

MINERALOGICAL NOTE

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Schultenite from Caldbeck Fells, Cumbria: the first British occurrence

SCHULTENITE (PbHAsO_4) was first described from Tsumeb, Namibia, where it occurs associated with anglesite, azurite and bayldonite (Spencer, 1926). Claringbull (1950) published an X-ray study of the mineral and Embrey and Hicks (1977) gave further details of its morphology, noting also its association with cuprian adamite, keyite and tennantite. Walenta (1980 and 1981) recorded schultenite from localities in Germany where associated supergene minerals include carminite, duftite, Ba-pharmacosiderite and scorodite. Falls *et al.* (1985) reported the mineral from a supergene assemblage within a pocket of partially oxidized sulphide in a quartz-arsenopyrite-galena-sphalerite-chalcocopyrite vein at King County, Washington, USA. Supergene minerals recorded from this vein are anglesite, aurichalcite, beudantite, cerussite, mimetite and smithsonite.

A single specimen of schultenite has been found in the outcrop of the Deer Hills Vein, on Caldbeck Fells, Cumbria [NY 3145 3626]. Identification was by X-ray powder photography [BM(NH) X-ray number 7780F]. The vein, which cuts lavas of the Eycott Volcanic Group, is at least 1.5 m wide and consists mainly of fine to medium-grained colourless quartz in which occur abundant pockets and lenses of fine to medium-grained sulphides. Most abundant of the sulphides is arsenopyrite, though pyrite is locally common and small quantities of galena are also present. The vein outcrop is heavily oxidized in places, with numerous open cavities resulting from the removal of sulphides. In part these are lined and partly filled with pale yellowish green beudantite, some of which clearly replaces earlier carminite. Unaltered carminite is also locally abundant together with pale green to bluish-green scorodite. Other supergene minerals include baryte, mimetite and pharmacosiderite.

The schultenite specimen was obtained from one of these cavities. It consists of a single spray of colourless

transparent blades up to 1mm long with acute triangular terminations very similar to the habit illustrated by Spencer (1926, Fig. 1). The mode of occurrence and association of the Deer Hills schultenite closely resemble the previously described occurrences of this rare species. In all of these instances schultenite appears to be a weathering product of arsenic- and lead-rich sulphide veins.

The specimen from Deer Hills has been presented to the Natural History Museum. This note is published by permission of the Director, British Geological Survey (NERC).

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