

SCORODITE FROM PUTNAM COUNTY, NEW YORK

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At the old arsenopyrite mine, one half mile southwest of the south end of Pine Pond, and three miles north northwest of Carmel, Putnam County, New York, is a deposit of scorodite which, on account of the clearness with which its origin is shown, seems to deserve a more detailed description than it has yet received.

The arsenopyrite and scorodite at this locality are briefly mentioned by Mather¹ who says: "The ore which is abundant and situated in hornblendic gneiss rock decomposes on the surface forming sulphate and arsenate of iron." Newland² reports pyrite and arsenopyrite with quartz gangue as occurring in closely set parallel stringers forming a lode in a gneiss country rock. He does not mention the scorodite. The lode where worked is 12 to 20 feet wide and has a northerly strike.

The scorodite was found in greatest abundance in a cut made in 1918 or 1919 on the hillside within 25 feet above and to the north of the tunnel entrance north of the shaft. Here the vein material and the rock adjacent to it are much shattered and traversed by numerous cracks. The scorodite occurs in these fissures and has evidently been formed by the alteration of the arsenopyrite and deposited from water solution. Not all of the scorodite has been concentrated in the fissures but some remains in the quartz where the arsenopyrite originally was distributed. Even at the surface small amounts of unweathered pyrite and arsenopyrite remain. On the face of the cut and evidently forming at the present time when weather conditions are favorable is a white coating of ferrous sulphate.

The largest vein of scorodite is two to eight inches wide and very irregular as to strike and dip. It extends for a length of about twenty feet across the face of the cut. The fissure in which it occurs continues to the west beyond the arsenopyrite lode and there, where the supply was less, are stalactites of porous scorodite thinly coated with gypsum, on the hanging wall. At the east side

¹ Mather, W. W., *Geology of New York. Part I. Geology of the First Geological District*, p. 115, 1843.

² Newland, D. H., *The Mining and Quarry Industry of N. Y. State Mus. Bull.*, 120, p. 13, 1908.

of the lode scorodite is the cementing material in a breccia of the country rock presumably formed by faulting.

The scorodite in the larger veins shows distinct banding parallel to its wall. It is fine grained and mostly rather porous, though very variable in this respect. Where not stained brown by limonite the scorodite is light green in color, and on account of its fine grain and porosity, has a rather dull luster. It has a hardness of 4.

Determinations of specific gravity with the Jolly balance on chips of a few grams weight soaked over night gave results varying from 2.70 to 2.86. This low specific gravity is doubtless due to air remaining in the pores of the mass. A sample of the scorodite was kindly examined microscopically by Dr. E. S. Larsen who reported that it has a mean refractive index of about 1.775 and a rather strong birefringence. It is too fine grained to allow any more accurate determination of its optical properties.

Fragments were selected for analysis which appeared to be free from limonite, the most constant associate of the scorodite. Although no impurity could be detected by microscopic examination of the powder prepared for analysis, possibly a very small amount of limonite was present. The results of the analysis are given below.

	I.	II.
Fe ₂ O ₃	34.68	34.6
As ₂ O ₃	48.89	49.8
P ₂ O ₅	0.04	
H ₂ O+	15.68	15.6
H ₂ O-	1.12	
CaO	none	
NiO	none	
SO ₃	none	
	<u>100.41</u>	<u>100.0</u>

I. Scorodite, Putnam County, N. Y. analyst, J. H. C. Martens

II. Theoretical composition for FeAsO₄ · 2H₂O.

The purity of the material analyzed was shown by its easy and complete solubility in dilute hydrochloric acid and by the negative results of tests for substances which it was thought might be present. In view of the poorly crystallized character of the mineral and its mode of formation the analysis agrees strikingly well with the theoretical composition of scorodite.