

ART. III.—*Mineralogical Notes from the Laboratory of the U. S. Geological Survey*; by F. W. CLARKE and T. M. CHATARD.

THE following analyses of minerals have been executed by us in the laboratory of the U. S. Geological Survey, during the past few months. Some of them possess more than ordinary interest, and all have value sufficient to warrant putting them on record. The only novelty in the methods of analysis has been in the determinations of the alkalis. These determinations were made by a modification of Hempel's process for decomposing silicates by fusion with bismuth oxide. An account of the process, as improved and used in this laboratory, will in due time be published.

1. JADE AND PECTOLITE.

Among the Eskimo implements collected by the U. S. Signal Service at Point Barrow, Alaska, were a considerable number of a material which appeared to be jade. Of these there were two varieties; one pale apple-green, the other dark green; both were highly polished, and exceedingly compact and tough. The sp. gr. of the pale green variety was 2.873, that of the dark material was 3.012. Analyses (Clarke) gave results as follows:

	Pale-green.	Dark-green.
Water.....	4.09	1.41
Silica	53.94	57.01
Ferrous oxide ...	<i>trace</i> .	6.95
Lime	32.21	12.75
Magnesia	1.43	21.36
Alumina58	.42
Soda	8.57	----
	<hr/> 100.82	<hr/> 99.90

The dark-green material is plainly jade, or nephrite, quite analogous in composition to that from the Swiss Lake-Dwellings. The light green mineral, on the other hand, agrees in composition with pectolite. It is easily fusible, and has, in short, all the essential properties of pectolite. It is, therefore, a new and interesting variety of that well-known species.

The Eskimo of Point Barrow say that the jade and jade-like minerals used by them come from some point to the eastward. The locality itself, we believe, has not yet been visited by civilized men. Whether both minerals are found at the same place or not, cannot be stated; but we hope that before long, more definite information may be secured.

2. SAUSSURITE.

From a euphotide collected by J. S. Diller, U. S. Geol. Surv., thirty-seven miles north of Pitt River Ferry, Shasta County, California. The mineral is nearly white, with a greenish-gray cast, and has a sp. gr. of 3.148. As the rock itself will be described by Mr. Diller, only the analysis of the saussurite need be cited here.

Analysis, F. W. Clarke.

Ignition	2.42
Silica	42.79
Alumina	29.43
Lime	18.13
Ferrous oxide	3.65
Soda	2.51
Magnesia	1.40
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	100.33

3. ALLANITE.

From Sprague's granite quarry, Topsham, Maine. Abundant in slender black prisms, usually rusty upon the surface, which are known to the local quarrymen as "nails."

Analysis, F. W. Clarke.

Ignition	4.13
Silica	34.97
Alumina	12.83
Ferrous oxide	18.11
Manganous oxide	2.82
Cerium, lanthanum and didymi- um oxides	17.26
Lime	7.21
Magnesia	1.40
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	98.73

The ferrous oxide carries with it some ferric oxide. As the analysis was made merely for the complete identification of the species, the troublesome separation of the cerium group oxides was not considered necessary. The mineral appears to vary considerably in different parts of the quarry.

4. DAMOURITE.

Two specimens of a micaceous mineral from the topaz locality at Stoneham, Maine, collected by Mr. N. H. Perry of South Paris, and sent by him to the National Museum, have been examined and prove to be different forms of damourite.

A. Subfibrous compact, light grayish green in color, greasy luster, associated with albite and topaz.

B. Broadly foliated micaceous, light grayish green, strong mother-of-pearl luster, also associated with topaz. Analyses (Chatard) as follows:

	A.	B.
Ignition	4.48	4.78
Silica	45.19	45.34
Alumina	33.32	33.96
Ferrous oxide	4.25	3.96
Manganous oxide	0.58	0.51
Lime	<i>tr.</i>	0.22
Magnesia	0.36	0.10
Soda	1.57	1.49
Potash	11.06	10.73
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	100.81	101.09

5. MARGARITE.

B. From Soapstone Hill, near Gainesville, Ga. Bright pistachio green, subfibrous aggregate of extremely minute scales surrounding and radiating from a core of bright rose-pink corundum which is in places interlaminated by the margarite. A very handsome specimen on account of the contrast of color. From Mr. Theodore Moreno of Gainesville, Ga. G. = 3.00; H. = 3.5. Analysis, T. M. Chatard:

Ignition	4.88
Silica	31.72
Alumina	50.03
Ferrous oxide	<i>tr.</i>
Lime	11.57
Magnesia	0.12
Alkalies (principally soda)	2.26
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	100.58

B. An altered crystal of corundum from Iredell Co., N. C., showing a core of corundum surrounded by a yellowish white, semi-micaceous, compact mineral more or less intermixed with small needles of black tourmaline. Analysis (Chatard) shows the micaceous mineral to be a margarite similar to that described, by Dr. F. A. Genth, as occurring at Hendrick's Farm in the same county.

Ignition	5.68
Silica	31.15
Alumina	49.51
Lime	11.13
Magnesia	0.45
Alkalies (mainly soda)	2.74
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	100.66

6. CIMOLITE?

Among a collection of Maine minerals received from N. H. Perry of South Paris, were several specimens of tourmaline and albite encrusted with a pink to rose-purple, earthy, alteration product. The color was found to be due to a little manganese, which was not, however, separately estimated. The analysis (Clarke), gave results approaching to those required by the rational formula $\text{AlH}_3(\text{SiO}_3)_3$, as the subjoined figures show.

	Found.	Theory.
Water	9.53	10.4
Silica	70.06	69.8
Alumina*	17.19	19.8
Soda	2.28	
Magnesia80	100.0
	<hr/> 99.86	

It will be observed at once that these results do not agree exactly with those commonly obtained for cimolite. They are too high in silica, and too low in water, and the formula deduced from them is somewhat novel. We are inclined to place the mineral, however, under cimolite, as being nearer to that species than to any other. Possibly the new formula represents the final outcome of an alteration process which ordinary cimolite has only partially undergone. Somewhat similar pink alteration products are not uncommon in the albitic granite veins of Maine and New Hampshire, and some, without analysis, have been supposed to be montmorillonite like that of Branchville, Conn. A more thorough examination of such products is much to be desired. The specimens now reported upon came from Norway, Maine.

7. HALLOYSITE.

Collected by Ensign J. B. Bernadou, at the Detroit Copper Mine, near Mono Lake, California. The specimens consisted of irregular lumps, covered and seamed with a black coating of the oxides of copper and manganese. The color of the pure mineral was white, with a very faint tinge of blue. Analysis by F. W. Clarke.

Water	18.95
Silica	42.91
Alumina	38.13
	<hr/> 99.99

* Including a little manganese.

8. PROCHLORITE.

A dark-green chlorite collected by Mr. G. P. Merrill on Foundry Run, Georgetown, D. C., may be assigned to the above-named species. The mineral is very dark in color, scaly-crystalline, and occurs in quite fine specimens.

Analysis, F. W. Clarke.

Water	14.43
Silica	25.45
Magnesia	15.04
Alumina	17.88
Ferrous oxide.....	24.98
Soda.....	.67
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	98.45

The iron was all reckoned as ferrous iron, although a little of it is probably ferric.

9. HALOTRICHITE.

At the headwaters of the Gila River, about forty miles north of Silver City, New Mexico, is a deposit of aluminous sulphates which are said to cover some two thousand acres. Among a lot of specimens recently received from this locality was one consisting of white, silky, asbestiform fibers, which were readily soluble in water. The analysis (Clarke) gave results which place the mineral under or near halotrichite.

Water	40.62
Sulphuric acid (SO ₃),	37.19
Ferrous oxide,	13.59
Alumina	7.27
Insoluble	0.50
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	99.17

A very little of the iron, but not enough to estimate, was in the ferric state. The mineral is reported to be abundant.

10. ALUNOGEN.

Associated with the halotrichite at the foregoing locality are great quantities of alunogen. The specimens received at this laboratory were crusts of various colors, white, pinkish, yellowish, brown and drab. Most of them contained sulphates of iron in small quantities; but one sample of pink color, was free from such impurities.

Analysis, F. W. Clarke.

Water	42.56
Sulphuric acid	34.43
Alumina	15.52
Insoluble	7.62

100.13

The following minerals from new localities have also come under our observation, and may be properly noted here.

Vivianite from Washington, D. C. Found abundantly in a bed of blue clay, during excavations for the foundation of a building on Connecticut Avenue. The mineral occurs in blue, earthy masses.

Hyalite from Foster's mica mine, near Jefferson, Ashe County, N. C. In very fine stalactitic form, coating the under side of a quartz shelf in a broad granite vein. The specimens are tinted with ferric oxide, and are as fine as any yet noted in this country.

Beryl from Gilmore's mica mine, in Montgomery County, Md., twelve miles north of Washington. Abundant, but not well crystallized, and associated with albite, large plates of muscovite, quartz, garnet and black tourmaline.

Cassiterite from the Brewer Gold Mine, Chesterfield County, S. C. Found in some quantity in the "black sands" of the gold washing, and crystals of $\frac{1}{2}$ " in diameter have been collected. The larger crystals are dark colored, while the small ones are often pale brown, straw-yellow and even colorless. The latter in microscopic grains.

Washington, April 14, 1884.