ART. XIX.—*Analyses of some minerals from the Emery mine of Chester, Mass.*; communicated by Dr. C. T. JACKSON. (From a letter to one of the Editors.)

1. *Andesine*.—The emery vein enlarges as it goes in, and from four feet has already widened to seven feet eight inches of solid emery of the best quality. The adit now is extended 260 feet. The portion of rock originally mistaken by me for granular quartzite, and called Indianite by Shepard, proves on analysis to be *Andesine*, although it is harder than stated in the books, scratching quartz crystal readily. It is associated with crystals of black tourmaline. It is very compact, fine granular in texture, with a conchoidal splintery fracture, and has G. = 2.586, H. = 7.5; the color slightly greenish white. I obtained for its composition,

	1.	2.
Silica, - - - - -	62.00	60.00
Alumina, - - - - -	24.40	25.00
Lime, - - - - -	3.50	
Magnesia, - - - - -	0.70	
Soda, - - - - -	8.07	
Water, - - - - -	1.00	
	<u>99.67</u>	

In No. 2 there was a trace of oxyd of iron not weighable.

2. *Analysis of Margarite*, by JOHN C. JACKSON.—The margarite of Chester has, G. = 3.08, H. = 8.5–4. The analysis afforded:

Silica, - - - - -	29.84
Alumina, - - - - -	53.84
Lime, - - - - -	10.88
Magnesia, - - - - -	0.24
Alkalies, soda chiefly, - - - - -	2.46
Water, - - - - -	1.32
Sesquioxyd of iron, - - - - -	0.30
	<u>98.88</u>

3. *Diaspore*.—The first of the following analyses of diaspore was made by my son, John C. Jackson. I was in hopes he would have had time to repeat the work and determine the alumina directly,—an accident having damaged that part of his analysis so that he can give it only by difference. In my analysis of the same mineral the ingredients were all directly determined. The quantity analyzed at a time was 10 grains; two analyses were made. The diaspore is in prismatic crystals which contain microscopic crystals of Brookite. H. = 7 nearly, scratching quartz distinctly but feebly. G. = 3.39. Analyses:

	1.	2.
Water,	14.75	14.8
Alumina,	[80.75]	83.0
Oxyds titanium and iron,	4.50	
Sesquioxyd of iron and oxyd titanium,		3.0
	<hr/> 100.00	<hr/> 100.8

The diaspore occurs in both the North and South Mountains, associated with emery and chloritoid. It exists both in bladed striated crystals, and in small prisms of considerable length, sometimes an inch or more long. Only the microscopic crystals present perfectly defined forms.

Chloritoid.—Ten grains of the chloritoid were selected for the analysis, as pure as possible, but it still contained microscopic particles of magnetic iron ore and perhaps of emery.

The results of my analyses are as follows. The second column contains these results as they would be if half the oxyd of iron is protoxyd:

	1.	2.
Water,	11.00	11.00
Silica,	22.50	22.50
Alumina,	28.50	28.50
Protoxyd of iron,		18.00
Sesquioxyd of iron,	41.50	20.25
Magnesia,	1.80	1.80
	<hr/> 100.30	<hr/> 97.05

If I can procure crystals free from any admixture I shall re-analyze it. It is plain that if the mineral is chlorite the magnesia is replaced by protoxyd of iron. It differs less from chloritoid but more from masonite, which by my analysis, published in my Report on the Geology of Rhode Island, contains 6 pr. ct. of oxyd of manganese and 32.20 of silica. The following is my analysis of masonite: (From analyses made in 1839 and published in 1840; Geol. of R. I., page 88, Prov., R. I., 1840. The analysis was repeated several times, and this is a mean of a number of carefully made analyses by myself on 25 and 50 grain lots.)

Water,	4.000
Silica	83.200
Alumina,	29.000
Magnesia,	0.240
Protoxyd of iron,	25.984
Oxyd of manganese,	6.000
	<hr/> 99.874

Boston, March, 1866.