top face could be recut for purposes of masking identification and a new projection would be so dissimilar that comparison would be difficult. A slight recutting of this facet would not change the values of *phi* to any extent and those values could still be used in identification.

It is not believed that this will become a practical method of recording cut gems but it was thought worthy of brief mention. Occasion might arise where a record of this sort of some especially valuable gem would be of importance.

PROCEEDINGS OF SOCIETIES

THE PHILADELPHIA MINERALOGICAL SOCIETY

Academy of Natural Sciences, December 14, 1922

A stated meeting of the Philadelphia Mineralogical Society was held on the above date with the Vice-president, Mr. Trudell, in the chair. Seventeen members and one visitor were present.

Upon favorable recommendation of the Council, Mr. Wilfred Broadbelt was elected an active member. Mr. Hoadley proposed Mr. Horace Hallowell for active membership. The chair announced the death of Mr. William R. Evans.

Dr. Edgar T. Wherry of the Bureau of Chemistry addressed the society on "Modern Views of Crystal Structure." The history of the study of crystal structure was reviewed, introductory to a description of the Laue, Bragg, and Hull methods of X-ray analysis, and some of the results achieved. A *domain* was defined as the space through which the attractive and repulsive forces of the atom are effective. The shape of the domains may be derived from the space lattices, which are determined by the equilibrium of these forces. The packing of domains was illustrated with a number of models and lantern slides. Crystal habit was regarded by the speaker as being principally influenced by impurities in the solution, but the faster the formation of the crystals, the less the influence of the impurities. Isomorphism is limited to atoms that approximate each other in size; thus, there is limited replacement of K for Na, while that of K for Ba is complete, as illustrated by the feldspars. The alkalies, Cs, Rb, and Li in the beryl group are considered to be due to an isomorphous *hexagonal* pollucite. In tourmaline Li replaces ferrous iron. Other cases of atomic isomorphism in the micas, pyroxenes, scapolites, and zeolites were cited. A vote of thanks was accorded the speaker for his interesting and instructive communication.

SAMUEL G. GORDON, *Secretary*

BOOK REVIEWS

THE MINERALOGY OF PENNSYLVANIA. SAMUEL G. GORDON. Special Publication No. 1, Acad. Nat. Sci. Phila., 1922. Price $3.75.

The frontispiece of this valuable work is an illustration of pyrite crystals from French Creek, which will preserve for all time the exact outlines and appearance of these remarkable crystals.

The Introduction (Chap. I) gives an excellent historical outline from the time of the beginning of the development of mineralogy in Pennsylvania to the present time, together with an outline of the scope of the present paper. Chapter II, on the Origin and Occurrence of Minerals, is a new and interesting departure; it deals with them as natural chemical compounds whose formation is governed by well known physico-chemical laws. The detailed classification is made on the basis of mineral assemblages, which are divided into two classes, i.e., those arising from magmatic phenomena, and those formed by sedimentary processes. The minerals forming the assemblages are classified as primary, metamorphic, or weathering products. Under igneous rocks are considered the silicic, alkalic, calcic, and magnesic types, with special attention to the pegmatites and hydrothermal deposits; among the sediments, the silicious, argillaceous, calcareous, magnesian, ferruginous, etc., and carbonaceous deposits are taken up, with detailed enumeration of the most typical minerals in each.

Chapter III gives a résumé of the general geology of Pennsylvania, by physiographic divisions, with further subdivision into counties for convenience. Chapter IV, the Descriptive Mineralogy of Pennsylvania, considers the minerals arranged by species in the Dana classification, with the Pennsylvania localities listed under each. A large number of figures gathered from the literature are given; chemical analyses are abundantly represented. Chapter V gives the list of mineral localities of Pennsylvania arranged alphabetically, with species reported from each, the authority and date, and the exact location of the occurrence, expressed numerically according to the Ninth Coördinate System of J. F. Kemp, explained on page 9 of the introduction. A bibliography and an index of localities and species close the volume.

This is a full and authoritative compilation of all available data on a classic area, and as such, as well as for the original methods of classification presented, it deserves an important place in any complete mineralogical library. A. C. H.

DAS FEINBAULICHE WESEN DER MATERIE NACH DEM VORBILDE DER KRISTALLE. Friedrich Rinne. Second and third editions. 8-vo. 168 pages, with 9 plates and 203 figures. Borntraeger Brothers, *Berlin*, 1922.

The reception of the first edition of this volume, entitled *Die Kristalle als Vorbilder des feinbaulichen Wesens der Materie*, which was published in 1921 (*Am. Min.* **7**, 161, 1922), was so enthusiastic and widespread as to call for a revised and enlarged edition within a year. Sixty-seven pages, including an index, four full-page plates, and 103 figures have been added. The book gives an excellent review of the great strides made in our knowledge of the structure of matter, especially from the standpoint of the crystallographer. While the treatment is on the whole the same as in the earlier edition, it is somewhat more historical. An English translation will undoubtedly be greatly welcomed by those who experience difficulty in reading German with ease. It has already been translated into several foreign languages. Edward H. Kraus

NOTES AND NEWS

On page 90 of Whitlock's List of New Crystal Forms of Minerals (*Am. Min.* **7**, 193, 1922) occurs the remark "...the writer is keenly conscious of the possibility of omissions and errors, and will gratefully welcome additions and corrections."