

that show the difference between physics and chemistry. In the second chapter, oxygen, hydrogen, and their compounds are considered. The halogens and their derivatives constitute the third chapter. At this point elements and compounds, as well as the use of symbols, are discussed. Nitrogen and the atmosphere are the subjects of experimentation in chapter four, while the fifth, sixth, and seventh chapters are occupied by the other frequently occurring non-metals and their derivatives. Seven chapters follow; in them facts relating to the more important metals are presented in simple experiments. Analytical tests follow each metal. Combining weights, the atomic hypothesis, and valency are considered immediately after the metal magnesium. It may be inferred from this that the author advocates first giving to the student an abundance of facts before deducing theories or entering upon a discussion of fundamental principles. This thought is constantly before the reader throughout the entire book. The explanations accompanying the numerous experiments in Part I are clear and to the point. It must be admitted that the author has presented his subject in such a manner that good will result. Part II (twelve chapters) is given to qualitative analysis. The subject-matter is not exhaustive, but here, as in Part I, types are presented to the student. These he works out in detail, being assisted in his efforts by valuable explanatory remarks on the part of the author. Part III considers the elements of volumetric analysis. The examples selected for work are typical and cover a wide field. Recent methods of value have not been overlooked. In this section, as in the two preceding sections, the author has presented all the subject-matter in a very clear style. In short, after careful inspection of the book one lays it down with the conviction that it possesses great merit; it is an excellent book and worthy of commendation.

EDGAR F. SMITH.

ELEMENTS OF MINERALOGY, CRYSTALLOGRAPHY AND BLOWPIPE ANALYSIS. BY ALFRED J. MOSES AND CHAS. L. PARSONS. pp. 342, with illustrations. New York: D. Van Nostrand Co., 1895.

This work, as indicated in its preface, is mainly intended for use as a text-book. It is divided into four parts: I. Crystallog-

raphy; II. Blowpipe Analysis; III. Descriptive Mineralogy; IV. Determinative Mineralogy.

The authors have given considerable space to crystallography, having devoted about one-fourth of the entire volume to the subject. The text is well written and fully illustrated.

In part II, after a chapter devoted to the apparatus, flame, etc., there is given a detailed description of the "Operations of Blowpipe Analysis," the reagents employed, and the results obtained in the various manipulations. This is followed by a series of "Useful Tests with the Blowpipe" on all of the principal elements. A valuable feature of this last chapter is a list of "Interfering Elements," which follows tests given for each element and in which directions are given for obtaining the proper reactions. The section is concluded by a chapter on "Schemes for Qualitative Blowpipe Analysis."

Part III, on Descriptive Mineralogy, occupies the major part of the book. The two first chapters treat of the physical characters and chemical composition of minerals. While the definitions of terms are clear and concise, they are in a few cases abridged to incompleteness and explanation of the optical and magnetic properties are omitted entirely.

The remaining chapters describe the various minerals under the heads of the elements forming their principal component parts. A distinguishing and most useful feature of this part of the work are the general remarks at the beginning of each chapter concerning the economic uses of most of the important minerals and ores.

The book would be more useful as one of reference, particularly to the analyst, if more attention had been given to the percentage composition. Many minerals have it in full, others only partially, while not a few have the formula only given.

Part IV consists of a number of tables of the usual tests for the rapid determination of minerals.

The arrangement of the book as a whole is excellent, and although the subject matter has been largely condensed, the elimination of less important details has made it much more practical than text books usually are, and it should be found useful to the professional mineralogist and chemist.

H. B. BALDWIN.