

BOOK REVIEW

ELEMENTS OF MINERALOGY, CRYSTALLOGRAPHY, AND BLOWPIPE ANALYSIS. ALFRED J. MOSES AND CHARLES L. PARSONS. Columbia University and U. S. Bureau of Mines. Fifth edition, enlarged and in large part rewritten. D. Van Nostrand Co., *New York*, 1916.

In the majority of text-books of mineralogy the arrangement of the minerals is chemico-crystallographic; that is, since the acid radicals are most closely related to the crystal form, the minerals are grouped according to these radicals. Users of this method are inclined to proclaim it to be the most scientific one; but that depends on the point of view. If it is desired to consider minerals from the genetic standpoint, the usual arrangement is actually the least scientific, for it separates minerals found associated in nature, and combines those which happen to have similar crystalline forms. Arrangement according to metals is a logical necessity if the subject is to be taught primarily from the practical, economic, and genetic side. The reviewer has long felt that the latter plan is the better one, and has therefore been especially glad to learn of the appearance of a new edition of Moses and Parsons, which is unquestionably the foremost text-book arranged according to this plan.

The new edition begins with a select bibliography of mineralogy, so up-to-date that Murdoch's *Opaque Minerals* and Bragg's *X-rays and Crystal Structure* are included. Part I is devoted to Crystallography, not the old-time, theoretical treatment of the subject, but with special reference to the conditions actually found in minerals. A valuable new feature is "a simplified method of classifying and identifying real crystals by partial symmetry and angles, which enables the student after two or three lessons to recognize the crystalline system of real crystals and often to identify the species by simple measurements." This is surely preferable to basing the instruction, as is so frequently done, on the teutonically accurate but utterly unnatural wooden models. The reviewer is in hearty agreement with the authors' view that "geometrical crystallography often receives an unmerited proportion of the time devoted to the study of crystals as a natural result of the fact that the geometrical relations were first studied," which has led to their reducing the space devoted to this phase of the subject.

The excellent description of the several crystal systems of the fourth edition is repeated in the present one with but little change, but Chapter VIII, which previously bore the title "Twin crystals or macles" is now "The grouping of crystals and their imperfections," and in it crystal aggregates and the structures resulting from them, crystal habit, striations, etc., are treated in a thoroly practical way. In logical sequence there follows "An enlarged section on crystallo-optics, schemes for crushed fragments, and grouped optical distinctions consequent upon the proved value of the polarizing microscope in rapid mineral determination." Part II, on blowpipe analysis, is but little changed from the preceding edition.

In Part III, Mineralogy proper, the introductory chapters have been partially rewritten, the one on "Formation and occurrence of minerals," which was a valuable and nearly unique feature of the previous edition having been considerably enlarged. As heretofore the individual minerals are then taken up in groups, depending upon their metals rather than their crystallization, the significance of which plan was above discussed. An instructive account of the genetic relationship existing between the minerals of each group is added. Previously wolframite had been grouped with iron minerals, vanadinite with lead minerals, etc., but now these species are separately treated in "descriptions of new economic groups and species consequent on the great development in industrial applications," especially of the rarer metals. The rock-forming minerals are treated together; and whereas in former editions the gem minerals were scattered thru the several groups, they are now assembled and described in a separate chapter. The descriptions of the gem minerals are especially full, and up-to-date discussions of synthetic and imitation gems are included. The modernness of this chapter will be further evident when it is mentioned that such phenomena as indices of refraction, absorption spectra, and behavior toward X-rays are given in many cases.

Part IV, Determinative Mineralogy, has been improved over former editions by the introduction of tables based on optical properties, and by the use of keys of rather novel but eminently practical character.

The book contains a number of typographical errors; technical errors are, however, rare; in the table on p. 531 the stating

of a definite value of $\gamma - \alpha$ for analcite conflicts with the description of its optical character as isotropic.

The book as a whole can be highly recommended to give a beginner a good idea of practical mineralogy.

E. T. W.

PROCEEDINGS OF SOCIETIES

THE NEW YORK MINERALOGICAL CLUB

The second regular assembly of the Club for 1917 occurred on February 14 in its usual meeting room in the American Museum of Natural History in New York, PRESIDENT J. G. MANCHESTER presiding and thirty-nine persons present.

The announced paper presented by Mr. Otto F. Pfordte, C.E., was entitled "Notes on a visit to the Mines at Cobalt, Thetford, and Sudbury, Canada."

It was very comprehensive, including reviews of the history, geology, mineralogy and industrial development of the above mentioned districts and some adjacent localities which respectively produce—silver and cobalt, gold, nickel (as pentlandite in pyrrhotite), asbestos and graphite,—and was illustrated by blackboard sketches, maps, specimens and a full series of lantern slides.

It was stated that silver had been known to occur near Cobalt since about 1879, as small nuggets were brought in by Indians from time to time, but its great deposits were first revealed by the cutting thru of a railroad in 1903.

Among the minerals described was a white earthy mixture of the arsenates of cobalt and nickel in such proportion that their red and green complementary colors exactly neutralized each other.¹

Early and recent views of the mining camps and towns showing their rapid and extensive development concluded Mr. Pfordte's interesting paper.

WALLACE GOOLD LEVISON, *Secretary*.

THE PHILADELPHIA MINERALOGICAL SOCIETY

Wagner Free Institute of Science, February 8, 1917

PRESIDENT TRUDELL in the chair. Twelve members and fifteen visitors present.

Mr. R. J. Hagey presented a paper on "The Petrographical Microscope." The optical principles involved were thoroly treated, and illustrated with instructive diagrams. Numerous slides were exhibited by an ingenious projection apparatus designed by Mr. Hagey. Particularly good were the interference figures thus shown, and the attendant optical phenomena. The lecture

¹A property possessed also by other pairs of elements in the same group and utilized, as in glass making, for decolorizing their solutions.