REVIEW.

The Characters of Crystals, an Introduction to Physical Crystallography. By Alfred J. Moses, E.M., Ph.D., Professor of Mineralogy, Columbia University, New York City. Pp. 211 + VIII. with 321 Text figures. (New York: D. van Nostrand Company, 1899).

Professor Moses has reprinted the series of papers which appeared during the past two years in the *School of Mines Quarterly*, and presents us with an elementary treatise on the physical questions connected with crystals, which will undoubtedly be found most useful by every mineralogical student. In a small compass he gives a very clear sketch of the apparatus and methods used in crystallography without employing any but the simplest mathematics, and thus makes it intelligible to students whose attainments in this subject are not of a high order. In many cases—notably in the chapters dealing with the optical phenomena—the proofs have been omitted altogether, and the reader is referred to other works for fuller and more detailed information.

The book is divided into three parts, dealing respectively with the geometrical, the optical and, finally, the remaining physical characters of crystals. The author follows Groth in avoiding all ideas of hemihedrism, and introduces a simple and effective nomenclature. On this point may we venture to hope that teachers of mineralogy will ere long come to some agreement in the names adopted for the thirty-two classes of symmetry? To explain the phenomena connected with the transmission of light through a crystalline medium, Professor Moses employs Fletcher's geometrical treatment, which avoids all questions as to the properties of the luminiferous aether. In the third part scarcely enough prominence seems to be given to the importance of etching in determining the crystalline symmetry, as exemplified by the researches of Baumhauer and Beckenkamp. In an appendix is added the very complete graduate course in Physical Crystallography given in Columbia University.

The book is well printed on good paper, and enhanced in value by numerous excellent figures.