The Optical Properties of Crystals with a general introduction to their physical properties, being selected parts of the Physical Crystallography. By P. GROTH, Professor of Mineralogy and Crystallography in the University of Munich. Translated (with the author's permission) from the fourth revised and augmented German edition by B. H. JACKSON, M.E., M.A., of the University of Colorado. 8vo, xiv + 309 pages, with 121 figures in the text and two colored plates. Cloth, $3.50. New York, John Wiley & Sons; London, Chapman & Hall, Limited. 1910.

This is a partial translation of the well-known work of Professor von Groth, "Physikalische Krystallographie," which is generally regarded by those who have to deal with optical crystallography as the best non-mathematical treatise on this subject yet produced. The translation, to quote from the translator's prefatory note, "is made up chiefly of matter contained in Part I. of the original work, on the properties of crystals; besides embracing the general introduction and all that falls under the heading optical properties in this part, it includes also whatever may be found there on the influence of other properties on the optical properties. Short extracts from Parts II. (Systematic Description of Crystals) and III. (The Methods of Crystal Investigation) have been introduced, on occasion, for illustration and example."

The scope of the work may be gathered from the headings of the principal divisions which are as follows: General Introduction to the Properties of Crystals; The Nature of Light; Combination (Interference) of Plane-polarized Light; Optically Isotropic Bodies; Double Refraction of Light; Optically Uniaxial Crystals; Optically Biaxial Crystals; Recapitulation: Classification of Crystals According to their Optical Properties; Combinations of Doubly Refracting Crystals to show the Character of their Double Refraction; Rotation of the Plane of Polarization of Light in Crystals; Absorption of Light in Crystals; Influence of other Properties on the Optical Properties of Crystals including Thermal Properties, Elastic Strain by Mechanical Forces and by Electrical Forces, Permanent Strain, and Twinning.

The translation is excellent, the English being free and idiomatic but following closely the original text. The work is entirely within the comprehension of any student who knows the rudiments of crystallography and forms a much-needed and very welcome addition to the English text-books in the field covered by it.

The colored plates reproduced from the original work are excellent; I comprises a spectrum of white light and a Newtonian color scale of the first four orders; II presents the important types of interference figures in convergent light in thirteen figures.

An appendix contains a useful list of German and American supply houses for apparatus, models, crystals and preparations. English firms might well have been added to this list.

CHARLES PALACHE

SPECIAL ARTICLES

WEST ELIZABETH, PENNSYLVANIA, DEEP WELL[1]

I AM indebted to Dr. I. C. White,[2] state geologist of West Virginia, for calling my attention to the omission from my paper published in SCIENCE, May 26, 1911, under the title "Underground Temperatures," of an important deep boring made in 1897 in Allegheny County, Pa. The data relating to this well are so important as to be worthy of a separate note.

The well is located on Peter's Creek about two and one half miles west of West Elizabeth, Allegheny County, Pa., and about twelve miles south-southeast of Pittsburgh. It is the deepest well drilled in the United States

[1] White, I. C., West Virginia Geological Survey, Vol. I(A), 1904, pp. 103–107. Hallock, W., "Subterranean Temperatures at Wheeling, W. Va., and Pittsburg, Pa.," *School of Mines Quarterly*, 1897, Vol. XVIII., pp. 148–153; see especially pp. 151–153.

[2] Personal communication, June 6, 1911.