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"Nec aranearum sane textus ideo melior quia ex se fila gignunt, nec noster vilior quia ex alienis libamus ut apes." JUST. LIPS. *Polit.* lib. i. cap. 1. Not.

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pling of streams and the sound of breakers appear to be almost exclusively due. I have examined a stream or two, and in all cases where a ripple made itself heard I have discovered bubbles. The impact of water against water is a comparatively subordinate cause, and could never of itself occasion the murmur of a brook or the musical roar of the ocean. It is the same as regards waterfalls. Were Niagara continuous and without lateral vibration, it would be as silent as a cataract of ice. It is possible, I believe, to get behind the descending water at one place; and if the attention of travellers were directed to the subject, the mass might perhaps be *seen through*. For in all probability it also has its 'contracted sections,' after passing which it is broken into detached masses, which, plunging successively upon the air-bladders formed by their precursors, suddenly liberate their contents and thus create the thunder of the waterfall.

XV. *Description and Analysis of Gurolite, a new Mineral Species.* By Thomas Anderson, *M.D., F.R.S.E., Lecturer on Chemistry, Edinburgh**.

THE mineral described in the following pages I first saw in the hands of a mineral-dealer, who offered it for sale under the name of Herschelite. A very cursory examination enabled me to see that it was not that mineral, and led me to the conclusion that it was either pectolite or a new species; and a few preliminary trials appeared rather to confirm the latter opinion, but my specimen was not sufficiently large to enable me to submit it to accurate analysis. In the autumn of 1849, however, I paid a visit to Skye, where I found the mineral, not abundantly, but in sufficient quantity to enable me to examine and analyse it. I then found that what I had before seen were weathered and effloresced specimens; and the result of my examination proved it to be a new and very distinct species, to which I give the name of Gurolite (from γυρὸς, *orbiculatus*), from the peculiar form of its crystalline concretions.

Gurolite occurs at Storr, about nine miles from Portree, at the spot already so well known to mineralogists for the abundance and beauty of the specimens of apophyllite, stilbite, laumonite, and other zeolites found there. With these gurolite occurs associated, and it is sometimes found coating crystals of apophyllite. The best and finest specimens, however, are not found in immediate contact with these minerals, but are met with in a basalt of very different characters from that in which they are

* Communicated by the Author, having been read before the Royal Society of Edinburgh.

most abundant. The rock in which these minerals are principally found may be described as a basaltic amygdaloid, very soft, and so vesicular that it is impossible to break even a small piece without finding it filled with drusy cavities, lined with rock crystal, stilbite and apophyllite. In this rock, gurolite is never found; but there occurs also another basalt, which I imagine to have been produced by a distinct eruption of basaltic matter, extremely compact and uniform in its texture, the drusy cavities smaller and much less frequent, rarely containing apophyllite, and almost never stilbite, but having these minerals replaced by gurolite. In this basalt traces of gurolite are by no means uncommon, but fine or large specimens are decidedly rare; and the collector must spend a considerable time in finding them; and when met with they can rarely be obtained uninjured, as the mineral is apt to fly to pieces in the attempt to dislodge it. During my visit to Skye, the weather was so extremely unfavourable that I had little opportunity of pursuing the search for it, but I have no doubt that it will be found pretty generally spread through the more compact basalts of the neighbourhood. I found traces of it at some distance from the point at which I collected my specimens; and an old wall which is passed in ascending the Storr is built of a basalt containing small weathered specimens of the mineral.

Gurolite occurs in small spherical concretions composed of thin plates radiating from a centre. The external surface of each concretion has an exceedingly beautiful striated appearance, owing to the plates of which it is formed rising to irregular distances above the surface. Colour white, lustre vitreous, passing into pearly when it has been exposed to the weather. In thin plates it is perfectly transparent. It cleaves readily parallel to the plates of which the concretions are composed. It is very tough, and cannot be reduced to powder without some labour. Hardness between 3 and 4.

Before the blowpipe in the matrass it gives off water, swells up and separates into thin plates, which have a fine pearly or rather silvery lustre. On charcoal it swells up, splits into very thin laminæ, and finally fuses with difficulty into an opake enamel. With borax it gives a transparent and colourless glass, and with soda it fuses with difficulty into an opake mass. With nitrate of cobalt it gives a feeble reaction of alumina. It is readily attacked by hydrochloric acid. Its analysis was very simple; the only difficulty experienced being in the selection of portions which had not lost water by efflorescence, and the earlier experiments on this account gave a variable amount of water. The proportion of water was determined by igniting one quantity in a platinum crucible, and another portion was treated with

hydrochloric acid in the ordinary way for the separation of silicic acid: the alumina, lime and magnesia were determined as usual. The silicic acid was attacked by hydrofluoric acid and found to be pure.

		Oxygen.	
Silicic acid . . .	50·70	26·86	6
Alumina	1·48		
Lime	33·24	9·49	2
Magnesia . . .	0·18		
Water	14·18	12·60	3
	99·78		

If we neglect the small quantity of alumina and magnesia as non-essential elements, we find the oxygen in the other three constituents to be nearly in the proportions of 6, 2 and 3, and the mineral is consequently a hydrated silicate of lime represented by the formula

$$2(CaO, SiO^3) + 3HO.$$

The analysis shows a slight excess in the amount of lime, and deficiency in the silicic acid and water required for the formula; but the latter is probably due to partial efflorescence, as I have found that gurolite loses water with great facility. 11·201 grs. of it, dried in the water-bath, lost 0·495 gr., equal to 4·42 per cent. This corresponds to one equivalent of water, the calculation of which gives 5·1 per cent.; so that gurolite dried at 212° is represented by the formula $2(CaO, SiO^3) + 2HO$, or more simply still, as a neutral silicate of lime with one equivalent of water.

In its chemical constitution this new mineral stands in a very simple relation to the other silicates of lime, of which three are already known, one hydrated and two anhydrous. Their formulæ are—

Wollastonite (tabular spar) .	$3CaO, 2SiO^3$.
"Kalk-trisilicat" of Gjellebäck	CaO, SiO^3.
Gurolite	$2(CaO, SiO^3) + 3HO$.
Dysclasite (Okenite) . . .	$3CaO, 4SiO^3 + 6HO$.

In gurolite, then, we have the same compound of silicic acid and lime as that existing in the Gjellebäck mineral; in the latter, however, it is anhydrous, while in the former two equivalents of the silicate are in combination with three of water. Its relation to dysclasite is closer still; in fact, by doubling its formula, the difference is found to consist only in a single equivalent of lime. To the latter mineral gurolite approximates also in some of its physical characters, possessing the same toughness and difficulty of pulverization, although in a very inferior degree. Its crystallization in plates and not in needles, its high lustre, and the ease with which it loses water, distinguish it completely from dysclasite, and render it an exceedingly distinct, well-marked, and characteristic species.