

7. *Smaragdite*.—The smaragdite or diallage of the euphotides appears to have been first examined by Vauquelin, who found in a specimen from Corsica with specific gravity 3.0; silica 50.0, alumina 21.0, lime 13.0, magnesia 6.0, oxyd of iron 5.5, oxyd of chromium 7.5, oxyd of copper 1.5=104.5. (Beudant, *Mineralogie*, ii, p. 134). Boulanger subsequently analyzed the diallage from the euphotide of the Fiumalto already described. It had a density of 3.10, and gave silica 40.8, alumina 12.6, lime 23.0, magnesia 11.2, protoxyd of iron 3.2, protoxyd of manganese 1.4, oxyd of chromium 2.0, water 5.2=99.4.—(*Ann. des Mines*, [3], viii, 159).

I have analyzed the grass-green smaragdite already described as occurring in masses an inch in diameter imbedded in the saussurite vi. It was to some extent penetrated by the latter mineral, and contained irregularly disseminated slender prisms of hornblende, apparently associated with talc. The analysis gave as follows:

Silica,	54.30
Alumina,	4.54
Lime,	13.72
Magnesia,	19.01
Protoxyd of iron,	3.87
Oxyd of chromium,61
Oxyd of nickel,	traces
Soda,	2.80
Loss by ignition,30
	99.15

A partial analysis of another specimen gave alumina 3.80, lime 14.22, magnesia 18.07, protoxyd of iron 2.34. The pale green color of the powdered smaragdite becomes brownish on ignition. The small portion of nickel, whose presence I have already shown in a great number of chromiferous serpentines and diallages,* gave evidence of a trace of cobalt before the blowpipe. The oxygen ratios of the silica, alumina and protoxyds in the above analysis are as 28.96 : 2.12 : 13.29. Its composition is evidently that of a pyroxene, with some admixture of saussurite and probably of talc. A portion of the latter mineral from one of the euphotides of Mt. Rose, was submitted to analysis, and allowing for a small admixture of saussurite, was found to have the composition of ordinary talc, being a hydrated silicate of magnesia with a little iron and a trace of nickel.

Conclusions.—1. The true euphotide is distinct from the diallagic dolerites, with which most modern lithologists have confounded it, and which are composed of pyroxene and a feldspar having the constitution of andesine, labradorite, or a still more basic variety approaching to anorthite. By the substitution of hornblende for pyroxene these dolerites pass into diorite or diabase.

* This Journal, [2.] xxvi, 237.