Further work on residues from lead/silver smelting at Combe Martin, North Devon

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ABSTRACT: This paper outlines the history of lead-silver mining, smelting and refining at Combe Martin, in north Devon, during the 16th and 17th centuries, and the background to the discovery of large amounts of smelting residues from that period in the centre of the village. The results of the analyses carried out on those residues are presented along with an interpretation of the processes which produced them.

Introduction

Combe Martin, on the north coast of Devon, has a long-history of mining for silver-bearing lead ores (Claughton 2004). Some aspects of the mines are well documented, from the first record in 1292 through to abandonment in the late 19th century. Although they were worked for short periods in the late medieval period, documentary evidence suggests that the mines were most productive in the 1580/90s, during the tenure of Bevis Bulmer (a mining entrepreneur who came to Devon from Mendip), with intermittent but undefined levels of production through to the end of the 17th century. Deep working in the 19th century revealed extensive, earlier, shallow workings on all the major silver-bearing deposits. However, until recently relatively little was known about the smelting and refining of the ores prior to the 19th century other than that a water-powered smelt mill was erected in the 1520s and new smelting technology appears to have been introduced in the 1580s. There was also a reference to the associated water course and the survival of ‘divers monuments, their names yet to this time remaining, as the King’s mine, the store house, blowing house and refining house’ in the early 17th century (Oliver 1845, 64–65).

In the argentiferous lead mines of Devon, the requirement to treat all the ore mined and maximise the production of silver meant that improved techniques for recovering and processing small fragments of ore had been introduced by the end of the 13th century. The ore was recovered using gravity separation methods and the careful control of the flow of water in the ‘buddling’ process (Kieman 1989, 15–16; Gough 1967, 147–149). Where small ore was finely disseminated in the gangue material, it was separated and smelted in the furnace along with lead rich residues recovered from the slags, and not discarded as waste (Claughton 2003, 152–156).

The 16th and 17th centuries saw the introduction of a number of innovations in the lead-smelting industry. Hochstetter may have constructed a charcoal-fuelled blast furnace early in the 16th century. These operated with a reducing atmosphere, so the ore was roasted and oxidized prior to smelting. The slag by-product from this type of furnace would have contained quite a high concentration of lead (and some silver) and so would have been re-smelted (Crossley 1990, 189). However, the documented attempts to use blast furnaces for lead smelting in England in the mid-16th century met with mixed success and did not compare favourably