



Examination of some minerals

M. Victor Hartwall

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fusion, unless the sand or mineral had been previously pulverized and mixed with the carbonates. Hence the operation should commence with the mixture of the carbonates and the mineral. In this manner considerable quantities of felspar may be readily decomposed by the heat of a spirit-of-wine lamp.—*Annalen der Physik*, 1828. *Royal Institution Journal*.

EXAMINATION OF SOME MINERALS. BY M. VICTOR HARTWALL.

Fergusonite.—This mineral, named in honour of Robert Ferguson, Esq. of Raith, occurs near to Kikertauvak, not far from Cape Farewell, in Old Greenland. On account of its near resemblance to Ytestantalite, it was referred to that species, until Haidinger, by a careful survey of its crystals, proved it to be a new species. Being analysed, it afforded the following constituent parts:

Colombic acid	47.75
Yttria	41.91
Oxide of cerium	4.68
Zirconia	3.02
Oxide of tin	1.00
— uranium	0.95
— iron	0.34

99.65

Manganesian Epidote or Pistacite.—The mineral found at St. Marcet, in Piedmont, and known to mineralogists under the name of Manganesian Epidote, was referred to the epidote genus, on account of its series of crystallizations.

This mineralogical determination it was desirable to have confirmed by chemical analysis; and further, chemists were curious to know the particular state of oxidation of the manganese and iron which it contains. The following is the analysis of M. Hartwall:

Silica	38.47
Alumina	17.65
Lime	21.65
Peroxide of manganese	14.08
— iron	6.60
Magnesia	1.82

100.27

M. Hartwall infers by the calculation of the result of the analysis, that the manganese and iron occur in the mineral in the state of peroxide. This is proved, not only by the diminished quantity of the isomorphous alumina along with them, but also by the reddish-brown colour of the mineral.

Pyrophyllite, a new mineral, by M. R. Hermann of Moscow.—This mineral occurs in the Uralian Mountains, and is known to mineralogists under the name of Radiated Talc. But its relations before the blowpipe are different from those of indurated talc. Heated before the blowpipe, without any re-agent, it divides in a fan-shaped manner into a swollen mass, which occupies twenty times
the

the space of the original specimen. The pounded mass is quite infusible. If heated in a glass retort, there condenses in the upper part of it a water which does not attack the glass, and which on evaporation leaves no silica. Soda dissolves the mineral, with effervescence, into a clear yellow glass. Phosphoric salt dissolves it into a colourless glass, leaving a siliceous skeleton. It acquires a blue colour with solution of cobalt. By these characters the mineral is well marked, and is distinguished from talc, particularly by its relations with solution of cobalt, its aqueous contents, and its fan-splitting by heating. Subjected to analysis it yielded :

Silica	59.79
Alumina	29.46
Magnesia	4.00
Oxide of iron	1.80
Water	5.62
(A trace of oxide of silver.)	

100.67

The name of Pyrophyllite is given to it on account of its exfoliation on exposure to heat.—*Jameson's Journal*, Jan. 1830.

IMPROVEMENT IN THE SMELTING OF IRON.

Heated air for blast furnaces has been used for some time at the Clyde Iron Works, and with great success. Experiments have proved that iron is smelted by heated air, with three-fourths of the quantity of coal required, when cold air, that is air not artificially heated, is employed for that purpose, while the produce of the furnace in iron is at the same time greatly increased. All the furnaces at Clyde Iron Works are now blown with it. At these works the air, before it is thrown into the blast furnaces, is heated 220° of Fahr. in cast iron vessels placed on furnaces, similar to those of steam-engine boilers. It is expected that a higher temperature than 220° will be productive of a proportionally increased effect. But this is a subject of experiment. It is supposed that this improvement will accomplish a saving in the cost of the iron in Great Britain, to the amount of at least £200,000 a year.—*Ibid*.

NEW VEGETO-ALKALIES OBTAINED FROM CINCHONA.

Dr. Serturmer, in re examining the products obtained by chemical means from the cinchonas, finds that the precipitates produced by alkalies from the acidulated infusion of these barks contains, besides cinchonia and quina, other vegeto-alkalies, which are to be considered as modifications of the former. The new bodies recall the case of opium to the mind, in which narcotine exists simultaneously with morphia. The new substances, and especially that named by M. Serturmer *chinioidia*, exist in the alkaline precipitate in intimate combination with a resinous subacid substance, which is not injurious, but is of no advantage. It is very difficult to separate these two substances, and M Serturmer succeeded only when he used the charcoal obtained when croconic acid is prepared by Liebig's process. This

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