

12. The chemico-crystallographic phenomena of isomorphism, morphotropism, and polymorphism are most intimately connected with one another. Polymorphism is the morphotropic structure-change, chemical relations remaining constant, conditioned by the influence of thermodynamic factors on the properties and reciprocal effects of the crystal-components; polymorphism occurs, as soon as the limiting-values for self-isomorphism are overstepped.

13. At higher temperatures that type of crystal-structure is stable which can be obtained through substitution of the counter-deforming cation by its next lower homolog.

A few details as to the observational data on which these various theorems are based are given in the article under review, but the bulk of the evidence is contained in a series of papers on the "Geochemical distribution laws of the elements" by Goldschmidt and his collaborators in course of publication in the *Skrifter norske Videnskap-Akademi*, Oslo, 1923-1926.

"I believe," writes Professor Goldschmidt in conclusion of the essay under review, "to have in this communication shown the way in which chemical-crystallography becomes, instead of a mere descriptive, an exact science." He has certainly done crystallographers a great service in having carried out such an extensive series of x-ray measurements on members of isomorphous series as to make possible the recognition of the principles governing isomorphous replacement. He has given the final death-blow to the older view that valence has a direct connection with isomorphism, as a glance at the series of compounds enumerated under the discussion of theorem 8 will clearly show. With the majority of the ideas put forward the reviewer is in complete accord.² The atomic and ionic radii used by Goldschmidt are however, hardly as well established as is implied by the assurance with which they are used, and the reviewer ventures to express the opinion that the values given for the ions of the halogens and oxygen (discussion of theorem 2) will ultimately be found to be about as much too high as those in present use by many workers (the Bragg values of 1920) are too low. If such is the case some of the conclusions as to commensurability of different space-lattice-types (theorem 5), marked deformability of certain crystal-components, (theorem 6), etc., may have to be revised. On the whole, however, Professor Goldschmidt's series of papers, summarized in this essay, represents the most important contribution to chemical crystallography which has appeared since X-rays have been applied to the elucidation of crystal structure.

E. T. WHERRY

PROCEEDINGS OF SOCIETIES

NEWARK MINERALOGICAL SOCIETY

The eighty-fourth regular meeting of the Newark Mineralogical Society was called to order by President T. I. Miller, eighteen members being present. The minutes of the last meeting were read and approved. The secretary reported a total membership of seventy-four with several applications for membership pending. The treasurer reported a satisfactory balance on hand. The special Museum Committee reported that an exhibit would be held at the Newark Museum on December

²He had already arrived at some of them independently, as indicated in articles published in this journal.

15, consisting of specimens obtained from New Jersey localities. At the present time there is displayed at the Museum a collection of radio-active minerals, arranged by Capt. Miller.

The By-Laws Committee presented the new By-Laws, revised to conform to the State incorporation laws. The report was adopted as read. The officers of the Society elected for 1927 are as follows: President, Herbert L. Thowless; Vice-President, Daniel T. O'Connell; Secretary, William H. Broadwell; Treasurer, Herman M. Lehman; Trustees, three year term, J. A. Grenzic; two year term, Mrs. T. I. Miller; one year term, G. E. Carpenter.

Mr. Broadwell then explained the exhibit for the meeting which consisted of mineral labels and trays. These comprised a complete set as used by himself, together with specimen labels from Ward's, English, Hopping, British Museum, and labels used by several other collectors. He emphasized the fact that all collectors should have a label of uniform size and printing, and stated that labels for the United States specimens should be of a different color from those of foreign localities. His card index contained six colors. He also exhibited trays of his own manufacture, made of one piece of good 10-ply coated stock and strong enough for the heaviest specimen.

Capt. Miller then spoke on the display of labels, trays, glass covered boxes, goniometers; etc., exhibited by request by Ward's Natural Science Establishment of Rochester, New York.

WM. H. BROADWELL, *Secretary*

PHILADELPHIA MINERALOGICAL SOCIETY

Academy of Natural Sciences of Philadelphia, Nov. 4, 1926.

A stated meeting of the Philadelphia Mineralogical Society was held on the above date with the president, Mr. Vaux, in the chair. Twenty-eight members and seven visitors were present.

Dr. W. S. Newcomet was elected to membership and Mr. L. Weagle to junior membership.

Mr. Frank J. Keeley addressed the society on "*Microscopic mineralogy and the George W. Fiss collection.*" Early in the 1880's minerals were first mounted for display under the microscope, by Mr. Fiss and possibly also Mr. Rakestraw, working independently. The speaker's long association with Mr. Fiss enabled him to give a particularly interesting and intimate description of the manner in which the Fiss collection was brought together and the personalities involved in it. Today the Fiss collection is probably the finest collection of microscopic minerals in existence.

Mr. Keeley also reported the results of his observations with the microspectroscope. It was found that the bright red line in the spectrum of the ruby is a fluorescence line superimposed on a continuous absorption band at the red end. On the basis of differences in the absorption spectra in the yellow, the following cerium-bearing minerals may be identified one from another: parisite, cordylite or ancylite, rinkite, monazite, tysonite, britholite, lanthanite and rhabdophanite.

Mr. Trudell described a trip which he took with several others to the French Creek mines. Pyrite and green calcite crystals were exhibited.

F. A. CAJORI, *Secretary.*