LAZULITE FROM CHITTENDEN, VERMONT

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In the Mineralogical Lexicon[1] of Massachusetts published in 1895, Professor Emerson recorded the finding of a waterworn, glaciated pebble containing lazulite in the bed of Hinsdale Brook in the Berkshire Hills. He was not able to locate the source of this pebble and up to this time this is the only recorded occurrence of lazulite in New England.

In 1894, Mr. C. L. Whittle, then of the U. S. Geological Survey and working in Vermont, found near Chittenden, Vermont, ten miles north of Rutland a small vein of lazulite in an Algonkian quartzite. He presented a specimen to the Harvard Mineralogical collection and this has now been analyzed. The material is sufficiently like the description of Emerson's pebble to make it extremely probable that the Chittenden occurrence was the source of the glacial drift boulder. It is here placed on record to establish the presence of lazulite in the New England rocks.

The specimen in hand, no details concerning which were recorded, is a thin hand specimen, about two by three inches, one side covered with deep blue lazulite, the other a coarsely crystalline quartzite with sericite scales and a few rutile needles and hematite grains. The lazulite shows no developed crystals but is in half-inch grains showing good cleavage. The specific gravity, determined by floating in heavy solution is 3.08.

Concerning the analysis Mr. Gonyer makes the following statement: the mineral is soluble after heating; it was therefore heated and after solution a residue of 1.49 per cent. of the original sample remained. This contained 0.33 per cent. of silica and 1.16 per. cent of undetermined nature, probably largely titanium oxide. The soluble material gave the figures of the table.

	PER CENT	MOL. RATIOS	CALCULATED PER CENT
Al_2O_3	33.11	.3238	33.39
FeO	2.59	.0360 ⎫ .3430	14.31
MgO	12.38	.3070 ⎭	
H_2O+	6.24	.3464	5.88
P_2O_5	46.17	.3250	46.42
	100.49		100.00

[1] Emerson, B. K. *U. S. G. S. Bull.*, **126**.

These figures lead to the formula $(Mg, Fe) O \cdot Al_2O_3 \cdot P_2O_5 \cdot H_2O$ with

$$Mg:Fe = 8:1$$

The last column shows the calculated composition for this formula and the correspondence is good. This is then a normal lazulite rather low in iron.

The optical properties, determined by H. Berman are:

Biaxial $(-)$, $2V = 70° \pm$ Dispersion perceptible, $\rho < \upsilon$
$\alpha = $ colorless $= 1.612$
$\beta = $ light blue $= 1.634$ all $\pm .002$
$\gamma = $ blue $= 1.643$