Stonecroft Mine, Northumberland

[NY 855 689]

Introduction

Stonecroft Mine is a former lead mine, worked from shafts situated on the left (north) bank of the Settlingstones Burn, approximately 0.5 km east of the former processing plant at Settlingstones Mine, approximately 5 km NNW of Haydon Bridge in the South Tyne Valley, Northumberland. The mine worked deposits associated with a complex vein system, part of which was formerly worked at Settlingstones Mine (see GCR site report, this chapter).

Stonecroft Mine was worked between 1853 and 1896 in conjunction with the adjoining Greyside Mine, the shafts of which lie between 0.5 km and 1 km east of those at Stonecroft. Dunham (1990) recorded a total output of 74 264 tons of lead concentrates from these mines.

There are no exposures of the veins worked at Stonecroft Mine and none of the underground workings are accessible. However, substantial amounts of mineralized spoil, containing important mineral assemblages typical of these veins, remain adjacent to the former Stonecroft shafts, although these are becoming increasingly obscured by vegetation, including woodland plantations. Little remains to mark the site of the main Greyside Mine shafts.

Parts of the Stonecroft Mine spoil-heaps are of interest, and have SSSI status, as one of the very few sites at which the rare orchid, Young's helleborine *(Epipactis helleborine* var. *youngiana),* grows.

Description

Stonecroft Mine worked lead ore from fissure veins which cut a cyclothemic succession of Lower Carboniferous sandstones, limestones and shales into which the Whin Sill, a dolerite of Permo–Carboniferous age, is intruded. The main orebodies worked here occurred in veins within Whin Sill wall-rocks (Dunham, 1990).

Although there are no vein exposures, and all underground workings have long been inaccessible, the substantial spoil-heaps contain an abundance of veinstone representative of the deposits worked. Most of the dumps have, however, been planted with trees, and as these approach maturity, useful material for mineralogical examination is becoming obscured.

Galena is the main ore mineral, and the only one to have been extracted during the working life of the mine. The galena in this deposit, in common with that from other veins in the Haydon Bridge area, exhibits a silver content significantly lower than most of the galena raised in the Northern Pennines. Typical silver contents at Stonecroft were around 2.45 oz per ton of lead, compared with average values of between 4 and 8 oz per ton for most of the Orefield. Sphalerite is abundant at Stonecroft, although it was never recovered during mining. Approximately 5000 tons of zinc concentrates were, however, recovered by processing the spoil heaps during the early 1950s (Dunham, 1990). Despite this, sphalerite remains an abundant mineral on the spoil heaps today. Unusually for the Northern Pennines, the sphalerite at Stonecroft typically occurs in a pale-brown, iron-poor form, unlike the more iron-rich dark-brown to black forms common elsewhere in the orefield. Much of the Stonecroft sphalerite exhibits striking banding in differing shades of brown, reminiscent of the 'schalenblende' variety (Symes and Young, 2008) (Figure 3.13).

The main gangue mineral is barite, usually present as compact white, buff or pale-pink crystalline masses. Pinkish-buff to pale-brown and cream ankerite is also common. A little witherite is present, together with small amounts of quartz (Dunham, 1990). Vugs or cavities in the veinstone are not abundant, although when found are commonly lined with very small cruciform twinned crystals of harmotome (Young and Bridges, 1984). Rarely, small radiating aggregates of strontianite crystals have also been found in vugs (Young, 1985d).

A large, brick-built pumping engine-house, adjacent to the Stonecroft pumping shaft, is a conspicuous local landmark. Large heaps of, mainly sand-grade, tailings near the Settlingstones Burn remain from the 1950s reprocessing of the heaps to recover sphalerite.

Interpretation

The veins of the Haydon Bridge area, including those formerly worked at Stonecroft Mine, Settlingstones Mine, and Fallowfield Mine (see GCR site reports, this chapter), occur within Carboniferous rocks and locally the Whin Sill, in the southern portion of the Northumberland Trough. Although these veins do not lie within the structural unit known as the Alston Block, from their form and mineralogy they are generally regarded as comprising the northernmost expression of the Northern Pennine Orefield.

The possibility of mineralization in this part of the South Tyne Valley being genetically related to the Stublick Fault Zone has been discussed briefly under the Settlingstones Mine GCR site report (this chapter). The lead- and zinc-rich mineralization at Stonecroft Mine may thus offer important insights into the base-metal potential of this major structural line.

The common occurrence at Stonecroft Mine of primary barite, with only subordinate amounts of witherite, is of interest in the light of the site's close proximity to Settlingstones Mine at which early carbonitization of barite to witherite has been so extensive. Comparative studies of veinstone and wall-rock samples from the Stonecroft Mine and Settlingstones Mine GCR sites may therefore offer unique opportunities to investigate the nature of the widespread development of witherite within this orefield.

The comparatively common occurrence of the barium zeolite, harmotome, within vugs in the Stonecroft veinstone, is consistent with Young and Bridges (1984) suggestion that this mineral developed as a result of reaction between late-stage carbonate-rich fluids and altered Whin Sill dolerite wall-rock.

The genetic significance of the low silver content of the galena, and the low iron content of the sphalerite have yet to be understood.

Conclusions

Stonecroft Mine is an important site in the Northern Pennine Orefield at which lead- and zinc-rich mineralization, associated with barfum gangue minerals, may be studied. Its position, both adjacent to Settlingstones Mine and within the Stublick Fault Zone, may have considerable genetic significance in understanding mineralizing processes in this part of northern England.

References

(Figure 3.13) Cut surface of banded sphalerite from the spoil heaps at Stonecroft Mine. The pale minerals are barite and ankerite. (Photo: B. Young.)