

XIII.—*On Substances which may prove to be New Minerals.*

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PART THIRD.

TYREEITE.

MY notice of this must be considered preliminary in every way. The discovery of "the beautiful carnelian marble of Tyree" has been in a late paper credited to Dr. Walker.

For some years after its discovery, it was used, or attempted to be used for mantle-pieces, and other internal decoration.

Partly on account of the minuteness of its pattern unfitting it for this purpose, and partly on account of the small quantity sent into the market, it, however, seems never to have found its way into general favour.

We find Dr. Macculloch lamenting the wasteful method of working adopted in the quarry,—the wholesale shattering of its mass by the excessive use of "Mines."

As the contrast of colour presented by its several ingredients is both striking, pleasing, and unique, the employment of it for inlaying, for letter weights, and similar purposes, undoubtedly would be now general, could it again be got.

The quarry, however, would seem to be both exhausted and ruined, and for many years not even a "hand-specimen" has been procured for cabinets.

The general mass of the marble is of an impure white very fine grain, and it has a greasy lustre. Profusely sprinkled throughout this, there occur rude crystals of *Sahlite* of the size of grains of corn. An analysis of these has been published by me in a paper laid before the Royal Society of Edinburgh. They are of a lively-green colour, singularly banded with white lines; and were, when of pale colour, at one time regarded as *corundum*. The "carnelian" tinge which characterises the rock is not uniformly diffused throughout it, but stains it, as it were, in blotches; more rarely in bands; while it sometimes is more intense around or in contact with the imbedded crystals of *sahlite*.

Very rarely minute highly lustrous crystals of brown *sphens*, with rounded faces, are to be seen; and still more rarely masses an inch or two in size of watery-blue *malacolite*, or of rich dark-green *augite*. The fringes of the mass rarely show *graphite* flakes, and granules of *pyrrhotite*.

The manner in which the red colouring matter is segregated, led me to examine the rock in section;—and the failure of the microscope in revealing the nature or source of the colouration, called for analysis.

A number of ordinary specimens were dissolved in weak acid, and left undissolved a brick-red powder. From the very intense tinctorial powers of this, from its appearance, and its total want of crystalline structure, I was led to suppose it to be new;—but the very minute quantity obtained rendered it impossible to determine this.

To the kindness of the clergyman of the island I am indebted for collecting at the spot the quantity which has enabled me to determine the little that I have done regarding it.

About one and a half hundred-weight of the rock were dissolved in hydrochloric acid, diluted with water to the extent of showing only the feeblest effervescence. Sixteen gallons of hydrochloric acid were required.

There were obtained about 30 pounds of crystals of *sahlite*; about one-eighth of an ounce of crystals of *scapolite*; perhaps half that amount of *sphene*; and some ounces of a red mud, evidently very mixed in substance.

It was found that by suspending this last in a large quantity of water, the larger part of its bulk separated pretty rapidly as a dull-brown cream, consisting apparently of minute scales of talc; while the whole of the red pigment with much of the talc remained in suspension; adhering to the water with great pertinacity.

As the only mode of crudely separating these last, a series of suspensions and decantations in a large number of stoppered jars, was carried on for the space of more than a year. At the end of this, about three ounces of an impure, and half-an-ounce of an *apparently* pure product were obtained.

Operating afresh upon the purest produce, there was ultimately obtained 1·913 grammes of a powder which did not seem to be capable of being further purified by such a process.

This powder, when examined by the microscope, shewed no trace of fibrous structure;—the repeated agitations would unquestionably, however, have almost entirely destroyed such, had it ever existed. This powder was of a deep brick-red colour, and of very intense tinctorial power. Its extreme state of division precluded the employment of all methods of ascertaining its specific gravity.

When placed in strong sulphuric acid it was found that, of the 1·913 grammes, ·785 were dissolved, leaving 1·128 insoluble.

This last, when fused with Fresenius' flux, yielded, on ·65 grammes—

Silica	68·461
Alumina	no trace.
Ferrous Oxide	3·468
Manganous Oxide	·153
Lime	2·326
Magnesia	19·076
Water	6·85

100·334

being probably an impure *talc*.

The portion soluble in acid, yielded :—

Alumina	8·227
Ferric Oxide	38·22
Ferrous Oxide	3·158
Manganous Oxide	·394
Lime	2·211
Magnesia	29·936
Phosphoric Acid	4·713
Water	12·466
Silica	1·019
		100·344

The qualitative analysis showed minute traces of two metals which I could not determine ; one of these came out at the stage when Uranium should have ; but tests for that metal in no way confirmed its presence.

The red portion was totally soluble in hydrochloric acid.

I know not what to make of this substance.

In the first place the total absence of alumina and ferric oxide in the first analysis, with their large quantity in the second, indicates a perfect separation.

A chemical consideration charges us to pronounce it a mixture ;—the phosphoric acid covering so small an amount of the bases. It cannot be an *ochreous* mixture, for such could not exist in primitive marbles, along with such reduction-products as *graphite* and *pyrrholite* : while again the consentaneousness of its suspension as a whole, contraindicates a mixture. I am fain to leave it in the hands of those who enjoy operating upon hundred-weights and obtaining grammes,—after splashing with water for years.