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Namibite from Buckbarrow Beck, Cumbria: the first British occurrence

A NARROW quartz–chalcopyrite–scheelite vein, which cuts the granodiorite of the Eskdale intrusion, at Buckbarrow Beck [SD 1367 9097]

west Cumbria, is remarkable for the common occurrence within it of the rare supergene minerals russellite, bismutoferrite and cuprotungsite (Young, 1985; Young *et al.*, 1986; 1991). Recent examination of veinstone obtained from the outcrop has revealed the presence of several further rare supergene species, including namibite, reported here, for the first time, from Britain. Identification was by X-ray powder photography. No chemical analyses have been undertaken.

Namibite (CuBi_2VO_6) has hitherto been known only from its type locality at Khorixas, Namibia (von Knorring and Sahama, 1981). Buckbarrow Beck is only the second confirmed occurrence of the species. At Buckbarrow Beck namibite (XE752*) occurs, rarely, as very dark green, roughly spherical masses up to about 1.5 mm across. In some instances these exhibit an internal sheaf-like, platy, crystalline texture and smooth to drusy external surfaces. The mineral occurs both alone and in small cavities with quartz veinstone and accompanied by bismutite, bismutoferrite, eulytite and mixite.

Eulytite ($\text{Bi}_4(\text{SiO}_4)_3$) (XE744) is common on several samples of iron-stained quartz veinstone. It occurs both as colourless to honey-yellow complex tetrahedra, up to 0.5 mm across, and as spherical aggregates up to 2.0 mm across in which concentric colour banding is locally conspicuous. In Britain, eulytite has previously been recorded only from Southwick Cliffs, near Dalbeattie, Dumfries and Galloway Region (Macpherson and Livingstone, 1981, p. 21).

Mixite ($\text{BiCu}_6\text{AsO}_4)_3(\text{OH})_6 \cdot 3\text{H}_2\text{O}$) (XE753) is a common associate of eulytite and namibite at Buckbarrow Beck. It typically occurs as pale turquoise to almost white acicular crystals which commonly form fibrous aggregates encrusting or filling small cavities in quartz veinstone. The only previously published references to mixite from Britain are those of Miller and Taylor (1966) who recorded it from the Dalbeattie area, S.W. Scotland and of Embrey (1977, p. LX) who reported its likely occurrence on specimens collected by A. W. G. Kingsbury from Wheal Owles, St. Just, Cornwall.

The abundance of bismuth-bearing supergene minerals in the oxidised outcrop of the Buckbarrow Beck vein strongly suggests that bismuth minerals may comprise an important part of the hypogene assemblage at depth. A small, but significant, concentration of vanadium-bearing minerals is suggested by the presence both of vanadium in the russellite from this locality

* BGS X-ray number.

(Young *et al.*, 1986, p. 19) and of the namibite reported here. Previous records of vanadium-bearing minerals in the Lake District are restricted to those of descloizite, mottramite and vanadinite in the Caldbeck Fells (Kingsbury and Hartley, 1956).

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