be used for the field and laboratory identification of minerals, and includes drawings for the construction of a portable kit for qualitative analysis; the fourth outlines routine chemical tests and gives tables for the identifications of minerals based upon their solubility in hydrochloric, nitric, sulfuric acids, or their insolubility in acids, plus a scheme for qualitative analysis. The fifth chapter is a description of a complete scheme of qualitative analysis, which includes the less common elements, and is accompanied by tables giving the blowpipe reactions on plaster of paris and charcoal, with and without various fluxes, for the different elements, also the borax and salt of phosphorus bead tests. Chapter six contains miscellaneous chemical information, including methods of blowpiping, reactions with hydrogen peroxide, with zinc in acid solutions, blowpipe tests, closed and open tube tests and others. Chapter seven is an extensive table for mineral identification, which lists practically all the known and several doubtful species.

The author obviously spent a great deal of time and effort in its preparation, and equally obviously got a great deal of enjoyment out of his task. Unfortunately, to the reviewer, it seems to fall between two stools. For the trained mineralogist or analytical chemist, it contains very little that is new, or not covered more adequately elsewhere. For the amateur, it assumes a skill in carrying out delicate qualitative tests, a familiarity with certain operations of mineralogy, and a well-equipped workshop, which he will probably not possess. The scheme of qualitative analysis calls for a number of very delicate tests and the carrying out of a large number of manipulations. It appears to the reviewer that several months of trial with known substances would be required before any degree of confidence in the results could be obtained. Certain of the tests, such as the hydrogen peroxide tests for thorium and yttrium on page 146, would not give the identifications described. No precautions are given with regard to recognizing arsine by odor, or for the danger of heating potassium chlorate in the probable presence of filter paper fibers. The concepts of fusibility of minerals and normality of acids are introduced many pages before they are defined or described, and there are no cross-references in the index. The way to make a borax bead, one of the pitfalls of the budding mineralogist, is not described. There are three or four other minor errors.

The color plates are extremely disappointing. In the copy sent to the reviewer, nearly all the plates are so badly centered that the color registration is too faulty to be useful. In several cases it appears that mineral specimens slipped during photography. The colors of many minerals are poorly reproduced, *e. g.*, cuprite, Plate 20; turquoise, Plate 27, and in several cases the colors are not typical, *e. g.*, fergusonite and samarskite, Plate 27. The reproduction of luster is very poor, *e. g.*, bakerite, alunite, anhydrite, margarite in Plate 27, graphite, in Plate 28. This is however, typical of the best of color photography of mineral specimens. There is no substitute for the study of the

actual mineral. The photographs of borax and salt of phosphorus beads in Plate 18 are poorly centered, and the color reproduction not really satisfactory. On the other hand, the color plates showing sublimates on charcoal and plaster appear to be better centered and more typical of the actual appearances.

On page 8, is described a very ingenious way of making a Jolly balance at home, provided the constructor has access to a machine shop. The use of ultraviolet light and fluorescence in prospecting and mineral identification, written by Thomas R. Warren, President of Ultra-Violet Products, Inc., Los Angeles, California, is extremely well treated, and contains much that is new. The methods of blowpiping are well-described. The use of hydrogen peroxide for distinguishing between several different minerals, as outlined on pp. 145-146 is novel and useful. The portable laboratory appears adequate, provided the prospective builder has the necessary mechanical skill to construct it.

On balance, the reviewer regrets that he cannot give a hearty recommendation of this book for the persons for whom it is apparently intended.

JOHN PUTNAM MARBLE

BOOKS RECEIVED

September 10, 1947–October 10, 1947

- H. A. BETHE. "Elementary Nuclear Theory." John Wiley and Sons, Inc., 440 Fourth Ave., New York 16, N. Y. 147 pp. \$2.50.
- JAMES BRYANT CONANT and ALBERT HAROLD BLATT. "The Chemistry of Organic Compounds." Third Edition. The Macmillan Company, 60 Fifth Ave., New York, N. Y. 665 pp. \$5.00.
- E. D. EASTMAN and G. K. ROLLEFSON. "Physical Chemistry." First Edition. McGraw-Hill Book Company, 330 West 42nd St., New York 18, N. Y. 504 pp. \$4.50.
- M. R. FOX. "Vat Dyestuffs and Vat Dyeing." John Wiley and Sons, Inc., 440 Fourth Ave., New York 16, N. Y. 323 pp. \$5.50.
- ARTHUR D. HERRICK. "Food Regulation and Compliance." Volume II. Revere Publishing Company, 32 Broadway, New York 4, N. Y. 639 pp. \$10.00.
- O. A. HOUGEN and K. M. WATSON. "Chemical Process Principles." Part III, "Kinetics and Catalysis." John Wiley and Sons, Inc., 440 Fourth Ave., New York 16, N. Y. 1107 pp. \$4.50.
- JOEL H. HILDEBRAND. "Principles of Chemistry." Fifth Edition. The Macmillan Company, 60 Fifth Ave., New York, N. Y. 446 pp. \$4.25.
- A. W. JOHNSON. "The Chemistry of the Acetylenic Compounds." Volume I, "The Acetylenic Alcohols." (With a foreword by Sir Ian Heilbron.) Longmans, Green and Company, Inc., 55 Fifth Ave., New York, N. Y. 394 pp. \$9.50.
- VARTKES, MIGRICHIAN. "The Chemistry of Organic Cyanogen Compounds." Reinhold Publishing Corporation, 330 West 42nd St., New York, N. Y. (American Chemical Society Monograph.) 460 pp. \$12.00.
- W. K. RIEBEN. "Beiträge zur Kenntnis der Blutgerinnung." Benno Schwabe and Co., Verlag, Klosterberg 27, Basel, Switzerland. (Imported by Grupe and Stratton, Inc., Medical Publishers, New York.) 97 pp. Fr. 9.— (paper cover).