

ART. XXVII.—*On the Lesleyite of Chester Co., Penn., and its relations to the Ephesite of the Emery formation near Ephesus, Asia Minor*; by J. LAWRENCE SMITH.

SEVERAL years ago a small amount of mineral from Chester Co., Penn., was handed to me for examination by Dr. Isaac Lea of Philadelphia. The specimen was too impure to warrant any conclusion upon analysis. Its character and associates, however, led me to suppose that it was the same mineral described by me as associated with the emery of Asia Minor and to which I gave the name *Ephesite*. In the mean time Dr. Lea described his mineral as a new species, calling it *Lesleyite*; and in a recent number of the American Journal of Science, S. P. Sharples has given an analysis of it, that at once brought to my recollection my original opinion that it was close to *Ephesite*, and on recurring to my examination of this mineral, making due allowance of the impurities contained in it, the opinion was confirmed.

I then obtained from Dr. Lea another specimen of his mineral and proceeded to analyze both it and the *Ephesite* for mutual comparison. Much labor was bestowed in selecting the pure

mineral from each, the greater part of a day having been consumed in procuring the necessary quantity for analysis. They are similar in their associations and identical in color and luster, and general physical properties. They are both very difficult to decompose by carbonate of soda, even when aided with caustic potash; so that in both analyses the silica obtained was fused a second time and much alumina separated from it.

My original description of the mineral will be found under Emery, in this Journal, II, vol. x, 1850, as follows:

"It is of a pearly white color, and lamellar in structure; cleavage difficult. It scratches glass easily, and has a sp. gr. of from 3.15 to 3.20. Heated before the blowpipe it becomes milk-white but does not fuse. At first sight it might be taken for white disthene. It is decomposed with great difficulty by carbonate of soda even with the addition of a little caustic soda."

The Lesleyite has identically the same properties. On analysis the two minerals were found to be composed as follows:

	Ephesite.	Lesleyite.
Silica.....	30.70	31.18
Alumina.....	55.67	55.00
Lime.....	2.55	0.45
Soda.....	5.52	1.20
Potash.....	1.10	7.28
Water.....	4.91	4.80
	100.45	99.91

The alkalis in the two varieties are reversed, the Ephesite containing principally soda, and the Lesleyite potash.

This close relation of the two minerals is an interesting fact as regards the associate minerals of corundum found in different parts of the world.

In regard to the reddish variety of Lesleyite examined by Roepper, the analysis cannot be considered as giving very satisfactory results, for the mineral may have been impure, and the difficulty in decomposing by the soda fusion may give very erroneous results in a silica determination.

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