Early lead smelting in southern Scotland

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ABSTRACT: A brief summary is presented of the evidence for medieval and earlier lead smelting in southern Scotland. Antiquarian, place-name and field evidence indicates widespread smelting with concentrations close to the Leadhills-Wanlockhead orefield and in the Manor Valley, Peebleshire. Four smelting sites have produced 10th-11th century AD radiocarbon dates.

Introduction

For the present purpose southern Scotland comprises the region between the Firth of Clyde and the Firth of Forth south to the English border. Most of the lead deposits in the area occur in the Southern Uplands, a spine of high ground running diagonally across the region from the Galloway Hills in the south-west to the Lammermuir Hills in the north-east. The principal veins are in the small but highly-productive Leadhills/Wanlockhead orefield in the Lowther Hills but significant deposits also occur in Dumfries and Galloway, especially around Newton Stewart and at Carsphairn. In addition, a number of small, dispersed veins occur throughout the region which, although neither historically important nor economically significant, could have been exploited in the past. The distribution of lead veins has been discussed by Wilson and Flett (1921) and is shown in Figure 1.

The documentary evidence for medieval lead mining has been summarised by Harvey (1997). Scottish lead was certainly being mined in the mid-12th century when it is mentioned as one of the duties payable to William the Lion. In 1239 there is a reference to mining at Leadhills-Wanlockhead followed in 1264 by a record of the movement of lead from the same area to Rutherglen. There are no accounts of lead mining during the late 13th or the 14th century, the time of the Anglo Scottish wars, but lead production from Leadhills-Wanlockhead is recorded again after 1466. There is also increasing evidence for lead mining during the prehistoric period. The discovery of a necklace of beads of smelted lead from an Early Bronze Age burial at West Water Reservoir, West Linton (Scottish Borders) suggests that southern Scottish lead deposits—perhaps the nearby silver-lead deposit at Siller Holes, West Linton—were being worked by 2000 BC (Hunter and Davis 1994). Lead objects also occur at a number of Iron Age and Roman sites and lead isotope analysis suggests the Scottish Southern Uplands as a possible ore source for some of these items (Hunter 2007).

The only direct documentary evidence for medieval lead smelting is a record of 1326 relating to the purchase of charcoal 'with a view to smelting' at a mine or trial near Loch Fyne in Argyll; this is outside our study area but it demonstrates a knowledge of lead-smelting technology in 14th century Scotland (Harvey 1997, 125). Later medieval records, however, show lead ore being exported from

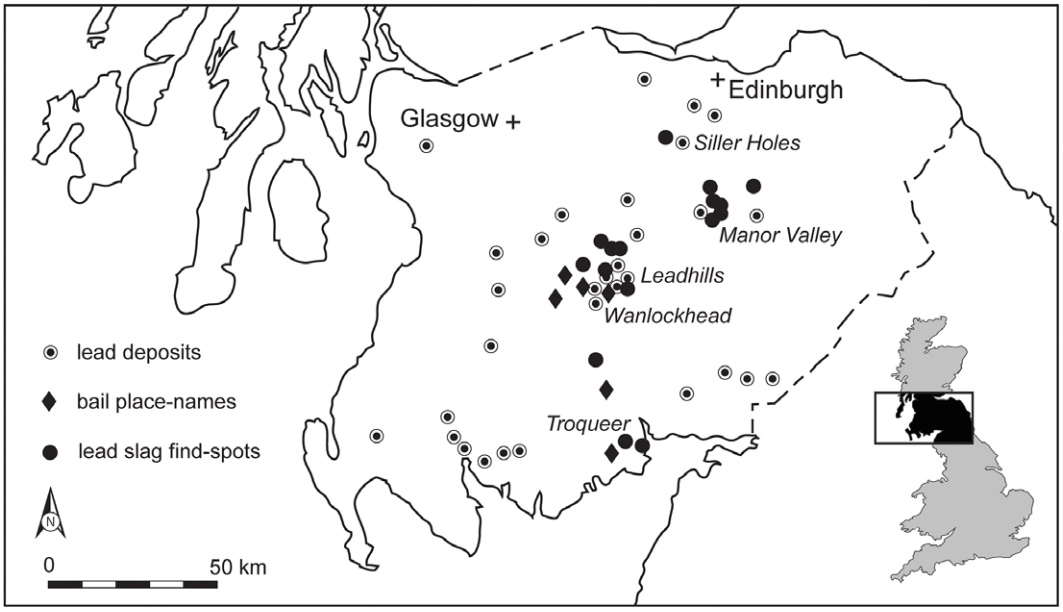

Figure 1: Lead deposits, bail/bale place-names and lead-slag find spots in southern Scotland.

Scotland to Flanders where it was refined and sometimes re-imported back to Scotland. This lack of indigenous metallurgical knowledge and expertise may explain why in 1567 the Scottish crown was to grant exclusive rights of the country's mineral reserves to a consortium of Flemish and German miners (Shaw 1984, 76).

The evidence indicates that lead has been mined and smelted in southern Scotland since at least the 12th century AD and possibly much earlier. One way to examine the occurrence and extent of smelting during this long period of time is to try and locate places where smelting took place and this can be achieved by combining antiquarian and place-name evidence with field work.

Antiquarian evidence

There are occasional antiquarian references to the discovery of lead slag. For instance Wilson and Flett (1921, 62) refer to a meeting in 1891 of the Berwickshire Naturalist Club where it was reported that gravediggers at Innerleithen (Scottish Borders) often came across the remains of furnaces, galena and slag, presumably in the village church yard. Wilson and Flett (1921) also mention an 'old slag heap' at Dalwick, near Stobo (Scottish Borders). Similarly, in 1873 members of the Dumfries and Galloway Natural History and Antiquarian Society visited two recently discovered lead smelting sites at Woodside and Martingirth in Troqueer parish near Dumfries; this visit was reported at the time in the Dumfries Standard (James Williams pers com) and one wonders how many similar accounts lie hidden in the pages of other provincial newspapers.

Place-name evidence

In northern England the place-name 'bail' is generally taken to indicate a lead-smelting site. The same place-name also occurs in southern Scotland, albeit confined to Nithsdale and upper Clydesdale. It is quite possible that the Scottish 'bail', especially when applied to a hill, refers to the site of a bonfire or beacon but a lead-smelting association cannot be discounted. There is a Bail Hill (NGR NS 864118) and a Bail Gill (NS 8611) at Wanlockhead (Dumfries and Galloway) and in the 18th-century Bellgill Burn (NS 8917) at neighbouring Leadhills (South Lanarkshire) was known as Bale Gill (Brown 1979, 108); the occurrence of these three place-names within the main orefield must indicate lead smelting. Another Bail Hill (NS 760143) is found between Sanquhar and Kirkconnel (Dumfries and Galloway); this is only 11km west of Wanlockhead and may indicate a smelting site just outside the orefield. Bail Hill, Moniaive (Dumfries and Galloway; NX 7295) is 12km west of the putative lead-smelting site at Penpont (see 'Field Evidence' below) and Bail Fell, Caulkerbush (Dumfries and Galloway: NX 938602) is 8km south west of the smelting sites at Troqueer (see Antiquarian evidence above).

Field evidence

The post-medieval lead-smelting industry in southern Scotland was comparatively small in scale and geographically restricted. There were smelt mills along the upper reaches of the Glengonnar Water and Wanlock Water at Leadhills and Wanlockhead respectively, at Woodhead near Carshairn and at Blackcraig near Newton Stewart. There were also smelt mills working silver-rich

lead ores at Linlithgow and Leith. The discovery of lead slags elsewhere in the region can be taken as a good indication of medieval or earlier smelting.

Recent fieldwork, much of it undertaken by Tam Ward of The Biggar Museum Trust, has resulted in the discovery of lead slag at a number of sites in South Lanarkshire. In the Leadhills area a large scatter of lead slag and charcoal was located by Ward (DES 2001, 125) in the valley of the Glenkip Burn (NS 864183), single pieces of black vitreous slag with large lead prills have been found by the author in a secondary context associated with late-medieval alluvial gold workings in the Shortcleugh Water (NS 916163) and Blick (1991, 100) refers to slag on the sides of Lady Manner's Scaur (NS 881158), a large hushed opencut overlooking Leadhills village. At Abington, 8km north east of Leadhills, Ward (DES 1994, 74) has located two adjacent slag scatters on a terrace above the Clyde at Castle Hill (NS 934221 and NS 934220) and a third on the slopes of nearby Winter Cleuch (NS 940227).

Survey work during the 1990s by the Peebleshire Archaeological Society resulted in the discovery of a remarkable cluster of eight lead-smelting sites in the Manor Valley south west of Peebles (DES 1995, 10; 1998, 81; 1999, 76–77). At the Siller Holes silver-lead mine near West Linton (Scottish Borders; NT 145533) an archaeological watching brief recorded lead slag and ore in association with medieval pottery, bone and leather and textile fragments (DES 1994, 7). Mention should also be made of a geochemical survey on the Eccles Burn, Penpont (Dumfries and Galloway; NX 848959) which produced soil samples with anomalously high lead levels (up to 8100 ppm); no lead deposits are known in the local area but this geochemical anomaly has been interpreted as an early lead-smelting site (Russell and Jantaranipa 1972).

The Manor Valley sites and those at Abington and Glenkip are substantial slag scatters and represent actual smelting sites. Unlike the well-known bale sites in Derbyshire and the Yorkshire Dales with their scarp edge or south-west facing hilltop locations, most of the Scottish examples favour valley bottom or lower hill slope positions. No structural remains have been observed at any of the Scottish sites and although it must be assumed that they were wind-blown hearths little else can be said about the technology employed.

Dating

Initial fieldwork at Abington and in the Manor Valley suggested a close association between the smelting sites and 'burnt mounds'. Burnt mounds are ancient cooking places, often surviving as horse-shoe shaped mounds of heated stone close to water sources, and most excavated examples in Scotland date to the Bronze Age. To test the possible association between burnt mounds and smelting the Peebleshire Archaeological Society arranged for radiocarbon dates on charcoal from some of the burnt mounds and three of the Manor Valley smelting sites. The burnt mounds all produced Bronze Age dates but the results from the smelting sites produced dates in the late 10th and 11th centuries AD. These were: Hundleshope (AA-30359) 980 ± 50 BP (birch charcoal); Lour, Drumelzier (AA-43413) 1075 ± 45 BP (alder charcoal) and Posso Milburn (AA-30357) 1000 ± 50 BP (birch charcoal). Interestingly, a radiocarbon sample obtained by Tam Ward on alder charcoal from the slag scatter at Glennkip, Leadhills (DES 2001, 127) has also produced an early 11th century AD in date: (AA-43412) 1005 ± 45 BP.

The only other evidence for dating comes from Siller Holes (Scottish Borders) where, as mentioned above, lead slag was found in association with medieval pottery. This material is currently at the National Museum of Scotland where post excavation work may provide more information on the precise date of the pottery and its association with the slag.

Conclusions

This brief survey has shown that there is a surprising amount of evidence for early lead smelting in southern Scotland. As demonstrated by Tam Ward, lead-smelting sites can be located through field survey and there is great potential for further work and new discoveries. Ward has looked in detail at the Upper Clydesdale area east of Leadhills but no detailed field work has yet been carried out in the Wanlockhead area or in Galloway. Perhaps one of the most surprising results of recent field survey has been the identification of a large number of smelting sites in the Manor Valley near Peebles, an area with no history of lead smelting nor any large lead deposits—the nearest lead veins are at Innerleithen some 8km to the east and these are comparatively insignificant by modern standards. This remarkable discovery highlights the danger of confining a search for slag sites to areas with a known or presumed mining history and raises the possibility that smelting sites could occur across much of southern Scotland.

The four radiocarbon dates are particularly interesting. A number of 10th–11th century dates have been obtained recently at smelting sites in Cumbria and the North and

Figure 2: 12th-century lead trough from Whithorn, Dumfries and Galloway; maximum width 720mm. One of a pair used for processing cat skins.

Central Pennines (Smith 2006; Fairbairn 2007). These dates suggest an unexpected episode of early-medieval lead production in southern Scotland and northern England, an episode which has yet to be identified elsewhere in Britain at this time. It may be significant in this respect that excavations at the monastic site of Whithorn in Galloway have produced considerable evidence for early-medieval lead working including casting waste, two plano-convex ingots and a lump of unworked galena (Hill 1997). The site has also produced two large 12th-century sheet lead vats (Fig 2). No isotopic work has been undertaken on these objects but a southern Scottish source is now a distinct possibility.

The field evidence for later medieval smelting is still lacking. One intriguing possibility suggested by the historical records is that 15th and early 16th century Scotland lacked the necessary metallurgical knowledge and that lead ores, and not just those with a high silver content, were sent abroad for smelting.

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