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The results of experiment 12th shew that the powder obtained by boiling the water 1-4 hour, consists chiefly, if not entirely, of carbonate of lime. Experiment 15th satisfactorily proves that the water contains sulphuric acid; and that it exists in combination is also evident from experiment 1st. It may be inferred from experiment 16th that the water is clear of muriatic salts. The effect mentioned may have arisen from hydrosulphuret of lime. The light precipitate formed in experiment 17th may have been occasioned by any of the earthy salts, formed by mineral acids. The effect shewn with the boiling water, may be attributed to the calcareous hepar. From experiment 22d we may conclude that the water contains no magnesia. The substance which last remained was probably alumine. Experiments 18th and 19th shew the existence of a large proportion of lime. These, together with the results of experiments 15th, 20th, and 21st, prove that the principal saline ingredient in this mineral spring is sulphate of lime or gypsum.

This substance, together with a considerable quantity of hydrosulphuret of lime, and a small portion of carbonate, may therefore be considered, so far as this trial has extended, as constituting the chief soluble matters in the Litchfield water, independently of its gaseous contents, a portion of which is sulphuretted hydrogen.

VIII. *On NATIVE MAGNESIA from New-Jersey.* By the
EDITOR.

ALTHOUGH Magnesia enters into the composition of many mineral substances, yet its existence in the mineral kingdom, in an uncombined state, has, till within these few years past, been unknown.

Brogniart, in his Mineralogy, has described several minerals under the name of Magnesite, (a term he has introduced as expressive of the large quantity of magnesia they

contain) in some of which magnesia appears to exist in a pure state. Of those which approach nearest to native magnesia, are the magnesites of Piedmont, as described by Giobert in the *Journal des Mines*, particularly the variety from Castella Monte.* Although this mineral, as analysed by Guyton de Morveau, afforded a large proportion of carbonic acid, yet it appears from the assertion of Giobert, that when first taken from the quarry it contains no carbonic acid, but that it absorbs it after being two or three weeks exposed to the atmosphere.

The magnesite from Baudissero†, which is near Castella Monte, contains in the hundred parts, according to Giobert, 68 magnesia, 12 carbonic acid, 15 silex, 2 sulphate of lime, and 3 of water. This, like the magnesite from Castella Monte, he thinks obtains its carbonic acid from the atmosphere.

The magnesites from Vallecas in Spain, and Salinelle in France, contain no carbonic acid; they however all have a large proportion of silex: that of Salinelle, according to Vanquelin, contains 55 parts in the hundred.

Brochant mentions, as native magnesia, a substance found at Robschütz, in Moravia, by the late Doctor Mitchell, of Dublin, which, according to Dr. Mitchell's Analysis, and that of Professor Lampadius, contains nearly equal parts of magnesia and carbonic acid. Why this mineral is described as Native Magnesia, I am at a loss to determine; unless, like those of Giobert when first discovered, it contained no carbonic acid, but absorbed it after exposure to the atmosphere.

At Hoboken, in New-Jersey, on the estate of Mr. John Stevens, is found a mineral, which presents the following characters:

* *Journal des Mines*, No. 119.

† *Journal des Mines*, No. 118.

Colour, white passing into greenish white.

Lustre, pearly.

Structure, foliated; the folia or leaves frequently having a radiated position.

The folia, when separate, transparent; in the mass, semitransparent; the surface, after exposure to the weather, becoming opaque.

Somewhat elastic.

Adheres slightly to the tongue.

Soft.

Powder, pure white.

Specific gravity 2, 13.

Before the blowpipe becomes opaque and friable, and loses weight.

Soluble in the sulphuric, nitric, and muriatic acids.

This mineral occurs in veins, from a few lines to two inches thick, traversing serpentine in every direction.

ANALYTICAL EXPERIMENTS.

A. On some of the mineral, finely powdered, was poured diluted sulphuric acid; an immediate solution took place unattended with effervescence. The solution was transparent and colourless, and extremely bitter to the taste.

B. To a portion of the solution A, was added pure ammonia; the fluid remained clear for a few minutes, when it became turbid; and after standing several hours a white cloud occupied the lower half of the vessel; the supernatant fluid was transparent and colourless.

C. Into another portion of the solution was dropped crystals of oxalic acid. The crystals were dissolved, the fluid remaining clear.

D. A third portion of the solution was evaporated, until a pellicle formed on the surface; in a few hours well-defined crystals of sulphate of magnesia were formed; the remaining fluid being exposed to spontaneous evaporation,

until the whole had gradually disappeared, crystals of sulphate of magnesia alone remained.

E. Fifty grains of the mineral, finely powdered, were put into a vial, to the mouth of which was adapted a spiral glass tube, which, together with a vial containing diluted sulphuric acid, were accurately weighed. The diluted acid being poured into the vial containing the mineral, the tube was immediately inserted: the solution having taken place, and the whole again weighed, it was found that no loss of weight had been sustained.

F. One hundred grains of the mineral in powder, exposed in a platina crucible to a red heat for half an hour, lost thirty grains.



From Experiment C, it may be inferred that magnesia forms the principal ingredient in this mineral. Had alumine been present, the ammonia in Experiment B would have caused an immediate copious white precipitate, consisting of the whole of the alumine, with a much larger portion of magnesia than if no alumine had been present. This appears to arise from the very powerful affinity which exists between magnesia and alumine; as, according to Chenevix,* magnesia, when unaccompanied by any other earth, and dissolved in an acid, is only partially precipitated by ammonia, however in excess, the remaining liquor being a soluble ammoniaco magnesian salt.

The absence of lime is proved by Experiment C. Had any been present, the oxalic acid, from its superior affinity for that earth, would have united with it, and formed an oxalate of lime, which would have been precipitated in the form of a white powder.

Experiment E shews the absence of carbonic acid and other gaseous matters; consequently the loss of weight sustained in Experiment F must be attributed to the loss of

* *Annales de Chimie.* tom. xxviii.

water. We therefore may conclude that this mineral contains in the hundred parts,

Magnesia	70
Water of Crystallisation	30
	100

IX. *Mineralogical Note respecting PHOSPHATED LIME, and PHOSPHATED LEAD, from Pennsylvania. Communicated to the Philadelphia Linnean Society by Mr. S. GODON.*

THIS substance is of a blueish green colour, sometimes varying to grey, rarely with a crystalline shape—some crystals appear, belonging to the varieties, *primitive* and *peridodecaedral* of Häüy.

It presents no sensible phosphorescence on burning coals. It does not melt before the blowpipe, by a continued heat the edges only become a little rounded.

It dissolves entirely in nitric acid, sometimes with the extrication of some bubbles; the solution forms an abundant precipitate with oxalate of ammonia. Lime-water added to the same solution, when in sufficient quantity to saturate the excess of acid, occasions a gelatinous precipitate, which is phosphate of lime.

These observations are sufficient to distinguish this substance from the Emerald, (Beril) which it frequently accompanies.

It is found in the eastern part of Germantown, about six miles from Philadelphia, and probably in many other places. In this spot it occurs imbedded in loose fragments of Felspathic rock, scattered on the ground, these fragments belonging evidently to Gneiss, which forms the predominant mass of the country.

I have also found Phosphated Lead in the veins of Pyritous copper at Perkiomen.