The archaeology of gold mining in England

Peter Claughton

Gold recovery is a minor aspect of the extractive industries in England. Unlike Wales and Scotland there has been no sustained production in modern times, nor are there identifiable prehistoric, Roman or medieval extraction sites. There are nevertheless some surviving archaeological features and the potential for further discoveries which can be related to gold extraction.

The geology of gold mineralisation in Britain has been studied in some depth in recent years. Potential sources having no historical exploitation have been identified, and sources worked from at least the period of Roman occupation are now better understood (Cooper 1998; BGS nd). Most if not all the gold mineralisation in England is confined to the older rocks and those associated with volcanic activity in north-west and south-west parts of the country. Those rocks, however, have not been anywhere near as productive as similar rocks in Scotland and Wales. Of over 3500kg of gold recorded as being recovered in Britain between 1860 and 1909, 90% came from the Dolgellau gold belt in North Wales whilst the remainder came from the Ogofau Mine in Carmarthenshire and the Helmsdale area of northern Scotland (BGS nd, 1). What production there was for England, and it has never been officially quantified, came almost exclusively from Devon and Cornwall prior to 1860. In the former case it was found in copper-iron deposits, fissure fillings with possible syngenetic origin, in Devonian rocks at North Molton (Cameron & Bland 1994, 4-5; Camm 1995, 87-88). Gold has also been found in alluvial tin-bearing deposits associated with the granite emplacement from Dartmoor to Bodmin Moor and westwards into the far west of Cornwall (BGS nd, 4). Dines makes the claim that small grains of gold had been recovered in practically every alluvial deposit in Devon and Cornwall but that it never been systematically recovered (Dines 1956, 30-1). In most cases the alluvial deposits were the result of erosion of epigenetic deposits in the granite and the adjoining metamorphosed rocks but there is evidence to suggest that some deposits in north Cornwall originated from pre-granite mineralisation, for example at and around the Treore mine near Port Isaac (Scrivener & Shepherd 1998, 145; Camm 1995, 53-59). The Treore stream was worked, albeit on a small scale, for gold and reported on by Edwards in the Mining Journal (1916, CXII, 103). It is, perhaps, the only record for historic working exclusively for gold in Cornwall (S Camm pers comm). For modern prospecting and gold-panning activity across Britain, see Callender (1990).

Whilst there is no specific evidence it is very probable that gold has been worked from alluvial deposits in the south-west of England since before the period of Roman occupation. Clear evidence does not emerge until the late medieval period when the right to work gold-bearing deposits was regularly recited in grants made by the English Crown from the early 14th century onwards and there is specific reference to its occurrence in tin workings. In 1325, 22 pennyweight of gold was recovered from mines in Devon (TNA: PRO, E101/262/2) and in 1377 Henry de Burton produced gold 'found in a river in Devenshire (sic)', and he was then tasked with searching out further deposits (Cal. Close R., Ric. II, 1, 90-91). This gold was probably the product of tin streaming activity, as described in Cornwall in later periods (Beare 1586, 101-13), but there were no subsequent reference to payments in gold into the Exchequer. The tinners were, no doubt, quick to conceal the
gold and paid only coinage on their tin production. Carew reported in 1602, that tinners would often find gold within the tin ore, which they would keep in quills and sell to goldsmiths (Carew 1602) and De La Beche confirms that this practice was still current in the 1830s when grains of gold were taken to Truro to make wedding rings and small items of jewellery (De La Beche 1839, 613). Returns for ‘St Tether’, probably the parish of St Clether on the north-east border of Bodmin Moor in east Cornwall, in the period 1445 to 1451 recorded the production of silver worth three marks (£2) but state that no gold was found (BL Add MSS 24513, f95).

There is the suggestion that gold might have been recovered from primary deposits when gold/silver/copper deposits attracted Crown interest in Devon in the 1260s: a discovery which led to the Crown asserting its right of prerogative. The location, at ‘La Hole’ is undefined but probably lay on the southern borders of Exmoor in the area of Molland where copper deposits do carry some silver and were considered to be gold bearing in the mid-nineteenth century (Rippon et al 2009, 28; Claughton 1997).

The presence of gold in the copper deposits at the Bampfylde Mine, at North Molton in North Devon, was known from at least the late 18th century, and has been confirmed in recent geological investigations (Cameron & Bland 1994). Although gold is not referred to specifically in the late medieval period, the mine was always identified as the ‘king’s mine’ (Rippon et al 2009, 25-26). Polwhele (1797, 69), quoting Chapple, states that gold had been found in a rich copper mine in the parish of North Molton. This can be identified with the site now known as the Bampfylde Mine (Claughton 1997, 2-3), but it was not until the 1840s that the mine was being worked specifically for gold in addition to copper when the Prince Albert Mining Company was formed and one of its adventurers made approaches to the Crown for rights to work gold (CRO DDFS 3/134 and 135; Claughton 1997, 2-3 for further details). There was also, in the period 1843-49, a further application to the Crown to work gold ‘at South Moulton (sic)’ (TNA: PRO CRES 2/207). It was, nevertheless, the publicity and the techniques associated with the discovery of gold in California in 1848 which appear to have pushed the interest in gold at North Molton to the fore and stimulated its working on a larger scale than hitherto.

There is scant evidence for dedicated gold extraction outside the south-west of England. Calvert (1853, 102-07) makes vague references to gold found in the north-west, in the counties of Westmorland and Cumberland, for which there is perhaps some credibility given the identification of gold-bearing polymetallic mineralisation in the area (BGS nd, 3; Cameron et al 1993, 15). Calvert’s other references to gold extraction in other counties of England, except Devon and Cornwall, are largely based on the erroneous assumption that, if gold was cited in a Crown mineral grant, it was the object of the search which was seldom the case. The extraction of gold in unlikely locations such as Essex (Calvert 1853, 109-10, citing amongst other Pettus, Fodinae Regales) is, however, based on local myth rather than substantive evidence for working.

Following on the discovery of gold in California and south-eastern Australia, 1848 and 1851 respectively, there were numerous futile attempts to work gold in England. The Lathkill Gold Mine, in Derbyshire being one such example (Grigor-Taylor 1972). Publications such as that by Calvert (1853) fuelled the search and the presence of gold, albeit in uneconomic quantities, in many streams only abetted those searches, so references to working and, perhaps, even physical evidence for attempted working might be found in counties outside the north-west
and south-west of England.

The working techniques for gold are in many respects no different from other non-ferrous metal ores, be they primary or alluvial deposits. Although gold was recovered from alluvial tin workings in Devon and Cornwall it is unlikely that the streamworks, as described in the assessment for tin, would have distinct features related to the gold recovery. On the other hand, where gold was the primary metal recovered from alluvial workings, in areas remote from the tin bearing rocks, distinct ‘streaming’ features might be identified. This is the case in south-west Scotland where those features are found at Wanlockhead which has a history of alluvial gold working from at least the post-medieval period (Pickin 2004).

Treatment of gold-bearing deposits once mined did call for specialist techniques. Gravity separation might suffice in some cases but, where the gold was combined with other minerals or was particularly fine, extraction through crushing and amalgamation (using the affinity of gold to mercury) was necessary. In the 1850s new amalgamation techniques were introduced into Britain which combined ore crushing/grinding with amalgamation using heavy iron rollers or spheres rotating within an iron vessel or ‘pan’. The most common of these were the Berdan and the Perkes machines, and the former was trialed extensively across the south-west of England. After experimentation with other methods, a Perkes machine was installed at the Britannia Mine, North Molton, and a Berdan machine at the nearby Bampfylde Mine (then known as the Poltimore), in 1854. Unfortunately the rich gold assays had been highlighted and poor returns ignored, and the bulk treatment of ores from both mines failed to recover any gold (Claughton 1997). The Berdan machine, and later developments of the technique, was however used successfully on gold mines in Wales and elsewhere, and a pair of Britten pans recovered from the Bedd-y-coedwr (Marina) Mine survives at Coed y Brenin in Merioneth, North Wales (Morrison 1975, 18-21).

Very little investigation has been carried out on the archaeology of gold working in England although the situation is much better in both Wales and Scotland. The Bampfylde Mine at North Molton was surveyed by the Royal Commission on Historic Monuments in England as part of Exmoor National Park’s West Exmoor Project (Wilson-North 1996) and was published along with an interpretation in The Field Archaeology of Exmoor (Riley and Wilson-North 2001, 150). Features, such as the Berdan machine house, associated with gold working can be compared with similar features investigated elsewhere, for example the structures associated with a Britten pan installation at Cefn-coch in Merioneth (Coflein 33962). No alluvial workings specifically for gold have been identified in England but those found in south-west Scotland (Pickin 2004) provide examples for informing any future searches. The detailed work carried out on late prehistoric, Roman and modern gold working (the Ogofau Mine) at Dolaucothi in Carmarthenshire also provides data which might inform investigations in England (Ancel et al. 2000).

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