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STREAMING AND HUSHING FOR SCOTTISH GOLD: THE ARCHAEOLOGY OF EARLY GOLD WORKING AT LEADHILLS AND WANLOCKHEAD

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Abstract: Recent fieldwork in the Wanlockhead-Leadhills region has identified three basic types of gold mining remains: alluvial workings, prospection hushes and hushed openworks. Documentary evidence suggests that most of the alluvial workings are 16th century in date but the hushes are likely to belong to single phases of activity in the early 17th century and the late 18th century.

Introduction

The Wanlockhead-Leadhills region of the Scottish Southern Uplands is well known for gold working. The earliest recorded mining dates from 1511 and there is remarkably good documentary evidence for gold production throughout the rest of the 16th century. The principal source of information is Stephen Atkinson's *'The Discoverie and Historie of the Gold Mynes in Scotland'* which was published in 1619 and includes a contemporary account of the activities of Bevis Bulmer, the exuberant English mine adventurer who was active in the Leadhills area after 1576 (Atkinson 1619). Another important source is Cochran-Patrick's transcription of early Scottish mining records held in the Public Records Office which includes most of the 16th century gold working leases plus a full copy of George Bowes' letters describing gold prospecting at Wanlockhead in 1604 (Cochran-Patrick 1878). There is little evidence for later organised gold working and the documentary evidence suggests that 1500 to 1650 was the principal - and perhaps only - period of large scale operation.

Fieldwork

Recent fieldwork has set out to locate the surviving evidence for gold working in the area. To date three distinctive types of gold works have been found: alluvial workings, gold prospection hushes and hushed openworks.

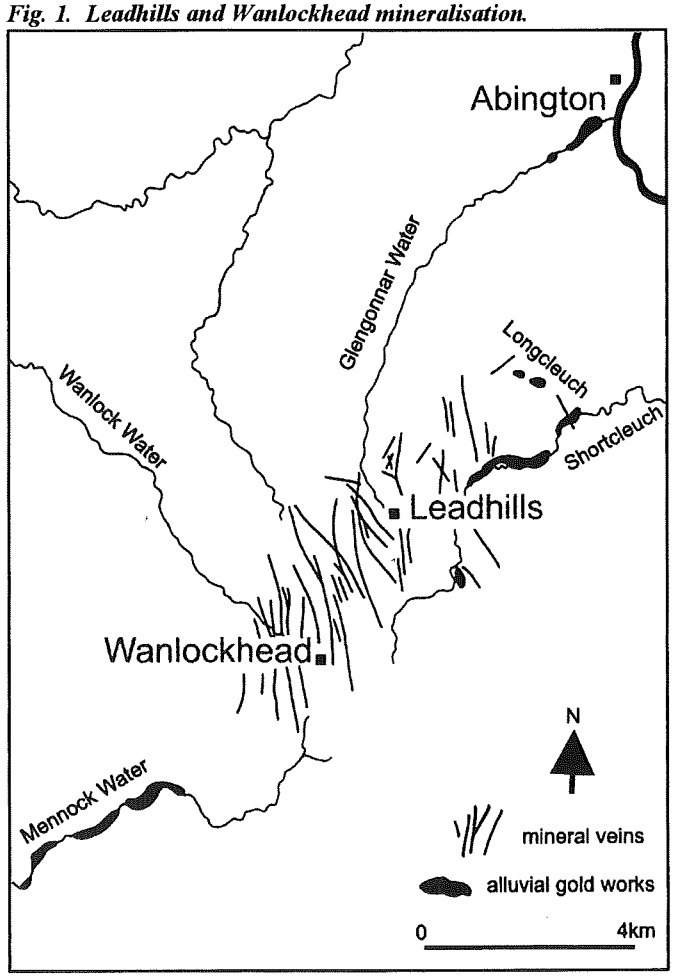
Alluvial Workings

The vast majority of the gold in the Wanlockhead-Leadhills region occurs as placer or alluvial deposits and the 16th century accounts show that it was being worked along the main river systems: the Mennock and Wanlock Waters at Wanlockhead and the Glengonnar, Shortcleuch (Elvan) and Longcleuch Waters close to Leadhills. These localities are still visited today by amateur gold prospectors and the distribution, extent and comparative richness of some of these alluvial deposits has been established in a recent semi-quantitative panning survey by Leeds University (Chapman and Crawshay 2001).

The archaeological evidence confirms alluvial working in the principal valleys (Fig. 1). Along the Mennock Water there are almost continuous streamworks for 1.8 km between NGR. NS 839100 and 854101. These workings are confined to the alluvial flats in the valley bottom and take the form of single, semi-continuous spoil banks parallel to the river's edge and accompanied in places by additional linear banks on the same axis. At one point the principal riverside bank appears to overlie and so post-date a group of spoil banks on a different alignment. Another concentration of streamworks is found on the Shortcleuch Water between NS 915160 and 922171. The field evidence here includes shaft hollows and linear spoil mounds running parallel to the course of the river and areas with less regular, isolated mounds. Further streamworks survive towards the head of the Longcleuch (centred on NS 913177) and include spoil mounds running parallel with and at right angles to the burn. Streamworks may also survive close to the Windgate Burn (NS 901140) but these have yet to be visited while any workings along the Wanlock Water are likely to have been destroyed during landscaping operations in the early 1990s. Outwith the main mining region, but still within the Leadhills drainage area, is an area of possible streamworks on the Glengonnar Water close to the point where it joins the Clyde at Abington (NS 925219); these can be seen from the road but have not been inspected.

The field remains give an insight into the techniques of gold

Fig. 1. Leadhills and Wanlockhead mineralisation.



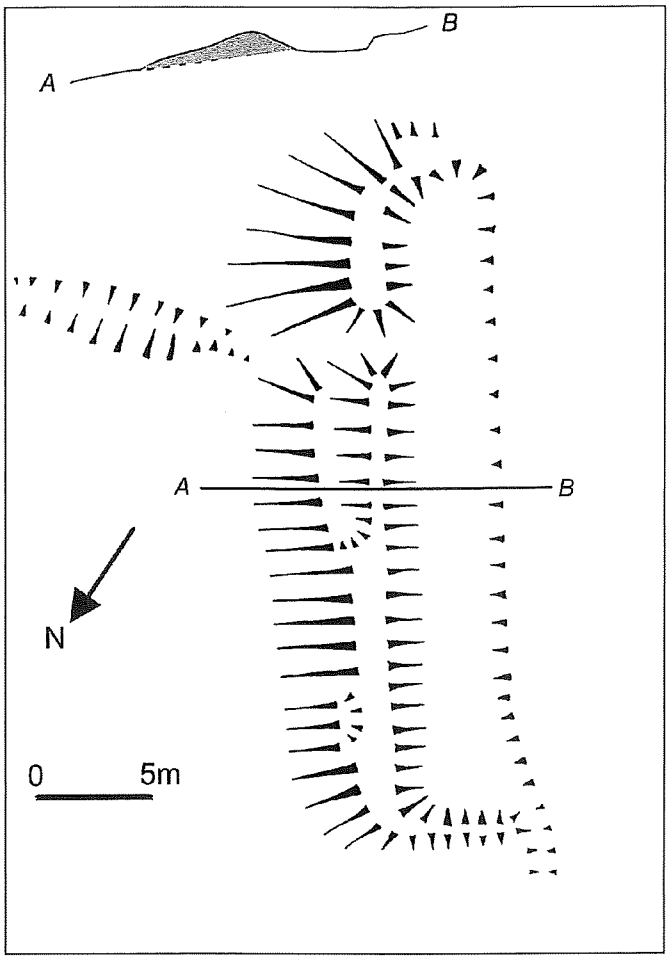


Fig. 2. Hush Dam, Greenhill, Wanlockhead.

streaming. All the workings are in the alluvial flats and concentrated in or close to old meanders, an indication perhaps that the burns have been routed away from their original courses to give access to the richer deposits. The linear mounds show where top soil and gravel have been systematically stripped down to the gold-bearing horizons and at one of the Shortcleuch sites (NS 918164) there are the remains of at least two prospecting or costean pits sunk through the head gravels within a group of spoil mounds. Water was undoubtedly used as part of the streaming process both initial stripping and sorting of excavated clays and gravels and later separation of gold from waste and probable water courses can be seen at sites on both the Mennock and Shortcleuch. It is quite possible that all the best alluvial deposits have been completely overturned on one or more occasions. A recent test excavation close to the Shortcleuch site mentioned above found pieces of sharp-edged rock in the sediment, probably fragments broken up in an attempt to recover gold from bedrock cracks; layers of hematite rich sediment (containing fine gold) were also found lying above layers of sand-sized material, suggesting the tipping of sluice sediments (R. Chapman pers.com.).

The field evidence is complemented by Atkinson's (1619, 16) description of local alluvial gold working:

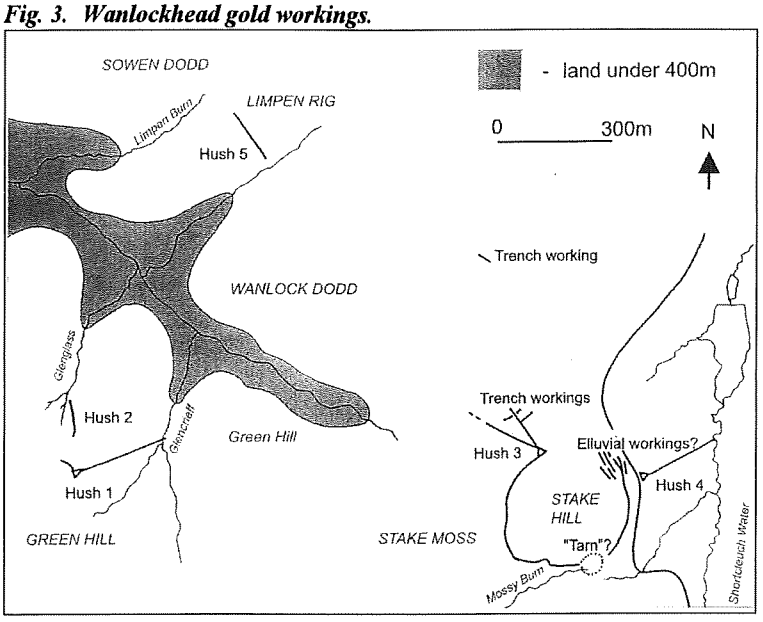
But their usual manner is, when they search for gold in coomes and vallies, to frame or make a long sowgh, or scowring place, into which they bring the streame water, to scower away the light earth from the heavy sandy earth, and to cull away the great stones from the heavy sand, which sand or heavy earth they scrape into theire troughe or tray, and by stirring it, and washing the same often, there is found both raine gold, pale gold and blacke gold.

The streamworks merit detailed survey but superficially they are similar to many of the medieval and early post-medieval alluvial tin workings in south-west England. For instance the pattern of co-axial spoil mounds running parallel with the river at Hart Tor Brook, Devon, is also found at a number of the Wanlockhead-Leadhills sites particularly on the Shortcleuch at NS 918164 - and this suggests that both areas share similar extractive technologies (Gerrard 2000). The only other British site with good evidence for alluvial gold working is Dolaucothi in South Wales where linear mounds and gullies survive in an area of woodland between the main opencast and the River Cothi; these remains are undated but could be Roman.

Prospection Hushes

The comparative richness of the alluvial workings led to a number of attempts to locate one or more vein gold sources in the area. Atkinson relates how Bevis Bulmer sought "gold in solidd places" and "discovered a small string thereof" at the head of the Longcleuch (Cochran-Patrick 1878, 107). George Bowes, inspired no doubt by Bulmer's apparent success, began a similar search for vein gold at Wanlockhead. Bowes had practical experience of metal mining through his work with the Company of Mines Royal in Cumbria and in a letter written in April 1604 to the Earl of Suffolk, one of his English sponsors, he describes the construction of a prospecting hush (Cochran-Patrick 1878, 109):

Fig. 3. Wanlockhead gold workings.



I doe conceive his Majesty did enjoyne me that my travaille should tend cheeflie for discoverie of a vaine of golde I began my workes with dames wherby I mean to teare ye earthe, and discover such vaines of metall as shalbe from ye bottom to yr top of yt gill (Glangrese Gill), above ye middest thereof I found bright golde in December last

A month later in a letter to Lord Essenden Bowes wrote:

"I have likewise wrought from Whites howse in Glangreese gill north and easte towards the height of the mountain 548 yeards clensing and breaking the

rockes in the bottome of the water in that trenshe I have cast furrowes 2800 yeards in length, to convey water, and have maid 2 dames, and dreeuen away by violence of the water issewing out thereof, about 500 tunnes of earth.

On Green Hill, at the very head of Glencrieff (Glangreese) Gill (NS 864125), is a rectangular dam measuring 23 x 3m (Fig. 2 and Fig. 3, Hush 1). The remains of an earth-cut lade enters the dam from the west and presumably channelled water from the extensive peat bog on the hilltop. The dam's turf bank is broken by a single outfall and a V-shaped channel, about 2m wide and up to 1.5 m deep, runs steeply from there down slope to the Glencrieff Burn some 120m below; at its lower end this channel cuts across the line of the Glencrieff lead vein. There can be little doubt that this is a prospecting hush and its location suggests a direct association with George Bowes.

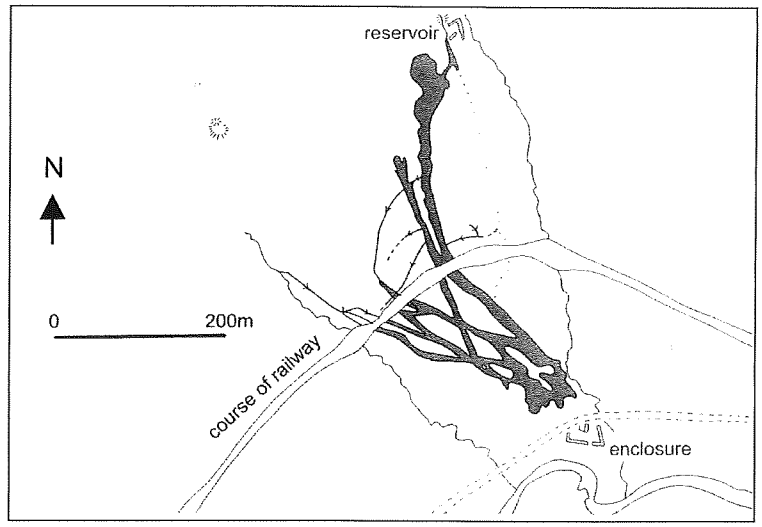


Fig. 4. Goldscaurs, Shortcleuch, Leadhills.

The vast majority of British hushing dams or reservoirs are semi-circular (see Stake Hill below). The rectangular dam on Green Hill is therefore unusual although it has similarities both in form and size with some of the Roman period tanks Dolaucothi, Dyfed and the undated (Roman?) dams at Pen Dylife, Powys. A construction date of 1604 for the Green Hill dam indicates that rectangular hushing dams continued to be constructed into the post-Medieval period and means that care must be taken before automatically assuming that all dams of this form are early in date.

Bowes built at least one other dam "in the highest part of Glangrese" (Cochran-Patrick 1878, 110). A recent search of the area failed to find any evidence for this but a remarkably straight channel was noted running diagonally down the south eastern side of Glenglass (Fig. 3, Hush 2); this feature appears to be man-made and could well be a prospection hush channel. A similar channel again without any surviving dam can be seen running down the south-eastern face of Limpen Rig (Fig. 3, Hush 5).

Bowes also used prospection hushes at "Stakemosse" and "on the north syde of Sct Annes Hill called Beltongraiue" (ibid.). Nothing appears to have survived at Stake Moss although heavy heather cover in this area could well mask earthwork features. On the north side of Stake Hill (previously Saint Anne's Hill?) however is a well-preserved hushing dam (NS 882127). Measuring approximately 22 x 5.5 m, it has a crescent-shaped earth wall and two hush channels run down slope to the north west. The more northerly channel is on the line of the Beltongrain vein and is associated with two hand-cut prospection trenches. The dam is fed by a lade which runs south then east to an area of marshy ground at NS 884122. A second lade, fed by this same marsh, runs north along the east side of Stake Hill and leads to an area of parallel trench workings at NS 885128; these are not conventional prospection hushes but may be connected with the supply of water to exploit an elluvial (gold?) deposit. Another crescent-shaped dam, 12 x 29m, with a long hush gutter is located on the east side of Stake Hill (Fig. 3, Hush 4; NS 887126) and appears to be associated with a long contour lade running north easterly from the head of the Longcleuch to Horner's Dam at Leadhills (NS 892139). It is tempting to associate the Stake Hill dams with Bowes but their distinctive crescent-shaped forms are very different from the rectangular hushing dam described above - which he built on Green Hill. The Stake Hill dams however are similar in form to late 18th and early 19th century hushing dams in mid-Wales and the English North Pennines; and it is probably more likely they were constructed by John Taylor, overseer at Wanlockhead, who is known to have used hushing during an unsuccessful gold working early in the 1880s (Williams 1810).

Hushed Openworks

At the Goldscaurs on the Shortcleuch Water (NS 907164) is a group of what appear to be hushed openworks. The site (Fig. 4) consists of a series of steep V-shaped gullies - the largest over 30m wide and up to 6m deep - which cut into the lower slopes of the hillside on the north side of the valley and are truncated by the line of the former Leadhills Elvanfoot railway. The gullies cut through clay and gravel intermixed with hill wash deposits and there are no indications of exposed bedrock or veins. There are two distinct groups of workings.

The first group comprises four parallel gullies aligned north-west south-east which connect with an embanked lade that can be traced back to the head of the Over Cleuch; this lade may have been the only source of water for the workings below or alternatively could have fed a dam or reservoir destroyed when the railway was constructed.

The second group forms two large, irregular gullies that run south down the hillside and then turn to the south-east close to the railway. The larger of the two gullies is associated with a sub-rectangular earth-banked dam measuring approximately 25 x 5m; the dam is obscured in part by a later spoil mound and has been damaged by the construction of a recent vehicle track but it appears to have been fed by a short contour lade from the head of the Nether Cleuch. There is no evidence for a dam above the other gully but field survey, which is very awkward in the thick heather covering the hillside, shows that this feature cuts through a number of shallow lades which run south-west across the hillside to join with some of the gully workings in the first group.

All the gullies converge at the base of the hill to form a single openwork or quarry. The ground here is very disturbed and contains a large number of irregular spoil mounds suggesting a number of episodes of working and reworking. There are no specific features within this area but immediately to the south and now on the opposite side of the road - is an earth-banked enclosure containing the foundations of a stone-footed building. Part of the enclosure is shown on the first edition six-inch map of 1849 but it may well incorporate an earlier

structure, possibly a processing area for the openworks above. A fragment of a concave, sandstone quern was found here in April 2002. This is an isolated find and may well have come from one of the many late prehistoric platform settlements and cairn fields on the north bank of the Shortcleuch. Nevertheless a later, mining-related function such as ore grinding or benefication cannot be ruled out.

Goldscaurs presents a problem in interpretation and the site cannot be explained as an area of conventional hushing. The scale and density of the workings suggests that this was an attempt at direct water-assisted exploitation rather than speculative prospecting. Feeder lades and at least one dam were used to direct water onto an area of (elluvial?) auriferous clay and gravel, presumably with the intent of breaking up the deposits and washing them down to a processing area in the valley bottom.

Parallels are not easy find although the site bears some similarity to the medieval tin openworks on Dartmoor, especially those exploiting degraded or secondary deposits where hushing was used on comparatively soft surface deposits. The Vitifer and Birch Tor area by Warren House in central Dartmoor is a good example of this type of mining and the system of parallel gullies surviving north of the main Vitifer opencut is remarkably similar to Goldscaurs. Some of the Roman hill slope workings in northern Spain also provide parallels. The closest is perhaps Las Medulas where a complex system of leats and dams was used to wash out auriferous gravel deposits for processing on the valley floor (Lewis and Jones 1970). Las Medulas was of course worked on a massive scale but the basic technology provides some comparisons with Goldscaurs.

Interestingly, the place name Goldscaurs also occurs at Wanlockhead where it is applied to a row of 18th century miners' cottages at the north end of the village. There are no signs of surface working here but some 200m to the north east is an intriguing group of parallel gullies along the side of the Cam Sheuch (NS 877137). They are covered in part by 18th-19th century spoil tips on the Beltongrain vein but could well be the remains of another small hushed openwork.

Unlike the alluvial gold workings and the Wanlockhead prospecting hushes there are no documentary records for Goldscaurs on the Shortcleuch and dating is at best speculative. The parallels with Spain and Dartmoor raise the possibility of Roman or medieval exploitation but it is perhaps more likely that the workings are contemporary with or later than the alluvial operations in the Shortcleuch valley. Goldscaurs is immediately upstream of the principal alluvial workings and its hushed gullies, like the prospecting hushes, could have been an attempt to locate a hillside source for the gold deposits already known and worked in the valley below. It may be stretching the evidence but could Bevis Bulmer, a man familiar with Devon - and presumably Dartmoor - mining, have introduced the idea of the hushed openwork to the Scottish goldfields?

Conclusion

The recent fieldwork has shown that the remains of gold working at Wanlockhead-Leadhills are extensive, complex and very well preserved. Early or pre-industrial gold sites are extremely rare and Wanlockhead-Leadhills contains the only evidence in Britain for large scale alluvial and elluvial gold extraction. The surviving sites are unique and of undoubted national importance.[1]

There is great potential for research and future work should aim to identify the full extent of the field remains, produce detailed site surveys and, crucially, obtain samples for dating. Such data will enable a start to be made on interpreting the scale, impact and technology of the local gold industry.

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Note

1. As this paper was being written (July 2002) some of the alluvial workings on the Mennock were destroyed in a flood-prevention scheme. This highlights the need for the surviving remains to be given national protection as scheduled ancient monuments.

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John Pickin has a long standing interest in the archaeology of early metal mining and he has been involved with the excavation and recording of mines in Britain, Spain and Turkey.