

Mapping the Mines and Streamworks of Bodmin Moor

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Abstract

The following paper discusses the field evidence for tin working on Bodmin Moor and summarises the results of several years of fieldwork, which is soon to culminate in a major monograph. The benefits of past work by individuals and groups researching the tin industry is recognised and a background into some of the more recent fieldwork projects is provided. The value of examining the industry as part of an archaeological landscape is highlighted as the importance of tinworking both in its socio-economic context and landscape impact become clearer.

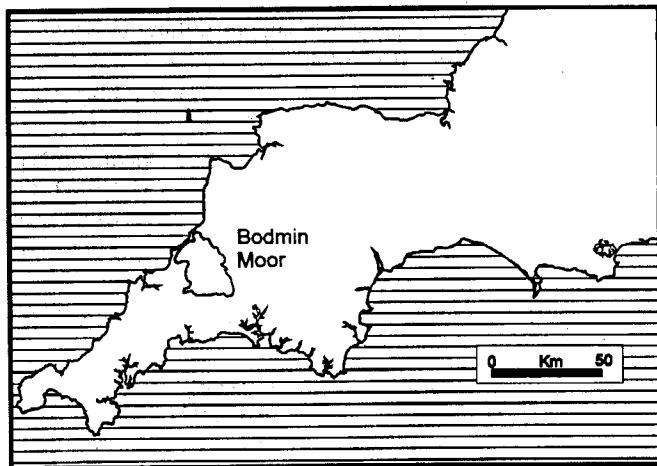


Fig. 1 Bodmin Moor. Location.

INTRODUCTION

Bodmin Moor's coherent complexes of prehistoric settlements, fields, pastures and ritual sites and areas, and its beautifully clear medieval hamlets, strip fields and pasture boundaries were closely recorded in the early 1980s by The Royal Commission on the Historical Monuments of England (RCHME) and Cornwall Committee for Rescue Archaeology (CCRA, now CAU; the Cornwall Archaeological Unit) in the Bodmin Moor Survey. Maps at 1:2500 produced by photogrammetric plotting from overlapping vertical aerial photographs were field-checked by RCHME. Key sites and areas were also subjected to measured survey by CCRA and RCHME. The main products were a detailed record and archive, and an important publication (Johnson and Rose 1994).

Apart from modern turf steads (peat platforms) which were then believed to have been associated with medieval turf charcoal manufacture (Quinnell 1984; Herring forthcoming a), industrial and post-medieval remains were largely left unrecorded in the main Bodmin Moor Survey, although Ann Carter, the RCHME photogrammetric plotter, did record leats, some pits and dumps, and most streamworks' cuttings.

The reasons for the general increase in official interest in industrial remains during the 1980s are fascinating, but really beyond the scope of this paper, and here we briefly consider some of the factors affecting work on Bodmin Moor:

The medieval history of the Moor, an area essentially co-terminous with an important medieval Stannary (Foweymore), could not be properly understood without reference to contemporary industry. The Bodmin Moor Survey being a pioneer project in landscape archaeology, a form of total

archaeology, could not completely ignore the industrial and post-medieval remains. So the accounts of the prehistoric and medieval landscapes, written by 1985, were combined as Volume 1 of the Bodmin Moor Survey (Johnson and Rose 1994), with the compilation of a second volume to cover the industrial and post-medieval remains, in mind from the start.

Added impetus was given to studying the Moor's industrial remains by the raising of the academic profile of medieval tinning history in the South-West by two strong personalities, Tom Greeves (mainly on Dartmoor) and Sandy Gerrard (mainly on Bodmin Moor) (eg Greeves 1981; Gerrard 1986).

Increasing public interest in industrial history and remains in Cornwall produced a demand for fully recorded and researched sites and landscapes for presentation (eg the Minions area; see Sharpe 1993).

Industrial remains, important for the historical, archaeological and presentation (or amenity) reasons given above were recognised as being as vulnerable to damage or destruction as other remains, perhaps even more so considering the relatively low value previously given to them. Moves to strengthen protection of sites and landscapes under English Heritage's Monument Protection Programme (M.P.P.) began to include consideration of the Moor's industrial remains (see Rose and Herring 1991). Bodmin Moor's industrial remains were recorded in a series of projects through the 1980s (and many aspects of the post-medieval landscape were also studied in parallel projects - see Herring forthcoming b).

Sandy Gerrard wrote up the archive for Colliford tin stamping mill (later medieval), excavated in advance of Colliford reservoir's construction in 1978-9 by Tom Greeves and David Austin (Gerrard 1983; Austin et al 1989), and he became deeply involved in the study of early Cornish tinworking, particularly streamworking. He surveyed most of the tinworks in St Neot parish for his PhD thesis in the early 1980s and made great strides in the interpretation of the complex field remains of streamworks (Gerrard 1986; 1987; Austin et al 1989). With *Bodmin Moor Volume 2* and protection in mind Sandy was commissioned in 1985 to sketch survey at 1:2500 the extensive (15 square kilometres) interlinked streamworks of West Moor in Altarnun, using the RCHME photogrammetric plot as a guide.

John Smith produced sketch surveys at 1:2500 of the Moor's abandoned china-clay works in 1987 and with Adam Sharpe made large-scale measured plans of two of the best preserved complexes (Burnt Heath and Glynn Valley). Then in 1987 and 1988 Adam Sharpe directed the Minions Area

survey, recording the whole of this important copper and tin mining area (c 12 square kilometres) at 1:10,000 with key complexes drawn at larger scales (Sharpe 1993).

The remaining 170 square kilometres were dealt with by the author and Nigel Thomas (both of CAU) in 1988 and 1989 in the Bodmin Moor Industrial Survey, funded by English Heritage. Covering c85% of the Moor, this project aimed to record all the remaining industrial remains and so included quarrying, turf-cutting, and other minor industries like ice-making, as well as military activities. Mining and streamworking, however, dominated the project (see Rose and Herring 1991).

FIELDWORK

The recording method developed for the Bodmin Moor Industrial Survey had to capture all significant remains and then to efficiently (constrained by budgets) produce records for them detailed enough to allow both interpretation and assessment. At that time the Moor's industrial remains were being assessed alongside prehistoric and medieval ones for English Heritage's Monument Protection Programme.

To achieve comprehensive coverage and to improve both the efficiency and accuracy of field work, some emphasis was placed on the compilation of base-maps. These were prepared at 1:2500 using the Ordnance Survey maps as a base and adding accurately plotted detail from the RCHME photogrammetric plot and the first and second editions of the OS 1:2500 (1880s and 1900s) before slightly less precise detail from the 1840s Tithe Apportionment maps and from other aerial photographs was added. Each source was given a different colour on these base-maps which were accurate networks of fixed points onto which further detail could be sketched in the field.

The fieldwork was one-person work, generally safe (few shafts or unprotected quarry faces) and there were no accidents. It was completed in 80 days (c 2.12 square kilometres per day on average). Detail was added to the base-maps by pacing and ranging-pole measurement; drawing conventions followed those developed by CAU for industrial sites (eg Herring and Thomas 1988); and further field description and interpretation was made by numbered notation. Only one camera could be carried and the photographic record was by colour transparencies.

ARCHIVING

Archiving was on 1:2500 gridded film (following the National Grid) with underlays showing all features, and separate overlays with notes and interpretation. These maps were then simplified in two stages to create 1:10,000 maps (with overlays) and 1:25,000 maps, the latter, with post-medieval remains also added, to become the source for the large fold-out map to accompany Volume 2 of the Bodmin Moor Survey. Each site was also archived in the Cornwall Sites and Monuments Record with a brief description and references to the relevant archive maps.

The project resulted in a better, fuller record of each site, most being provided with a plan and site description for the first time. There were many new discoveries, some being whole new complexes, such as the stamping and blowing house at Millpool, others important new components in known sites. As intended, the project enabled the most important sites to be identified and put forward for protection. These were mainly those sites which were well-preserved; coherent in themselves and in relation to other features or

complexes; displayed certain features or processes well; were well-documented; and which had either potential or real amenity value (see Rose and Herring 1991).

RESULTS

Full discussions of the Moor and its industries will appear in the *Bodmin Moor Survey, Volume 2* (Sharpe *et al*, forthcoming). It is now possible to see more clearly how industrial and post-medieval Bodmin Moor worked. The well-preserved complexes of inter-related sites like the Cardinham Moor clayworks, the Carbilly Tor granite quarries, and the West Moor streamworks, not only neatly illustrate working methods but also show clearly how natural constraints were overcome: the beautifully designed dams, leats, water-wheels and flat-rod lines which generated and transferred power from tiny streams to pump the clayworks; and the run-off leats and diversion channels on West Moor which on the one hand captured winter rainwater to serve eluvial streamworks and on the other diverted the summer's diminished streams away from alluvial streamworkings.

Just as importantly, we can now see industrial remains in relation to other contemporary or earlier elements in the landscape. For instance, many of the early to mid 19th century intake farms and smallholdings in the heart of the Moor, north and south of Bolventor, can be associated with the re-working of streamworks, early china-clay workings and, to a lesser extent, mining (Herring forthcoming c). Their buildings and field walls were constructed, in part at least, by the women of the families, helped between-times by the labouring men (*ibid*). Victorian local services - schools, chapels, public houses, post-offices, letter-boxes etc - can now be seen to not only cluster around the main industrial villages (Minions, Pensilva, Row etc) but to be also scattered, albeit more thinly, through this semi-industrial farming country.

Bodmin Moor's medieval landscape is also more clearly visible now, with streamworks seen in relation to the longhouse hamlets and fields. We are still not sure who was doing the tinning, although recent documentary work on Dartmoor (Fox 1994) helps us suggest that there was probably a combination of the possible groups of people: full-time tanners, working through the two seasons by turning to alluvial streamworks in the summer (when drainage was easier) and eluvial streamworks in the winter (when obtaining a water supply was easier); part-time farmers, probably working some of the eluvial winter streamworks in their quieter season; part-time landless labourers for whom tinning was one of several seasonal jobs (others including turf charcoal manufacture, millstone making and herding animals).

The tanners' buildings of Bodmin Moor, of which 46 have been recorded so far, might help us illustrate and understand the problem. These are small structures found either very close to streamworks or within them. Built of turf or stone, some with gable-end fireplaces (and thus probably post-1600?), they were not family homes; internal areas rarely exceed 12 square metres and most are between 3 and 10 square metres. They have single entrances, usually in the centre of one long wall. The huts' functions are not certain although one or two are so neatly hidden that they appear to be stores or caches for either equipment or tin ore. Most, however, are in the open and, with their fireplaces, appear designed to give shelter and perhaps comfort to people; so crib-huts or dries are possible interpretations. More attractive than these is the possibility that some or many of the tanners'

buildings were temporary dwellings.

Their distribution on the Moor tends to complement that of medieval longhouse (agricultural) settlements and most, 31 of the 46, are associated with alluvial, summer streamworks. How should we interpret such patterns? A distribution complementing farming settlements could suggest that these shelters housed part-time farmers working some distance from home; but the alluvial works probably operated in the summer, the farmers' busiest time on the land. An alternative view may then be that where streamworks were close to an established settlement full-time or part-time labouring tanners found beds there. It may not even be possible to sustain an argument that as alluvial workings operated in the summer these shelters housed part-time, seasonal workers as winter eluvial streamworks were rarely far away and dwellings near the alluvial works had the advantage of relative shelter. Indeed it can be suggested that alluvial workings, generally requiring greater capital investment than eluvial works, to cut river-diversion channels, to cope with wetter, heavier digging (usually involving casting material up rather than down), were closer to being industrial, or at least proto-industrial. Their owners were therefore more likely to employ full-time tanners; Abraham the Tinner, who in 1357 claimed to have 300 men (see Austin et al 1989, 35), probably worked the rich alluvials of the Fowey River and its St Neot tributaries. An eluvial works, on the other hand, could be developed more gradually, its elements more easily created and controlled by smaller numbers of people, further suiting farmer-tanners.

Of course the same capital-investment difference can be used to suggest that as lode works (openworks, mines etc) succeeded shoad works (streamworks etc), so medieval alluvial streamworks may have succeeded eluvial ones. It may be significant, then, that all those tanners' buildings with gable-end fireplaces (post-1600?) are associated with alluvial works, and there is much more evidence for the 19th and 20th century reworking of alluvial streamworks than for eluvial ones (CRO, Brookes Index, passim). It also supports Harold Fox's hints that summer (alluvial) tanning appears to have developed later (15th century?) on Dartmoor (Fox 1996, forthcoming).

Who might the full-time tanners or part-time rural landless labourers have been? There are clear suggestions in Duchy records that many were people who would rather have been farmers. That the tin economy collapsed so drastically compared with the agricultural economy after the Black Death is considered to be partly due to tanners taking up newly vacant agricultural holdings. Tanning appears to have only easily attracted labour in periods of surplus population (Hatcher 1970). Tanners may have been mainly unmarried, as proto-industrial workers appear to have been in other better-documented areas of England (eg Butcher 1996), and may have delayed marrying until they came into a tenancy (Fox 1996, forthcoming).

Farmers' lives were themselves greatly affected by tanning and the diversified economy it was part of. The establishment of some or many of Bodmin Moor's medieval longhouse hamlets will probably have been stimulated and partly supported by the demand for agricultural produce (grain, dairy products, meat) from non-agricultural workers like tanners. On the other hand, Cornwall's early commercialised economy (in which tanning was a key element) also assisted the rise of the individual, isolated farmer at the expense of the communal/co-operative ways of the hamlet and its subdivided fields (see Herring 1986).

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