

PROCEEDINGS OF SOCIETIES

NEW YORK MINERALOGICAL CLUB

Meeting of January 16, 1918

Part 2: Exhibition of Luminescent Minerals

In the meeting room at the left of the platform by a round table was a mercury-vapor arc lamp, called a "Sun Lamp," provided and operated by Messrs. I. J. Allen and F. W. Robinson, representatives of the Hanovia Chemical and Mfg. Co. of Newark, N. J. Preceding the meeting the early arrivals surrounded the instrument and tried its effect on specimens of willemite, etc., they had brought with them, including several cut gems. The greenish-yellow color of the gem variety of willemite was shown by this light as by sunlight, and it vividly excited a residual glow in certain willemites and other sensitive substances.

Upon the conclusion of the Gratacap memorial proceedings, the President announced that Dr. G. Failla of the Memorial Hospital had brought to the meeting a tube containing radium which would be experimented with. It consisted of a capillary glass tube sealed at both ends, about 1/8 inch outside diameter and perhaps 5/8 inch long, containing radium emanation, and was retained in the sealed end of a larger tube by a plug of cotton. In the dark it was visible to the entire assemblage as a faint luminous glow. On approaching it to specimens of sensitive willemite it excited the usual green fluorescence of the mineral, vividly when near it and distinctly even at distances of several feet.

A letter was then read by the Secretary from Mr. W. S. Andrews of the General Elec. Co., Schenectady, N. Y., accompanying specimens of luminescent products made by him and offered for exhibition at the meeting. These were a zinc silicate (called artificial willemite) and cadmium phosphate, both fluorescent; and a triboluminescent zinc sulfide. Dr. Kunz then exhibited several choice mineral specimens from the Museum collection which after exposure to the quartz lamp or to radium showed very strong residual luminosity, among them willemite and fluorite.¹

Mr. George E. Ashby then read a letter from Mr. George L. English, of Ward's Nat. Sci. Establishment, presenting for exhibition a large specimen of the triboluminescent sphalerite from the Horn Silver Mine, Frisco, Utah, and several small specimens for distribution among the members with his compliments.

Mr. J. P. Wintringham exhibited a similar large and highly responsive specimen of willemite which afforded a brilliant afterglow and showed the blue fluorescence of a small crystal of fluorite, the mineral in which the phenomenon was first observed and from which its name was derived. He read from a textbook of mineralogy the customary description of phosphorescent and fluorescent minerals.

Commenting on the general subject the Secretary remarked that on various early occasions and especially lectures of October 13, 1898, and February 8, 1900, before the Brooklyn Institute, published in the daily papers, and a paper for the N. Y. Acad. of Sciences read December 5, 1898,² he had defined fluorescence and phosphorescence as step-down and step-up transformations, and fluorescent and phosphorescent substances as step-down and step-up transformers, of radiant wave energy, because the former transform incident wave energy to energy of longer wave-length and the latter to rays of shorter wave-

¹These had been described by him in several papers, especially: On the triboluminescence of pectolite as distinguishing it from the zeolites. *Annals N. Y. Acad. Sci.*, April 20, 1876; The action of radium, actinium, Roentgen rays, and ultra-violet light on minerals and gems (in collaboration with Professor Charles Baskerville). Presented before the New York Academy of Sciences. Oct. 6, 1903.

²On a system of classification of fluorescent and phosphorescent substances. Abstract in *Annals N. Y. Acad. Sci.*, (5), 40, Pt. 3, pp. 496-497, Dec. 31, 1898.

length, although its refrangibility is usually altered only a few steps from the upper or lower to the middle registers of the spectrum. He pointed out also that the prevailing impression that the excitation of fluorescence is confined to the ultra-violet rays, resulting from incomplete explanations of the action of the spark gap light, is unwarranted, as most of the many sensitive substances now known will respond quite as well to one or another of the rays of the visible spectrum, especially those above the yellow-green. It was with sunlight after transmission through a train of glass lenses and prisms that he had discovered the direct fluorescence and afterglow of the Franklin, N. J., willemite in 1898.³ Conversely neither should the development of phosphorescence be considered as exclusively confined to the infra-red rays, as in some substances it may be excited within the visible spectrum.

After some further discussion of the subject the meeting adjourned, but many of those present lingered to try further experiments with the various exhibits.

WALLACE GOULD LEVISON, *Secretary*

THE PHILADELPHIA MINERALOGICAL SOCIETY

Wagner Free Institute of Science, February 14, 1918

A stated meeting of the Philadelphia Mineralogical Society was held on the above date with the President, Dr. Leffmann, in the chair. Eighteen persons were present.

Dr. Herman Burgin made an interesting communication on "The Early History of the Anthracite Industry in Pennsylvania." Mr. Trudell read an account of a mineralogical trip around Philadelphia taken by Mr. Theodore Rand fifty years ago (1867).

SAMUEL G. GORDON, *Secretary*

NEW MINERALS

Mullanite

On mullanite, a new member of the jamesonite group, from two localities. Earl V. Shannon. *Am. J. Sci.*, [4], 45, (1), 66-70, 1918.

NAME: After Capt. John Mullan, for whom one of the localities, Mullan, Idaho, was named.

PHYSICAL PROPERTIES

Color: steel gray, sometimes darker when tarnished; luster: metallic to metallic-adamantine; opaque; streak: brownish black; form: long parallel fibers; friable; fine matted wool-like masses. $H = 3.5$. Sp. Gr. = 6.407.

CRYSTALLOGRAPHIC PROPERTIES

Orthorhombic. Forms: a (100), b (010), c (001), m (110), r (120), β (510), n (130), t (140). Habit: prismatic-fibrous; deeply striated and somewhat flattened parallel to the front pinacoid. Cleavage: c (001) and b (010) distinct, a (100) and probably m (110) imperfect. Thin fibers are flexible, thick ones brittle.

CHEMICAL PROPERTIES

Composition: $5PbS \cdot 2Sb_2S_3$. Analysis (average of 2) of material from Iron Mountain Mine, Superior, Montana: Sb 25.71, Pb 55.05, S 18.82, As 0.25, Cu none, Fe trace; sum 98.81.

³ Levison, W. G., On a simple and convenient phosphoscope (Read N. Y. Acad. Sci., April 4, 1898.) *Annals N. Y. Acad. Sci.*, (5), 40, No. 17, pp. 401-403, Sept., 1898.