

*A Basic Ferric Sulphate, from Parys Mount, Anglesey.*

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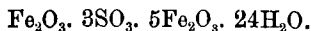
**A**N orange-coloured ochreous substance from Parys Mount, Anglesey, was recently submitted to analysis. It gave the following percentages:—

Water lost at 100° C ... ..	13·51	} Silica deducted.	26·94
Water lost on moderate ignition ... ..	12·85		
Sulphur trioxide ... ..	13·44	..	13·74
Ferric oxide ... ..	57·85	...	59·12
Silica ... ..	2·14		
Alumina, Lime, &c. (by difference) ... ..	·21		
	100·00		

The formula  $2\text{Fe}_2\text{O}_3 \cdot \text{SO}_3 \cdot 8\text{H}_2\text{O}$  requires these percentages:—

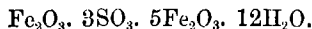
Water ... ..	26·47
Ferric oxide ... ..	58·83
Sulphur trioxide ... ..	14·70

The observed loss of water at 100° corresponds to  $4\text{H}_2\text{O}$ , which requires 13·24 per cent. If we assume that the molecular weight of this sulphate is thrice that represented by the empirical formula above given, we shall arrive at the expression for a hexabasic compound:—

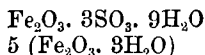


This corresponds to the body described by Berzelius as gradually produced, in the form of a yellow precipitate, by exposing a solution of green vitriol to the air. More recently O. Meister has described (*Deutsch. Chem. Gesell.* 1875, p. 771) a similar body to which he assigned the formula  $2\text{Fe}_2\text{O}_3 \cdot \text{SO}_3 \cdot 7\text{H}_2\text{O}$ . He obtained this salt by washing with cold water a crystallised and less basic sulphate— $\text{Fe}_2\text{O}_3 \cdot 2\text{SO}_3 \cdot 15\text{H}_2\text{O}$ . As the

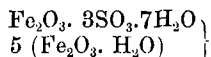
mineral now under discussion loses half its water at 100°, it may, after drying at that temperature, be represented by the formula—



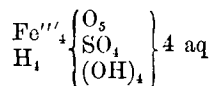
The mineral, in its natural condition, corresponds to a compound of one molecule of normal ferric sulphate, or *coquimbite*, with 5 molecules of normal ferric hydrate :—



After drying at 100° it may become :—



But the physical properties of our mineral are not those which would be expected in a compound such as that which we have imagined, and it therefore seems better to take the simplest possible formula for it, and to regard the mineral as a single chemical entity :—



In this case the 4 aq. outside the compound proper represent the water lost at 100°. The *glockerite* of Naumann may be written in the same manner, but with 2 aq. instead of 4 aq.

This mineral, in the lump or in powder, appears of a deep yellow and is quite opaque to the unassisted eye. But when viewed in the microscope with a sufficient magnifying power, the individual particles of which it consists are seen to be transparent, or at least translucent, and crystalline. In polarised light they seem to be isometric.

Although the result of the action of atmospheric oxygen and of water upon ferrous sulphate, it is doubtful whether the product described in the present note can be fairly regarded as entirely natural. Possibly the ferrous sulphate from which it has been derived may have been formed, not directly from iron pyrites, but from scrap iron reacting upon the copper sulphate occurring in the waste waters of a mine. However, there can be no doubt that the ferric sulphate above described frequently occurs as a wholly natural product.