

are indistinguishable from jarosite but were confirmed as natrojarosite by their X-ray powder patterns (B.M. 1958, 49).

A closely allied mineral, containing 1.99 %  $\text{Na}_2\text{O}$  and 3.5 %  $\text{K}_2\text{O}$  and showing affinities to both natrojarosite and alunite, has been collected from a quartz-carbonate vein cutting a highly altered quartz-dolerite at Embleton Quarry, about 2 miles west of Bassenthwaite Lake railway station.

*Department of Mineralogy,  
University Museum, Oxford.*

ARTHUR W. G. KINGSBURY

*Department of Geology,  
University of Leeds.*

J. HARTLEY

<sup>1</sup> The Geology of the northern part of the English Lake District, 1876 (Mem. Geol. Survey).

---

### *Two beryllium minerals new to Britain: euclase and herderite.*

BERYLLIUM minerals are by no means common in the west of England, and many of the recorded occurrences are from old specimens or localities where they are now no longer obtainable or extremely rare. Several further new occurrences of beryl and other rarer beryllium minerals have, however, recently come to light in both Devon and Cornwall; among these rarer species, euclase and herderite are interesting additions to the list.

*Euclase.* Cligga Head has long been known as a locality for well-crystallized topaz; though widely distributed as an accessory in the greisen and as small crystals in many of the quartz-veins and joints, the best specimens have been found in quartz-tourmaline-topaz veins, which are barren of metallic minerals; these veins are somewhat restricted in their occurrence. The crystals are prismatic in habit, usually slightly flattened laterally in one direction, and are colourless, yellowish, or sometimes bluish, and may reach 7 or 8 mm. in length. A description of the occurrence and of the crystals found there was given by Sir Arthur Russell<sup>1</sup> in 1924. Though now not so easily found as previously, crystals of topaz can still be collected by breaking open portions of quartz-veins, *in situ* when accessible, or in blocks of greisen lying among the mining debris or which may have fallen from the cliffs.

It is in part of a quartz-vein from one of such blocks, collected in 1949, that euclase has now been found. The block was among a pile of

similar material covering a small shaft in the wolfram-workings and though fresh and evidently taken out fairly recently, its exact origin is unfortunately not known. In the course of breaking up this piece of matrix, with other similar material, a pale bluish prismatic crystal became detached and fell out of a shattered cavity; this crystal was about 8 mm. long and at first sight might have been taken for a typical bluish topaz crystal from this locality. The most unusual, and at once noticeable feature, however, was that it showed a very distinct, longitudinal, prismatic cleavage and not the characteristic basal cleavage of topaz. Fortunately it was possible to pick out and recover from the broken vein-material a number of fragments of the remainder of the crystal, spectrograms of which, taken by S. Ross Taylor in this Department, showed that the mineral contained beryllium. The cleavage suggested that the crystal might be euclase and the spectrographic examination provided additional and stronger evidence: a subsequent X-ray powder photograph has confirmed the identification.

Only this one crystal (B.M. 1958, 40) was found, in a not very large piece of the matrix that appeared to have come from a vein barren of metallic minerals: I have found small crystals of topaz in parts of other veins, collected in recent years on different occasions, and it seems probable that the euclase is very restricted in its occurrence. It is possible that other specimens might be found by careful searching at Cligga Head.

*Herderite.* This rare calcium-beryllium phosphate was originally described from the tin-mines at Ehrenfriedersdorf in Saxony, a few specimens only having been found there prior to 1825. Herderite has since been found in pegmatite in Bavaria, at Mursinsk in the Urals, and at a number of New England localities in the U.S.A.; at all of these latter localities it occurs as a later-stage, hydrothermal mineral.

In 1920 Sir Arthur Russell<sup>2</sup> recorded the finding by himself at Wheal Cock, St. Just, Cornwall, of phenakite and scheelite; these minerals occurred in a matrix of loosely coherent, scaly, brownish-green, partially altered chlorite forming a loose block among other blocks of lode-material lying in the rocky inlet known as Stamps and Jowl Zawn,<sup>3</sup> at the foot of Roscommon Cliff, under Wheal Cock, one of the adits of which opens into the Zawn. In 1949, while on a visit to the St. Just area, I collected several specimens of almost identical scaly chlorite from the waste material lying round one of the old shafts of Wheal Cock just above and inland from the same Zawn, my attention having been attracted by some small buffish prisms of apatite embedded in part of it. In one of the specimens, which was friable and crumbly, there were

embedded several rather shattered, short prismatic crystals of phenakite, and some more buffish, apparently hexagonal crystals, which appeared to be apatite. These latter crystals were corroded and again much shattered and mostly came out in fragments, but on being powder-photographed, some of them gave an entirely different pattern; spectrograms were then taken which showed the presence of calcium and beryllium, and the mineral was confirmed as herderite (B.M. 1958, 41).

Following on this, I re-examined a number of other specimens of apatite I had collected on various occasions in Cornwall and, as a result, have found a second occurrence of herderite, at Colcerrow Quarry, Luxullyan. This and other adjoining quarries are well known for their specimens of fluorite, gilbertite, and, at Colcerrow in particular, apatite. The best-known apatites from here are pale blue in colour and from the development of many faces in the pyramid zones have a rather rounded appearance and habit. Other crystals are, however, sometimes more prismatic in habit and show other shades of colour, from colourless to whitish, yellowish, and greenish. Since the quarries ceased working, good specimens have been difficult to obtain, but in 1931 I was lucky in finding a few small specimens of crystallized apatite in vugs in some of the coarser pegmatitic granite at Colcerrow. The apatite crystals are generally implanted in or associated with globular aggregates of gilbertite on creamy-coloured crystals of felspar and may be also associated with albite, tourmaline, and somewhat smoky quartz. Most of them were colourless or very pale yellowish and showed the usual rather rounded form; on examination, however, some of these recently have proved to be herderite (B.M. 1958, 42), again showing the less common pseudo-hexagonal habit of the St. Just crystals, and being only with difficulty distinguishable from apatite.

It is possible that other occurrences of herderite may be found in pegmatite druses where there has been late-stage hydrothermal mineralization or that they have been overlooked or mistaken for apatite. In view of the scarcity of beryllium minerals in Cornwall and in Britain generally, the identification of herderite makes an interesting addition to the list.

*Department of Mineralogy,  
University Museum,  
Oxford.*

ARTHUR W. G. KINGSBURY

<sup>1</sup> Min. Mag., 1924, vol. 20, p. 225.

<sup>2</sup> Ibid., 1920, vol. 19, p. 19.

<sup>3</sup> A Zawn in the St. Just area is a sheer steep-sided chasm in the cliffs formed by the walls of an outcropping mineral-vein, when the vein itself has disintegrated and fallen into the sea.