

NOTES AND NEWS

HALITE AND GLAUBERITE CAVITIES AND INCLUDED MINERALS FROM CENTRAL NEW JERSEY

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The mineral occurrences here noted are all in red shales of the Triassic series, which outcrop along the course of the Raritan river in Middlesex County, and of the Millstone river in Somerset County, New Jersey.

Massive red shales, which are weathering along the roadside just at the west end of the Johnson estate along the river road on the north bank of the Raritan a mile above New Brunswick, have afforded to date two excellent casts of halite crystals. Both of these are hopper shaped, over 2 cm. across the open end and 3 cm. deep, one showing a small cube face at the acute end. These cavities are entirely empty, the halite having long ago been removed by circulating water. They are interesting not only from the nature of their occurrence, but because there is no record of such halite crystal cavities having been found previously in this formation at any point south of Massachusetts.¹

Cavities similarly representing glauberite crystals have often been observed near New Brunswick and elsewhere, but the remarkable abundance of them in the red shales has apparently not been recognized. At a point a mile east of New Brunswick, these slot-shaped cavities (with diamond-shaped outline, the crystals showing base *c* and unit pyramid *s*), averaging 1×1 cm. in size, so completely fill certain layers of shale that these layers are quite porous. In the vicinity of the Johnson & Johnson works in New Brunswick, and again on the east side of the river in Highland Park, the cavities, which are abundantly bunched together in what were once groups of glauberite crystals in mud layers, are lined with small white calcite crystals whose form is a combination of the obtuse rhombohedron *e* with the unit prism *m*. Also many of the cavities contain, with the calcite, white tabular barite crystals showing numerous lines of "phantom" growth. The forms shown by these barite crystals are: base *c*, unit prism *m*, unit brachydome *o*, obtuse macrodome *d*(102), and brachypinacoid *b*. The largest crystal recently found measured 1.5×2 cm. Some are arranged in rosettes. Their origin is thought to have been in hot solutions associated with those which produced the deposits of copper minerals that exist in the immediate vicinity. Similar deposits of barite on a larger scale exist at Glenmoore, N. J., and in Prospect Park, Paterson.

At the little quarry along the Delaware and Raritan canal just east of the bridge at Blackwell's Mills, the filling of calcite crystals (scalenohedral in habit) lining the glauberite cavities is so complete and firm that the shale on the outside breaks away from the cavity fillings, so that we obtain complete calcite pseudo-

¹ B. K. Emerson, A Mineralogical Lexicon of Franklin, Hampshire, and Hampden Counties, Massachusetts; *U. S. Geol. Survey, Bulletin* 126, p. 144, 1895; Skeleton halite cubes replaced by calcite. See also Wherry, E. T., *Am. Mineral.*, 1(3), p. 37, 1916; Describes exactly similar glauberite cavities and pseudomorphs from Pennsylvania.

morphs after the glauberite crystals. These pseudomorphs may be picked up out of the loose, weathered shale. They average 1 to 3 cm. long by 1 to 2 cm. wide, but some very large simple crystals occur, 10 cm. \times 5 cm. and larger. As above stated, their forms are all very simple, showing base *c* and pyramid *s*. Numerous bunches of crystals also occur. These cavities may have been filled by the action of solutions from the dying activity of the diabase dike which is exposed in the canal bank about a quarter of a mile away to the north, which broke vertically across the shale beds, bringing in copper minerals, and soaking some of the shale layers with hot reducing solutions so that their color was changed to gray.

This Blackwell's Mills locality is six miles north of the famous Griggstown copper mine, whose minerals had a similar origin. Pseudomorphs of calcite after glauberite have also been found near New Brunswick, but rarely.

RECENT ACQUISITIONS FOR THE MINERAL COLLECTION OF THE BRITISH MUSEUM (NATURAL HISTORY)

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FINE CRYSTALS OF GEM MINERALS

Beryl (aquamarine), a clear bluish-green crystal of gem quality, 13 cm. high and 10–12 cm. in diameter, weighing 2505 grams (= 12,525 carats). From a pegmatite on Pingueira Mountain, near Santa Rita de Arassuahy, Minas Novas district, State of Minas Geraes, Brazil. The well developed crystal (forms *m*, *a*, *c*, *p*, *s*, *u*, Dana's letters) shows beautifully marked etch-figures on the faces and the edges are slightly rounded by corrosion. It was evidently in the process of resolution.

Topaz, a clear transparent crystal with pale blue tinge of color, measuring 12 \times 11 \times 10 cm. and weighing 2290 grams (= 11,450 carats or just 5 pounds). From a pegmatite at Tsaratanana, Maevakanana district, Madagascar. The well developed and brilliant crystal faces (forms *c*, *m*, *l*, *y*, *f*, *X*, *u*, *i*, Dana's letters) are marked by complex and intricate pyramids and lines of growth, and the specimen is an instructive example of a crystal in which the process of growth has been abruptly arrested.

PROCEEDINGS OF SOCIETIES

THE MINERALOGICAL SOCIETY (ENGLAND)

Mineralogical Society, March 20th,—Dr. G. T. Prior, F.R.S. President, in the chair.

MR. A. F. HALLIMOND: *On the atomic volume relations in certain isomorphous series, II.* The volume-relations of compounds of Ca, Sr, Ba with O, S, Se, and Te correspond in every way with those previously indicated for K, Rb, Cs, Na, Li, and the halogens. The differences in volume produced by the interchange of eutropic elements exhibit a constant ratio in each series. The partial volumes calculated for the radicles from the volumes of the free metals agree with those already obtained for the alkali compounds, and the values 6 for oxygen and fluorine agree with those calculated by Wasastjerna from the refractive indices. The volume effect of substitution in the sodium chloride lattice varies somewhat with the size of the cell, but the variation never attains the extent required for a