EMERGENCY ARCHAEOLOGICAL RECORDING AT

LAND ADJACENT TO

MOSS COTTAGE, NEWBRIDGE, HARTFIELD

TQ:45533262

Project No. 2004/10

November 2004

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East Sussex Historical Environment Record

County Hall

Lewes

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Abstract

In November 2004 the Archaeological Section of East Sussex County Council was made aware of the possible disturbance of archaeological features by the construction of a horse sand arena on land adjacent to the Newbridge blast furnace site.

An examination followed by archaeological recording produced evidence of a dumping area for waste material from the nearby furnace.

This mound of waste material showed evidence of later disturbance by road construction, probable ploughing and service trenches.

1.0. Introduction

1.1. In October, Mrs Clark the owner of Moss Cottage, Newbridge was granted planning permission to construct a sand school for horses on meadow land adjacent and south of her property. This area, although lying close to the 16th century blast furnace site, fell outside both the area that had been scheduled as an ancient monument and defined as an archaeologically sensitive area.

1.2. During the initial groundworks, members of the Wealden Iron Research Group (WIRG) observed an area of black soil, exposed in the course of leveling of the site. The Group brought their concerns to the attention of Dr. Andrew Woodcock, the East Sussex County Archaeologist who arranged for an assessment and recording brief was maintained on the site by the author. The work was carried between the 17th and 18th of November 2004.

2.0. Site topography and geology

2.1. The site lies within a rectangular, level meadow bordered on its west by a stream and on its east by the Colemans Hatch to Gills Lap road. A short distance to the south are the earthwork remains of a substantial pond bay, cut through on its western side by the present stream.

2.2. Newbridge lies in a steep sided northeastwards running valley at a height of 75m OD. The British Geological Survey (Sheet 303) records the underlying geology as Ashdown Sand with a band of alluvial clay running along the valley.

3.0. Historical and Archaeological background

3.1. The first historical mention of the Newbridge furnace is in 1496 when "the great water hammer" and the casting of iron shot is recorded. Accounts

survive from the reign of Henry VIII and by 1574 Henry Bowyer held a double furnace here. However by 1650 the works had been abandoned.

3.1. The Newbridge iron furnace was first recorded by Salzmann (Salzmann, L. 1913) and later in the 1930s by Straker in his pioneering work 'Wealden Iron' (Straker, E. 1931). Salzman records that the pond bay showed evidence of later disturbance, probably associated with the construction of a mill stream. He also records the field below the bay (the site of this article) as being covered with slag. This statement suggests that the field in question was under arable cultivation. Straker incorrectly suggests the site of the forge as being in the vicinity of the later mill, however the 1962 Ordnance Survey Archaeological Division Field Investigator records a more likely location in a southern projection of the western end of the bay, an area with abundant slag visible. An inspection of this area (TQ:45523245) by Andrew Woodcock and the author revealed evidence of the wheel pit, associated sluice and raised level building platforms, confirming this location.

4.0. Investigative methodology

4.1. Upon first arrival on site it was apparent that as part of the development the site had been built up with imported soil and hardcore, producing an overburden of c. 0.5m. Dot Meade of WIRG and the builder pointed out the approximate extent of the black soil, which corresponded with a truncated mound on the eastern edge of the site. The mound was best preserved under the modern roadside hedge were it measured 20m in diameter and stood to a height of 1.5m. The eastern half of the mound had been removed by the construction of the present road and within the development area the mound dropped sharply to c.0.5m in height, suggesting earlier erosion or truncation.

As the remainder of the site was buried it was decided to section the remains of this mound.

4.2. Three 2m by 1m trenches were hand excavated butting up to the surviving portion of the mound. The trenches were positioned to examine the edges and highest sections of the feature, but not to greatly encroach on the portion of the mound that was to be left in situ by the developers. Unfortunately, as will be discussed, these trenches were in the same position as an early 20th century service trench. Another service trench, running parallel c. 5m to the west, was uncovered by the builders during initial groundworks.

5.0. Results

5.1. Trench 1: A layer of topsoil ranging in thickness from c.4.5cm - 6.0cm, but badly disturbed by JCB tracks was first removed (Context 1). This revealed a c.20.0 - 37.0 layer of dark orange clay containing occasional fragments of charcoal and bloomery slag (Context 2). This in turn overlay a c.5.0 - 17.0 cm layer of black clay with occasional orange clay patches, both of which contained abundant fragments of charcoal, bloomery slag and nodules of iron rich sandstone (Context 3). This layer increased in thickness rapidly towards the southern end of the trench, the area represented by the edge of the earthwork mound. Beneath this layer was the clay natural, within which was found a cut containing a length of black plastic service pipe running the whole length of the trench, bringing excavation to a halt. Fortunately the service trench dug to lay this pipe was located c. 5.0cm in from the excavated section recorded by the author. No archaeological artefacts were recovered from this trench.

5.2. Trench 2: A layer of topsoil (Context 1) ranging in thickness from c.5.5 -

12.0cm was first removed. Again this layer had been disturbed by JCB tracks but did appear to show a shallow cut in the central area of the trench. Below the topsoil at the southern end of the trench was a c. 45.0cm thick layer of dark orange clay containing occasional fragments of charcoal, bloomery slag and nodules of sandstone (Context 2), at the base of which lay another section of black plastic pipe. The only pottery recovered from the trench, came from an area slightly above this pipe. Below the topsoil in the northern and central area of the trench was a c.30.0 - 35.0cm layer of black clay with occasional orange clay patches, both containing numerous fragments of charcoal, bloomery slag, fired clay and nodules of iron rich sandstone (Context 3). This layer also contained within its central area a lens of rusty iron fragments, charcoal fragments, large lumps of fired clay and brick/tile c. 7.0cm max thick laying at an angle of c.110° thickening at its southern end. Below context 3 lay natural clay containing the black pipe and its associated cut.

5.2. Trench 3: A layer of topsoil ranging in thickness from c.4.5cm - 6.0cm, but again badly disturbed by JCB tracks was first removed (Context 1). This revealed a c. 1.0m thick layer of grey clay containing numerous fragments of charcoal with occasional concentrations of charcoal. At the base of this layer, slightly above the clay natural lay a further length of the black plastic pipe encountered in the previous trenches. No archaeological artefacts were recovered.

5.3. Finds summary sheet

Trench	Context	Material	Quantity	Comments
1	1	Bloomery slag	High	Pottery 19th

		Pottery Iron ore?	Occasional Occasional	century
1	2	Bloomery Slag Charcoal	High Medium	
1	3	Bloomery slag Charcoal Pottery	High Medium Occasional	Pottery 16th century
1	4	Bloomery slag Charcoal	High Medium	
2	1	Bloomery slag	Medium	
2	2	Bloomery slag Charcoal Fired clay	High Medium Occasional	
Spoil Heap		Bloomery slag Pottery	High Occasional	Pottery mainly 19th century

5.4 Pottery Report by Keith Bowman

11 sherds weighing 140 grams were recovered from the trench and 4 sherds weighing 40 grams were recovered from the spoil heap.

The sherds were numbered and divided into periods according to fabric.

16th Century

Most fabrics are identical or similar to those found at a 16th Century Pottery Kiln at Lower Parrock. (Freke D.J. 1979)

Spoil Heap:-

1. Fine red earthenware with red oxidized surfaces and light red glaze. Flat rim, probably part of a bowl.

Trench:-

2. Hard fired fine red earthenware fabric with red core and wiped surfaces.
   No diagnostic features.

3. A fine fabric with sparse course quartz inclusion.
   Oxidized buff surfaces with off white core.
   Strap handle with one edge curled under as found at the Lower Parrock Kiln (Freke D.J. 1979).

4. Fine fabric with dark grey core and dark red outer surface.
   Partly glazed dark brown outer surface.
   No diagnostic features.

5. Fine hard fired fabric with dark red core and surface.
   Splash of dull green glaze on outer surface of flat base.

6. Fine buff fabric.
   Thin walled vessel – 3mm.
   No diagnostic features.

19th Century

Spoil Heap :-

7. Pearlware.
   Probably Staffordshire.
   Moulded `feather edge` decorated in underglazed blue.
   Plate rim.

8. Off white earthenware.
   Wall tile 4mm thick with white glaze on one edge and one surface.

9. Off white earthenware.
   White glazed abraded with black underglazed unidentified decoration.

Trench:-

10. Off white earthenware.
    Probably Staffordshire.
    Plate rim with floral pattern in underglazed blue.

11 - 15 Five small sherds with no diagnostic features.
Possibly 16th. Century.

Distribution

The table below shows the distribution of sherds recovered from the spoil heap and trench. Because the assemblage was so small, the sherds were not weighed individually.

Period	Spoil Heap	Trench
16th. Cent.	1	10
19th. Cent.	3	1
Unidentified	Nil	5

6.0. Conclusions

6.1. It was unfortunate that the trenches excavated by the author were located along the alignment of a 20th century service trench, leaving only portions of the excavated section intact. However enough remained to show that the earthwork mound had been formed by a dump of waste charcoal, bloomery slag, fired clay and brick/tile, presumably from cleaning events conducted at the nearby furnace. Trench 1 positively identified the edge of this dump, but also showed a thin spread extending further north. Presumably most if not all of this meadow would have been covered by a thin layer of furnace debris, as recorded by Salzman. Trench 2 although badly disturbed by the service trench at its southern end revealed the makeup of this furnace waste dump, with one particular tipping event preserved as an irony charcoal lens. The presence of nodules of iron rich sandstone suggests that rejected poor quality iron ore was also being dumped on this mound. Trench 3 was of a different character to the other trenches and appeared to be a concentrated deposit of charcoal rich soil, presumably deposited later and butting up to the waste

mound, although this intersection was not revealed by the trenches excavated by the author, so must be left for future work to prove.

6.2. In conclusion, the results of this archaeological recording suggest that the sand school development area encompassed an area of 16th/17th century furnace waste dumping from the nearby furnace. This area appears to have been disturbed on several occasions by the excavation of service trenches and possibly by 20th century ploughing. It is unlikely, but not improbable, that any ancillary structures associated with the furnace existed within this area. However, the events leading up to this project, highlight the importance of an overall review of the defined archaeologically sensitive areas around bloomery and furnace sites in East Sussex.

7.0. Archive

7.1. The full paper, photographic record and finds (including samples of bloomery slag and charcoal) will be collated in accordance with *'Guidelines for the preparation of excavation archives for long-term storage'* (UKICI 1990) and deposited at the Archaeological Department at East Sussex County Council in Lewes.

7.2. Copies of this report will be sent to the East Sussex Historical Environment Record, Dr Andrew Woodcock the East Sussex County Archaeologist, the Wealden Iron Research Group and the landowner Mrs Clark.

8.0. Acknowledgements

8.1. The writer would like to thank Mrs Clark for allowing access to her site, Mr & Mrs Meades and Mr Hodgkinson of W.I.R.G. for bringing this site to the attention of the archaeological section at East Sussex County Council, and last but not least Dr. Woodcock for his input into this project.

9.0. Reference

Freke, D.J. 1979, 'The excavation of a 16th Cent. Pottery Kiln at Lower Parrock, Hartfield, East Sussex, 1977.' Post – Medieval Archaeology 13 (1979), pp79 – 125

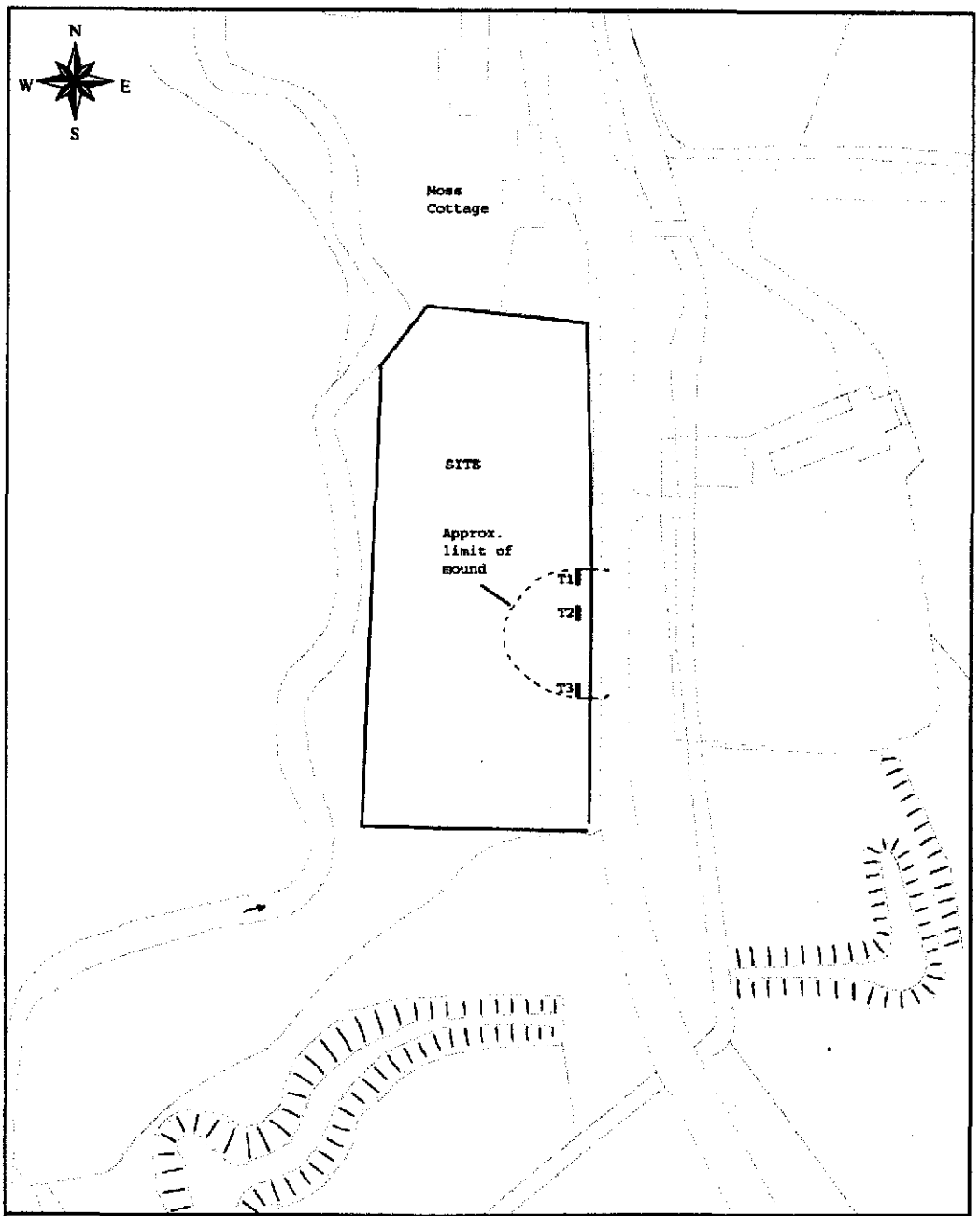
Salzmann, L. 1913, 'English Industries of the Middle Ages.' Boston, Houghton Mifflin Company

Straker, E. 1931, 'Wealden Iron.' Redwood Press Ltd, Trowbridge, Wiltshire.

SMR SUMMARY SHEET

Site Code.	
Site identification and address	Land adjacent and to the south of Moss Cottage, Newbridge, East Sussex
County, district and / or borough	Wealden
O.S. grid ref.	TQ:45533262
Geology.	Alluvial
Project number.	2004/10
Fieldwork type.	Recording brief
Site type.	Development

Date of fieldwork.	17-18th November 2004
Sponsor/client.	East Sussex County Council
Project manager.	Andrew Woodcock
Project supervisor.	Greg Chuter
Period summary	16th-17th century, 20th century
Project summary.	An emergency recording brief was maintained during the construction of a horse sand school. A mound made up of waste material from the adjacent iron furnace was recorded in the eastern section of the site.



East Sussex County Council		Scale : 1:500
		Date : 11 November 2004
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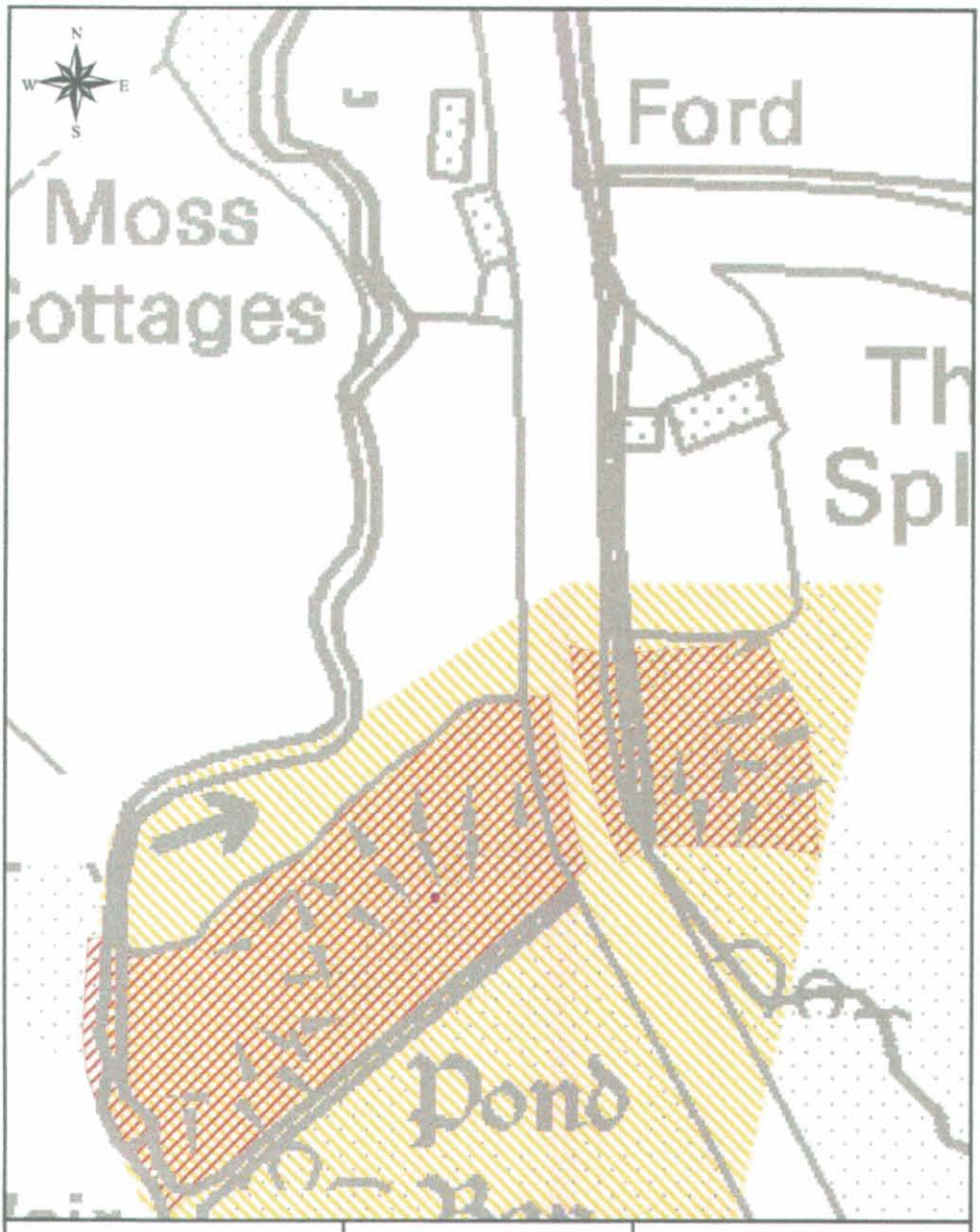

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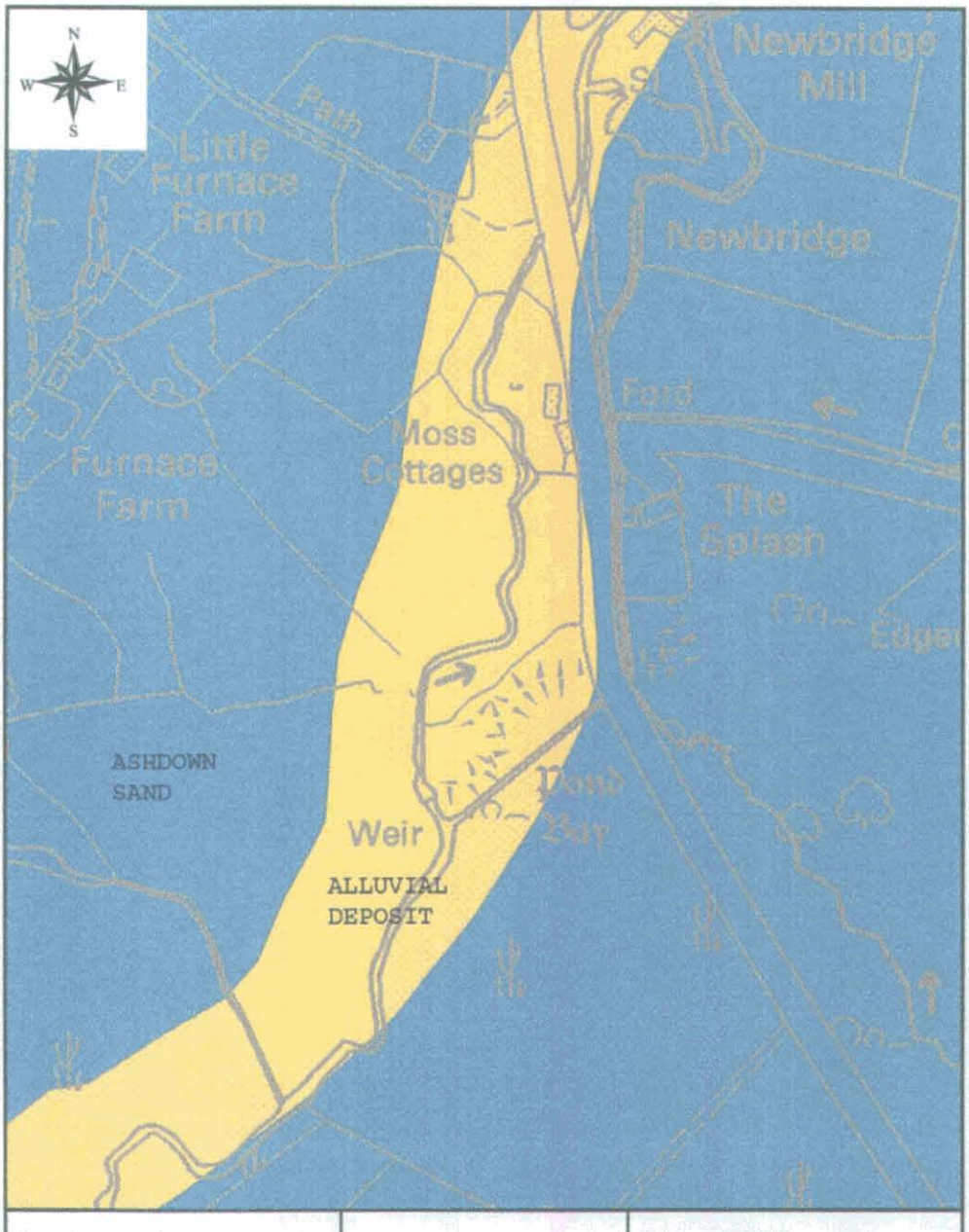
		Drawn : Greg Chuter



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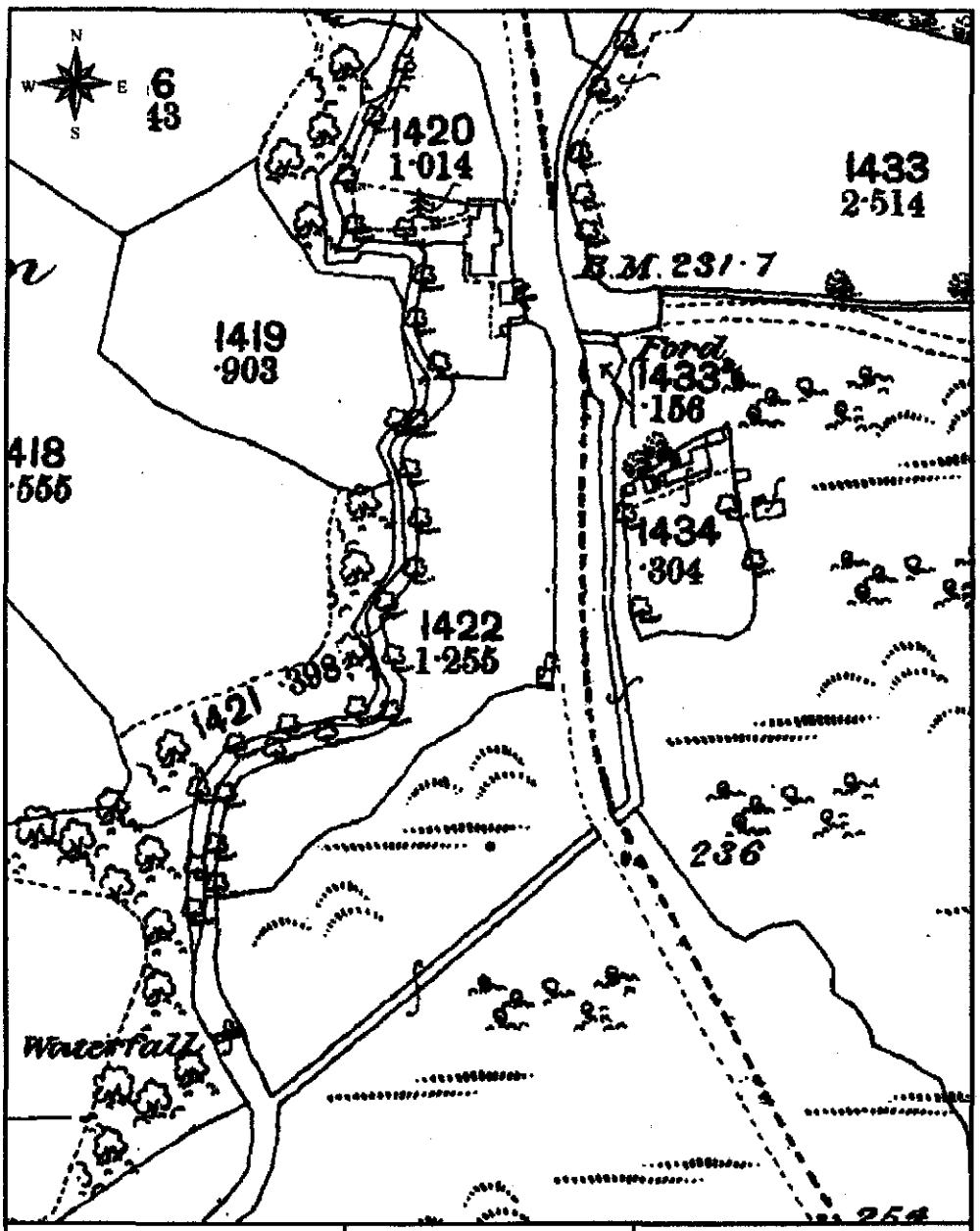

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		Date : 18 November 2004
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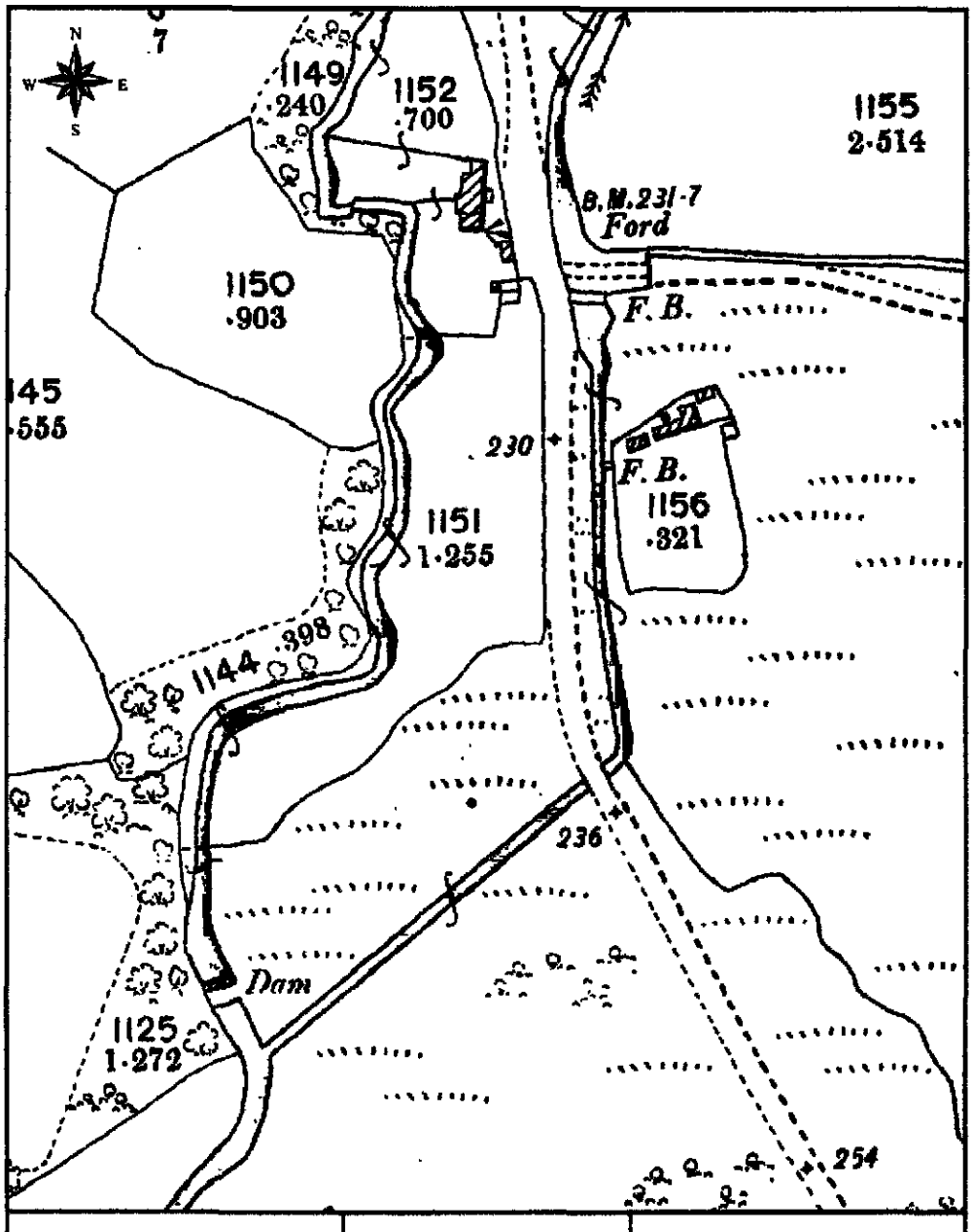
		Drawn : Greg Chuter



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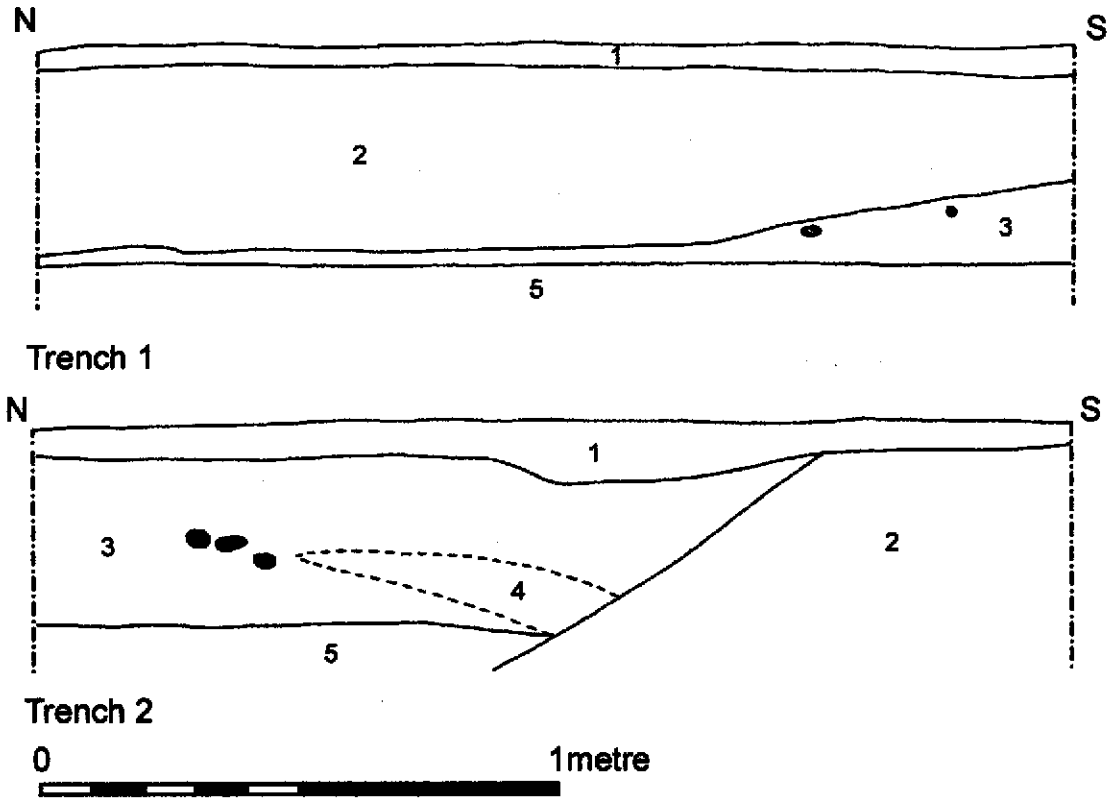
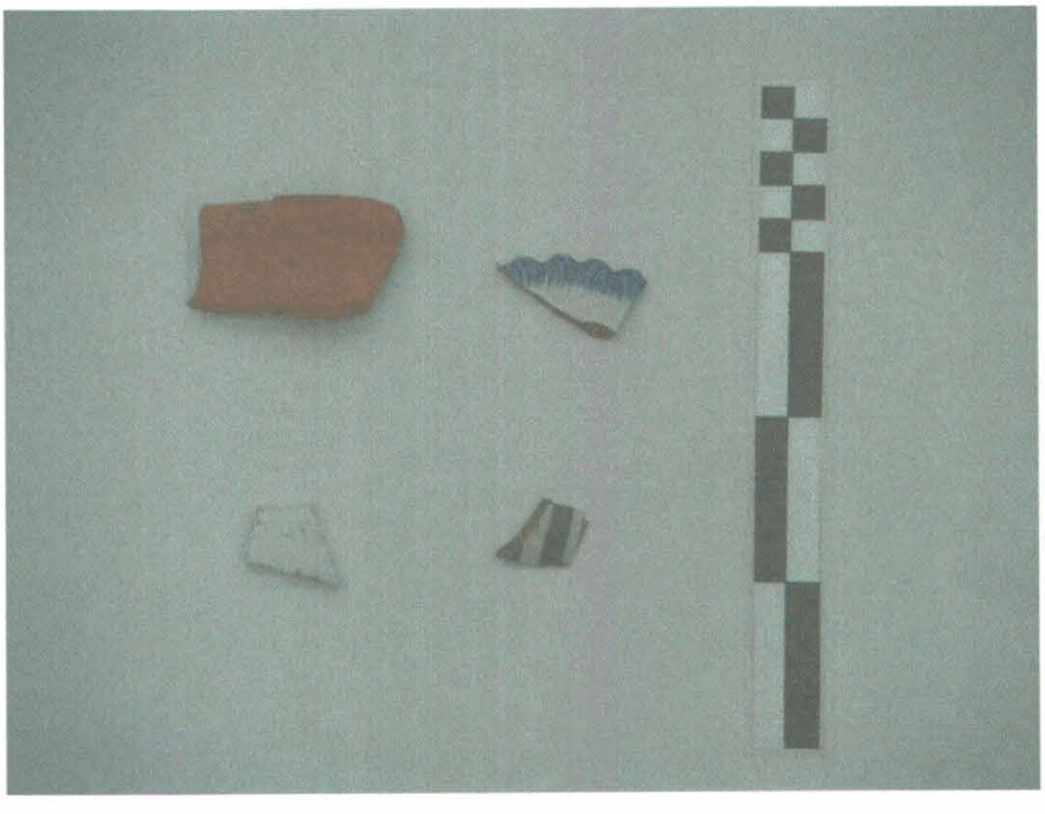


Moss Cottage, Newbridge Nov. 2004



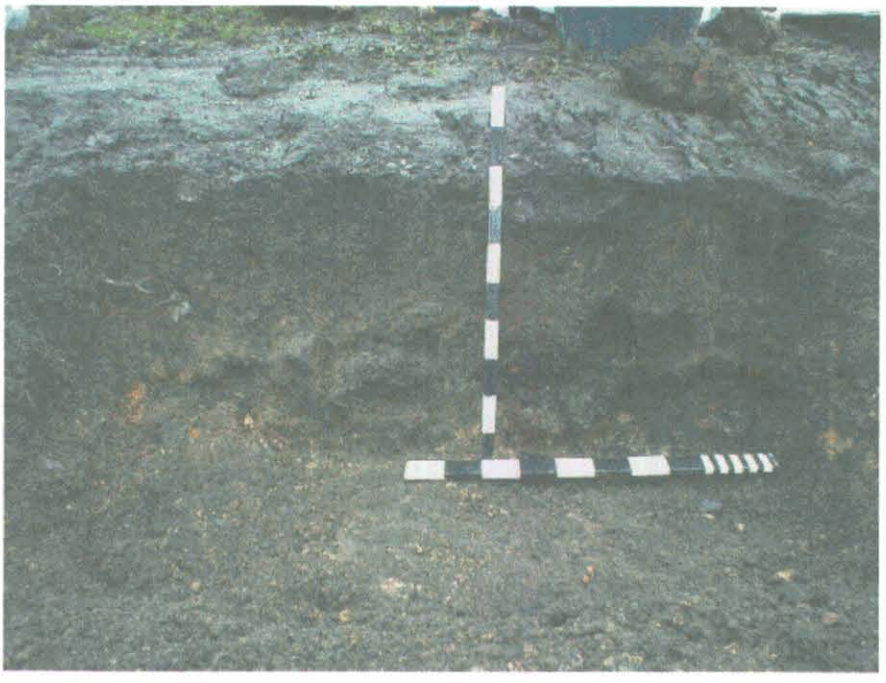
General site view looking south

View south along roadside hedge

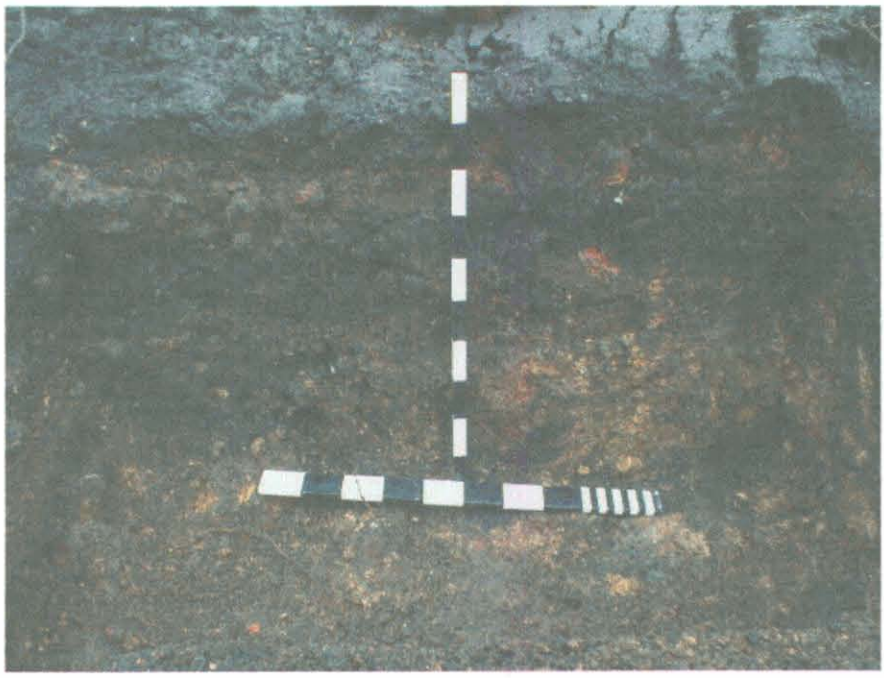
View south along road showing truncated mound

View east showing sectioned mound and area of investigation

Trench 1 prior to sampling



Trench 1 west facing section



Trench 2 west facing section

PRO DL 42/73 f2
lease to Thomas Boleyn; ironmill and dwellinghouse set within 14a land in AF, late occ Humphrey Walcote, before Penncelett Symart, which have been vacant and without farmer for 7 years past; 21 years from 29 9 next at £4; detailed inventory
[Feb 16H8 - 1525]

hereafter ensueth the implements ...

first a beam of iron with a pair of scales ... timber bound ...
chains of iron
item weights of lead that is to say 2 hundreds, a quartron and 14 lb
8 pair of tongs or iron whereof one little pair
4 hammers of iron whereof two great and two small
two males of iron whereof one to break mine and the other to break stone
two long rammers of iron for the furnace
two wyssels of iron
a rake of iron
a shovell of iron
a stere rake of iron
two short rammers for the finer
two coal rakes topped with iron
seven hooks for the bellows of the furnace
four clamps or clasps of iron to keep the tongs fast
two clamps or clasps for the finer
two stokkers of iron to make clean the tuwell
two forks of iron
two malles of iron for the finer
a pair of broken tongs of iron which Ewen must make sufficient
a chisel to cut iron
four sows of iron, whereof two at the hole of the bellows, and two at the issue or running of iron as it is molt away
a great pair of bellows to the same with two great and long pipes of iron and bound with iron hoops with two leathers of oxhides sufficient for the same
a wheel of timber with a long axtree bound with four hoops of iron
...eate brenned which hath seven hoops .....
the anvil for the hammer is broken which Ewen the late farmer must make sufficient and the stock wherein the said anvil is set is bound with a large hoop of iron
another anvil of steel weighing 250 lb
a great hammer of iron with a hoop of iron
a pair of bellows with two pipes of iron lacking the leathers which Ewen must make sufficient
a pair of bellows with pipes of iron in the finer's office which lacketh leathers, which the said Ewen must make sufficient
axtree, trough and wheel good with four hoops of iron upon the axtree

for Historical Metallurgy Society 'Pre 1500 Metallurgical Sites' list. DAH.

1. Name of Site:

Newbridge Furnace and Forge, Newbridge, Hartfield, East Sussex.

2. Metal:

Iron

3. General History of Area:

The site lies on Ashdown Forest, a sterile area of upland reminiscent of the Pennine Moors. Formerly Lancaster Great Park and therefore a royal preserve, the area has been occupied since mesolithic times and on its surface are the marks of man's long use of the area. At Garden Hill, a fortified enclosure to the south-west of Newbridge, there is evidence of neolithic, Iron Age and Roman occupation and of iron working in the latter two periods. A Roman road crosses the Forest and its path is marked where it passes beside the B.2026 between Camp Hill and the Five Hundred Acre Wood. To the south, towards Nutley, excavation revealed a small, Middle Saxon ironworking site.

Ashdown Forest was a hunting ground, outside the common law, in the Middle Ages. Its boundary, the park pale, can still be traced and its form, a bank, with a ditch on the forest side, betrays its purpose as a deer-leap fence, preventing deer from escaping from the forest but allowing them to enter. Gates or 'hatches' allowed people to enter and exit. In some of the valleys, lodges were built for the rangers who preserved the game for their royal visitors. Place names record their sites. Also to be seen are the long 'pillow' mounds of the rabbit warrens. Again their names continue in use.

The establishment of Newbridge Furnace restored ironworking to the Forest. Later ironworks include a Steel Forge built circa 1509, and a furnace at Stumblewood Common, on the Forest's western edge. Attempts by the Crown to sell off the Forest were the cause of bitter resentment and a Decree of 1693 secured 6400 acres of grazing rights for the commoners. The rest was enclosed including land on which Pippingford Furnace was built on the old Steel Forge site in 1696.

Land improvements to the Forest started in the early 18th century but gathered pace in the 19th. when new farms were created at Pippingford and Crowborough Warrens. Ashdown Forest's wild and rugged character attracted the Army who began using it as a training area during the First World War. A considerable area to the south west of Newbridge is now owned or leased by the Ministry of Defence. In a lighter vein, Ashdown Forest has become immortalised in the classic children's stories of Winnie the Pooh, by A.A.Milne.

4. Remains and Dating:

Bay Length 180m; Height 2-3m. Breached by road and Newbridge Mill Leat (part of Millbrook); partly removed west of road. West end forms a semi-circle, part of which was probably designed to protect the working area from spillway flooding. Two gaps in the semi-circular portion may indicate inlets to wheelpits.

Water System Pond dry. Present restored spillway probably on

original site. Two dry hollows within the semi-circular part of the bay, with dry ditches to main stream, may indicate wheelpits and tailraces.

Working Area The semi-circular portion of the bay contains forge cinder and bloomery-type tap slag. North of destroyed length of bay, next to road, is a scatter of glassy slag and charcoal. Large quantities of glassy slag are known to have been removed from small field to north.

Dating Earliest reference: 1496; latest reference: 1603.

5. Location:

NGR TQ 456325. Along footpath to west of minor road between Coleman's Hatch and Duddleswell, just south of Newbridge.

6. Accessibility:

Open to the public throughout the year. Scheduled Ancient Monument (Sussex) no. 399.

7. Ownership of Site:

East Sussex County Council. Administered by The Board of Conservators of Ashdown Forest, Ashdown Forest Centre, Wych Cross, Forest Row, East Sussex.

8. Permission required to visit:

None required. Public open space.

9. Sketch plan of Site:

(attached)

10. History of working at the site:

Newbridge is the earliest documented blast furnace site in England. It was set up for the Crown by Henry Fyner, a Southwark goldsmith, by an order of December 1496, to produce iron for Henry VII's artillery on its Scottish campaign. Iron was being produced early in 1497 and the works were leased, at £20 a year, to Peter Roberts, alias Graunt Pierre, a Frenchman. Roberts defaulted in his payment of the rent and was imprisoned. By the end of 1498, Pauncelett Symart, another Frenchman, held the lease.

Products of the furnace, listed in the accounts, included bolts. bolsters, strake bars for axles, cross bars and nails; all components for gun carriages. Also mentioned are two-part cannon. For converting the cast iron produced at the furnace into wrought iron, it is clear that a forge with a water-powered hammer existed although later accounts suggest that it was not immediately adjacent. It is possible that the forge provided the location for Simon Ballard who made gunstones (or cannon balls) from iron cast at Newbridge, and sent them to The Tower of London.

An inventory of Newbridge ironworks was drawn up in 1509 when a commission was appointed to inquire into their poor state. In 1512, Symart gave up his lease and a new one was granted to

Humphrey Walker, the king's founder. The works appear to have been in decline again in 1519, and may have been out of use. They were re-let in 1525, to Sir Thomas Boleyn, father of the future queen. Simon Forneres, the king's gunstone maker, sub-leased the site from Boleyn by 1534, but five years later it was in the hands of William Nysell, and casting about 160 tons of iron annually.

In the 1574 lists, Henry Bowyer had a royal furnace and forge on Ashdown Forest; in one version of the list this is identified as a double furnace at Newbridge. The last reference is in 1603.

11. References:

E.Straker Wealden Iron (1931).
H.R.Schubert 'The First English Blast Furnace' Jnl. Iron & Steel Inst. 170 (1952), 108-10.
H.F.Cleere & D.W.Crossley The Iron Industry of the Weald (Leicester 1985).

12. Adjacent sites of interest:

Ashdown Forest Centre (TQ 432324)
Sheffield Park Gardens (TQ 412240) NT
Standen (TQ 390356) NT

500TH ANNIVERSARY OF NEWBRIDGE BLAST FURNACE

14th December 1996

We are gathered here today to commemorate the fact that just 500 years ago in December 1496 a blast furnace was established here at Newbridge. The technology was not new. It was already well established on the Continent of Europe and in particular in the Low Countries and in Normandy. However, the Newbridge furnace was the earliest documented blast furnace in England.

The iron industry in the Weald is of course much older than that. It had flourished under the Romans, after a gap of some 5 centuries had started again under the Saxons, and in the 13th and 14th centuries was sufficiently established to supply large quantities of nails and horse shoes to the Crown for military purposes. However, further expansion was inhibited by the essentially small scale nature of the bloomery furnace technology then in use. For example, the 14th century bloomery furnace at Minepit Wood had a hearth diameter of 30 cms producing a bloom of iron probably weighing about 30 lb. It was not until the mid 16th century, after the introduction of the blast furnace here at Newbridge, that the expansion of the iron industry in the Weald really took off.

How did this innovation come about and what were its long term effects?

The Ironmongers' Company, of which I had the privilege of being Master two years ago, was already established as one of the merchant guilds of the City of London by 1260 and had received its first royal charter in 1463. Like other guilds, it enjoyed a monopoly in its trade, which enabled it to control quality standards. No one was allowed to trade in the City in iron or in iron products unless he or she (yes, there were women members from the earliest times) was a freeman of the Ironmongers' Company. Members certainly traded in Wealden iron, but for the larger and higher quality items they tended to import iron from Germany, Normandy, Castile in Spain and the Baltic. Thus, although not iron makers themselves, they would have been well aware of of technological developments among their continental suppliers.

As early as 1290, the Wardrobe, the Crown's administrative office of supply or central purchasing office, was permanently established in the City of London. By the early 1490s the office was under pressure to provide for Henry VII's artillery for his Scottish campaign.

Is it too fanciful to suppose that at that time officials of the Wardrobe, over a bottle or two of wine in the then equivalent of a City wine bar, heard from some ironmongers of the superior quality of iron being produced and the advantages of scale and economy being achieved on the Continent by the use of the blast furnace, coupled no doubt with complaints about the backwardness of the domestic producers ?

Certain it is that it was officials of the Crown who gave instructions for the

establishment in 1496 of the first blast furnace in England, that it was to be at Newbridge on Duchy of Lancaster land controlled by the Crown and that the initial output for supply to the Crown was iron shot and parts for gun carriages.

To whom were the instructions given? Not to an established and perhaps conservative Wealden iron maker. Not to a merchant member of the Ironmongers' Company with no manufacturing experience. No, the instructions were given to a goldsmith, Henry Fyner. The Goldsmiths were a craft company. They manufactured articles from gold and silver and other precious metals. They were, and still are, responsible for the assay office testing all silver articles made in the City and applying to them the well-known silver marks and for the testing of the purity of the national coinage. They were metallurgists. Henry's surname may indicate that his family had been involved for generations in the metal refining business. He imported skilled Frenchmen to operate his new ironworks.

So perhaps that is how the establishment here at Newbridge of the first English blast furnace came about.

What were its long-term effects and why are they important ?

In the 500 years since 1496 there have been other notable milestones in the development of the iron and steel industry in this country, including Abraham Darby's Coalbrookdale replacement of charcoal by coke for iron smelting, the Bessemer steel-making process, oxygen steelmaking and continuous casting.

Today the industry in England and Wales leads Europe and is among the leaders of the world in efficiency, productivity and low cost. During my time with British Steel in the 1970s, the great leap forward that made that possible was the adoption from Japan of the design and operating technology of the very large blast furnace with a hearth diameter of 9 meters, a furnace height of over 30 meters and a total height of some 60 meters, comparable in size with the NatWest Tower in the City. When the furnace is tapped, each hot metal car carries some 135 tons of molten iron to the steel making. That is only a little short of a full year's production at Newbridge. Of course, in a modern steelworks, the steel making and continuous casting processes which follow the iron making are of 20th century origin and would have been inconceivable in the 15th century. None the less, the fact remains that, without the blast furnace process of making iron, the steel industry could not operate as it does today.

It therefore gives me great pleasure on behalf of the Wealden Iron Research Group, of which I am proud to be a member, to dedicate this plaque to the 500th anniversary of the landmark achievement of the establishment of the first English blast furnace here in the Weald at Newbridge.

WEALDEN IRON RESEARCH GROUP

PRESS RELEASE

500TH ANNIVERSARY OF THE FIRST BRITISH BLAST FURNACE

On Saturday 14 December 1996, at 11 am, a plaque commemorating the establishment of the first documented blast furnace, for the smelting of iron, will be set up on the site of the furnace, at Newbridge, near Colemans Hatch, East Sussex.

The plaque will be provided by the WEALDEN IRON RESEARCH GROUP and, at a short ceremony, will be dedicated by MICHAEL EDWARDS, CBE, QC, a PAST-MASTER of THE WORSHIPFUL COMPANY OF IRONMONGERS and a former MANAGING DIRECTOR of BRITISH STEEL.

Newbridge Furnace was established by command of Henry VII, on 13 December 1496. Henry Fyner, a goldsmith of Southwark, was commissioned to employ founders and labourers, and to erect the buildings necessary for the manufacture of iron, at Newbridge, on lands belonging to the Duchy of Lancaster on Ashdown Forest. By early in the following year, 'rough' or cast iron was being produced, using local ore and charcoal, and was being forged into the various pieces of ironwork required for gun carriages for the king's military expedition against the Scots. Shot for ordnance and hand-guns was also made.

The significance of this anniversary lies in that the introduction of the blast furnace into Britain, from northern France, led to the development of the iron and steel industry, first in the Sussex, Kent and Surrey Weald, which predominated for 150 years, and subsequently in South Wales, Shropshire, the Forest of Dean, Yorkshire and other regions of Britain. From Newbridge, it can be said, the pioneering development of coke iron smelting by Abraham Darby at Coalbrookdale, the cutlery industry of Sheffield, and the shipbuilding industry of Tyneside, had their beginning.

THE WEALDEN IRON RESEARCH GROUP was founded in 1967 to focus and initiate research into the extinct iron industry of the Weald. It has approximately 140 members, and publishes an annual bulletin of fieldwork and documentary research. It won the BBC's *Chronicle* Award in 1981.

DIRECTIONS: Newbridge lies at NGR TQ 456325, 9 km SE of East Grinstead, just west of the minor road between Colemans Hatch and Gills Lap.

REFERENCE: H. Cleere & D. Crossley, *The iron industry of the Weald* (Leicester 1985; 2nd ed. Cardiff 1995)

CONTACT: Jeremy Hodgkinson (Chairman); 3, Saxon Road, Worth, Crawley, Sussex, RH10 7SA.
Phone: (day) 01342 713292; (evenings and weekends) 01293 886278

Affiliated to:
The Council for British Archaeology,
The Sussex Archaeological Society, The Kent Archaeological Society,
The Surrey Archaeological Society, The Historical Metallurgy Society.
Registered Charity No. 281485

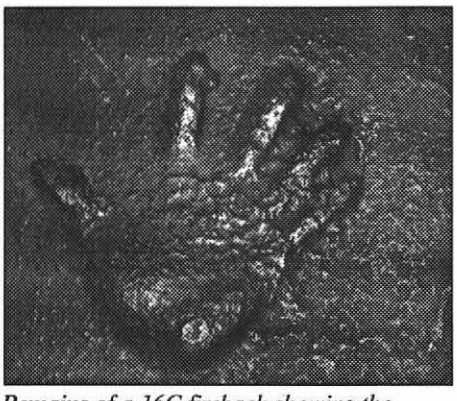
500 years of the blastfurnace in Britain

On 13 December 1496, King Henry VII commissioned Henry Fyner – a goldsmith – to engage founders and labourers to construct an ironworks on Crown lands at Newbridge on the Sussex Weald.

Located some 50 miles south of London, on the Ashdown forest, timber for charcoal was abundant, ore deposited in clay was close by, and there was a stream to drive the water wheels needed to work the bellows and hammers.

The ironworks was to produce items for use by the Royal Artillery on its Scottish campaign against James IV; parts for gun-carriages '*with other things as shall be necessary for the binding of the stock and wheels of the ordnance*', were made from wrought iron; cannon were cast direct from the furnace and cannon balls were produced from cast iron – in a fraction of the time previously spent on fashioning stone balls or using wrought iron dies.

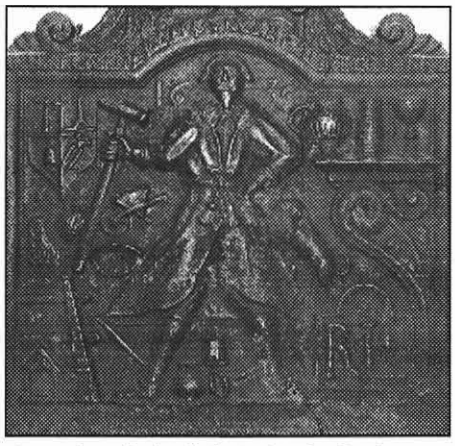
The new ironworks was exceptional in a number of ways. Both its technology and its skilled manpower came from Northern France. This 'walloon' technology – originally developed in what is now part of Belgium, represented a break from the past. Previously,



Remains of a 16C fireback showing the imprint of a woman's hand (Anne of Cleves Ho)

wrought iron had been produced directly in a bloomery furnace in small quantities, typically 2 cwt (100kg) in 24 hours, and cast iron was virtually unknown in Britain. By contrast, the Newbridge blast furnace might make 15 cwt (750kg) of pig iron suitable for casting in 24 hours and if needed, this could be refined into wrought iron in a forge on the same site.

Excavations of other early Wealden blast furnaces suggest that the Newbridge furnace would have consisted of a double-skinned stone stack with a base up to 20ft (6.5m)



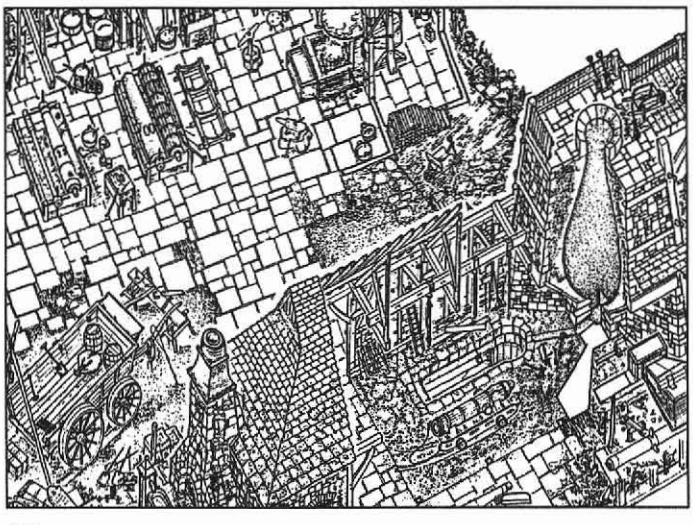
A cast iron fireback depicting the Brede Furnace in 1636 (bottom left) with the ironmaster Richard Lenard surrounded by the tools of his trade. (Anne of Cleves Ho)

square (outside measurement), the space between the walls being filled with rubble. Its height was probably about 22ft (7m) and the walls reinforced with heavy timber bulks. Intriguingly, the only contemporary illustration of a Wealden furnace exists as a relief casting on a decorated fireback dated 1636. This fireback, which can be seen at the Anne of Cleves House in Lewes, shows the Brede furnace along with the ironmaster, Richard Lenard and the tools of his trade.

Continental paintings show that the furnace stack was surrounded by a roofed building, open at the sides, which covered the casting area, and, on an adjacent wall at 90° to this, the bellows and tuyere arch. A wooden leat took water from the pond to drive a waterwheel to power the bellows.

Many of the Wealden furnaces are associated with deep pits for casting cannon vertically, and with work shops for preparing cannon moulds and reaming out the hollow cast bores to an accurate fit. Other items commonly cast were fire backs, sometimes with elaborate decoration, and at other times a simple pattern made with rope or tools, or in one example preserved in Lewes, the imprint of a woman's hand.

Alternatively, the iron was cast into a long 'sow' two metres or more in length. When cold, this was transported to the finery, or forge, housed in a separate nearby building. In line with the walloon process, this would have contained at least two hearths with water powered bellows and a water-powered helve hammer.

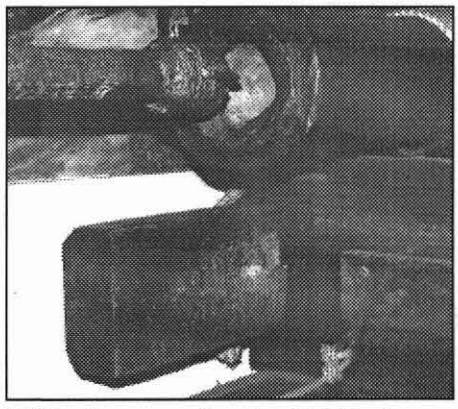


Representation of a typical Wealden blast furnace, finery and casting house of 15-16 Century

In the *finery* hearth, the large sow would be gradually fed into the hot charcoal through a hole in the back of the hearth wall and the air blast of the tuyere played onto it to melt off a 'ball' probably weighing about 20kg. This was partially decarbonised before being carried to the hammer where it was hammered flat, followed by slicing into small billets. These were taken to the second hearth, the *chafery*, where a less powerful air blast enabled the Smith to remove further carbon in a more controlled manner, alternately taking the metal to the hammer for forging to produce an homogenous billet of the desired size.

Newbridge ironworks has not been excavated but a long bank survives, 2-3m high in places, which is the remains of a dam (called a *bay* in the Weald), which once stretched continuously across the site. Nothing else remains to be seen above ground, but a little scratching of the soil, or inspection at the mouth of a convenient rabbit hole or uprooted tree, may reveal lumps of 500 year old slag.

Newbridge furnace was not an immediate success. The first lessee, a Frenchman, Peter Roberts, was imprisoned within two years for unpaid debts. Another Frenchman, Pauncelett Symart became tenant, but had difficulty in paying his rent. Records show that the furnace could produce 160t iron a year for which the selling price for pigs (*rough iron*) is recorded as £2 13s 4d a ton (£2-66).



16C boring reamer found at Chiddingly (Anne of Cleves House)

The technology, however, survived on the Weald for 316 years, the last water powered charcoal furnace, at Ashburnham, closing in 1812. ■

Further reading

H Cleere & D Crossley The Iron Industry of the Weald 2nd edition, Merton Priory Press 1995.

Schubert, H R, History of the British Iron & Steel Industry RKP 1957.

Awty, B G, Bulletins of the Wealden Iron Research Group 1st Series nos 13 pl7, 15 p2 and 17 p2; 2nd Series No 11 (1991) 11-14.

Acknowledgement

To Mrs Dot Meades for the basis of this article and to Reg Houghton who prepared the interpretive sketch..

Finding the Site

Newbridge Furnace is located at OS map grid ref TQ 456325 1/4 mile (0.5km) SW of the village of Newbridge which is some 4 miles (6.5km) west of Crowborough in East Sussex. A plaque depicting a plan of the site has been erected by the Wealden Iron Research Group.

Anne of Cleves House is at 52 Southover High Street, Lewes, E Sussex and is open from the last weekend of March to 31 October Mon-Sat 10am to 5-30pm, Sun 2pm to 5-30pm. (Tel (0)1273 474610.

fragment from a second Acheulian hand-axe, a large one-platform core and another flake, A total of 28 flints has now been recovered. Five flakes show apparent signs of utilisation. Field-walking around the find-spot of the single small hand-axe from Hawkshill Down at Walmer has now also yielded 6 heavily patented Palaeolithic flakes together with a finely worked section of another hand-axe and a platform core. The flints were discovered on a localised outcrop of Clay-with-Flints and occurred over an area some 40 metres across.

Monitoring by the Canterbury Archaeological Trust of a new water pipeline between Ringwould and Upper Deal in the summer of 1993 produced two small Palaeolithic hand-axes. One, a small ovate, was found on the top of a high chalk ridge capped with Clay-with-Flints southwest of Ringwould Mill. The second, a very small pointed example, was found at a lower elevation near Coldblow, some 900 metres to the north-east. About a dozen contemporary struck flakes were found in the same general area. Another hand-axe has already been reported from near this spot and the presence of a small site here now seems to be suggested.

A prolific new site has been discovered in the parish of St Margaret's at Cliffe, on the hill-top some 450 metres to the north-west of West Cliffe church. Field-walking here yielded a number of Acheulian hand-axes, several cores and about 200 struck flakes, several of which are worked. Situated some 3.75 km to the southwest of Wood Hill, Kingsdown, this site lies on the same chalk ridge and again occurs on a deposit of Clay-with-Flints. It stands at an elevation of about 95 metres O.D. and the main lithic concentration investigated covers an area some 200 metres across. Six complete hand-axes have been recovered so far, together with fragments of three others. They include a fine twisted cordate, a twisted ovate and several pointed types. The twisted cordate shows clear evidence of extensive use-damage on the tip, including a large flake which has been detached. This damage provides good evidence for the way in which such tools were sometimes used. It clearly indicates that the end of the axe was utilised with a chopping action, against something hard such as wood or bone. A more general scatter of later flint material has also been recovered from the same site and this includes a small axe and two axe-sharpening flakes of typical Mesolithic form, and a large quantity of flakes of probable Neolithic-Bronze Age date.

This additional information adds further details to our understanding of the distribution of Lower Palaeolithic material across the east Kent chalk lands. Of particular interest is the increasing occurrence of Acheulian hand-axe finds, both old and new, in association with apparently contemporary struck flakes, implying that many hand-axe discoveries are not in reality, isolated stray finds, as has often been thought, but are in fact derived from more extensive scatters, where the less diagnostic flakes have been missed. The available evidence combines to suggest that Lower Palaeolithic man was fairly active across the downlands of eastern Kent. Details concerning the precise nature of that activity, however, are very difficult to deduce from the flint material recovered. A variety of different camping sites used by family groups for both short and longer term occupation, together with hunting party kill sites and other activity places, could all be represented. But detailed excavations at very well preserved sites such as Hoxne (Suffolk), Swanscombe (Kent) and Boxgrove (Sussex) have suggested that the nature of such early habitation areas is not as we might expect. As well as lacking any clear evidence for structures such as hearths, pits and post holes, these areas generally do not seem to show any organised camp-site lay-out, the extensive scatters of debris recorded usually having no clear focus to define the principal occupation areas.

From the numbers of flints found, Wood Hill, Whitfield and West Cliffe presently appear to be the most prolific sites and quite possibly represent the locations of well-established habitation areas. Elsewhere, the discovery of small groups of contemporary struck flints with single hand-axe finds has rather blurred the distinction between what were originally seen as definite habitation 'sites' and casual, isolated losses of implements. Close dating of the main assemblages recovered is very difficult. All the recognisable implements are Acheulian. Given the great length of time that Acheulian material was produced (around 300,000 years for Britain) it seems most unlikely that the various individual flint scatters recorded could have been produced within even the same millennium. Yet it is generally agreed that the Lower Palaeolithic population of Britain must always have been extremely small and it was also certainly intermittent. Thus, just one group of hunter-gatherers who wandered across what is now eastern Kent, perhaps on a seasonal basis, could have been responsible for producing the recorded assemblages within the course of perhaps only a few decades. The writers would currently prefer to see the Wood Hill, Whitfield and West Cliffe localities as representing sites which were short lived and of a single phase. It is hoped that further field-walking, more trenching to confirm *in situ* sites and Mrs Scott-Jackson's detailed work will provide significant new information concerning this remote period in Kent's past.

From an article in KAR no.123 Spring 1996 by Keith Parfitt & Geoff Halliwell, Dover Archaeological Group

THE FIRST ENGLISH BLAST FURNACE — a quincentenary celebration

An anniversary that deserves to be better appreciated is that of the first documented blast furnace, for the smelting of iron, in Britain, which was established at Newbridge, near Hartfield in Sussex, in December 1496. It ranks in importance with the introduction of iron into these islands, sometime in the early centuries of the first millennium BC, and with the introduction of a commercially successful method of smelting iron with coke in the 18th century. However, neither the

the property, Mr T H Farrer, suspected that these materials marked the site of an ancient building and on 20th August 1877, had part of an adjoining field excavated with the result that part of a villa was uncovered. Parts of six rooms were revealed, one of which had a floor of red tile tesserae. A quantity of artefactual material was recovered but no formal report was forthcoming on any aspect of the excavations. A plan published in *The Builder* of 1878 shows the layout of these rooms, but the location of the excavation cannot be determined from this. Charles Darwin became interested in the excavations and conducted experiments on the floor whilst researching evidence for his book "The formation of vegetable mould through the action of worms, with observations on their habits", this has led to the publication of the only known section from this excavation.

Given the limited knowledge for the location of this building, and the large quantities of Romano-British material being brought to the surface of the field by modern agriculture, it was felt that an excavation to ascertain the nature of the building as well as examining the degree of damage to any surviving structures should be undertaken. A three week season of excavation was, therefore, undertaken during July and August 1995. On the second day of this excavation a number of walls, subsequently dated to the Romano-British period were uncovered. These gave the plan of five rooms, forming part of a large building. The deposits within two of these rooms were excavated to latest floor levels; one of these consisting of a compacted chalk mixed with crushed tile, and the second a damaged mosaic of fine workmanship stylistically dated to the fourth century. Two of the rooms showed evidence of a considerable burning episode. With charcoal and ash mixed with significant amounts of roofing tile; this appearing to mark the destruction of the roof of the building by fire. The deposits within the rooms excavated had a remarkable absence of datable material, indicating that the building had been cleared out and deliberately abandoned at sometime prior to its destruction.

No evidence of the 19th century excavations was revealed during this season of work and it is now thought that this lies at some distance to the west of the 1995 trenches.

From the limited work carried out it can be seen that the building is clearly of some importance and English Heritage have declared their interest in designating the site a Scheduled Ancient Monument. During the winter months work has continued, through geophysical survey and field walking, in an attempt to begin to understand the scale of the site as well as adding knowledge of the economy and relationship to the landscape of the building complex.

A second season of excavation is planned for July and August 1996 with the aim of answering specific questions as well as determining the extent of the building range to aid the scheduling process.

Participants will be welcome, both volunteers and students (numbers are limited), details can be obtained from: Judie English, Flat 1, 2 Rowland Road, Cranleigh, Surrey, GU6 8SW.

Steve Dyer

The excavation described briefly above is the subject of the AGM Lecture given by Steve Dyer on 27 April 1996 at 2.30 in Salters, Castle Street, Guildford. full programme enclosed

More Palaeolithic Discoveries In East Kent

A report concerning the discovery of Lower Palaeolithic flint material in non-river gravel contexts in east Kent has recently been published (*see CBASE Newsletter no. 6*). Since that report appeared, further work has been undertaken and a number of new finds have been made in the same region. These have generally confirmed and amplified the conclusions previously reached, namely that the chalk down lands around Dover and Deal show considerable evidence for Lower Palaeolithic activity, including both stray finds and more importantly, sites with evidence for *in situ* occupation.

A small research excavation was undertaken on the Wood Hill site during September 1993 by Mrs Julie Scott-Jackson of the University of Oxford, Dept of Quaternary Research. Of particular interest was the discovery of a complete bifacially worked hand-axe *in situ* within the natural clay at a depth of about 0.55m below the base of the plough-soil. This brings the total number of such implements represented on the site to seven. Of these, only four are substantially complete. A number of different types are represented and these include a finely worked, undamaged, twisted cordate and a large broken ovate. Of the fragments, one large piece appears to be from a flat butted cordate axe, or a boute coupé type, which may perhaps be of Middle, rather than Lower Palaeolithic date.

Analysis of the 281 struck flints recovered from the site at Green Lane, Whitfield near Dover has identified a total of 12 substantially complete Acheulian hand-axes, together with fragments from three others. Seven of these implements came from the upper zone of the natural Clay-with-Flints sub-soil. Visually, the complete axes show a variety of shapes, sizes and forms and they range in length from 61mm to 148mm. Three-quarters of the implements belong to Wymer's pointed hand-axe groups. Single examples of ovate, cordate and sub-cordate types are also represented. The finely worked, twisted cordate hand-axe shows that a high degree of knapping skill was present on the site even if more crudely fashioned implements were being most frequently produced.

Further field-walking at West Street, Finglesham, near Deal has produced more struck material, namely a

beginning of the Iron Age in Britain, whenever that was precisely, nor the introduction of the blast furnace, were innovative in the sense that coke smelting was; and for that reason Coalbrookdale and the Ironbridge Gorge have been celebrated more, indeed to the extent that they have achieved World Heritage site status. Nevertheless, the developments which took place at Newbridge in the closing years of the 15th century were of great significance, for they represent a major advance in the scale of iron production in Britain and, for the South East, 1496 marks the beginning of a prolonged period of prosperity.

It may be that the setting up of a blast furnace on Ashdown Forest, which was Crown land, was contemplated as early as 1491, for the text of an agreement between Henry VII and Joahnnes de Paler and John Heron, whereby the two individuals were to send overseas for skilled men to work two water mills and a forge, has survived in the Public Record Office. It is not known whether the agreement was ever carried out. However, among the clauses of the agreement was one stating that every six days 2000 weight of gunstones (cannon balls) were to be delivered to the king. The period of six days, known as a *founday*, was the working week for blast furnaces at the time, so the intention to erect a blast furnace seems real enough.

Political expediency seems to have been the motive in the attempts to establish a blast furnace at Newbridge. In 1491 it was the planning of a campaign to assist the heiress to the Duchy of Brittany, against Charles VIII of France. Five years later it was the need to secure the Scottish border that led to the works definitely being started. Henry Fyner, a Southwark goldsmith, was required to produce iron for the king's artillery train. Within a year the works were up and running and were leased to Peter Roberts, a Frenchman, although by 1498 he was imprisoned for defaulting on the rent. Another Frenchman, Pauncelett Symart, took on the lease and retained it until 1512. Being on Crown land, the works were periodically liable to produce accounts, and these show that production during Symart's tenure was varied. Bolts, bars and nails were made, as well as two part cannon. Clearly there was a forge nearby, with a water powered hammer, where the cast iron from Newbridge was refined into bars and where cannon balls were made for the Tower of London. The fortunes of the works flagged at times, and in 1512 the leased was granted to Humphrey Walker, the king's gunfounder. He was no more successful, and the works passed through a number of hands, including those of Sir Thomas Boleyn, future father-in-law of the king. The last reference to its use was in 1603, although it was noted as having been rebuilt in a different location, towards West Hoathly, as early as 1539.

The early references to foreign workers, in the document of 1491 and in the names of early lessees, highlights an important aspect of the iron industry at this point of technological change. Here was not a natural development from an earlier, indigenous process. Instead the new technology was deliberately introduced, and that necessitated attracting skilled workers from areas where it was already established. Research has shown that the introduction of the blast furnace to England was a stage in the gradual spread of the indirect ironmaking process from the area round Liége, in modern Belgium, where it developed. The majority of the ironworkers who brought their skills to Sussex in the 1490s and after, came from the *pays de* Bray, south east of Dieppe, in Normandy, where the blast furnace had been introduced in the 1450s, following the end of the English occupation of the area. Bray is a microcosm of the Weald's geology, and economic conditions in the region in the mid-15th century had led to an increase in the amount of woodland and the availability of mill sites abandoned during periods of pestilence. The migration of these families continued through the first part of the 16th century, and ironworkers whose families had continental origins continued to form the core of the skilled workforce of the iron industry in the Weald and in many other areas. Even Abraham Darby's founder at Coalbrookdale, John Tyler, came from immigrant stock. Foreign workers have long been a feature of the economy of south-east England, notably also in the cloth industry, and local acceptance of these aliens may have been a social problem of the times.

The new growth in the iron industry, which was begun at Newbridge, was confined to the Weald for the first fifty years, and for more than a century and a half the region remained the most important source of iron in the realm. From the 1560s, however, furnaces were built in South Wales, influenced initially by ironmasters from the Weald but soon by the entrepreneurship of local men. At about the same time the first blast furnaces were being built in the Midlands and, within twenty years, in Yorkshire. A hundred years after the setting-up of Newbridge there were 50 such furnaces in the Weald and a further 30 elsewhere in the country.

The effect of the introduction of blast furnaces and their accompanying finery forges, on the Wealden landscape, was undoubtedly dramatic. Huge dams, or bays, were thrown up across valleys, forming ponds. Sometimes chains of ponds were constructed to ensure a constant supply of water; the Iridge estate, near Robertsbridge in eastern Sussex, possessed a system of no less than 25 ponds. Woodland was assailed. Vast acreages of trees seemed threatened until a pattern of coppice and underwood management emerged. The wooded character of the Weald today is a legacy of the iron industry, which preserved, rather than destroyed, the woodland. In addition, farmland and waste were disturbed by the digging of ore, or mine, which was extracted from narrow cylindrical pits. The prospect of employment, albeit seasonal, would have attracted migrant workers at a time when an increasing population was causing encroachment on manorial wastes in the South East. Small shanty settlements may have sprung up around the larger works. At the other end of the social scale, wealth generated by iron production led to the building of new houses, the grandeur of which reflected the prosperity and aspirations of landowners and tenants alike. With

fireplaces protected by new iron firebacks, chimneys became indispensable on new dwellings.

Among the early products of Newbridge furnace were cast iron guns. Fabricated in two parts, they were the direct successors of the wrought iron, two-piece weapons that had been welded together in military smithies for more than half a century. The descendants of these artillery pieces were a product which is particularly associated with the Weald; cast iron ordnance. While the blast furnace and the variety of products made in it, were developed and improved as it spread into other parts of Britain, the manufacture of ordnance remained a preserve of the Weald until the latter half of the 18th century. This was not the immediate legacy of Newbridge, however, for the successful casting of an iron cannon in one piece was not accomplished until some fifty years later, in 1543, and at a furnace in Buxted, a few miles to the south.

Today, Newbridge lies in a forgotten corner of Ashdown Forest. The pond held back by its earthen bay is long since dried up. The site of the furnace is overgrown with bracken, brambles and birch trees. Only on the ground is there the evidence of one-time activity, in the tell-tale, glassy green slag. Like so many Wealden ironworking sites, the woodland has reclaimed its own, but in those quiet woods lies the birthplace of a great industry.

Jeremy Hodgkinson

The site of Newbridge furnace is at NGR TQ 456325, along a footpath to the west of a minor road between Coleman's Hatch and Duddleswell. It is open to the public throughout the year.

Further information about Newbridge or about other aspects of the Wealden iron industry may be had from the Wealden Iron Research Group, c/o The Hon. Secretary, 8, Woodview Crescent, Hildenborough, Tonbridge, Kent, TN11 9HD.

Fishbourne Excavation

The first of the Sussex Archaeological Society's five-year programme of excavations at Fishbourne Roman Palace was undertaken in 1995. The 17m by 20m site was just to the east of the stream that runs from north to south outside of the east wing of the main palace. The excavated area was selected so as to include part of the 1983 excavation dug by Alec Down.

The principal results of the excavation can be summarised as follows: Two parallel masonry walls, separated by a distance of about 2m, were uncovered running from east to west across the southern half of our excavations, and disappearing under the eastern section. The southernmost wall continued westwards past the north-south wall discovered in 1983 (which was butted up to it), and is presumed to continue until joining the wall apparent in the east side of the north-south stream. The northernmost wall ran westwards across the excavation but terminated about 5m short of the north-south alignment of masonry. The foundations of both walls were constructed of natural flint cobbles, although more effort seems to have been taken with the southernmost wall; a foundation trench greater than the foundation width was dug for the latter, and there was evidence of use of mortar, the deliberate laying of flint nodules in courses and the use of chalk and greensand facing stones. Both walls were characterised by a significant depth of foundation material. Where excavated to the bottom of the foundations, the southernmost wall had a foundation depth of 1.2m.

Alec Down proposed that the building he had partly uncovered in 1983 had been deliberately demolished to the top of the foundations, and argued that it must have been broadly contemporary with the so-called Proto-Palace, constructed around AD60. Clearly, an obvious historical context for the demolition of our masonry structure would be at the time of construction of the main palace at Fishbourne (around AD75 or later). The evidence uncovered from the 1995 dig supports the hypothesis of an early masonry building subsequently demolished. There is no hint that any of the foundations were robbed. Finds from the excavation (mostly broken brick and tile, with some nails) is consistent with the hypothesis of deliberate demolition. There is also no definitive dating for the masonry, since the foundation trenches and wall foundations were devoid of any dating material. The presumption of a date earlier than the Palace is founded on the assumption that the ground in front of the Palace would have been kept free of buildings, becoming 'gardens' in AD75 and after.

At some time after the demolition of the masonry building a ditch and associated drainage gully was excavated in the area. The ditch was located in the north-east corner of the excavation and terminated within 3m of the eastern section of the dig. Leading from its south-western side was a small gully that ran across the excavated area from north-east to south-west, cutting across the foundations of the two masonry walls, and presumably draining into the stream to the west. The filling of the ditch contained noticeably larger fragments of brick and tile, with body sherds and handles from an amphora. The most significant single find from the excavation came from the fill of the gully in the shape of a New Forest beaker, manufactured in the period AD270 to 350. A simplistic interpretation of the ditch and gully would be to assume that these were garden landscape features, associated with the gardens in front of the Palace. They went out of use, being subsequently filled by natural and man-made agencies, after the occupation of the Palace had ceased, around AD280.

The area excavated was remarkably devoid of mediaeval, post-medieval or modern intrusions; the only modern disturbance being a narrow mole-drain that crossed the northernmost part of the excavated area from east to west. A reasonable assemblage of flint work, some of which is Mesolithic in date, was recovered from the excavation, particularly in the area bordering the southern section. Much if not all, of this flint is likely to have been redeposited, but it will prove a useful indicator, and reminder, of the potential

From: Mrs D M Meades,
(Vice-Chairman) Brackenside,
Normansland, Fairwarp, Uckfield,
East Sussex, TN22 3BS

9 November 1996

P. Kendall, Esq
English Heritage
Room 130
23 Savile Row
London W1X 1AB

Dear Mr Kendall

Newbridge Furnace site, Ashdown Forest - Application for Scheduled Monument Consent for commemorative plaque on Monument No. 399, by the Wealden Iron Research Group

I understand that Mrs Coad has been in touch with you about the above; I enclose the relevant application form, 2 coloured copies of the proposed design and a sketchmap of the plinth on which it is proposed to mount the plaque.

Mrs Coad and Brigadier Constantine, Clerk to the Conservators of Ashdown Forest kindly met me at Newbridge and agreed on a suitable siting for the plaque on its plinth. This was approved by the WIRG committee. It is marked on the design with the words, "You are here".

Brigadier Constantine has agreed that they will erect the plinth in accordance with the design used for the Roman road section and others on Ashdown Forest.

We hope very much to have the work completed by 13th December, this year, so that the plaque will be in place on the 500th anniversary of this site, which is so significant in our industrial history.

Yours sincerely

2-4 Cockspur Street, London, SW1Y 5DH
Telephone: 0171-211- 2114 Facsimile: 0171- 211- 2006

URGENT FAX

DATE: 3 December 1996 NUMBER OF PAGES: 3

TO: Mrs D M Meades, Wealden Iron Research Group

FAX NUMBER: 01342-718517

FROM: William Burd

MESSAGE:

NEWBRIDGE BLAST FURNACE SITE, HATFIELD, EAST SUSSEX

Please find attached our letter granting consent for the erection of the commemorative plaque.

William Burd

William Burd
Buildings, Monuments & Sites Division

2/4 Cockspur Street
London SW1Y 5DH
Telephone: 0171-211 2114 Facsimile: 0171-211 2006

Mrs D M Meades
Brackenside
Normansland
Fairwarp
Uckfield
East Sussex TN22 3BS

HSD9/2/3770pt1

3 December 1996

Dear Madam

ANCIENT MONUMENTS AND ARCHAEOLOGICAL AREAS ACT 1979 (AS AMENDED) - SECTION 2
PROPOSED WORKS AT: NEWBRIDGE BLAST FURNACE SITE, HARTFIELD, EAST SUSSEX
MONUMENT NUMBER: 399
APPLICATION BY: WEALDEN IRON RESEARCH GROUP

1. I am directed by the Secretary of State for National Heritage to refer to your application for scheduled monument consent dated 9 November 1996 sent direct to the Historic Buildings and Monuments Commission for England (English Heritage), your covering letter of the same date to Mr Kendall of English Heritage , the sheet showing the design in colour of the proposed plaque and the sketch map showing the approximate dimensions of the plinth for the commemorative plaque submitted therewith in respect of proposed works at the above scheduled ancient monument concerning the erection of a commemorative plaque.

2. In accordance with paragraph 3(2) of Schedule 1 to the 1979 Act, the Secretary of State is obliged to afford to the applicant, and to any other person to whom it appears to the Secretary of State expedient to afford it, an opportunity of appearing before and being heard by a person appointed for that purpose. This opportunity has been declined in your telephone conversation with Mr Burd of the Department on 2 December 1996.

3. The Secretary of State is required by the Act to consult with English Heritage before deciding whether or not to grant scheduled monument consent. Having considered English Heritage's advice, the Secretary of State agrees that the proposed works will benefit the public's appreciation of the monument and is satisfied that they will involve only very minor ground disturbance. She is content for the works to proceed providing the conditions recommended by English Heritage and set out below, are adhered to. Accordingly the Secretary of State hereby grants scheduled monument consent under section 2 of the 1979 Act for the proposed works as described and detailed in paragraph 1 above, subject to the following conditions:

i. the works to which this consent relates shall be carried out to the satisfaction of the Secretary of State, who will be advised by English Heritage. At least 1 weeks' notice in writing of the commencement of work shall be given to Mr P Kendall of English Heritage, Room 130, 23 Savile Row, London W1X 1AB and Mrs V Coad, English Heritage's Field Monument Warden, Baileys Reed, Bodiam Road, Salehurst, Near Robertsbridge, East Sussex, TN32 5SP in order that an English Heritage representative can have the

opportunity to inspect and advise on the works and their effect in compliance with this consent;

ii. the excavation of the hole for the foundation of the plaque is to be carried out under your supervision.

4 By virtue of section 4 of the 1979 Act, if no works to which this consent relates are executed or started within five years from the date of this letter, the consent shall cease to have effect at the end of that period (unless it is revoked in the meantime).

5 This letter does not convey any approval or consent required under any enactment bye law order or regulation other than section 2 of the Ancient Monuments and Archaeological Areas Act 1979.

6 Attention is drawn to the provisions of section 55 of the 1979 Act under which any person (hereinafter referred to as the 'applicant') who is aggrieved by the decision given in this letter may challenge it's validity by an application made to the High Court within six weeks from the date when the decision is given. The grounds upon which an application may be made to the Court are (1) that the decision is not within the powers of the Act (that is, the Secretary of State has exceeded her powers) or (2) that any of the relevant requirements have not been complied with and the applicant's interests have been substantially prejudiced by the failure to comply. The "relevant requirements" are defined in section 55 of the 1979 Act ; they are the requirements of that Act and the Tribunals and Inquiries Act 1971 and the requirements of any regulations or rules made under those Acts.

7 A copy of this letter is being sent to English Heritage.

Yours faithfully

I Newton

I NEWTON
Authorised by the Secretary of State
to sign in that behalf

Newbridge Mill Lane 1720 Mrs Hudson says mill dates from that date. Cyril Fletcher had all information CFT says now lost

WEALDEN IRON RESEARCH GROUP

TEAM: BMFWH

RDG 63878

42 Silverdale Rd.,
Earley, READING.

NOTICE OF FORAY

SAT/SUN

SATURDAY

1) Terrain: Auncient Parysshe of ....
   Modern Parish of ...

2) Leaders: PA CC PCh JH D&TM JoPe JePo CFT EG HC JE EF LF

3) Rendezvous: — NGR/TQ
   Time: 11.0 am
   Place: Fred's

4) Business:
   Reports: PA CC PCh EG JH D&TM JoPe JePo CFT HC JE LF EF — NGR/TQ
   1 2 3 4 5 6 7 8 9 10 21

   Last Foray: — See Note
   Mayfield Fce.
   Hendall Fce

   Future Activities: — NGR/TQ
   Next foray: Framfield ?

   Dig: Fred's ?

   Research: ESRO SAT PRO BM

   Prelim. Survey:

   Member's Article: SAC SN&Q MO WO

5) Explore (with leaders): | SAC | SN&Q | STR | SCH | SAT | SRS | TA | NGR/TQ

May 16
   a) Newbridge Fce
   Up to Strickedridge Copse
   Down to
   Up to Steel Fo.

   b)

SUNDAY May 17 (by agreement)

May 17

1) Dig at Fred's

2)

News Flash:

Are Hendall Fce. bottoms merely for cinder?
Is there a blast. fce at the Stew Ponds?
Was Big Bertha Cast at Newbridge?

Joe

Thank you for the offer of the rendezvous.
A

WIRG/BMF/WH (1)

N E W B R I D G E F O R A Y

I. INTRODUCTION.
II. REFERENCES.
III. TOPOLOGICAL.
IV. CHRONOLOGICAL.
V. CORNMILL AND FURNACE.
VI. STEEL FORGE AND STEEL.
VII. BLOOMERIES.
VIII. WATER-POWERED BLOOMERIES.

TRACING OF 6" OS (1870)
INSETS:
OSAD OF NEWBRIDGE
PIPPINGFORD.
INVISIBLE SOLUTION OF WHOLE PROBLEM

I. INTRODUCTION.

A stream with an interesting WI history (And did those streams in ancient times...?) is Steel Forge River. It debouches into the Medway in Withyham, having flowed N and NE thro' Ashdown Forest via Pippingford and Newbridge in Hartfield. Back in geological time it captured Millbrook which rises in the Isle of Thorns at 431209 and flows towards Nutley and should turn SSE to Old Forge; instead it switches NNE and N into Steel Fo river.

Our special interest is the section from Pippingford to Cotchford Bridge. On this stretch are four bays and probably more. Gills come in at intervals. Speculations about bloomeries and water-powered bloomeries arise, ponds at every footbridge, blfus earlier than the earliest, outfredding Fred, Straker, the conveners.....

Accepted opinion is that along this stretch were sited the earliest blastfurnace, the earliest hammer forge, the earliest steel forge and the earliest gunfounding in Britain, the earliest founding...

Excited?

II. REFERENCES.

Str	Straker, Wealden Iron	45-49, 246-252
Sch	Schubert, Hist Iron/Steel Indy	Caps. X, XV, XVI, XVIII
Tyl	Tylecote, Metallurgy in Archaeology	Caps. IXb, X.
SAC	Sussex Archl. Collections	
	23 - Parliamentary Survey, [illegible]	269, etc
	24 - Ditto 1658	201-2
	81 - Ashdown Forest (Str)	121-139
	- Map	130
	- Newbridge Cornmill	133
BMP	Budgen's Maps of Sussex - New Furnace	
OS	Ordnance Survey Maps 2½" (c1950)	TQ43
	1"/2" (1813) - Fred has 1" reproduction	
	6" (1870) - JP has ph-copies - originals at ESxRO	
	- enclosed is a tracing	
	25" (1870, revised) - JP has Cotchford but not Newbridge	
	- OSAD tracings - Newbr)	On enclosure
	- St Fo)	
OSAD	OS Archl Division - slips of resurveys; held by JP	
	- all local Str sites -	JP will bring
SN	WIRG Bulletin No. I, Serial nos. of Sites	
TAS/M	Tithe Apportionment Schedule and Map for Hartfld)	ESRO
	- JP has extracts)	PRO, Lond.
DC	Letter from David Crossley re Steel Fo - JP holds.	Will bring
CFT	Our own Fred Tebbutt has corrected some Grid Refs of OSAD and SN.	

There are certain other SAC and SNQ (Sx Notes and Queries) articles I have not seen.

There are certain Journal of the Iron and Steel Institute articles (see Sch, footnotes to Caps. above) which we might ask Hy Cleere to get ph-copied for us if we ask for bulk sets. Or perhaps one of each for circulation. Will someone ask at Bateman's?

NEWBRIDGE FORAY WIRG/BMFWH

III. TOPOLOGICAL.

1)	SAC, 23, 269 24, 201-2	Steel Fo and River	
2)	Str, 247-8 Sch, 314,394	STEEL FORGE, PIPPINGFORD blfusl only but both think this is the "fo of steel' site	
	OSAD	fo cinder too at whole site	449631 44943152-45043150
	SN		450316
3)	SAC, 24, 201-2	Strickedridge Gill to Newbridge Ford 'old hammers fu pds bayes &... Ironworks were'	453323-456326
	TAS/M	G*/LN Beechfds, New Lodge Fm	See map
	SAC, 81, 130(M)	Fu Bank - marked M but vague-	W of River
	OS6"	Fu Fm (Str applies this to 2)	453326
	BMP	New Fu	
	OS2½"	Newbridge Ford*-leat or stream?	456326
4)	Str, 248-250 Sch, 161-165, 382 OSAD	NEWBRIDGE FURNACE - Fu blfusl AND &Fo CORNMILL Fu blfusl sl in millrace 45643283) Fu	43603286-45673276 457328
	SN		
	CFT	Correction of OSAD	456..
	SAC, 81, 132	"Curris (curs)..no little trouble" at the cornmill, 1545	EH? See IV
5)	SAC, 81, 130(M)	Old road thence to Newbridge Gate by Ford*nr Hart's Fm) to	461331
	OS2½"	Old road now a footpath) slagged?	
	SAC, 81, 130(M)	Table Gill	460332
6)	TAS/M	Mill Fd. on Hart's Fm	462333
7)	OSAD TAS/M OSAD	Bay - Penpond for Cotchfd? Cinderfield, Cinder Mead very little cinder	46023378 457/8338
	CFT	Fragment in gill to N	460½338
8)	25"	Pinmeadow Cott., Marsh Green(Pen?)	465334
9)	Str 251	COTCHFORD FU/FO G*/Lt Pofds & Hammer Mead(not TA)	
	OSAD/SN		470348
	CFT	Correction (and cinder at 339)	338
	25"TA	Pond Fd and Weir	c472340
10)	Str, 252	COTCHFORD BAY OR BURNING SITE FOR FO Hammer Md (not TA)	
	OSAD/SN		471343
11)	OS2½"	ROMAN ROAD crosses stream at	474341
	CFT	Cinder at	473/4 343

.....

Problems arising here are dealt with later.
The asterisk draws attention to the problem of Newbridge Ford; there was another ford at Newbridge gate.

WIRG/BMFWH (3)

N E W B R I D G E F O R A Y

IV. CHRONOLOGICAL.

1) BLOOMERIES.

a)	ROMAN	CFT, etc.	PIPPINGFORD BLY	2 fus, c/sl/tpsl & pottery	445313
b)	?	Str, 252	COTCHFORD BLY or burng site	cinder	471343
c)	?	TAS/M Htfd CFT	Hart's Fm Bly (evidence thin)	Cinderfield, c c by stream	457/8 338. 460/1 338

2) WATER-POWERED BLOOMERIES. (None is known in the Weald. Str does some supposing; Sch has found a document. I merely put this in to promote discussion).

a)	1433	Sch, 343	CROUCHLAND	pond & plat with fo.	TICEHURST
b)	?	Str, 96/270	FURNACE	?Fo c-H no actual evidence.	LAMBERHURST

3) FIRST BLAST FU. HAMMER FO, STEEL FO, Shot and gun-founding in Britain.

a)	1490	Sch,161-2	OLDLANDS BEND	'Irone founders in Bd' on S fringe of Ashd For.	477271/2
b)	1492	Str, 47	?	'Ierne founders in Bd.	
c)	1496	Str, 248	NEWBRIDGE,FU, Htfd.	at mod cornmill site	
		Sch, 162	FU and FO	at same site?	456328
		Str, 248	FO	'great water hamor' Steel Fo or Cotchfd	450315 or 470338
d)	1496	Sch, 163	JOHN SMYLE'S FO at Htfd	Str, 245 puts this at Chartnek's ??	475363
e)	1509	Sch, 166,394	nr NEWBRIDGE	'a Forge of Steele or Iron'	
		166Map	=STEEL FO.	following Str as below	
	1523	Str, 247	STEEL FO		450315
			STYLFORD MILL	'prostrat';	
	1555		STELE FORGE	up again?	
f)	1513	Str, 241	PARROCK FU/FO in Htfd	'Parokforge..gunstones	457357
	1514	242		'Fo and furnace'	
g)	1545	SAC, 81,133	NEWBRIDGE CORNMILL	'troble' with dogs	456328

Between 3b) and c):

1493	Str, 246	IRONMILL in Htfd	in the Forest of Ashdown belonging to ? Gieter Robert 'yerne-founder'.	

V. CORNMILL AND FURNACE AT NEWBRIDGE. (See Map and inset).

Str and others place Newbridge Fu at the present cornmill site. 16th. C. records show that both existed at the same time. It is possible that both were at the same site, sharing the water as at Horsted Keynes (Str 410 - per CFT) or that the cornmill is new and the 16th. C. mill was elsewhere while the Fu wasas Str says or vice-versa or both were elsewhere. All right I'll skip the last. At former Newbridge Gate there is (TA) a Millfield; whether it has a bay I don't know but it's suggestive. There's another Millfield on the gill N of Hart's Fm., i.e. of Newbr Gate. This is near Cinderfield but the cinder is not blfusl. Moreover there is blfusl at Newbr cornmill, and , indeed, tapslag (CFT for latter). Further, Fu Fm is nearby.

However, SAC 24 indicates considerable activity above the cornmill and mentions a mill but not old WI works as by the road to Duddleswell. Similarly one to Chuckhatch, though that could be the decayed one via Newbr Gate.

Enough of speculation in the armchair.... but one point about tapslag at blfus. Tyl (304) says that,early on, tapslag was used as a flux; it emerged with a little more silica, magnesia and alumina and lost no iron (but it would have a slightly lower %age of FeO, wouldn't it?

.....

Dear Teamster,

Would you please indicate whether you would like to keep Framfield as our next objective (May 16) or let me persuade you to agree to a NEWBRIDGE FORAY?

Let me know by May 6. Silence implies consent.

Yours ....Joe.

VI. STEEL FORGE AND STEEL.

Iron is converted to steel when it absorbs carbon. The process is called cementation or, specifically, carburisation. Charcoal is a nearly-pure form of carbon so, in a favourable area of a bloomery, steel might be automatically available. Further, a smith could case-harden iron in his forge by heating it with charcoal - a normal process in forging.

Since in the blast-furnace process of smelting the newly-formed iron was molten, the latter absorbed too much carbon and, instead of steel, cast-iron was produced. This was hard like steel but not tough. Steel could be made by mixing wrought-iron with cast-iron. Thus, by even distribution of the carbon, a typical steel would result. In 1614, by one of the earliest patents in British history, Ellyott and Meysey had a monopoly of a new process: they heated wr't iron with charcoal in an enclosed container. (Str, cap nineteen; Sch, cap VII & XVIII; Tyl, cap VIc, VII (243..), VIII (273..), IX (293..) Tylecote does not mention Steel Forge, though he follows Str/Sch in accepting Newbridge Fu and Parrock Forge (see section IV). (He occasionally omits the less provable points). I am inclined to doubt that steel was produced either at Pippingford or Steel Fo in Warbleton (Str, 247 & 377).

Str and Sch both assume that steel was produced but no firm mention of steel as a product appears in documents (but see Str 312 and Sch, 314 for obvious later evidence). Steel Cross, Crowboro' and Steel Bridge, Eridge are both named after a William le Stile (Str,263); Stillyans in Heathfield, sometimes appearing as Steelyards, is named after a Thomas Stollion, or Stillyan, who owned Steel Forge in Warbleton (Str378); both Str and Sch mention a John Stile as owning a Fo in Hartfield (see section IVc). Stile and steel were pronounced somewhat similarly in the 16th. C. However both Str and Sch found mention of 'a Forge of Steele' so I now surrender.

But by what logic did Str name the blast-furnace at Pippingford as Steel Fo: merely, I think, because it was the nearest site to Newbridge known to him. OSAD reports a little fo c but neither Str nor CFT nor we found any. Certainly Str's doct. on Newbr. (of 1559 on p. 248-9) shows a forge apart from (away from) Newbr. Perhaps SAC 24 is correct about fos just above Newbr.

So we hope our fieldwork will.... But we can't hope to find steel; rather less likely than ice on the Congo.

DC's letter to CFT: he wishes to lok at Steel Fo in the autumn; perhaps a small dig by BMFWH, he says; perhaps asmall grant in 1971 ... to get us a new typewriter and typist? No?

VII. BLOOMERIES

I draw your attention to sections III and IV: the only certain blyoost is Fred's certain Roman one; he found a solitary piece of cinder in the gill at Cinderfield and OSAD says a ploughman had found some in the field. CFT has now found tpsl at Newbr. but Tyl tells us to expect it. Can one prove anything about blfus? We can find a bly (surely.

VIII. WATER-POWERED BLOOMERIES

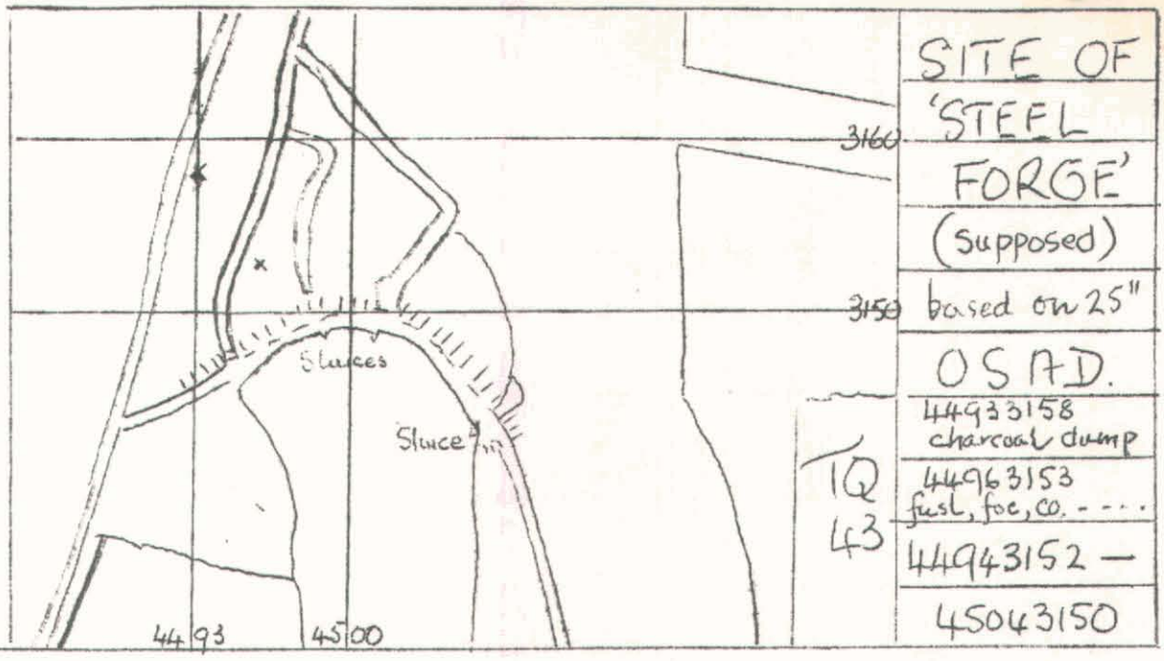
There is no known wpbly in the Weald though Sch found a doct suggesting one in Ticehurst. I have a ph-copy of this: it names the place as Crouc hland but search for the place name has so far failed.

How, short of a doct, would one establish that one had found a wpbly? By a bay and cinder and tpsl indistinguishable from bly waste. (Tyl: 'no substantial difference in the iron content' - 288). A hafo produces cinder sometimes indistinguishable from bly cinder; blfus appear to produce both tpsl and a mucky stuff like fo cinder which is like bly cinder which is like wpbly cinder...

Pauline's bay at Spaullings may be a causeway across the stream: we at one time hoped it was evidence for a wpbly; there is, apparently no alluvium above the 'bay' though along flat area suggests an old pond.

CIRCUMSPICE. Look around.


COLEMAN'S HATCH
Table Gill
MILL FIELD
Marsh Green
To Chuckhatch
KEWBRIDGE
Mill
Furnace Farm
Ford
Water Fall
Leat
RIVER
Steel Forge
New Locke
BIRCH WOOD
Little Beechfield
Great Beechfield
Steel Forge ?
GILLS LAP
To Duddleswell
small valley.



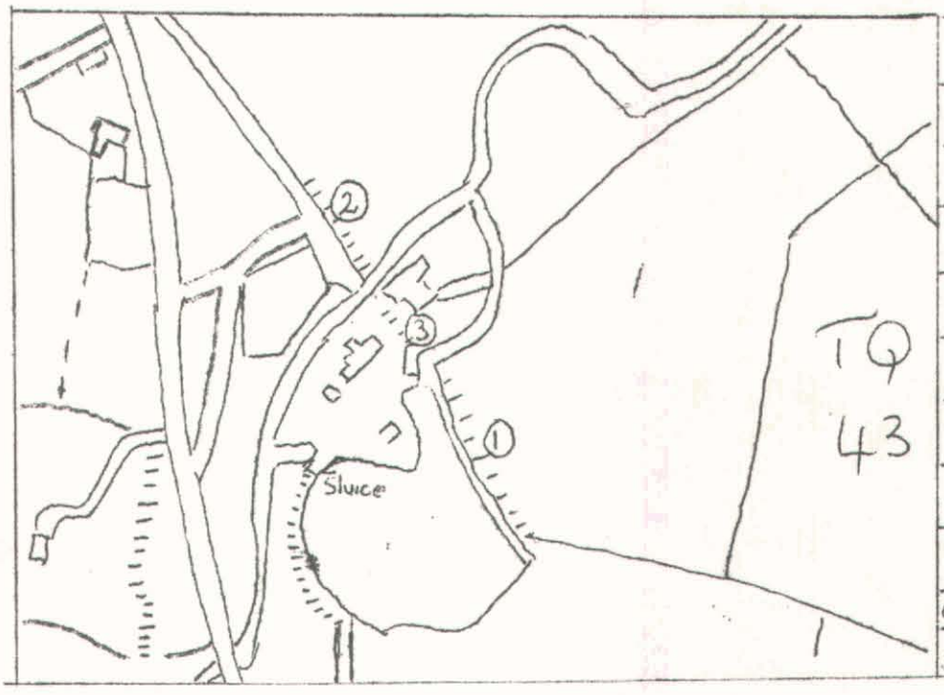
SITE OF 'STEEL FORGE' (supposed) based on 25" OSAD.

44933158 charcoal dump

44963153 fusl, foc, co. - - - -

44943152 —

45043150



SITE OF NEWBRIDGE FURNACE (based on 25" OSAD

① Remains of bay under hedge

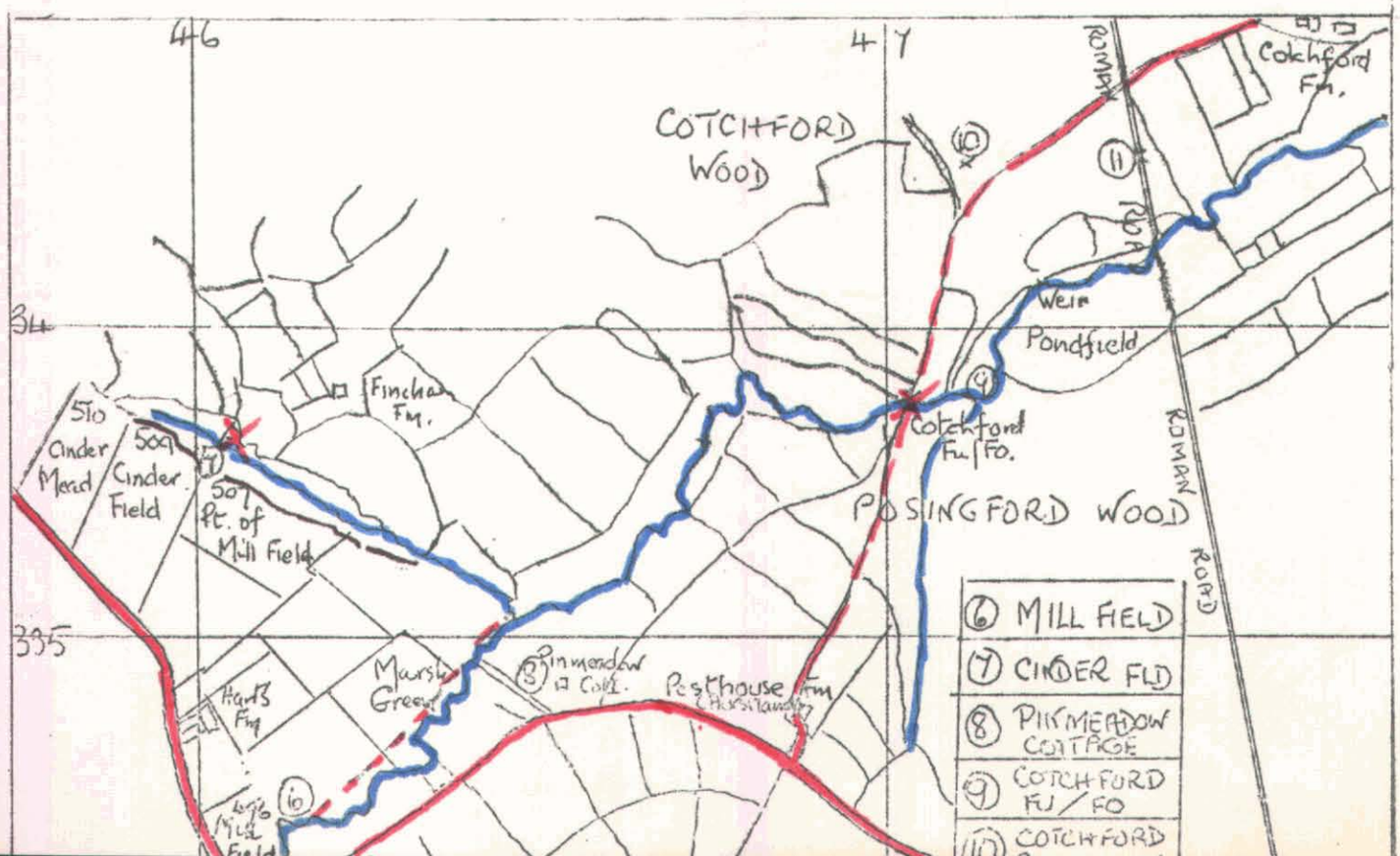
② Dike

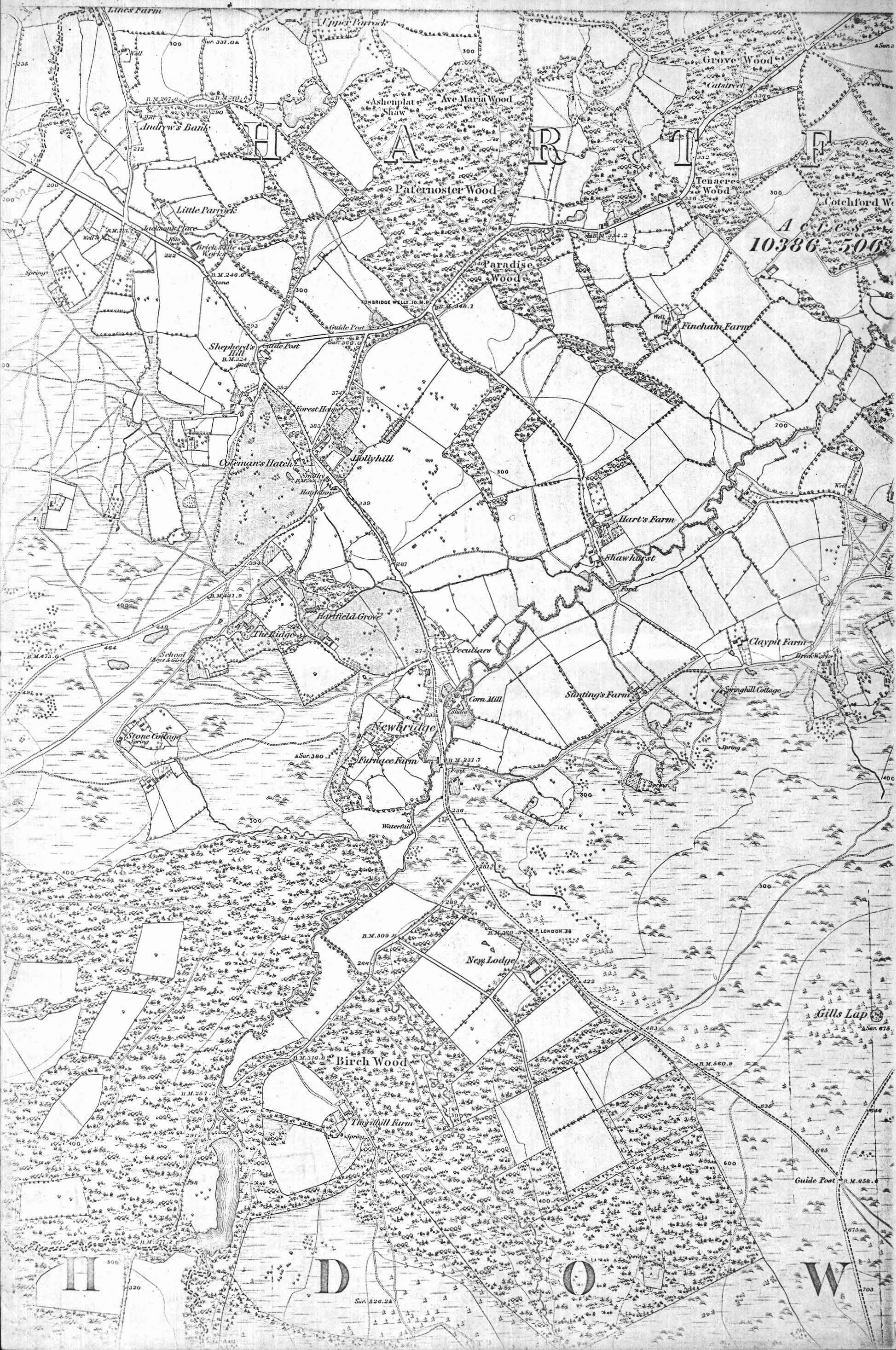
③ Obliterated bay

45603286 – 45673276 (corrected by CFT).

Cleared cinderfield – 'where'.

fusl in bay (CFT only (fsl.)





Lines Farm
Upper Parrock
Andrew's Bank
Ashenplat Shaw
Ave Maria Wood
Grove Wood
Catstreet
H A R T F
Paternoster Wood
Tenacre Wood
Cotchford W
Little Parrock
Jackson's Place
Brick & Tile Works
Paradise Wood
Acres
10386.506
Fincham Farm
Guide Post
Shepherd's Hill
Forest House
Hollyhill
Coleman's Hatch
Smithy
Hart's Farm
Shawhurst
Ford
Hartfield Grove
The Ridge
School Boys & Girls
Peculiars
Claypit Farm
Brick Works
Corn Mill
Sluice
Sunting's Farm
Springhill Cottage
Newbridge
Stone Cottage
Spring
Furnace Farm
Waterhill
New Lodge
M.P. LONDON 36
Gills Lap
Birch Wood
Thyrthill Farm
Guide Post
H D O W

The leat/dyke carries water from the main stream to the gill - how old?

What is the waterfall - artificial/natural?

1364
1363
W7
1309
1380
1379
1378
273
1376
1375
1377
1435
1430
Peculiars
1426
1425
1408
1423
1431
1407
1424
Corn Mill
1428
1410
Sluice
1429
1409
Newbridge
1432
1411
1415
1416
1420
1433
Furnace Farm
1413
1419
BM231
Ford
1433
1418
1434
1414
1422
1417
1421
1412
236
1468
Waterfall

Barfield Grove
The Ridge
School
Stone Cottage
Furnace Farm
Waterfall
Peculiars
Corn Mill
Newbridge
Sunting's Farm
Claypit Farm
Brickwork
Springhill Cottage
Whitehouse Bank
Lowood Hall
Wren's Warren
New Lodge
Gills Lap
Guide Post
Birch Wood
Thirdhill Farm
North Wood
H D O W N

456
Upper Blowers

HART

HOW

Lines Farm
Upper Parrock
Andrew's Bank
Ashenplat Shaw
Ave Maria Wood
Grove Wood
Catstreet
Paternoster Wood
Tenacres Wood
Cotchford W
Little Parrock
Brick & Tile Works
Paradise Wood
Finchem Farm
Shepherd's Hill
Guide Post
Forest House
Coleman's Hatch
Hollyhill
Hart's Farm
Shawhurst Field
Hartfield Grove
The Ridge
School
Peculiars
Claypit Farm
Springhill Cottage
Corn Mill
Stone Cottage
Newbridge
Furnace Farm
Waterhill
New Lodge
Gills Lap
Birch Wood
Thornhill Farm
Guide Post
TILE LODGE

CINDER FIELD
MILL FIELD
LITTLE BEECH FIELD
GREAT BEECH FIELD
Beech Field

10386-506

HARTFIELD
OS 6" 1st Edn.
Pippingford to
Newbridge
to
Cinderfield
to
Kinmeadow

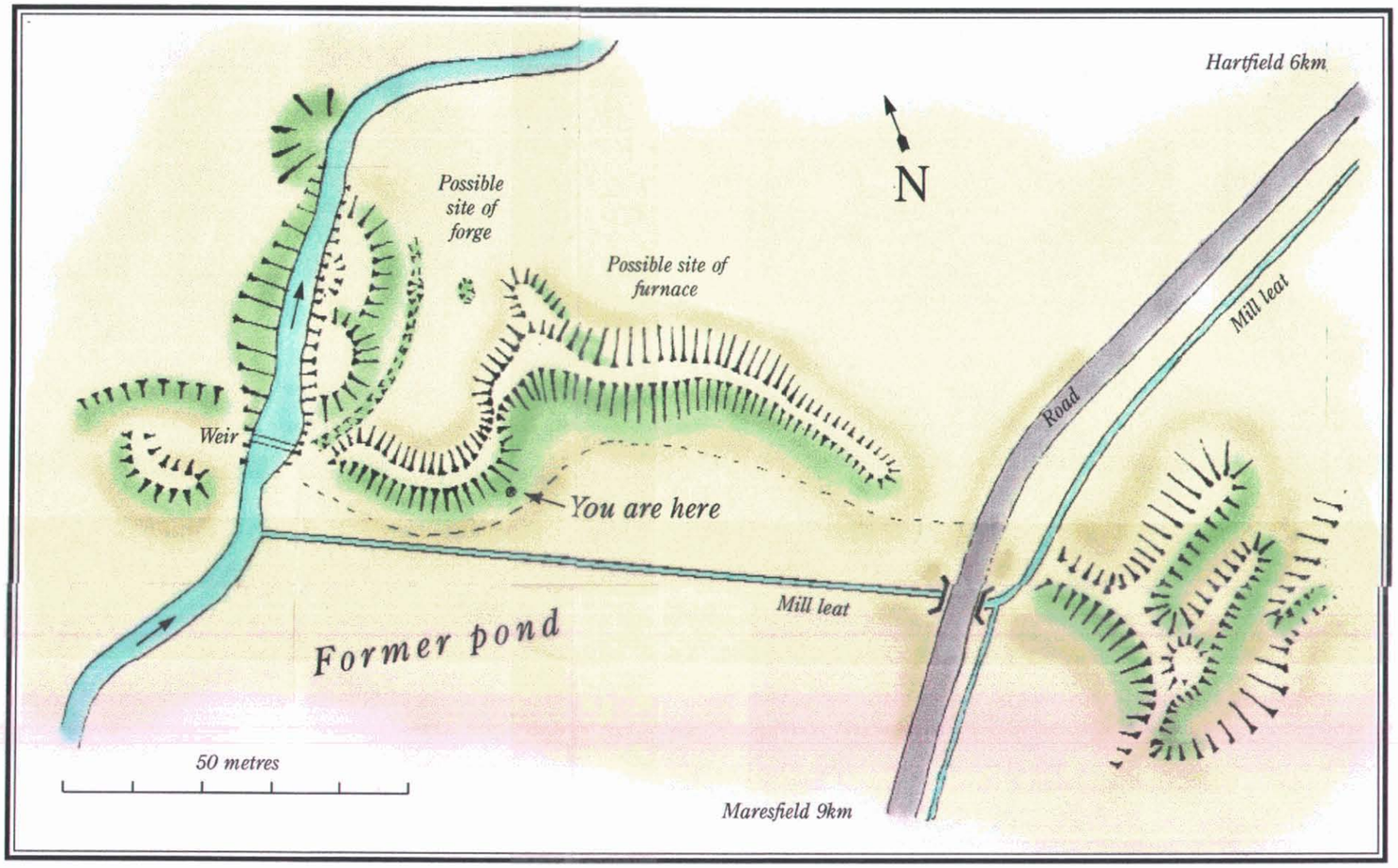
NEWBRIDGE FURNACE

At the behest of King Henry VII, the first English blast furnace, for the smelting of iron,was established in this place.

13th December A.D. 1496

Here, the water from the pond, held back by the dam, or bay, gave power to the bellows of the furnace to make cast iron; and to a finery, where the 'great water hammer' enabled immigrant French workers to forge bars of wrought iron. The works had a modest output, which cannot have far exceeded 150 tons of iron a year. Early products included the ironwork of gun carriages for a military campaign in Scotland, and were soon to number guns and shot as well.

From small beginnings, in this secluded corner of Sussex, grew the ironworks of the Weald, and subsequently the iron and steel industry throughout Great Britain.



This plaque was erected by the Wealden Iron Research Group to commemorate the 500th Anniversary

WEALDEN IRON RESEARCH GROUP

NEWBRIDGE 1/500