

Wealden Iron



Second Series
No.13 1993

Bulletin of the
Wealden Iron
Research Group

ISSN 0266-4402

WEALDEN IRON RESEARCH GROUP

Bulletin No. 13, Second Series

1993

Contents

Field Notes	compiled by J.S. Hodgkinson	2
Henly Furnace (Lower), Wadhurst	J.F. Berners-Price	4
Henly Upper Furnace	B.K. Herbert	7
Notes on Kent Furnaces	J.S. Hodgkinson	8
Foray to Matfield, Kent	B.K. Herbert	11
London-Lewes Roman Road	B.K. Herbert	14
Notes on Wealden Furnaces – Board of Ordnance		
Records 1660-1700	R. Rhynas Brown	20
Three Forays – Upper Stonehouse Farm		
Bloomery site, Surrey	B.K. Herbert	31
Two Ironworking Sites, Hoathly, near Lamberhurst	B.K. Herbert	34

Published by the Wealden Iron Research Group in collaboration
with the West Sussex County Council Planning Department

Set by Denis Ashurst

Hon. Secretary

Mrs S. Broomfield, 8 Woodview Crescent, Hildenborough, Tonbridge
TN11 9HD

Hon. Editor

D. W. Crossley, Division of Adult Continuing Education,
The University, Sheffield S10 2TN

© Wealden Iron Research Group 1993

Field Notes

compiled by J.S. Hodgkinson

A bloomery at Grayshott, Surrey

A concentration of bloomery tap slag has been found in National Trust woodland above Whitmore Vale, near Hindhead in Surrey. The site, SU 878358, lies on the Lower Greensand but the source of ore is unknown as no samples have been found.

A bloomery at Beckley, East Sussex

A concentration of bloomery slag has been noted at TQ 859216, adjacent to the moated site at Glossams Place in what was formerly known as Cinderhill Wood. We are grateful to David Padgham for drawing attention to this site.

Two bloomeries in Lingfield, Surrey

Two concentrations of bloomery slag have been found along the same stream, at TQ 419412 and TQ 421413, north east of Upper Stonehurst Farm, where there is a substantial bloomery. Both lie on the south side of the stream.

Cinderhill Bloomery, Leigh, Kent

A trench 2m x 1m was dug into the slag heap of this bloomery, TQ 533459, but no datable material was recovered. Very dense thick tap slag was encountered. The attention of the Field Group was also drawn to three substantial open-cast workings in Redleaf Wood, about 1km to the west. From their location in relation to the geology of the area, it may be surmised that they were workings for the extraction of sandstone. Four similar excavations are to be found in The Grove, an area of woodland on the same geological formation, on the west side of the Penshurst-Chiddingstone Causeway road.

Fore Wood Bloomery, Crowhurst, East Sussex

A further exploration was undertaken in January 1993, by kind permission of the RSPB, through their warden Mr Martin Allison. Two trenches were dug (TQ 752130), close to the locations of the trenches dug in 1991.¹ Digging in one of the trenches was halted because of the appearance of clay, burnt grey to smelting heat, which suggested that a hearth structure might lie buried beneath. In the other trench, only slag was encountered, and probing indicated that it lay to a depth in excess of 1.7 metres. One small sherd of pottery was recovered from within the slag layer, and was later identified as East Sussex ware, dating from the late Iron Age or early in the period of Roman occupation. It was characterised by a grog temper with flint inclusions. On this, albeit slight, evidence the site can now be confirmed as dating within the first two centuries AD.

Also recovered from the same trench was a mass of slaggy material which had originated inside a furnace and which, because of its attraction to magnets, was suspected of containing part of an unworked bloom. Together with samples of ore from the same levels, this has been sent to the Research Laboratory for Archaeology and the History of Art at Oxford University. Another unworked bloom was recovered from this site earlier this century.²

References

1. WIRG, *Wealden Iron*, 2nd series **12** (1992) 8-9.
2. Smythe, J.A., "Ancient Sussex Iron Blooms: A Metallographic Examination", *Transactions of the Newcomen Society*, **17** (1936-7) 197-203.

Henly Furnace (Lower), near Wadhurst

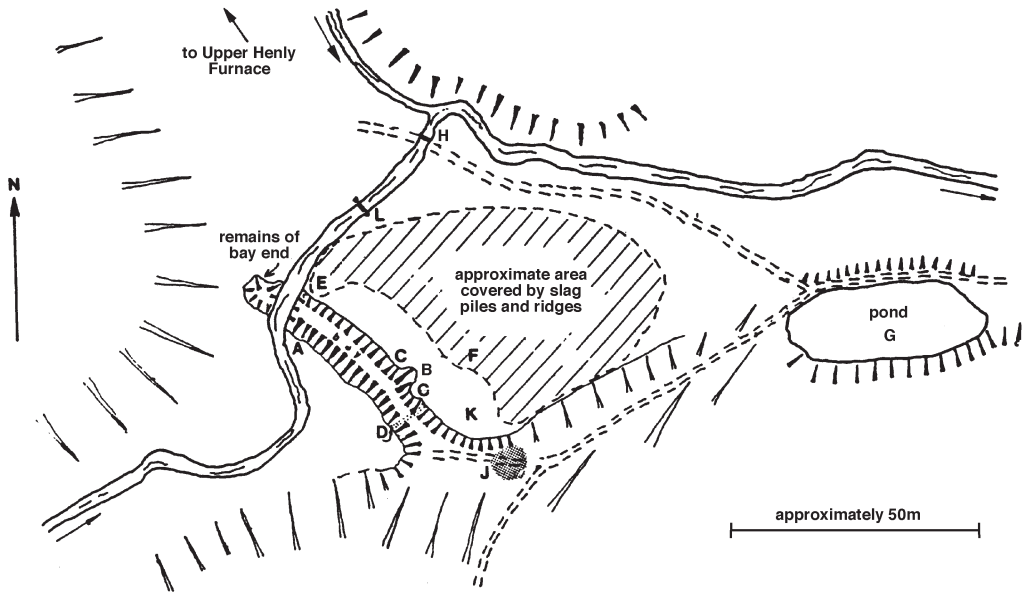
J.F. Berners-Price

A three-man visit was paid to this site (TQ 601335: Cleere and Crossley No. 101) in October 1992, prior to a full-scale survey, but so many unanswered problems arose that a further visit, by a larger party, was made in November 1992.

The bay is about 50m long on the SE side of the stream, with a gap of about 10m, and signs of a continuation of the bay on the NW side. The stream approaches from the SW, through two right-angled bends before passing through the bay. There is glassy slag at the foot of the bay on the upstream side near the gap, perhaps tipped as protection for the bay (A).

Straker (*Wealden Iron* p.275) says, “there is a little cinder” but, on the contrary, both visits disclosed large amounts of glassy slag lying to the NE of the bay covering a considerable area. This slag appeared to be in ridges and humps (1-2m high) leaving spaces or voids sometimes 10-20m across. These voids indicate where slag may have been extracted at some time, although how this was done is not clear. There is an especially large void on the SE side, in the base of which probing appeared to indicate more slag, about 23-30cm below the silty topsoil.

Towards the SE of the bay, projecting about 7m out from the base, is a slightly raised compacted area upon which are some random blocks of dressed stone and a large ‘bear’. It is suggested that this raised area (B) could have been the foundation for a furnace. There are hollows on either side (C1 and C2) which could have been wheelpits, but, despite extensive searches, no evidence could be found of a possible position for a tailrace, all being blocked by the slag mentioned above. There is a slight depression running across the top of the bay above the southerly of the two hollows which could have been the site of a water take-off for a wheel or,



Henly Lower Furnace

alternatively, a spillway (D). There is still the problem of where the water then went. One suggestion was that it was taken N along the base of the bay, where probing reached a solid layer 23-30cm below the silt surface. However, any outlet into the stream for such a water flow seems to have been blocked by a ridge of slag (E). This slag may have been deposited when the bay burst, as there is evidence of the area having been washed over by much silt. Alternatively, this area of slag (E) could have been a foundation for the furnace, with the wheelpit where the stream now flows.

Opposite the possible building platform (B), in a NE direction about 25m from the base of the bay on one of the slag ridges, another area of tumbled dressed stonework was discovered (F), and a piece of rough casting was disclosed under leaves by a metal detector. This led to speculation that this ridge was, in fact, a former bay and that the adjacent hollow might have been a quarry for construction of the present bay.

Eighty to one hundred metres E of the bay is an oval pond (G), probably a mine pit. The northern edge of this pond appears to have been built up as a causeway, to give access to the furnace site, by a track now almost obliterated to the NE by landslip. From the NW corner of the pond, the footpath/track continues in two directions: the first roughly westerly where it crosses the stream by a plank bridge (H), the other way is uphill in a SW direction where it bends round to the S at the top of the slope. Nearly at the top of the rise there are signs of a former track which leads slightly downhill to the top of the bay and beyond. Just before it reaches the bay, on both sides of the track is a fairly large area of black charcoal deposit, which would indicate the site of a former loading bridge (J). Immediately below this point is a low-lying flat area, which could have been the working area (K). Again, the probe showed a solid area a short way below the surface. However, it would have been liable to flooding by surface water.

About 40m SW from the present gap in the bay there is dressed stonework in both banks of the stream, standing about 1.5m high, together with stonework in the base of the stream. Nearby, in the water, a wooden plank about 1m long and 200mm wide was found.

This had two cut-outs on either side of one end and along one edge lengthwise. It had been worked for some purpose, probably in connection with the adjacent stonework. In the banks by the stonework, is an area of black slag and reddened stone. It has been suggested that this construction was either some form of water control or the foundation for a bridge.

Fifty metres downstream below the gap in the bay the stream turns SE, just N of the plank bridge (H), and at this point a small tributary joins it from the NW. Another bay, 300m up this small stream, is probably Henly Furnace (upper).

As the area covered by the Henly Furnace (lower) is a scheduled ancient monument, no excavation was possible and investigation had to be limited to probing. It would seem the layout and history of this site will have to remain a mystery until some other form of investigation is possible.



Henly Upper Furnace

Brian K. Herbert

After the visit to the Lower Furnace (above) the site known as Henly Upper Furnace (TQ 601338: Cleere and Crossley No. 101) was explored. The identification of the Upper bay as a pen-pond for the Lower Furnace cannot be accepted, as water flows along the tributary stream to join the Lower Furnace supply downstream from the latter's bay. Although, in theory, a leat could have been cut between the two streams, none has been found.

Henly Upper has an exceptionally high bay, about 4m from stream level, but this is offset by a plateau area at field level, on the working side, extending half way up the bay. The plateau is covered by blast furnace slag to a depth of some 60cm, and there is a scatter of slag elsewhere, including the adjacent field. There is one heavy piece of slag of about two cubic feet. There seems to be an absence

of charcoal fines on the bay, or the field.

It is noticeable that the plateau is very level, most unlike any other furnace site. Also, there is no sign of where the furnace would have been built, possibly because the plateau has been eroded by the stream.

The evidence for this as a furnace site is rather slim. The slag is sparse, there is no sign of charcoal, and space for the furnace is limited. Nevertheless, there seems an excessive quantity of slag brought as hardcore for the base of a corn mill or any other building.



Notes on Kent Furnaces

J.S. Hodgkinson

1. Horsmonden Furnace

I am grateful to Mr G.W.E. Farrow of Ledbury, Herefordshire, for information concerning a document in the Herefordshire Record Office which helps to resolve the problem of whether references to Horsmonden Furnace and to Brenchley Furnace relate to one site or two. The problem arises from the fact that although Horsmonden (or Shirrenden) Furnace is adjacent to the village of the same name, it lies just within the parish of Brenchley. This has caused fieldworkers to look for a further site in Brenchley. The deed which clears up the muddle is an Assignment by Thomas Foley, Herbert Springale and Edward Herbert to George Browne and Alexander Courthope, of interests in furnaces in Kent and Sussex, dated 23 August 1660.¹ The sites concerned are:

“ ... several furnaces forges ironworkes and
brassworkes hereafter named that is to say
Horsmonden and Brenchley furnace Barden furnace
Cowden furnace Benhall forge and Hawkhurst furnace
and forge...”

In the document, ‘Barden furnace’ is interposed above the line but

the sense seems clear that, even if Barden Furnace were omitted as when the document was originally drafted, the use of the singular ‘furnace’ after “Horsmonden and Brenchley” distinguishes it as a single site, and from “Cowden furnace” which follows. Presumably the use of a double name indicates that some confusion existed in the seventeenth century as well as in the twentieth. The quotation implies that the Browne’s brassworks were also situated at one of the sites mentioned, presumably at Horsmonden.

2. The Cowden Furnaces

The existence of a putative third furnace in Cowden has its origin in the 1590 list of ironworks drawn up for the Lord Lieutenant of Kent following the Armada crisis.² In it is “the furnace in Cowden” occupied by John Swayseland and “upper” furnace by Thomas Burr. Francis Johnson is referred to as the occupier of Scarlets Furnace, also in Cowden. In a further list Swayseland and Johnson appear to occupy the same furnaces as before, and one Knight of Cowden “half-let” his furnace to Thomas Burr. The apparent inconsistency of the information led Cattell to surmise that Swayseland may have occupied a third Cowden Furnace, downstream from the furnace below Scarlets.³ In the list of 1664, a ‘lower’ furnace is mentioned.⁴ The unconvincing field evidence of a small amount of blast furnace slag, and a solitary field name which could refer to the well-documented Cowden Furnace, upstream, have supported this identification.⁵

A document in the Kent Archives Office, at Maidstone, in supplementing our information about the extent of the iron industry in the eighteenth century, has unexpectedly provided some important evidence concerning the identities of the Cowden furnaces 150 years earlier. A deed of 1 February 1741/2 between George Lewis, of Westerham, and others and William Bowen of Tonbridge conveys Woolcombs Farm *alias* Lower Furnace Farm or Cowden Farm to Bowen, bringing forward the earliest known date of his involvement at the furnace as an ironfounder and supplier of ordnance.⁶ Reference to the first edition of the Ordnance Survey six-inch map of the area

identifies Woolcombs Farm as being in the north-east corner of Cowden Furnace Pond (TQ 454400), coinciding with the lands of William Bowen shown on a map of Cowden Furnace, dated 1748.⁷ However, the same conveyance recites an earlier deed of Lease and Release of the same lands, dated 28/29 February 1731/2. The parties to the deed were Henry Swaysland, of St Margaret, Westminster, gent, heir of Charles Swaysland, gent, dec., only son and heir of John Swaysland of Sevenoaks, dec. of the first part, and George Lewis and others, of the other parts. Again the property is named as the Lower Furnace Pond Farm or Cowden Farm.

The 1732 reference to Cowden Furnace as the 'lower' furnace identifies this site with the one mentioned in the 1664 lists. The ownership of the same site by the Swaysland family suggests that this is the furnace associated with them in 1588. The identification of the 'upper' furnace now points to Scarlets. Since the Knight family were to continue to be associated with the Scarlets Furnace for a further fifty years, it is highly likely that the site 'half-let' by Knight to Burr was indeed Scarlets. Now that Swaysland can probably be connected with the Cowden Furnace, the most likely explanation is either, as Crossley has suggested, that Johnson and Burr were partners at Scarlets, or that Johnson's ascription as tenant at Scarlets was a clerical error and that he was Swaysland's tenant at the lower furnace of the two. Either way a third furnace probably never existed at all.⁸

References

1. Herefordshire Record Office HRO/F/Loose papers: Assignment.
2. Cattell, C.S., 'An evaluation of the Loseley list of ironworks within the Weald in the year 1588', *Archaeologia Cantiana* **86** (1971), 85-92.
3. Staffordshire Record Office D593/S/4/28/17.
4. Parsons, J.L., 'The Sussex ironworks', *Sussex Archaeological Collections*, **32** (1889), 21-3.
5. Cleere, H. & Crossley, D., *The Iron Industry of the Weald* (1985) 325. WIRG, *Wealden Iron*, 2nd Series **12** (1992), 2.
6. Kent Archives Office U1280 T.2.
7. Kent Archives Office U650 P.1.
8. Crossley, D.W., 'A gun-casting furnace at Cowden, Kent', *Post-Medieval Archaeology* **13** (1979), 246-8.

Foray to Matfield, Kent

B.K. Herbert

Introduction

The fourth foray of the season was to the Matfield area of Kent, 3½ miles NE of Tunbridge Wells. The object of the visit was to discover the actual site of a presumed ironworking site on land owned by Mr and Mrs Preston of Badsell Park Farm (TQ 6509 4339), previously known as Bogs Hole. The writer and others have visited the area several times over the last 20 years without making any relevant finds.

Map Evidence

The tithe map shows Cinder Field, centred on TQ 6481 4293, with a stream passing on the east; beyond this stream there is Cinderhill Wood, centred on TQ 6485 4256. However, the name on the 1st edition OS map is Sunderhill Wood, and Cindrill on the tithe map. It is interesting to note that the large Roman bloomery furnace site at Chitcombe (TQ 813211), is associated with two similar field names, Cindrell Field and Long Cindrells, presumed to mean 'Cinder Hills'.

Since the foray, it has come to the writer's notice that an early 6 inch OS map shows the name Cinderhill at TQ 6535 4263 and Cinderhill Cottages nearby at TQ 6540 4250. These names will be followed up in due course.

The 1:25000 OS map shows four bays in the locality, all to the south of Badsell Park Farm.

Field Evidence

The long 'North Bay' (TQ 6485 4303), produced no evidence of slag, nor of the original use to which it was put. Two streams, here called East Stream and West Stream, feed the bay, each continuing through its breach and meeting some 50m to the north. The pond

produced by this bay would have flooded much of Cinder Field. When the word 'cinder' is used as a place-name, it usually refers to bloomery cinder. Thus Cinder Field is probably a very old name, pre-blast furnace era, and perhaps the cinder has been covered by the silted pond.

The next bay south, at TQ 6476 4298, here called North West Bay, is at the end of a 'graben', that is, the land has sunk to form a steep sided valley, unlike one produced by river erosion. The end of a bay was recorded here by the Ordnance Survey and it is a perfect place for a furnace site, except that the pond produced by the North Bay would have flooded the working area. Unfortunately, no furnace evidence of any type could be found and the bay now seems to have been ploughed out.

Further south, the breached South West Bay was found (TQ 6453 4268). It was here that Straker thought a blast furnace, called Matfield might have existed, although he questioned this fact in *Wealden Iron*. All that he found was some sand which was analysed as being 'casting sand'. The writer also found this material when visiting the site some 12 years ago. The same material, now sandstone, was again discovered one foot below the surface using a metal detector, and located on the east bank, 5½ yards from the bay and 5½ yards from the stream. No conclusion could be made concerning the sand. As it could be located with a metal detector it would seem that the sand had either been heated in conjunction with metal, or else the sand/sandstone contained an unusually high percentage of iron ore.

The South West Bay is unusually wide, (not meaning long) giving the impression that it was used as a roadway over the stream; however, the only place it leads is to the East Bay, see below.

On the east side of the working area a strip of damp soil was noted parallel to the stream. This may be the original course of the stream before the bay was made, a spring, or, with wishful thinking, a tail-race.

The final bay, East Bay (TQ 6464 4244), was found to have been

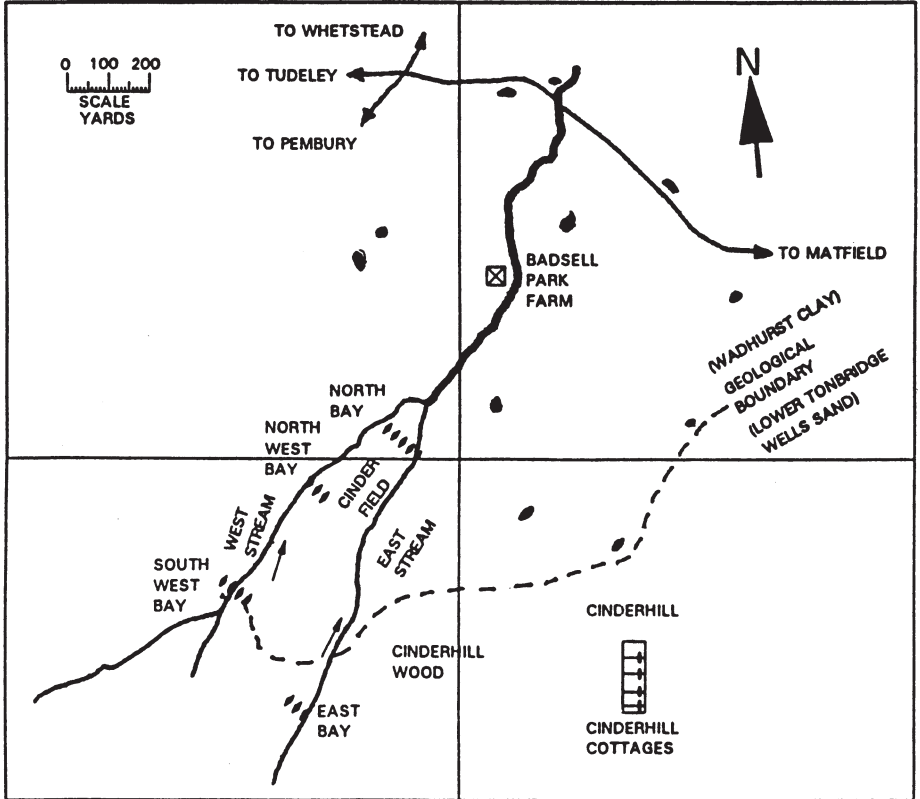


Fig 1: Area around Badsell Park Farm, Matfield, Kent

completely destroyed since the writer's previous visit some 12 years previously. However, 100 yards upstream from where the bay once stood, a new fishery pond has been built on to the hillside, not taking its water from the stream but from springs on the hillside above. On inspecting the original site of the bay nothing of interest was discovered.

Geology

The final part of the foray searched northwards through Cinderhill Wood, which, due to its overgrown nature, was not very thorough. Nothing of interest was found apart from two water-filled pits on the north side. Geologically, it is hard to predict where iron ore would have been found in this area; the higher south-east part of the wood is on Lower Tunbridge Wells Sand, with a diagonal boundary to the Wadhurst Clay, see Fig.1.

The Brenchley Brass Foundry

Part of the area searched is in Brenchley parish, where it is known that John and Thomas Brown of Horsmonden Furnace (TQ 695 412) close by, had a brass foundry for cannon making, although its location is unknown. The West Bay may be its location, although just outside the parish.

It should be noted that a sewage works has been built on the pond side of the South West Bay, and may have caused the surface of the working area to have been covered.



London-Lewes Roman Road Foray – April 1992

B.K. Herbert

At the end of the 1990-91 season of forays, about one mile of the London-Lewes Roman Road was investigated north of the Kent/Sussex county boundary (WIRG, *Wealden Iron*, 2nd series 12, 1992). This article continues the investigation for another two miles towards Edenbridge. The points of interest along the road are noted in parentheses, and are indicated on the maps, whilst a corresponding list of map references is given at the end of the article.

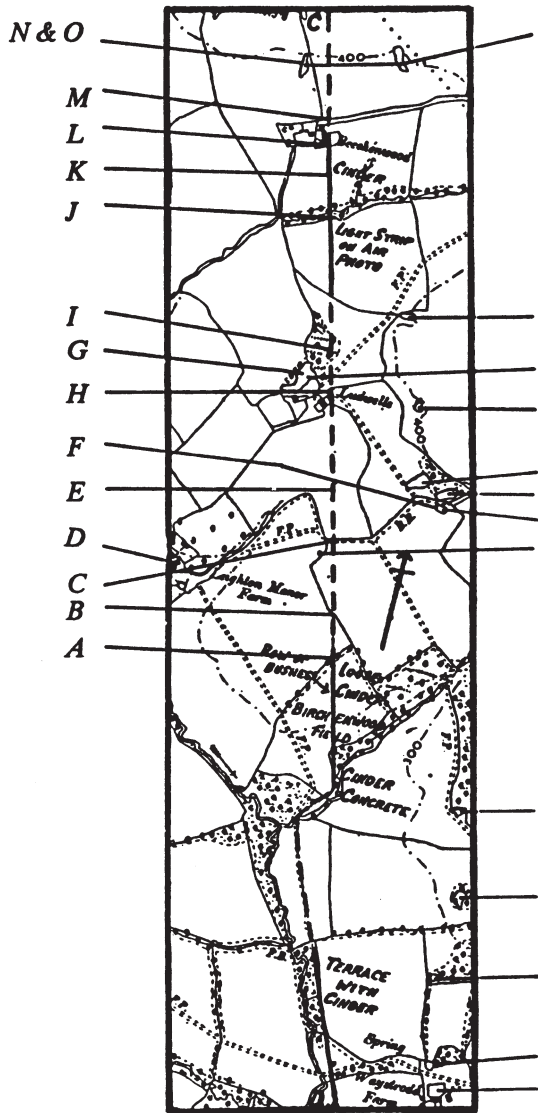


Fig 1: The London – Lewes Roman road

On leaving the newly planted woodland, Birchenwood, the road continues into a field at (A). Here, the old 25-inch map shows a slight depression for some 100 feet into the field, but this is now largely ploughed out. The road passes to the west of a cattle trough, into the next field at (B) and up to a road at (C). The metal detector indicates that the road between (A) and (B) contains plough-disturbed slag. Where the road passes a two-fence boundary at (B), there is a short, isolated length of ditch, possibly where Margary dug one of his road sections.

On the summit of the hill at (C), a new road comes in from the east, whilst there is a new road from (C) to Leighton Manor Farm, with the original obliterated. From (C), the road continues into the next field, where again the 25-inch map shows a slight depression which is now ploughed out. The slag dies out where the road dips into a shallow valley as it heads to the east of Ludwells Farm.

At the time of the foray, the electricity company had cut a trench in the valley bottom, directly across the road at (E), showing a thin layer of slag at road level, about 18 inches beneath the surface. Some gasworks cinder was found in the trench, packed around a land drain which crosses the road line.

The electricity supply trench also cut through the edge of a mine pit (F), showing much tabular iron ore. In the earlier article it was noted that iron ore was to be found on both sides of the road. It is these two outcrops which meet north of Ludwells Farm, producing the water-filled pit north west of the farm (G) and others nearby. No trace of the road was found between the trench and the farm road (H) although pieces of slag were found outside the farm building north of (H); this might have been put there at any time. Beyond the farm buildings, to another summit (I) no trace of the road could be found. In the next valley a small amount of slag was detected in the field beside the 15-foot-deep gill (J).

Both banks of this gill are very steep; no slag was found within the gill, suggesting that a bridge would have been used for the crossing. The field sloping up beyond the gill, belonging to Beeches Farm,

showed a slight agger on the course of the road (K), whilst just south of the farm buildings (L) slag was again detected. Beyond the farm, the field was in barley, preventing serious searching, although nothing of significance was found on the edge of the field (M). From this viewpoint two minepits could be seen to either side of the road (N) and (O). There are many large water-filled minepits on the brow of the hill, especially to the east (off the map), again predicted by the geological map.

On skirting the barley field, some slag was again visible on its northern edge (P). An east-west road outside a bungalow (Roughets), is raised up at the point where the Roman road crosses it. The bungalow, (O), has its front and back doors on the line of the road and much slag was detected just below the surface of the front lawn. At the back of the bungalow no slag was found.

From point (O) northwards, covered in February 1993, the alignment of the road on Margary's map diverges slightly to the west, although on a later 6-inch map the alignment is straight. The map references given at the end of the article have been corrected to the actual course of the road.

Some small diameter minepits were found near (R), associated with at least six house platforms. A hollow-way starts at (R), with sides rising only 3 to 4 feet; this is the Roman road again, with slag in what now looks to be a very small stream within the hollow. At the end of the hollow-way (S), a three feet deep steep-sided stream crosses the road at right angles, with slag evident on the surface on both sides. One interesting piece of slag, (on the south bank), over a foot in diameter and lying flat on the surface, has several 2-inch wide grooves across it and may be related to the construction of the bridge undoubtedly used here. The author has added this stream to Margary's map and suggests that its course was changed to make it cross the road at right angles. Points (R) and (S) are very approximate due to the lack of specific features.

Just beyond (S), and on the line of the road, there is a charcoal-making platform.

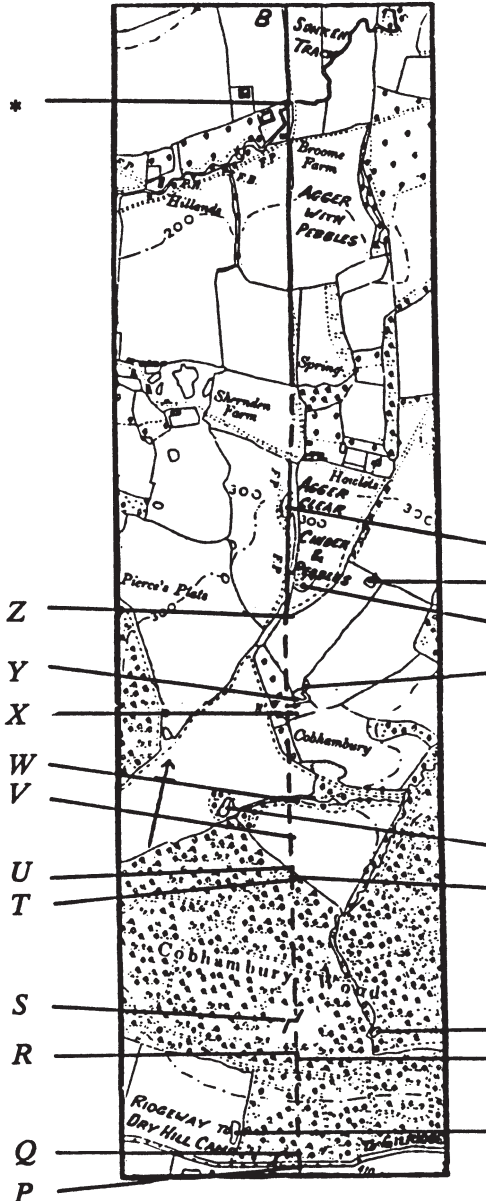


Fig 2: The London – Lewes Roman road

The road was located three times in Cobhambury Wood.

Although the metal detector did manage to detect the slag at each location, a small hole was dug for proof. The road was about one foot below the surface, and appeared to be very substantially constructed with a width of between 8 and 10 feet.

At (T) a small pit has been dug into the road. On coming out of the wood at (U) the road is only visible for some 3 feet into the field, beyond this it has been ploughed out, leaving a section visible. A few pieces of slag were found one foot down at (V), beside what is now woodland.

At the next location, in the stream (W), a scatter of slag was found on both banks and adjacent to the downstream side of the modern bridge. As the slag is too thinly spread to be a bloomery site, and as both banks are gently graded to the stream it is assumed to be the much disturbed position of a ford.

The road was next found at (X), south of the small bungalow beside Cobhambury House. Here the slag was one foot down with a road width of about 8 feet.

The line of the road crosses the pond at (Y), according to the modern 6-inch map, and slag was probed 18 inches down on the south side, but no trace was found between (Y) and (Z). However, in the stream at (*), a bed of 'conglomerate' material was seen at water level. This may be a geological feature or perhaps gravel laid specifically for the base of a ford.

One final point: some 15 years ago, when Honours Mill, on the east side of Edenbridge High Street (TQ 4442 4602), was being converted into a restaurant, a layer of bloomery slag was found under the ground floor.

WIRG thanks the owners of land crossed by the Roman road for permission to re-walk its course. This is some 50 years after the pioneering work of Mr I.D. Margary, whose original maps are reproduced from *Roman Ways in the Weald*.

Map References for the points of interest

A TQ 4561 4131	J TQ 4541 4203	S TQ 4525 4261
B TQ 4559 4138	K TQ 4539 4209	T TQ 4520 4282
C TQ 4556 4152	L TQ 4537 4215	U TQ 4519 4285
D TQ 4531 4139	M TQ 4536 4219	V TQ 4518 4290
E TQ 4554 4157	N TQ 4530 4236	W TQ 4517 4295
F TQ 4572 4160	O TQ 4545 4232	X TQ 4514 4307
G TQ 4544 4175	P TQ 4531 4238	Y TQ 4514 4312
H TQ 4550 4175	Q TQ 4530 4242	Z TQ 4510 4324
I TQ 4547 4181	R TQ 4526 4256	* TQ 4489 4404



Notes on Wealden Furnaces in the Records of the Board of Ordnance, 1660-1700

Ruth Rhynas Brown

One of the most important sources of information on the founders of the Weald are the records of the Board of Ordnance, who supplied guns, ammunition and other stores to the armed forces on land and sea. The two important series, presently in the Public Record Office at Kew, are WO 51, the Bill Books, which form a virtually complete record of the payments from the Board to its suppliers and officials from 1660 onwards, and WO 47, the Minute Books which form an incomplete and unhomogenous series in the last 40 years of the seventeenth century. These record the meetings of the Board in varying detail. Although most of the references are to founders, there are several to specific furnaces, not only indicating who was using them, but also how they were used. The following extracts show such information. Career details of the founders are compiled

from the Bill Books and the Minute Books. Further information on the furnaces may be found in the gazetteer of water-powered sites in Cleere H. and Crossley D., *The Iron Industry of the Weald* (Leicester, 1985) and on furnaces outside the Weald in Riden P., *A Gazetteer of Charcoal-fired Blast Furnaces in Great Britain in use since 1660* (Cardiff, 1987).

Part 1. The Second Dutch War

During the Second Dutch War the Board kept close contact with their founders through George Browne's clerk, Mr Dawson. He was asked to submit a weekly report on the progress of casting in the furnaces which operated under the Brown consortium. A few of the reports are preserved in the Board's Minute Books. These throw some light on the lists drawn up of the state of Wealden furnaces in 1664.

WO 47/7, 77v 3 June 1665

An accompt of what ffurnaces are now employed by Mr Browne in casting of Ordn[a]nce

Barden ffurnace wilbe ready to Cast Demy Cannon Iron Ordnance within this ffortnight

Horsemandon ffurnace wilbe ready to Cast about a fortnight hence and in probility within 5 weekes after may cast Demy Cannon Iron Ordnance

Ashburnham ffurnace wilbe going at or before Midsomer

Embham ffurnace wilbe ready if need requires wthin these 5 weekes

Hawkehurst Furnace may be sett going the beginning of September next

Bedgebury Furnace may be bee ready by the first of October

All these are stocke & the 4 first will Blow Winter & Summer

WO 47/7, 113 4th July 1665

An accompt of what ffurnaces are now employed by George Browne Esqre in Casting Ordnance & shott. viz.

Barden Horsemonden Embham & Hawkehurst are now going for Gunns and cannot be Converted to the casting of shott being stocke wth armes onely proper for Gunnes to cast wth into Shott would be an extraordinary Charge and loss to Mr Browne.

Bedgebury ffurnace if water hold shall be sett a going for Shott.

- Mr. Johnsons ffurnace in Surrey is now goeing upon shott & will make 23 or 24 toms monethly. (Margin: Di Can & Di Culv 20 torn ready)
- Mr. Clayton will make 50 tons monethly. Tht he be sent to ymediately to know what is done & that a person be sent ymediately by Mr. Browne to render an accompt to the Office and to bring up a parcell of shott. (In margin: Cul; DiCul; & 12 pr; abt 60 ton wilbe ready).
- Mr. Baker's furnace wilbe ready wthin this weeke & wilbe able to Cast 24 tons monethly. (*Margin*: DCan; Cul; DCul; 12 pr; & 6pr; of each a propotion).
- Mr. Littletons furnace is now ready to goe & will Cast after the same propor[tion] wth Mr. Bakers. (*Margin*: DCan; Cul; 12 pr; 20 ton a month).

WO 47/7, 133 24 July 1665

Mr. Baker desires to know what quantity of shott he should cast and that his father would willingly make some at their furnace.

WO 47/8, 167 5 July 1666

Mr Baker at Hamsell furnace to cast shott.

These throw some light on the use of furnaces within the Browne consortium in the period following 1664. Most of the guns are being cast at furnaces directly controlled by the Browne partnership at Horsmonden and Imbhams, both stocked before 1664 and at Hawkhurst and Barden, both noted as ruined before 1664. Bedgebury was restocked to cast guns but may have been switched to producing shot and no further information is given on the use of Ashburnham. Of the other founders mentioned, Jeremiah Johnson was paid for several deliveries of shot from March 1667 until January 1668; I have not been able to identify which furnace in Surrey he was using. William Clayton of Whitwell, Notts, worked at Staveley works in Derbyshire. During the Dutch Wars he delivered guns and shot to Hull for which his widow was later paid. James Littleton made several deliveries of shot and shells between 1666 and June 1668. John Baker was paid for deliveries of shot mainly to Chatham in summer 1667.

Part 2. James II's Mortars

During the reign of James II there were a series of experiments with brass and iron mortars. These unusual castings were closely supervised by the Board's officers, who on their return to London, put in their travel claims.

WO 51/34, 110 Ulto Junii 1687

Jos. Berriff Land Service

To Joshua Berriff Carpenter for his Travelling Charges and Expense in going down to the Foundry of Mr Tho Westerne at Bread in Sussex to oversee the Casting a new Carriage of iron for Mortarpeeces p. order of the Board the 20 January 1686/7

Employed from the 26 February to the 6 March 1686/7 being 9 days at 6s 8d a day – allowed p. order of the Board the 11 June 1687 (3 lib).

WO 51/36, 67v 28 March 1688

To Jacob Richards Gentleman, his Maj[es]ties Third Engineer, For his Travelling Charges, and Expences in goening downe to Mr. Beng's Foundry Workes in Sussex (Now Employ'd for his Majt's Service) and there giving direction in Tryng An Experiment of preparing, Casting, and Transmutateing the Iron ore, the Effects of wch. Mr. Beng hath reported to the Honble. Board, Employed in the said service, from the 3d to the 28th March 1688 both dayes Included being 26 dayes by order of the Board the 28 Febry. 1687/8 wch. att 13s: 04d p.diem Amounts to the Summe of 17l: 06s: 08d.

WO 51/36, 68

To Capt. Richard Leake Ma:r Gunn:r of England, the Summe of fourteen pounds for his Travelling Charges and Expences in going down into Sussex to Mr Beng's ffounderyes, and there going giving directions in the Casting sev[er]all Ordnance & Mortarpeeces for his Mats. Service p. ord.r of the Board the 28th of Janry 1687/8. Went the 29th Ditto, & Return'd the 18th February 1687/8 being 21 Days att 13s. 4d. r diem.

Amounts to the Summe of 14 *L*.

WO 51/36, 97v April 18th 1688

To Capt. Richard Leake Mr Gunnr...

For going to Mr Benge's Found'ry in Sussex to give directions in the casting Sev'll Mortars & c for his Majsties Service, went the 12th, and Return'd the 18th Aprill 1688 being 7 dayes att 13s = o4d p diem (4l. 13s 04d).

Thomas Westerne, a Londoner, was one of the main suppliers of guns and ammunition from the Second Dutch War until his son Maximilian took over his business in the 1690s. In 1660 he and his partner took over Brede Furnace from his brother-in-law Samuel Gott. William Benge is first recorded in the Board's papers in June 1685 when he put proposals for supplying round shot which were accepted a few days later. There is no indication which furnace he was using at this time; some of his shot was delivered to Chatham rather than Woolwich.

Part 3. William's Wars

During the reign of William III, Britain was again involved in war. The Board was so desperate to get munitions in the 1690s that it was prepared to pay extra for winter carriage so that desperately-needed ammunition could be got to the fleet. Officials were sent down to the Weald to proof guns and shot to speed up their delivery straight to the Navy's dockyards.

WO 51/43, 63v 31 March 1691

To William Phelps Clerk under S:r Thomas Littleton Clerk of Their Maties. Ordnance. For his Travelling Charges & Expences in the Service follow: vizt.

To Sussex to Prove & weigh and Receive Granadoe shells & Round shott, from Mr. Westerne and Mr. Benge and shipping the same at Rye for their Maties Service in Ireland, Went the 25th Febr'y 1690/1 Returned the 31 March following being 35 dais at 10s p.diem. (17l. 10s).

WO 51/46, 31v **16 July 1692**

To Thomas Westerne Esq for the Extraord:y Charge and Expence hee bath been at in Removing the Following Grenadoe Shells (By Order of the Board) by Land Carraidge from his Founderys in Sussex the Depth of Winter To bring them up in due time for the supply of the Stores for furnishing the Trayne For the Flanders Decent: vizt. Grenadoe Shells as appears by 3 Debents. in this Office being 107:4:0:14 at 5 sh p. tun 41/. 16s. 0d.

WO 51/46, 171 **(30 December 1692)**

To William Benge Founder for his Extraordinary charge in removeing the Grenadoe Shells & shot hereafter menionied by the Directions of this Office by Land Carriage in the Depth of winter from his Foundreys in Sussex to bring them up in time to Supply the Stores for furnishing the Trayne of Artillery in fflanders & the Descent Trayne. vizt.

	ts.cw.
From Cussuply of Granadoes shells of sevil. natures	18:10
From Cowden wth Ditto	30:00
From Hamsell with Ditto	27:17
From Hawkhurst & Constance that went to Limerick	34:00
From Mr. Hayes round Shott of sevl. natures	30:00
poz: 133ts 7cw at 5sh p. ton	33/.06s.08d.

WO 51/46,172 **31 December 1692**

John Charlton Esq: Survey:r Genil of their mats. Ordance. his bill of Travelling charges...

November 2 – To Portsmouth ... and to Sussex to Survey sevl. ffounderys there returned the 12th November being 11 dayes at 2 lib p. diem.

(An identical charge is recorded from William Boulter, Assistant Surveyor, at 20sh. per diem on the following page).

WO 51/47, 167v **30 June 1693**

To Edward Silvester Clerke under Wm Boulter Esq: assist Surveyr. for the Travelling Charges ...

June 12 – To Sussex & Kent to View the Foundryes retd: 21st – 5:0:0

WO 51/50, 50v **15 March 1695**

To Samuel Wolrich Clerke under John Charlton Esqr. Surveyr. Genll, of his Mats. Ordnce. for his Travelling Charges and Expences in going to Rye to prove Grenado Shells & to Woolwch ... for the space of 45 dayes betwn. 17th Janry. 1694/5 & 16th March ... the Summe of Twenty two pounds ten shillings.

WO 51/50, 63v **April 30th 1695**

To William Boulter Esq: Assisst. Surveyr. for his Traveling Charges hereafter ...

March 21st – To Portsmouth ... & to the Sevil ffounderys in Sussex ret the 29 do ... 09:00:00.

(A similar payment is made to John Charlton on the following page).

WO 51/50, 88 **March 30th: 1695**

To Maj:r Jno. ffuller the Granadoe Shells hereafter menioned reced. at Lewes as p. Certificat Signed by Mr. Blake & Mr. Gardiner vizt.

Grandoe Shells 12:³/₄ In po: 15:2:0:0 at 14 lib p. ton 211:8:0

Mo it haveing been Inquired into whether the shells were actually reced. at Lewis before the:25:March & it appearing that they were long before that time therefore 10sh more 13/ 10sh is allowed as p. Contract: J. Ch.

WO 51/50, 98 **25th June 1695**

To John Blake, one of the Proof Mar. belonging to this Office for his travelling Charges in the Service following Vizt.

22 March 94/5. To Lewis to prove Granadoe Shells p. Ordr the 21.

Instant and to Sevl. other Foundryes in Sussex in the same Service to 31st May inclusive, in all 71 daies at 12 sh p. diem. 42: 12: –.

WO 51/50, 124**12 April 1695**

Received from S:r Jno Pelham at Lewis the Grenadoe Shells & Carcasses hereafter menioned as P. Certificate Signed by Jno Blake, Samil Wolrich & Christo. Gardiner ... 997:4:4½

WO 51/50, 124v**June 22 1695**

Reced at Lewis from S:r Jno Pelham the Grandoe Shells & Carcesses hereafter menioned at being shipt of there for his ma:ts Service as p. Caertificate Signed by Mr Blake Mr: Wolrich Mr. Gardiner vizt Shipt of at Waldron furnace 22 April. 1695
 Grenadoe shells 12¾ In = 206 ...
 Carcasses 12¾ In = 90 ...
 Shipt of at Lewis by Mr Galloway 22:June 95
 Carcasses 12¾ In 107 ... 543:10:11

WO 51/50, 127**10 May 1695**

To Wm. Benge Esqr. ffounder for the granadoe Shells & Carcesses by him delivered at the sev:ll places hereafter mencened as p Certificate Sign'd by Mr. Woolrich & Mr. Gardiner vizt 1695

April 12 Att Lewis –	Granadoe Shells 12¾:	530
	Carcasses 12¾:	104
May 2 Att Sluce –	Grenadoe Shells -:	379
4 Att Hastings –	Grenadoe shells -:	222
	Carcasses -:	98

69:5:1:26 at 14/i 110sh p ton:

Total - 1883:08:5

WO 51/50, 130v

May 27 1695

To Wm Benge Esqre ffounder for the Granadoe Shells & Carcesses
by him Delivered at the Sev:ll places hereafter mentcened as p.
Certificcate Signed by Mr. Woolrich and Mr. Gardiner vizt.

	Carcasses 12 ³ / ₄ –	27
April 26:96 Pounsley furnace	Granadoes Shells 12 ³ / ₄ :	92
	Carcesses 12 ³ / ₄ –	122
May 9: Darvell do	Grenadoe shells 12 ³ / ₄ :	387
Do 27: Scarlett Do	Grenadoe shells 12 ³ / ₄ –	412
poiz ...		
102:00:1:19	at 14 li p. ton	
1428:5:10½		

WO 51/52, 46

30 Aprill 1696

To Philip Fincher For the Winter Land Carriage of the Granadoe
Shells 12³/₄ inch Diamr. by him deliver'd at the Places hereafeeter
men'ioned p Contract the 30th Novemr. 1695 & Order of the Board
the 9th Jany. following as p Certificat of the Tunage annex to the
bill remaining in the office – Vizt

No 1779 Deliver'd at Rye	131 tons poiz 258
1525 att Mill-hall 127 tons poiz 258 tons at 10sh p tn =129 li.	

WO 51/55, 84v

25 Aprill 1696

Recd. into his Mat Stores from Tho: & Maximilian Westerne p Wart.
Dat. 12th Decr. 1696 the Granado Shells foll Vizt
Granado Shells of 12³/₄ in Diamr – 1257 poz 98:19:2:09 at 15sh p ton
1484:13:8

For Winter carriage of Do at 10sh p tunn p Ord'r of the Board 9th Jany
1695 – 49:9:6
1534:3:2.

The most interesting points to emerge from these payments are the details of William Benge's arrangements for casting shells. I do not believe that his association with any of these furnaces has been discovered before: Conster, Coushopley, Cowden, Darvel, Hamsell, Hawkhurst, Pounsley and Scarlets. These were probably taken on short leases when there was sufficient demand. At this period he was also involved in the setting up of Gloucester, Lamberhurst, which is presumably where he was casting the guns which he also supplied to the Board. The Mr Hayes referred to is probably one of the Hays family of Beech furnaces. By the 1690s the Westernes were the most important gunfounders. Thomas and Maximilian had taken on Ashburnham as well as Brede to cope with the increasing orders.

Sir John Pelham owned Waldron Furnace. During the Dutch Wars he was paid for shot supplied to Portsmouth in the 1670s and in the 1690s he cast both shot and shells. Philip Fincher, Citizen and Ironmonger of London, acted as an agent for other founders. Between 1694 and 1697 he supplied guns, round shot, shells and Yorkshire lead, while in 1700 he delivered a batch of guns on Peter Gott's behalf cast by William Benge. Major John Fuller is first mentioned as a supplier in February 1694. He specialized in supplying ordnance rather than shot or shells.

Part 4

Late in 1697 the Board reduced the price for guns and shot cast. Board officials were sent down to the furnaces in Sussex and Kent, as well as Fox's furnace in Coalbrookdale, to carry out a survey of guns, shot, etc already cast which would be accepted at the old prices.

WO 51/55, 152

24th Decemr. 1697

To John Berry Labourer in Ordinary to this Office For his Travelling Charges & Expences ...

Octobr 28th – To Sussex to Assist Mr. Silvester intaking an Acctt of all the Guns shott shells & ca at the Sevil Founerys return'd the 27th of Novemr following being 30 Dais at 5sh p Day for himself & a horse – 07:10:0.

Novemr 30th –To Worcestershire ... And in Shropshire to Mr Fox's Foundry, returned the 24 of Decemr being 25 Dais at 5sh p Day, for himself & a horse – 06:05:0.

Edward Silvester's expenses are on WO 51/58, 29v. Founders who were paid for guns cast before November 1697 or included in Mr Silvester's Account include Wiliam Benge (WO 51/56, 108; /58, 25 & 45v); William Dyke (WO 51/56, 114v); Peter Gott (WO 51/56, 126); and Thomas Westernne (WO 51/58, 19).

William and Sir Thomas Dyke had been suppliers of shells in 1680-1 and of ordnance in 1696 and 1698. Peter Gott was Thomas Westernne's nephew and son-in-law; he inherited much of the Farnden family's iron interests from his grandfather, Peter Farnden. He began supplying ordnance and shot and shells in summer 1696. Later he was associated with William Benge; two of the furnaces which Benge had leased, Coushopley and Conster, belonged to Gott and later the Gott family took over the running of Gloucester Furnace at Lamberhurst. Shadrach Fox specialized in supplying grenades to the Board from April 1688 until 1693. From 1696 until the following year he was delivering round shot to Bristol and Gloucester, possibly cast at the Coalbrookdale Furnace which he had taken over in 1696.

Three Forays to Upper Stonehurst Farm Bloomery Site, Surrey

B.K. Herbert

Three visits have been made to the bloomery site at Upper Stonehurst Farm, Surrey (TQ 4234 4113). The aim of the forays was to test WIRG's recently-purchased resistivity meter and to determine if contrasts appeared between soil containing slag and adjacent soil free of slag. Other group members searched for bloomery furnace sites in the locality. A plan of the survey and excavation is available from WIRG.

The first visit to the site on 14 March 1992 surveyed an area 20m by 100m on top of, and parallel with, a steep bank down to the stream. During a second visit on 17 October 1992 an adjacent strip of measurements was produced. On 13 February 1993 a 20m by 60m strip was measured. Although the new meter allows measurements to be made much more quickly than our previous meter, it still takes about 45 minutes to gather the 400 data points from a 20m by 20m square.

After plotting the results via a computer, nothing of great significance could be seen. That is, no straight lines signifying walls, nor circles suggesting pits could be seen on the computer-plotted printout. It was noticed, however, that the two strips, (which were measured at different times), did not match along co-joining edges. It is thought that a difference in moisture content of the soil may be to blame here, perhaps due to the mode of operation used to make the measurement. There are, in fact, two basic modes of operation:

Absolute resistance, where all four probes are mounted on the probe holder and moved together for each measurement. Although the

measured resistance values may not match between measurements taken under different conditions, it should be possible to multiply the figures by a constant factor so as to match earlier measurements.

Relative resistance, where only two probes are moved together on the probe holder, whilst the other two probes are placed well outside the area of measurement. This method produces resistance values which are not only dependent on the moisture content of the soil, but also on the position of the two stationary probes.

The latter mode was used for the measurements; although this does have advantages they are not discussed here.

Despite the plotted results producing spurious straight edged features, easily misleading the viewer into seeing phantom buildings, one place was chosen to be excavated. This showed an 'edge' feature, although it was not in the slagged area, at about TQ 4235 4115.

A 1.5m by 2m excavation revealed many sandstones in the high resistance area and just top soil in the low resistance area, with the subsoil at about 300mm. This is consistent with the sandstone having a higher resistance than soil, as indicated by the computer printout. It is suspected that the sandstone may be part of a tumbled structure because an adjacent excavation, some 5m away, showed what could be the base course of a wall. In this second excavation, three pieces of medieval pottery were found, capable of being joined together. It was felt that as the pottery was only 75mm from the surface, it did not date the bloomery site, but perhaps the possible building.

Initial indications suggest that soil containing slag does not greatly alter the resistance measurements compared with nearby soil slag free. The density of slag was measured using a metal detector; this was only approximate, as the slag content could not be confirmed visually.

Another important factor is the moisture content of the soil. For example, very wet soil conditions might be better at distinguishing between the high resistance slag and low resistance wet soil. Also,

further measurements will be made using the ‘absolute resistance’ mode of operation.

Four hitherto unrecorded bloomery sites have been discovered nearby:

TQ 4234 4120. On the east side of the drive into the farm and on the right bank of the stream, a narrow, raised bank of slag extends for some 15m along the river. This is probably an extension of the Upper Stonehurst Bloomery site which has been disturbed by the drive.

TQ 4243 4082. On either side of the gateway and into the field to the east, perhaps 7.5m in diameter. This is an unusual situation, well away from a stream and beside an area of undulating ground. This is a likely place for iron ore according to the geological map, but does not show the usual mine pits. The site is on almost level ground and could be the base of a building.

TQ 4213 4137. On the east side of the drive into the farm and on the right bank of the stream: a medium-sized site some 15m along the bank.

TQ 4182 4113. Three metres to the south of the very small stream, and under grass: this site could only be found with the metal detector and was only 3.5m across.

These last two sites are on land owned by Mr W. Allan of Old Lodge, (TQ 421417).

Two Ironworking Sites at Hoathly near Lamberhurst

B.K. Herbert

Introduction

This report brings up to date the results of a survey and many forays to the ironworking sites at Hoathly, near Lamberhurst, on the Kent/Sussex border. The earliest site, Hoathly Forge (1546 to 1667) was followed by Lamberhurst Furnace, also known as Gloucester Furnace, (1696 to 1787) and a later corn mill (1812 onwards). All these operations relied on a leat as a source of water power, the water being taken off the River Teise. It is this feature which is considered in detail. It was called the “Hoathly Ditch” and is one of the more unusual features of the Wealden iron industry still to be seen.

Hoathly Forge, the Hoathly Cut and Ditch

The map, Fig.1, scaled up from the 1:25000 OS map, shows the complete water system dug for Hoathly Forge and the later blast furnace and corn mill. Also shown is the original course of the River Teise. Map references are given at the end of this article.

The original course of the River Teise is shown dotted between A and C. The re-routed Teise, from A via B to C, is obviously man-made, considering the width, depth and straightness of its course. It has been decided to call this the “Hoathly Cut”, thereby differentiating it from the “Hoathly Ditch” described later. Two field names on the map of 1728¹ are indicative of the start of the Cut: Penstock Croft and Pold Bay.

The head of water at C, gained across the meander of the Teise might leak back into the river at C. However, a dam within the

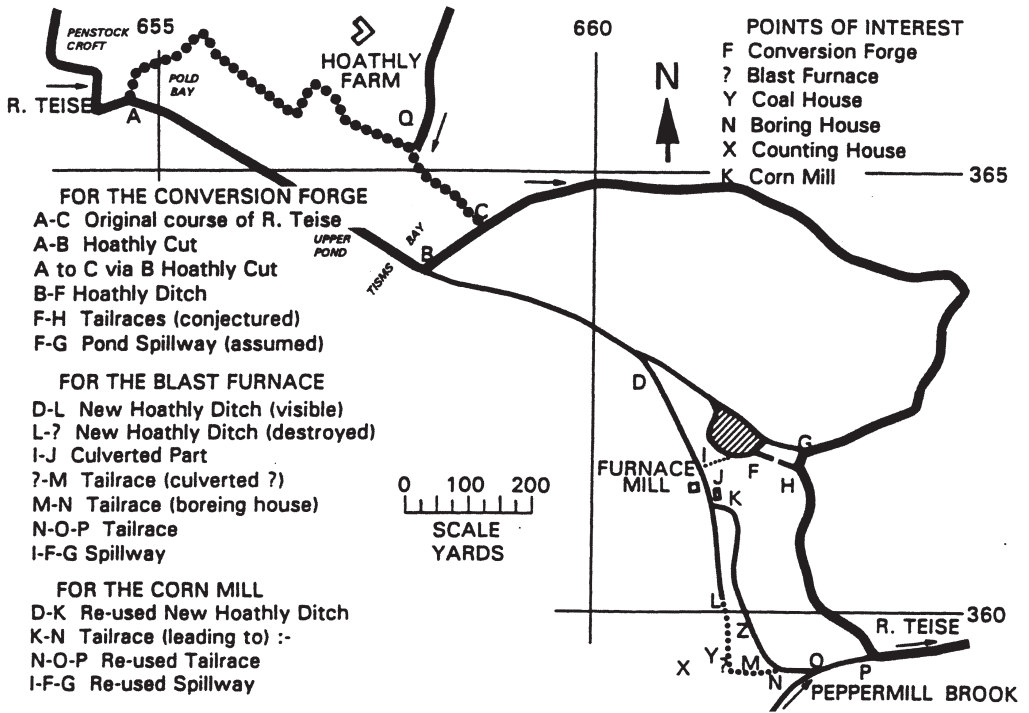


Fig 1: Water courses at Hoathly, Kent/Sussex

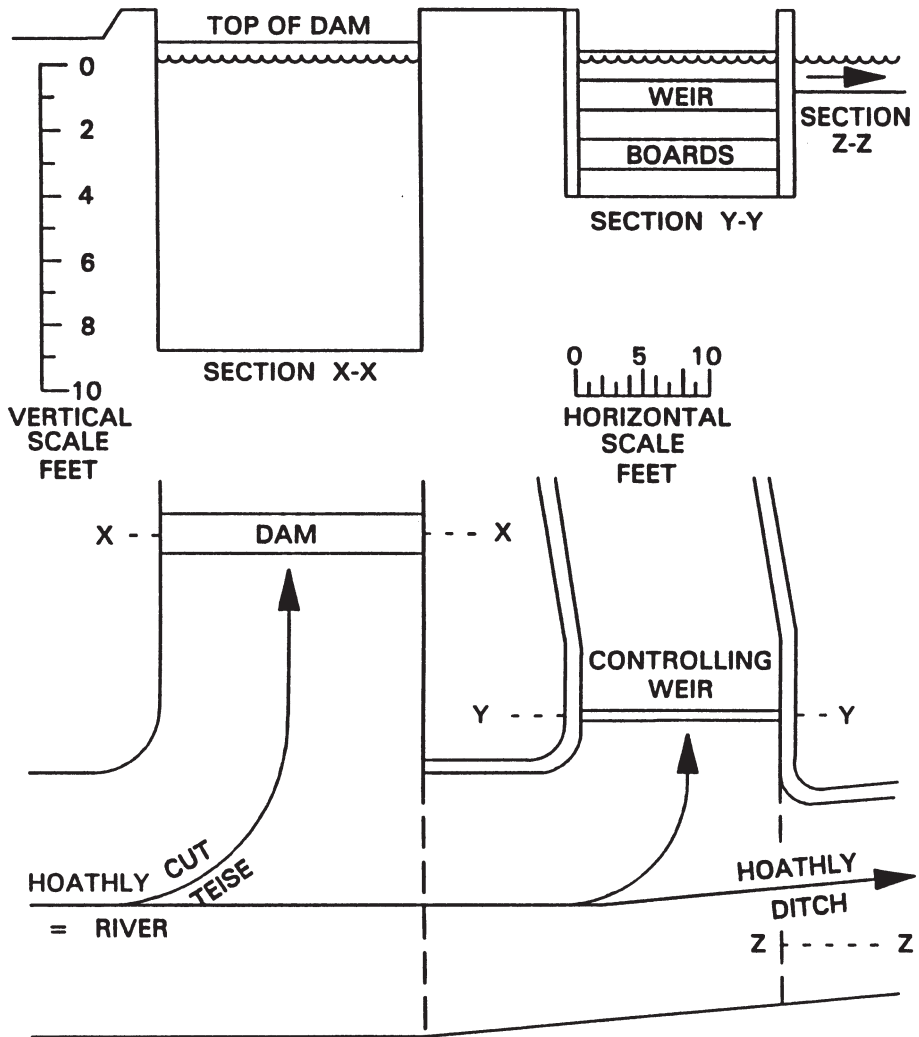


Fig 2: Idealised plan and section through point B, River Teise

Hoathly Cut, at point B, raised the water to a useful level. Although there is little evidence for this dam, several very large pieces of worked sandstone may be seen within the Hoathly Cut, whilst Fig.2 shows the Cut's dimensions at B, indicating a substantial structure would have been necessary.

Although there is evidence for a bay near B, on the map of 1728, where 'Tisms Bay' is shown, no use can be found for it. There is also the field-name Upper Pond to the west of B, whilst a moated site is shown on this map at Q, on a side stream joining the Teise. Due to the wide flood plain here, the whole valley would have been inundated if the Teise had been dammed by Tisms Bay.

What will be called the Hoathly Ditch, was dug from B to finish at F, the Hoathly Forge site, cutting across a second larger meander of the Teise. Fig.2 shows the water control system at B that was used to adjust the flow of water along the Hoathly Ditch. An isolated weir at the south-east end of the dam allowed the height of water to be controlled by inserting a number of horizontal boards (edgewise) into slots still to be seen on either side of the weir's sandstone walls. Excess water at B passed over the weir boards and back into the last few yards of the Hoathly Cut, before returning to the original course of the Teise at C.

The Hoathly Ditch followed a straight course through rising ground from B to F, the forge site, with the deepest part near D at 16 feet. At this point the Hoathly Ditch is 60 feet across at the top and 15 feet wide at water level; however, the water would only have been about one foot deep.

Before F, the end of the Hoathly Ditch widens out to form Hoathly Forge Pond, see Fig. 1 and Fig. 5. Evidence for this may be seen in the woodland where the hillside, which slopes up to the SW, has been excavated to hold the pond whilst the spoil was used to raise the NE and SE sides to deepen the pond. There is a break in this man-made bank to the east, possibly to drain the pond, although it is likely that a spillway would have been necessary at this point to let excess water flow back to the Teise at G.

The head of water gained at the forge site has been measured at 13 feet. This head has been gained because the length of the Hoathly Cut plus Hoathly Ditch is only 880 yards, whereas the river covers a distance of 1640 yards.

Calculations have been made on the spoil removed in digging these two water courses:

The Hoathly Cut is 550 yds long, 20 ft wide and 6½ ft deep, corresponding to 7500 cubic yds of soil.

The Hoathly Ditch is about 150 yds long between B and D, becoming progressively wider and deeper. This corresponds to about 5500 cubic yards of soil being removed.

The volume of soil removed in the last 65 yds of Ditch before the forge pond is suggested at 2000 cubic yards.

Another 2000 cubic yards to dig out the pond and produce the embankment.

This makes a total of 17,000 cubic yards; a large undertaking for 1546, just to produce a head of water for a conversion forge.

The map, Fig. 5, shows the layout of the forge and furnace sites.

It is because the SE bank of the forge pond has been almost destroyed, that it has taken so long to understand the water system for Hoathly Forge. Further evidence for the forge pond may be seen on the 1728 map, whilst a map of 1795² just refers to Old Forge Pond. The former map also refers to Forge Lane, this being the farm track from Hoathly, via Furnace Mill house, to Peppermill and Lamberhurst Manor at TQ 662357.

Although this source of water power for the forge appears to be complicated, it may be simplified by considering the SE embankment of the forge pond to be the bay of a conventional water-powered site. This puts the forge working area F in what is known as Upper Forge Field, on the 1795 map, presumably containing the conventional finery, chaferly and tilt hammer. This is evident by the large number of forge bottoms and considerable cinder to be found in the Teise at H.

During the operation of the forge, between 1546 and 1667, the nearest furnaces were at Tollslye 2 miles away, Horsmonden 3 miles, and Chingley 4 miles. The Tollslye Furnace is supposed to have had a short operating life around 1640, Chingley and Horsmonden from before 1574.

Lamberhurst Furnace, the New Hoathly Ditch Extension

When Lamberhurst Blast Furnace was built around 1696, a different location was chosen from that of the forge; one that was further above the flood plain. This re-siting required the Hoathly Ditch to be diverted and extended. Fig. 1 shows that the New Hoathly Ditch, as it will be called, was dug into the right hand side of the original channel at D, and may be seen now as a rather wide water-course. It is unfortunate that the area around D has been disturbed by the building of a hop shed, and it is not now possible to see how the water was stopped from flowing to the disused forge site. On the 1795 map, D is marked as Brick Kiln Platt, possibly used for the replaceable bricks used for the inner furnace structure. The 1795 map also shows the New Hoathly Ditch to be narrow; perhaps the rather wide New Hoathly Ditch, seen today, was dug to produce a pond for the later corn mill.

The next point of interest on the 1795 map is the floodgate, I, which is situated above the gully called the 'sow'. This archaic word describes a depression or groove, in this case produced by the excess water flowing back through the floodgate to the forge pond, and thence to the Teise at G. This floodgate would also have been used by the later corn mill.

Near I, the New Hoathly Ditch disappears from the 1795 map, to reappear again at J, just beyond Furnace Mill house, built around 1722. The New Hoathly Ditch must be culverted here, where it passes under a modern oast house and brick out-buildings in front of the house. Culverting the New Hoathly Ditch would always have been necessary because it passed under Forge Lane. The New Hoathly Ditch is again visible at J, behind the corn mill, K, built in 1812, some 25 years after the furnace closed down.

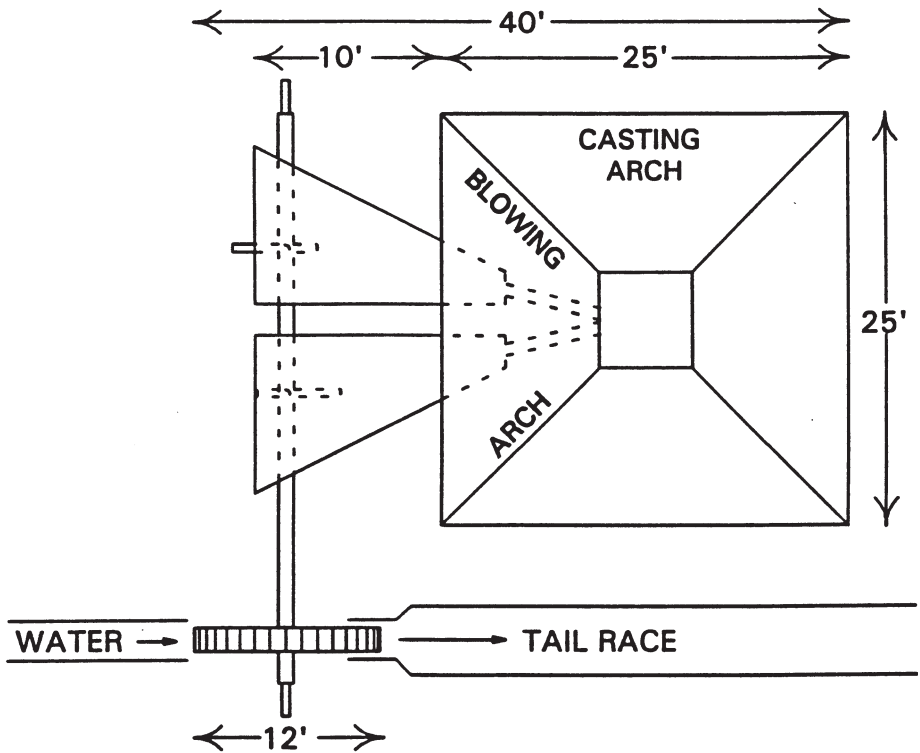


Fig 3: Probable plan of Lamberhurst Blast Furnace

Beyond the later corn mill the New Hoathly Ditch was cut into rising hillside to the SW between J and L, with the spoil used to construct a wide bank on the downhill side. The water-course is straight, although the bank is breached just beyond the corn mill. The furnace structure was thought to have been located north of the Coal House, L, despite the impossibility of being able to load the furnace with ore and charcoal.

Recently, it was noticed that the New Hoathly Ditch probably veered to the east just beyond L. The roadside embankment at Z matches that of the New Hoathly Ditch between K and L, thus bringing the New Hoathly Ditch closer to Forge Lane.

The 1795 map also gives a clue to the location of the furnace structure, where a Boring House, N, is marked on what was probably the furnace tail-race. Only the latter part of the tail-race is indicated on this map, so it seems likely that the initial length from the furnace was culverted. A careful comparison of the 1795 map and the 1:25000 OS map shows that the last 50 yards of the modern mill tail-race, between N, O and P, corresponds with the end of the furnace tail-race. Projecting this feature back places the blast furnace near the quarry entrance. The tail-race flows into the Peppermill Brook at O, before flowing into the Teise at P.

On the 1795 map a Coal House, Y, is marked; this is located on top of a steeply rising field some 15 feet above the New Hoathly Ditch level and close to Z. There is also visual evidence for the Coal House where both the field and bank is covered with charcoal fines. Immediately below the Coal House a slight mound was recently noted at New Hoathly Ditch level, and about the area of a blast furnace – 25 x 25 feet. A metal detector indicated that the mound was a very metallic area. Should the mound be the remains of the furnace, it would have allowed the coal house easy access to the top of the furnace for loading with ore and charcoal. The Appendix to the article suggests that Fig. 3 might be the plan for Lamberhurst Furnace, covering an area 30 x 40 feet.

Fig. 4 shows a typical elevation of a blast furnace. If a 12 foot diameter water-wheel is assumed, having its axle one foot above the casting floor level, the casting floor must be about 7 feet below the incoming water level. This means that the bottom of the tail-race must be about 6 feet below the casting floor. If the supposed mound, noted above, which is at New Ditch level, is the furnace structure, then there must be some 6 feet of furnace structure existing below

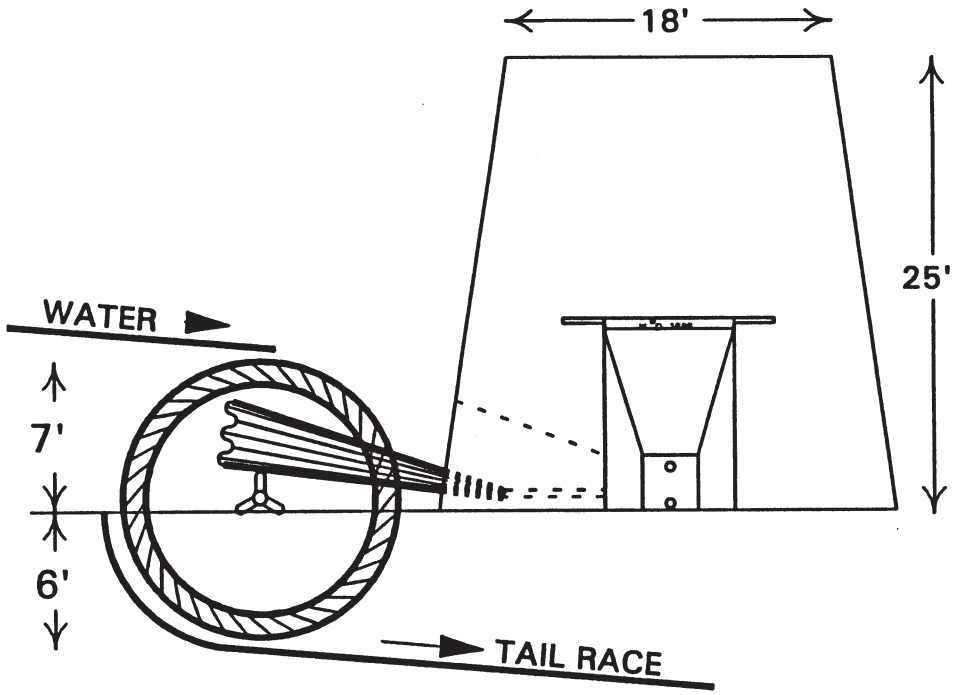


Fig 4: Typical elevation of a blast furnace

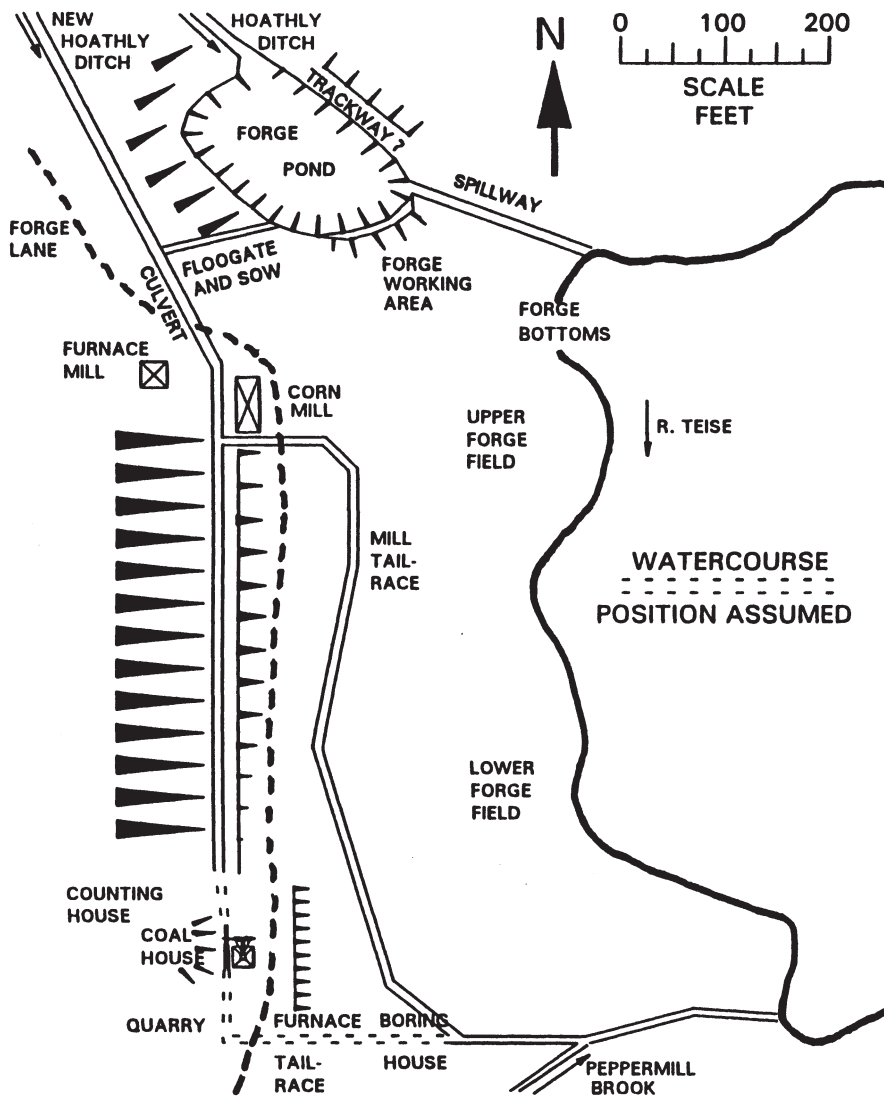


Fig 5: Idealised drawing of forge and furnace layout

ground level.

There are two less likely locations for Lamberhurst Furnace:

1. Low down in the field beside Z. This is too far from the Coal House at Y and the loading ramp would run down to the furnace.

2. Further into the quarry area. The water courses would be complicated, and the quarry floor would have to be about 7 feet below its modern level.

Hence, the most likely position for the furnace is the mound noted above. The apparent lack of space may be caused by slumping of the steeply rising bank up to the Coal House.

The head of water in the New Hoathly Ditch at L has been measured at 20 feet. This has been gained because the complete length of water course is only 1130 yards whereas the length of Teise is 1960 yards. (The author considers that a 20 foot head of water may be too great, and perhaps the New Hoathly Ditch at L has been partially filled in).

Demise of the Furnace Structure

Towards the end of the 18th century, Lamberhurst Furnace probably became uneconomic to operate, as were many furnaces in the Weald. In 1796, Hoathly Farm, TQ 6570 3667, a 15th century timber-framed house, was being enlarged. It is surmised that much of the ashlar from the furnace structure (and perhaps the revetting and culverting from the New Hoathly Ditch) was re-used for this building. There is an inscribed stone outside the back door of the house which may refer to refurbishment dates for the furnace or perhaps the firing-up dates of each campaign. It is hoped to obtain a copy of this rather worn inscription for a later Bulletin.

Another unique item in this house is the bressumer from Lamberhurst Furnace, built in 1695/6 by William Benge (Fig.6). The original position of the bressumer is approximately indicated in Fig.4 above the casting arch. A bressumer is defined as “a beam across a

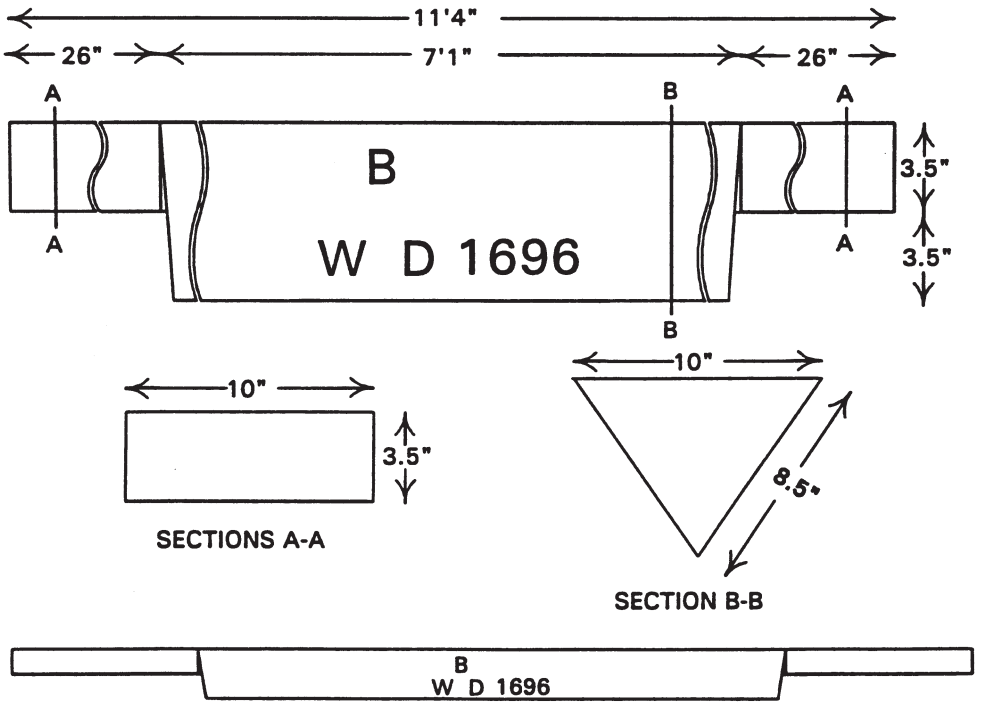


Fig 6: Bressumer from Lamberhusrt Furnace

broad opening, sustaining the superstructure”. Its weight has been calculated as 11cwt 0st 31lb, assuming a density of 0.26lb/cu.in. It will be seen that both ends of the bressumer are of rectangular section, suitable for resting on the stonework on either side of the casting arch. The centre portion, with its triangular section taking the form of a cast-iron pig, would have supported the stonework above the casting arch.

Documentary evidence covers two of the initials and the date on the bressumer: William Benge, who built the furnace in 1696. The remaining initial may be Benge’s wife, a sister-in-law of John Barham, another local ironmaster. Although no other bressumers are known to have survived from the Weald, the well known Darby blast furnaces at Coalbrookdale have bressumers across the casting arch.

The last date for the operation of a furnace at Lamberhurst is 1787,³ and is assumed to be the actual Gloucester Furnace structure, although it must have been re-lined many times during the 90 years of almost continuous operation.

One further point of interest on the 1728 map is the reference to “the Lord Camden Iron Mill”. This is thought to refer to Bayham Forge at TQ 642366, known to have belonged to Mr Prat, later Lord Camden.

The Furnace Mill.

Although the corn mill post-dates the blast furnace, its tail-race has been shown on Fig. 1 and Fig. 5. The mill shown at K was built in 1812, and took its water off the New Hoathly Ditch, at right angles, to drive an overshot water wheel. The tail-race passes under the road, veers south, and joins up with the tail-race from the furnace close to the Boring House, N.

References

1. Bottle's map dated 1728, but showing signs of additions and deletions. Copy with the Lamberhurst Historical Society; original source unknown.
2. A map of Lamberhurst Furnace site dated 1795; source, Kent Archive Office, Maidstone.
3. Straker, E., *Wealden Iron*, 269-273.

Map References.

A	TQ 6547 3658
B	TQ 6582 3639
C	TQ 6589 3645
D	TQ 6605 3030
L	TQ 6615 3600
P	TQ 6633 3595
Q	TQ 6579 3654
Forge Pond	TQ 6617 3621
Forge Site	TQ 6622 3617
Furnace Site	TQ 6615 3596
Boring House	TQ 6621 3594

WIRG would like to thank the three landowners for permission to walk freely over their property and to Mrs A. Hornsby for bringing the bressumer to WIRG's notice. We are indebted to Mr J. Vale-Taylor of Lamberhurst Historical Society for the active interest shown in this project; he has suggested that this article might form the basis of a booklet. Last, but by no means least, our thanks to Mr and Mrs Simmons and family for allowing us to visit their historic site so many times. The furnace originally became famous for casting the iron railings surrounding St. Paul's Cathedral, London; it can now be doubly famous for having one of the most complicated water courses in the Weald.

Appendix

Four Layout Plans for a Blast Furnace Site

Whilst the author was writing the report on the iron working sites around Lamberhurst it was realised that there are basically only four possible layout plans for a blast furnace, shown in Figs. 1 and 2. Note that the blowing arch is always adjacent to the casting arch.

Fig.1 shows the two situations where the casting arch is on the opposite side from the tail-race. This layout does not necessarily require the tail-race to be culverted.

Fig.2 shows both cases where casting takes place adjacent to the tail-race. With this layout it would be convenient, but not mandatory, for the tail-race to be culverted.

The diagrams also show that the direction of water and rotation of the axle cams under the bottom bellows boards are also of significance. With all Wealden furnaces excavated so far, the axle cams first touch the rear of the bottom bellows board and then slide towards the front. This assumes that an overshot wheel was used.

The list below indicates the plan arrangement for all Wealden furnaces so far excavated.

Furnace	Fig. No.	C & C Ref.	C & C Page	Note
Chingley	2a	131	322	A
Maynards Gate	2a	103	344	A
Scarlets	2b	66	354	A
Pippingford East	1b	78	350	B
Pippingford West	1a	78	350	A
Panningridge 1	1a	146	348	A
Panningridge 2	1a	146	348	B
Batsford	2a	151	312	A
North Park	2b	6	331	A

A Water wheel axle parallel to bay
 B Water wheel axle at right angles (approx) to bay.

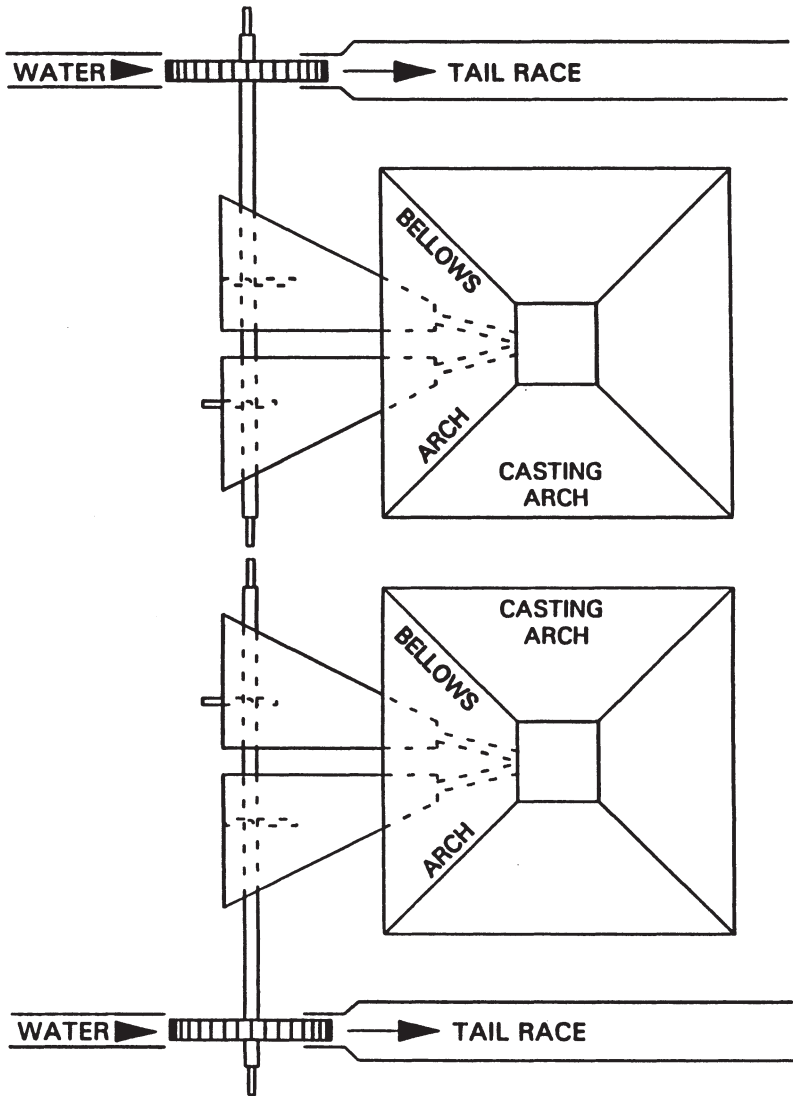


Fig 1: Plan of furnace

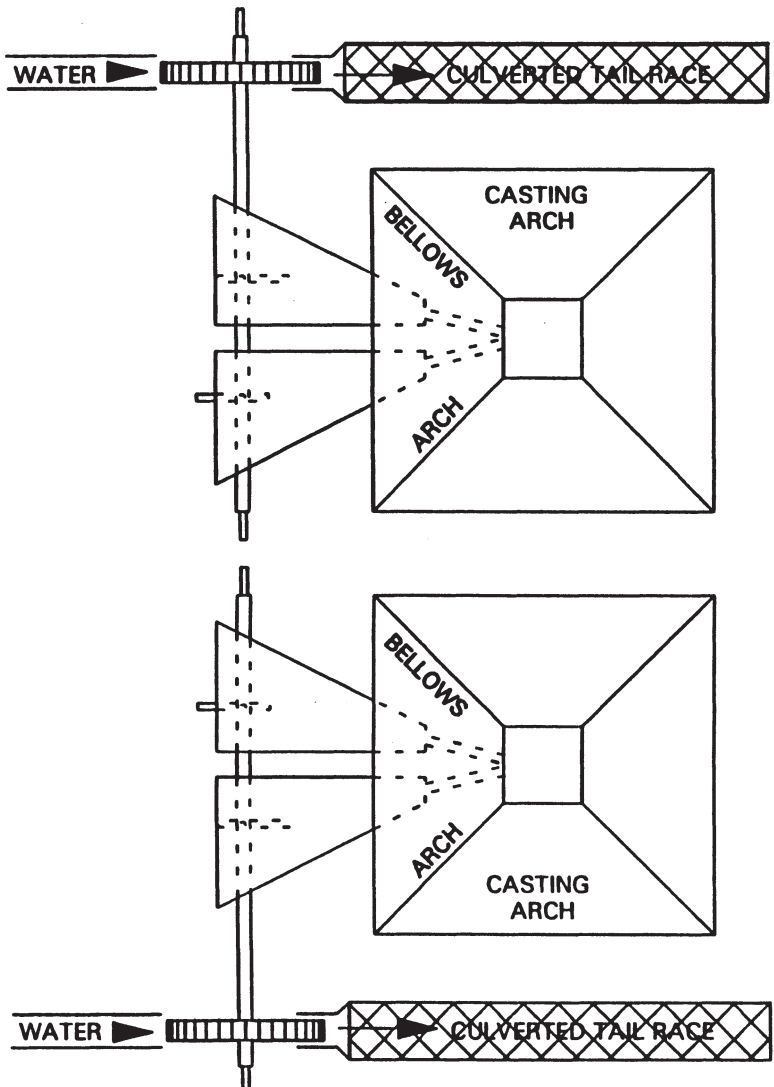


Fig 1: Plan of furnace with culvert