Phonolite.

Associated with the numerous trachytic dykes at Lachine is one of the phonolite already referred to. It is brittle and somewhat schistose, breaking into angular fragments, and appears to consist of a reddish fawn-colored base, in which are disseminated greenish-white rounded masses, often grouped, and apparently concretionary in their structure. These greenish portions are sometimes half an inch or more in diameter, and cover from one third to one half of the surfaces. They are not very distinctly seen unless the rock is moistened. The hardness of the different portions does not greatly vary, and is nearly that of apatite. The specific gravity is very low, being only 2·414. The mass contains small cavities filled with carbonate of lime, which is rarely stained purple: it is also found in small films in the joints. The rock is granular in its fracture, without lustre, and is feebly translucent at the edges. When pulverized, and treated with nitric acid of specific gravity 1.25, a slight effervescence ensues, with abundant red fumes. The mass grows warm, and gelatinizes; and on washing out the acid solution, and treating the insoluble portion with a solution of caustic soda, a white granular residue remains. These reactions are obtained both with the fawn-colored and the greenish portions, but the amount of insoluble matter is greater from the last. The rock is but slightly hygroscopic: a portion of it in powder lost only 0.2 per cent by a prolonged exposure to 212° F., but 7.10 per cent at a red heat.

For the quantitative analysis, the method already indicated was followed. It was found that while a dilute solution of caustic soda removed all of the gelatinous silica separated by the acid, it took up only a trace of alumina; leaving a feldspathic residue which was no longer attacked by nitric acid. The silica was separated from the alkaline liquid, and the acid solution was found to contain, besides alumina and soda, a little potash, some lime, magnesia, and iron, and traces of manganese. The greater part of the lime is evidently present as carbonate; for when a portion of the pulverized phonolite, which gave to nitric acid lime equal to 4.36 per cent of carbonate, was boiled with a solution of nitrate of ammonia, there were dissolved 3.87 per cent of carbonate of lime; besides which there was a separation of a considerable amount of oxyd from the decomposed carbonate of iron. From this reaction, and from the entire absence of sulphur, which was carefully sought