

*Note on the Occurrence of Evansite in East Cheshire.*

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IN the volume of the "Philosophical Magazine" for July—December, 1864, the late Mr. David Forbes announced the discovery of a new mineral-phosphate from Zsetcznik, Gömör Comität, in Hungary, and published a detailed account of its physical properties and chemical composition. He proved it to be a highly hydrated phosphate of alumina, with a very small amount of silicate, having the probable formula,  $3 \text{Al}_2 \text{O}_3, \text{PO}_5 + 18 \text{H}_2 \text{O}$ , and proposed to designate it by the name of *Evansite*, after Mr. Brooke Evans, of Birmingham, who first brought the mineral under his notice, and who, until then, had imagined it to be a peculiar variety of Allophane.

Up to the present time, this comparatively new species does not appear to have been recorded as occurring in the British Isles, and the specimens exhibited are, perhaps, of unusual interest on that account. They are from a small fissure in the Yoredale Rocks, at Ratcliffe Wood, near Macclesfield, and though no very fine examples have yet been secured, a study of the present ones, together with other carefully collected fragments, is quite sufficient to leave no doubt as to the correctness of the identification here made. Dr. Burghardt, of the Victoria University, and Mr. Thomas Davies, of the British Museum, have both examined the specimens, and it is chiefly due to their kind suggestions and assistance that it is now possible to add the name of this interesting mineral to the British lists.

I first found the Evansite, at the locality named, on March 25th, 1882, and have, so far, only seen it in one small section. The proprietor of the quarries, however, states that he has several times observed similar incrustations in the cracks by which the rock is everywhere traversed, but, not knowing the nature of the glassy mineral, has not preserved any specimens: during the last twelve months none of the phosphate has been met with, but this fact is scarcely any guarantee of its extreme rarity, for it seems to occur only in the commercially-unprofitable shaly beds, and whenever possible these are avoided in the quarrying operations.

Owing partly to scarcity of material, and partly to unfortunate circumstances shortly after the time of discovery, I have not been able to complete a quantitative analysis, but qualitative results agree very well with those of Forbes in his original investigations. Further, on pulver-

ising some of the British mineral, and igniting a portion in a crucible, the loss was slightly less than 40 per cent., equal to the amount of loss observed by Forbes when the Hungarian mineral was treated in the same manner. Carbonates being absent, the loss on ignition denotes the percentage of water.

With regard to physical properties, it may be remarked that the specimens exhibited are closely similar in general appearance to some of the examples of Hungarian Evansite in the Forbes Collection, preserved in the Museum of the Owens College, Manchester. The hardness is likewise the same,—*i. e.*, between 3 and 4.

As already stated, the fissure containing the Evansite, at Ratcliffe Wood, traverses, at the particular spot referred to, a layer of hard and soft shales; these are about four or five feet thick, and it is a noticeable fact that, although numerous fossil shells—chiefly Goniatites—are to be obtained from them, almost all of these occur merely as most indefinite traces, the original materials having been completely removed and not replaced. *Possibly* the phosphoric acid of the mineral alluded to in this note may have been derived from the organic remains, but it is somewhat difficult to understand how the decomposition of the molluscs alone would furnish a sufficient supply. No fish remains have been detected in the locality.

Intimately associated with the mineral, are brown iron ore, oxide of manganese, and calcite, the latter in places occurring in very minute crystals, sometimes with an amethystine tinge. A few yards distant, there have also been found minute, but beautifully perfect, crystals of iron pyrites, abundance of pearl-spar, and a few scattered crystalline grains of zinc-blende. For detailed particulars, however, reference may be made to a paper by myself, read before the Manchester Literary and Philosophical Society in April 1882, and subsequently printed in the Proceedings,\* where the Evansite was incidentally mentioned, but not by name.

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\* "Proc. Manch. Lit. and Phil. Soc.," Vol. XXI. pp. 115-124; reprinted in the "Chemical News," June 2nd, 1882. A mistake occurs in this paper that it may be well to correct here. It is stated that the Evansite is sometimes pseudomorphic after organic matter, like the wad there referred to, but such is certainly not the case.  
—A. S. W.