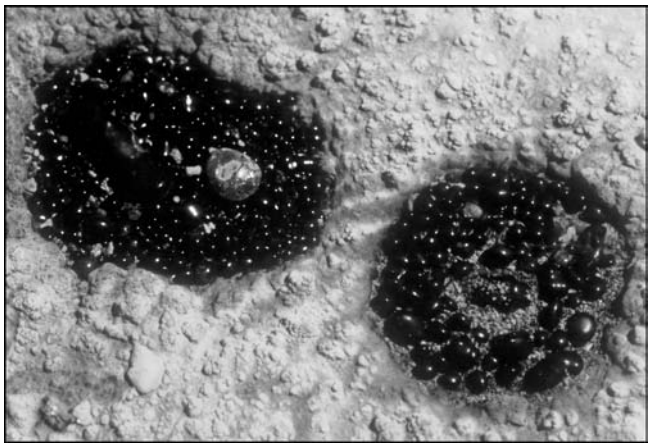
REPORT

Black cave pearls in Derbyshire

Black cave pearls have been found in the Bage Mine, in the eastern part of the Carboniferous Limestone at Bolehill, near Wirksworth. This mine was worked for galena from the 16th century or earlier, until closing in 1908. Its shaft was re-discovered and re-opened in November 1980 by the Wirksworth Mines Research Group. Most of the workings are in the Bage, Butler, Wallclose and Bloodworth Veins, which have been worked on three levels each 17 m apart.

About 200 m north of Hardend shaft, in Bolehill, at the intersection of the Butler and Wallclose Veins on the 200 ft level, the miners worked through a natural cave that rises vertically for 6 m, to grey/black shales exposed in the roof. Meteoric water coming through these iron-rich shales runs down the walls to forms a stalactitic flowstone of hard goethite/limestone, varying in colour from yellow and brown to black. Below these wall deposits, the mine floor is covered in a soft, red, hematitic ochre, which has spread over a large area of the floor on Butler Vein. This part of the mine is generally known as Red Ochre Junction. The miners followed the Butler Vein through the cave by removing a small section of the natural wall.



Water now drips from the exposed mine limestone walls on to the red ochre floor, where several nests of black cave pearls have formed in water that is 8 mm deep. The pearls vary in size up to 6 mm in diameter. Some have been cut to reveal cores of yellow-orange limonite with a honeycomb structure inside a hard, black, shiny, outer shell that is 1 mm thick. This structure appears to originate from a reduction process, whereby a red ochre of soft hematite alters to the lustrous black shell of hard hematite. The drips of water that land in the pearls' pool splash out to form a crust of nearly white calcite on the surrounding red ochre floor. Some pearls have tiny crystalline calcite overgrowths on their black hematite.

(Thanks to Bob King for useful comment on the mineralogy)

John Jones
31 Bridgefields, Kegworth DE74 2FW