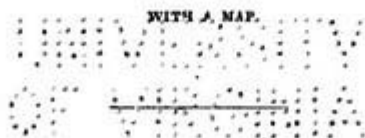


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reëxamined it, and found the phosphoric acid to vary in different specimens from 37.62 to 11.90 per cent.—showing that he had not obtained a homogeneous mineral.

Considerable pains have been taken to obtain a number of authentic specimens for examination, some of which are direct from the locality, and others from our own collection. The results show that the mineral is a hydrate of alumina, (Al_2O_3) with but a trace of phosphoric acid, and in some specimens not even a trace existed.

Two analyses gave,

	1.	2.
Alumina,	64.24	63.48
Peroxyd iron,	trace	trace
Water,	33.76	34.68
Silica,	1.33	1.09
Phosphoric acid,57	trace
Magnesia,10	.05
	<hr/> 100.00	<hr/> 99.30

The phosphoric acid was determined by molybdate of ammonia; the small amount of silica is due to the intimate mixture of the mineral with allophane. From the results of these examinations, we are confident that Mr. Hermann has not at any time analyzed pure Gibbsite.

26. Emerald Nickel.

We notice in the last edition of Phillip's Mineralogy, that Prof. Miller and Brooke place this species among the doubtful ones, without however giving any reasons for so doing. To ascertain if any good reason existed for this doubt, we have reanalyzed it, and find the same composition as given by Prof. Silliman, Jr.,* which was,

Oxyd Nickel.	Carbonic Acid.	Water.
58.81	11.69	29.49

We obtained,

	Oxygen
Oxyd of nickel,	12.10
Magnesia,67
Carbonic acid,	8.46
Water,	26.56

which gives the formula, $\text{Ni}^2\text{C} + 6\text{H}$.

	Atoms.	At weight.	Per cent.	Oxygen ratio.
Oxyd nickel,	3	1408	59.72	3
Carbonic acid,	1	275	11.66	2
Water,	6	675	28.62	6

We would prefer expressing its formula by an atom of carbonate of Nickel plus two atoms of the hydrated oxyd of nickel; this is rendered probable from the fact, that whenever it is attempted to form a carbonate of the protoxyd of nickel, by precipitating a protosalt with an alkaline carbonate, a carbonate is obtained,

* This Journal, [2] vi, 248.

containing a certain amount of the hydrated oxyd—for these reasons, we would express emerald nickel by $\text{NiO} + 2(\text{NiH}_3)$.

It is without question a distinct species, and a most beautiful and interesting mineral, both from the richness of its color and its association with chromic iron.

Since completing our examinations of this mineral, we have observed an analysis of a mineral called emerald nickel, by Mr. T. H. Garrett.* The mineral examined was of a very impure description, and was supposed by the analyst to be a mixture of emerald nickel, meerschauum and augite; of course, it is impossible to furnish any correct idea of the composition of pure emerald nickel, from results on such impure specimens. This mineral is often associated more or less intimately with a nickel serpentine, or gymnite, but with an abundance of the mineral to select from, a hydrous carbonate of nickel can be obtained of a uniform composition; a quarter of an ounce of selected fragments sent by Mr. L. White Williams, furnished us with about one gramme of the pure mineral.

University of Virginia, May 6th, 1853.

ART. VI.—*New and ready method of determining the Alkalies in Minerals: PART II—Conversion of the Sulphates into Chlorids: Qualitative Determination of the mixed Alkalies: Separation of the Alkaline Chlorids from each other, with a more direct method of obtaining them from silicates not soluble in Acids*; by J. LAWRENCE SMITH, Professor of Chemistry in the University of Virginia.

Conversion of the Sulphates into Chlorids.

31. In continuation of the subject, the next point to be considered is the conversion of the sulphates of the alkalies into chlorids. The method ordinarily adopted to accomplish this change, is to precipitate the sulphuric acid by means of chlorid of baryum, care being taken to avoid the slightest excess of the latter. The annoyance attendant upon this exact precipitation, is familiar to all who may have had occasion to make the trial.

32. Instead of the chlorid of baryum, the acetate of lead is used; a solution of this salt is poured in excess upon the solution of sulphates, warming the latter slightly, the sulphate of lead readily separates, the whole can be immediately thrown on a filter and washed—a drop or two of the acetate of lead should be added to the filtrate, to insure there being an excess of the lead salt.

33. The filtrate is then warmed and sulphuretted hydrogen added—care must be taken to see that there is an excess of sul-

* This Journal, May, 1853.