10. DISCUSSION

Although essentially unstratified, the 12th- to 14th-century material recovered at Siller Holes has provided sufficient evidence to establish its medieval origins and that it is a site of considerable importance. Until now, it has been difficult to find dating evidence for lead mining in the medieval period. Dating of the visible remains is difficult and unfortunately there is no stratigraphic association between the finds and the spoil heaps from the mining operations. Table 10 shows the distribution of the various categories of finds as related to the disturbed areas in Illus 5. The quantities are based on the information available.

However, the ceramic assemblage and the excellent preservation of the organic items show evidence for an early date for lead mining in Scotland. Further evidence for this was obtained by the Peeblesshire Archaeological Society from lead-smelting sites located in the Manor Valley south-west of Peebles. Three of these yielded radiocarbon dates in the late 10th and 11th centuries (Pickin 2010: 83).

It is noteworthy that the Stonypath Roman temporary camp and road respect – and are respected by – the visible mineworkings (Illus 5). The north-east corner of the camp is situated immediately south of the pits. Does this mean that the Romans might have used it as a work camp even though its location on the steep slope of Lead Law would have made it extremely uncomfortable for a sizeable army unit to pitch its tents? However, the full extent of the camp is not known and it may well have stretched across the line of the road to the more level area opposite.

It is unlikely that the lead vein, situated as it is just 750m north of Tocherknowe fortlet at Lynedale House and alongside the Roman road leading from Biggar to Carlops and eventually to Elginhaugh,

Table 10 Distribution of finds related to shaded areas in Illus 5

Type	A	B	C	D	E	Island	Unstratified	Totals
Bone	59	38	18	5	1			121
Brick		1	1					2
Charcoal	5	1	1					7
Coin							1	1
Fibres	8	5	2	1				16
Flint, chert	2	12						14
Leather	63	30	13	1				107
Metal	4	1				1	10	16
Nut	8	5						13
Ore	8	1		1				10
Pipe	1							1
Pot	125	242	88	82	8	2	14	561
Cord, rope	3	3				1		7
Slag	29	35		3	1	1		69
Soil sample	1	1	1					3
Stone	1	3	1					5
Teeth	7	9	1	3				20
Wood		1	1			1		3
Wovens	61	62	7	5	4	2	3	144
Totals	385	450	134	101	14	8	28	**1120**

could have been overlooked by the Romans, especially if earlier lead working in southern Scotland had been established by prehistoric peoples, as indicated by the recovery of Bronze Age lead beads at the nearby West Water reservoir (Hunter et al 2000: 140). Unexpectedly, these beads are of Southern Uplands origin whereas the isotope ratios for Siller Holes relate to the Midland Valley (Rohl 1996: table 12; Rohl & Needham 1998: 33–4). Hints of early lead workings at Wanlockhead and Leadhills are given by the finding there of stone and bronze tools (Hunter 1885: 376).

Recent work on finds from Strageath fort (Hunter 2006: 85) has indicated that the source of the lead ingot found there is also likely to be in the Southern Uplands. The obvious source is in the Leadhills/Wanlockhead area although no evidence for a Roman presence there has so far been found.

The Romans came to Scotland with a view to exploiting its resources, and the proliferation of forts and fortlets embracing the Lowther Hills would suggest their awareness of the gold, silver and lead deposits in that area. Inchtuthill legionary fortress (Canmore ID 28592) also was apparently near mineral sources, including those of silver (Woolliscroft & Hoffman 2011: 26).

However, study of the leather, textile and ceramic remains has provided evidence for the exploitation of the mineral resources from at least the 12th century. This date for the medieval workings would tie in with the appearance of the first Scottish coinage which David I was then having minted at Carlisle. The need for silver, previously obtained from Cumberland or from melting down such items as bullion, foreign coins or plate, would lead to prospecting for native sources (Nicholas Holmes, pers comm).

Where did the medieval workforce live? The area to the immediate north of the lower line of pits was probably boggy. Did they also use the interior of the marching camp or did they have their huts on the rising ground on the west side of the road? Judging by the amount of domestic debris recovered from the pond, they must have lived close by, but there is as yet no evidence of any structures.

Everything had been well used, with textiles and shoes showing patching and other repairs, suggesting that these were working garments. The simplest forms of weaving and the occurrences of mistakes imply that the textiles could have been locally made by relatively unskilled workers. Many items were well worn and several had been repaired for reuse. Other uses could be for padding, insulation or for industrial purposes. More than 80% of the textiles were of 2:1 twill weave, which was prevalent during the 13th and early 14th centuries. Colour had been used in many of the fragments, either by the use of natural wool colours or by the use of widely available natural dyestuffs, such as indigotin (blue), luteolin (yellow) or carminic acid (red). Three samples had been coloured with probable synthetic dyes; further work on dye analysis would be needed to identify more precise dye sources and likely dates.

The leather items were all very worn and there was extensive evidence for the patching and repair of shoes. Even waste material was very worn; the presence of this might suggest that repairs were being done on site if new shoes were hard to come by. Textile fragments would provide padding and warmth for the feet. Shoe styles suggest 12th- to 13th-century date.

Pottery, too, is very utilitarian, with little evidence for 'better' ware. There was extensive sooting of cooking pots, which suggested that care was taken to see that they survived for reuse. Vessel forms suggest a 12th- to 14th-century date. There was nothing earlier or later, apart from a few sherds of industrial pottery of the mid-18th century or later.

This all adds up to poor living and working conditions, with a low-status work force having to 'make do and mend'.

Pay then would possibly have been on a daily or output rate, as was the case in the 17th century. The Hope family, who operated the Leadhills mines at that time, began to apply discipline to their workforce there – on remote sites boredom would have generated fighting and drinking (Smout 1967: 124).

It is interesting that pottery, textiles and shoes recovered are dated to between the 12th and 14th centuries. Although there is documentary evidence for the working of the lead and silver deposits in the 16th century, no pottery of this date has so far been found.

Water was essential – for washing the ore, for working pumps and for waterwheels used to operate the smelt mill's bellows (Smout 1967: 108). Certainly excavations by Edinburgh

University found a series of ditches in a later phase, evidence of water control measures likely to have been part of the ore processing (Coles 1995: 38). These cut a number of pits containing fragments of animal bone, worked wood, cloth, leather and feathers. The Harlawmuir or Back Burn, which runs north-east to join the River North Esk, originally had its origins in this area (Armstrong 1775) and its water may have been diverted for use. Similar water control features were seen in other lead mining areas such as Mulreesh on Islay, where they were dated to the late 18th and early 19th centuries (Caldwell forthcoming). At Siller Holes, they may relate to the periods when Ronald Crawford & Co or the Earl of Wemyss and March were operating there (Buchan & Paton 1927: 98). The later phase of ditching may have been attempts to improve the agricultural potential of the site (Coles 1995: 39). Unfortunately, no artefactual evidence was recovered from the ditches. Disuse of these measures may be the cause of waterlogging of the site; the pond and marshy ground were indicated on mid-19th-century maps (Smith 1849).

Water may have caused problems in the mine workings and it is possible that scraps of textiles could have been used in rag and chain pumps, as shown by Agricola (Hoover & Hoover 1950: 188–96). Ventilation would have been essential and this could have been achieved by the constant shaking or flapping of linen cloths to circulate the air (ibid: 210–12).

Lead ore, slag and small pieces of smelted lead have been found, mostly around the north-east end of the pond, which suggests that smelting was done on site. Traces of silver, less than 0.1%, were noted in some samples of ore, but not in the slag samples, hinting at its efficient removal. However, there is as yet insufficient evidence to say whether cupellation for silver was also carried out there. It could be, as has been hinted at, that this was done abroad (Nicol 1843: 180). Certainly Eustachius Roche had permission to do so should he be unable to undertake this process at the mines themselves (Cochran-Patrick 1878: 55).

Wood would have been required for fuel, building purposes, pit props and to make charcoal for smelting. There are records of estate owners selling woods in the 17th century and also of them treating timber as a crop. Where available, peat and coal were also used for smelting towards the end of the century (Smout 1967: 108–9).

Shallow coal measures exist south of Carlops and were believed to have been worked as early as the 13th century, possibly by the monks of Newhall (Oakes nd), but there seems to be no documentary evidence to support this suggestion. However, it is possible that an assumption has been made, as the word *Monks* appears in place names around Newhall, but it may also refer to General Monck's army's passage through the countryside in the mid-17th century.

Landowners generally found it less risky to lease out the mining rights on a royalty basis, taking a proportion of the lead raised, although they sometimes operated the mines themselves (Smout 1967: 113). In the later years, Siller Holes would have been a small-scale operation compared to the likes of Wanlockhead, Leadhills and Tyndrum, with a smaller margin of profit preventing it from becoming a profitable enterprise.

The big question is *Who was running these early lead mining operations*? Dating for medieval lead mining sites is sparse; so far, documentary evidence for this has not been traced back to before the late 16th century, although when Roche had the contract for Siller Holes in 1592 it was for 'the semes of mettelis discoverit and wrocht *of auld*' (Cochran-Patrick 1878: 55).

The early 12th century was a time when the Border abbeys were exploiting the countryside and becoming major players in the wool trade with the products of their large-scale sheep farming. Mining and quarrying were important industries, as were woodland management and agriculture. Although the monks of Newbattle were responsible for the lead mining on Crawford Muir, it has not been possible to link them with the operations at Siller Holes; but, given that they appeared to be the only Scottish abbey involved in the mining of lead, they could be considered as possible candidates for the exploitation of Siller Holes.

Other candidates are the Comyn family, which seems to have held lands in the Linton area in the mid-12th and 13th centuries, followed by the Douglases in the early 14th century. However, proving a lead mining connection may be impossible to establish.

Perhaps further research may throw more light on the mystery.