



LIX. On a granular albite associated with corundum, and on the indianite of Bournon

B. Silliman Jun. M.D.

To cite this article: B. Silliman Jun. M.D. (1849) LIX. On a granular albite associated with corundum, and on the indianite of Bournon , Philosophical Magazine Series 3, 35:239, 484-486, DOI: [10.1080/14786444908646400](https://doi.org/10.1080/14786444908646400)

To link to this article: <http://dx.doi.org/10.1080/14786444908646400>



Published online: 30 Apr 2009.



Submit your article to this journal [↗](#)



Article views: 2



View related articles [↗](#)

Experiments of September 29.

(A Bunsen's battery of 30 elements, well-cleaned and amalgamated, was employed.)

First Series.

	Deviations.
Without current . . .	12·0
Current A	14·9
Current B	8·6
Without current . . .	11·7
Current B	8·8
Without current . . .	11·8

Second Series.

Without current . . .	18·4
Current B	14·9
Current A	21·7

It is to be remarked, that here, if the principal sections of the prisms were perpendicular, the deviation, at first null, would scarcely attain one semi-division when one of the currents was made to act.

Lastly, to obviate every objection, a third series of experiments was made by taking away the prism of flint-glass, and observing the deviations produced by the solar ray, when, as before, the electric current was made to pass in the wires of the electro-magnet, now in one direction, now in another.

	Deviations.	As should be the case, the deviations are equal, which proves that the electric current and the magnet change the deviations in acting on the flint-glass and not in acting on the needle of the galvanometer.
Current A ...	16·5	
Current B ...	16·8	
Current A ...	16·8	

The above experiments establish, we believe, in an irrefragable manner, the rotation of the plane of polarization of heat under the influence of magnetism.

LIX. *On a Granular Albite associated with Corundum, and on the Indianite of Bournon.* By B. SILLIMAN, Jun., M.D., Professor of Chemistry applied to the Arts in Yale College, and of Medical Chemistry and Toxicology in Louisville University, Kentucky*.

A SPECIMEN of a granular mineral was sent me by Mr. Gibbs of Andover, last year, with the remark that it was found in beds in Lancaster County, Pennsylvania, and

* From Silliman's Journal for November 1849.

was so hard as to resist all attempts to penetrate it by hardened steel, greatly impeding the operations of the miners in the chrome iron districts.

I also received other specimens of the same from Mr. Williams of Westchester, associated with corundum, which was found imbedded in it; and from this circumstance it has been mistaken by some mineralogists for Indianite, which species it resembles in hardness, gravity and in granular structure, but not at all in composition.

In its granular structure it so resembles dolomite, that no difference can be detected between them by the eye, while its hardness and great difficulty of fracture completely blind the inquirer as to its real character. Its characters are as follows:—

Massive, compact, granular, resembling white dolomite; tough; fracture even, but very difficult. Colour, white with shades of gray. Streak, white. Hardness, 7 to 7·25 (scratching quartz with facility). Gravity, 2·619.

Insoluble in acids. Before the blowpipe, infusible, and does not *colour the flame yellow*; with the fluxes yields evidence of silica, alumina and lime. By a quantitative fusion with carbonate of baryta, soda was detected.

The first specimen analysed was from Lancaster County, Pennsylvania, and showed no trace of corundum disseminated in it.

This analysis was made by Mr. G. J. Brush, and yielded on the quantity taken, 1·234 grm., as follows:—

		Oxygen.	
Silica	0·8225 = 66·653 p. c.	34·85 = 12	
Alumina	0·2565 20·786	10·70	3
Lime	0·0253 2·050	3·08	1
Magnesia	0·0071 0·519		
Soda	0·1155 9·360		
	1·2269 99·420		

It gives the constitution 4SiO^3 , Al^2O^3 , $\text{NaO} = \text{Al}^2\text{O}^3$, SiO^3 + NaO , SiO^3 :—

4 atoms Silica . .	2309·24	69·09 per cent.
1 atom Alumina . .	642·33	19·22
1 atom Soda . .	390·90	11·69
	3242·47	100·00

This is precisely the formula and constitution of an albite.

The second analysis was on a specimen from Unionville, Chester County, Pennsylvania, having identical characters,

but associated with corundum, which occurs implanted in it. This analysis was made by Mr. M. C. Weld. Quantity taken, 2.180 grms. Found —

				Oxygen.
Silica . . .	1.4575	=	66.857 p. c.	= 12
Alumina . . .	0.4772		21.889	3
Lime . . .	0.0389		1.785	1
Magnesia . . .	0.0105		0.481	
Soda . . .	0.1914		8.779	
Water . . .	0.0105		0.481	
<hr/>				
		2.1860	100.272	

This obviously yields the same formula as the last analysis.

The extreme hardness of this mineral is its most remarkable quality, and is not easily accounted for. It is probably connected with its association with corundum, for we find the quality equally developed in the Indianite (or anorthite), the Asiatic associate of the same species.

Analysis of Indianite.—I thought it of interest, in connexion with the foregoing analyses, to make a new analysis of Bournon's Indianite, which, as already remarked, is found to be the matrix of the corundum in India. Being possessed of an authentic specimen, I requested Mr. Brush to conduct the analysis, the results of which are now given. This mineral is granular, and of a pink colour, sometimes gray or blackish; very tough and hard. Hardness, 7 to 7.25. Gravity, 2.668. It gelatinized completely in cold hydrochloric acid. Before the blowpipe alone, infusible. The analysis gave on 1.594 grm.—

				Oxygen.
Silica . . .	0.6710	=	42.09 p. c.	21.869 = 4
Alumina and a trace of iron	0.6200		38.89	17.160 3
Lime . . .	0.2516		15.78	5.592 1
Soda . . .	0.0651		4.08	
<hr/>				
		1.6077	100.84	



which is the formula for anorthite.