

ART. XXIV.—*Chladnite of the Bishopville Meteoric Stone proved to be a Magnesian Pyroxene*; by J. LAWRENCE SMITH, Prof. Chem. Med. Dep. University of Louisville.

IN 1846, Prof. C. U. Shepard published an account of an exceedingly interesting meteoric stone that fell at Bishopville, South Carolina, in 1843, differing in its external character from other meteoric stones; the fractured mass being exceedingly white, except where metallic iron and other associate minerals occur. I would refer the reader to Prof. Shepard's description of it in this Journal, Sept. 1846, p. 381.

The composition of the snow-white mineral (constituting about 90 pr. ct. of the entire mass) as given by Prof. Shepard is—

		Oxygen.	Ratio of ox.
Silica,	- - - - 70.41	35.205	3
Magnesia,	- - - - 28.25	11.300	1
Soda,	- - - - 1.39	.338	

From the results of this analysis he considered it a *tersilicate of magnesia*, constituting a new species to which he gave the name *chladnite*.

Several years after this examination, a fragment of this meteoric stone came into my possession, and separating a small portion of the mineral in question it was examined. The result of this incomplete examination justified the statement in a note to a memoir of mine on meteorites, presented to the Amer. Scientific Association in April, 1854, and published in this Journal for March, 1855, p. 162, "that from some investigations just made, *chladnite* is likely to prove a pyroxene."

Since that announcement I have been placed in possession of other fragments of the meteorite, and have been able to separate the "*chladnite*" perfectly pure, and in sufficient quantity to submit it to a thorough analysis.

To render the *chladnite* soluble in acid, it was fused with four times its weight of carbonate of soda and potash, with a small fragment of caustic potash placed on the top of the mixed powders in the crucible.<sup>1</sup> After fusion, the analysis was proceeded with in the ordinary way; the results of two analyses were as follows:

	1.	2.
Silica,	- - - - 60.12	59.83
Magnesia,	- - - - 39.45	39.22
Peroxyd of iron,	- - - - .30	.50
Soda, with feeble potash and strong lithia reaction,	.74	.74
	100.61	100.29

<sup>1</sup> I would remark that I seldom or ever fuse a silicate with the alkaline carbonates, without the addition of a small piece of caustic potash or soda, and never analyze a known or supposed pyroxene or hornblende without this precaution. I have no doubt that there are many minerals classified with hornblende, which properly belong to pyroxene, the silica in the analyses being rated too high, an error arising from an imperfect fusion.

The minute quantity of peroxyd of iron came from exceedingly fine particles of iron diffused through the minerals, and could be seen by a magnifying glass. One separate analysis was made for the soda.

The constitution of the mineral, as made out from the numbers in analysis 1, is—

	Oxygen.	Oxygen ratio.
Silica, . . . . .	31.22	2
Magnesia, . . . . .	15.51	1
Soda, . . . . .	.19	

corresponding to the formula  $\text{Mg}^3\text{Si}^2$ , equivalent to the general formula of pyroxene,  $\text{R}^3\text{Si}^2$ .

The excess of silica obtained by Prof. Shepard in his analysis is doubtless due to an imperfect fusion of the mineral with the carbonate of soda, an error easily made, if the precautions I have already mentioned are not attended to.

"Chladnite" approaches those forms of pyroxene known as white augite, diopside, white coccolite, &c.; these last named minerals having a part of the magnesia replaced by lime. It is identical in composition with *Enstatite* of Kenngott, a pyroxenic mineral from Alosthal in Moravia (this Journal, [2], xxi, 200).

From these observations it will be seen that the Bishopville meteoric stone, however different in external characteristics from other similar bodies, is, after all, identical with the great family of pyroxenic meteoric stones.