



NEWSLETTER NO 44 AUTUMN 2006

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NOTE FROM THE CHAIRMAN

Dear All

It was so good to see so many of you at the Annual General Meeting. We were very fortunate to hear Jeremy Hodgkinson and Ruth Brown treat us to such an erudite pair of talks on both the ironworking and people of the Ashburnham furnace that greatly enhanced the visit to the site in the afternoon. This was by kind permission of the owner, John Wallace who has been instrumental in the conservation of the spillway and boring mill amongst other things.

After the talks the business meeting took place. The main feature being the change of secretary - Ann Callow stood down as secretary and David Brown has now taken over this important post. I look forward to working with him. In recognition of her sterling work Ann was presented with a book token and bottle of wine. The

annual report commenting on many aspects of WIRG's activities of the past year is enclosed with this newsletter.

Brian Awty has stood down as President and, I am very pleased to report that, Dot Meades is now our President. Dot is a founder member of WIRG and has been, and continues to be, the editor of the newsletter for the past few years. She has worked tirelessly on so many aspects of the iron-working industry and is a friend and fount of knowledge to me and so many others.

Hugh Sawyer has asked to be replaced as foray group secretary. We thank him for many years of efficient work for the Group and are pleased to say that David Brown has agreed to take on this duty.

On the subject of the committee we are always pleased to welcome new members to help run WIRG – we can co-opt very easily so please contact me if you think that you can join the small and friendly committee. We meet approximately four times during the year - usually on a Sunday afternoon in some-one's house.

Many thanks to those of you who have completed Gift Aid forms – this is a splendid way of adding to WIRG's resources at no extra cost to any tax-payers.

Best wishes for Christmas and the New Year

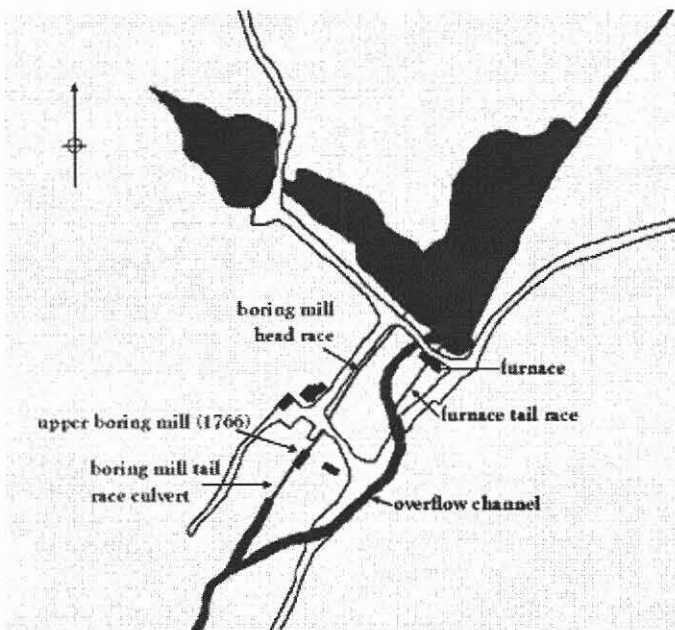
Shiela Broomfield

Jeremy Hodgkinson gave us the following introduction to the Ashburnham Furnace site in preparation for Ruth Rhynas Brown's lecture on gunfounding:

Ashburnham Furnace

The site of Ashburnham furnace is probably the best-preserved iron-working site in the Weald, as much because of its remote location as because it was the last furnace in blast in the region. The landscape of the Ashburn valley contained three water-powered ironworks in addition to Ashburnham furnace. Upstream

is the site of Panningridge furnace, which was built in the 1540s by the Sidneys of Penshurst, who had acquired the lands of Robertsbridge Abbey following the Dissolution of the Monasteries. That site was excavated by David Crossley in the late 1960s, and the accounts of the furnace are among the most complete of any site in the Weald. Downstream of Ashburnham furnace is the site of Ashburnham forge, the working history of which parallels the furnace, but which was used for much of the 18th century as a boring mill for cannon cast at the furnace, and which continued in use until about 1828, making it the last ironworks to work in Sussex. On a tributary stream is the site of Penhurst furnace, of which more later.



The layout of the furnace site at Ashburnham is still sufficiently clear to enable a visitor to understand the site's operation. The pond bay, which held back an L-shaped pond, allows three channels to carry water from the pond to different parts of the site. On the eastern end, a wheel pit brings water at a low level past where an undershot wheel probably drove the bellows of the furnace, and is then carried away through a culvert. This joins the main stream which is allowed through the bay by means of a stone spillway (recently consolidated). Still surviving is the wooden boarded apron that channelled the water from the pond to the sluice boards. The stream carried surplus water from the pond, across a ford (there were two originally) and downstream to where the hammer pond lay. In 1766 the furnace accounts, which are now in East Sussex Record Office, record the building of an upper boring mill, intended to supplement the capacity for cannon boring then sustained by the forge. A channel was cut to the west of the spillway, carrying water to a culvert under the

roadway and was then directed onto a breast-shot waterwheel in a pit south of the road. Water from this wheel was then culverted beneath a brick building and away to join the overflow stream at the south end of the site. The building survives as 'Furnace' and is a private dwelling; the culvert survives in good condition, though now dry.

Ashburnham furnace was well supplied with the raw materials necessary for its business, with the furnace accounts noting the locations of charcoal and ore sources within a radius of a few miles of the site. In addition to the water supplied by the stream, it was found necessary, probably in the first part of the 18th century, to construct a leat to carry water from near the site of Penhurst furnace, approximately along the 100 ft. contour, into the Ashburn valley close to the furnace. This was described in WIRG Bulletin 2nd ser., 1 (1981). Significant elements in the site of Ashburnham furnace are the three furnace workers' cottages. Two date from the late-16th century, while the third, known as the Pay Cottage, dates from the 18th century.



Pay Cottage, Ashburnham

For most of its working life, the site belonged to the Ashburnham family, whose descent went back to the early Middle Ages. They had the furnace built by the 1550s and continued to operate it until the profligate Sir John Ashburnham was forced to sell the estate in 1611 to pay off debts. It came then into the hands of William Relfe, perhaps the first person to be called an ironmaster, and passed by descent and marriage to the Gyles, May and Scarlett families until it was repurchased by Sir John Ashburnham's grandson, William, in 1678. By that time it already been leased to George Browne, the son of the celebrated gunfounder, John Browne, and later to 'The Great Ironmonger', Thomas Western, both of whom

used the furnace to cast ordnance for the navy during the Dutch wars. The Westerns did not renew their lease after Thomas died and, after the Ashburnhams invited others to take on the furnace, it was leased to William Rea and other partners of the Forest Ironworking Partnership based in the Forest of Dean. For a short period iron cast at the furnace was shipped to the River Severn. When Rea was sacked the works came into the hands of his clerk, Thomas Hussey, who began to build up a portfolio of ironworks in partnership with John Legas and others. In the late 1730s the site was leased to John Crowley, whose father, Sir Ambrose Crowley, had built up an extensive iron production business in Staffordshire, Tyneside and London. This business arrangement was further cemented in 1756 when John, 2nd earl of Ashburnham married John Crowley's daughter, Elizabeth. The Crowley family and their business successors, the Millingtons, continued to be associated with the furnace until the end of the century.

Products from Ashburnham in the early years would have been, for the most part, iron sows for fining at the forge, but the concentration on gunfounding during the second half of the 17th century lead to a greater focus on cast products. While guns are the subject of Ruth Brown's contribution to the AGM, other notable products were a range of firebacks, some identified by a distinctive AN monogram. Mill cases and garden rollers were also produced.

The closure of Ashburnham furnace has been pinpointed to late February 1813 by the untimely demise of William Jones, aged 6, one of two boys working with four men at the furnace. After the fire was blown out, Jones consumed an entire bottle of gin, the ill effects of which killed him. By that time the industrial aspects of the Weald were becoming anachronistic. Within a very few years, J. M. W. Turner was to paint a romantic view of the Vale of Ashburnham for his patron, another ironmaster, Jack Fuller.

	<u>Owner</u>	<u>Lessee</u>
?1549		
<1554	John Ashburnham	
1574	John Ashburnham	
1591	Sir John Ashburnham	
1611	William Relfe	
1640	John Gyles & Benjamin Scarlett	
1654	Joan Gyles	
c.1655	Anthony May (her son)	
1663	Anthony May	Geo. Browne & Alexr. Courthope
1664	Thomas Scarlett	

1677	Thomas Scarlett	Thomas Western
1678	William Ashburnham	
1683	William Ashburnham	Thomas Western
1689	John, 1st Baron Ashburnham	
1708	John, 1st Baron Ashburnham	William Rea & partners
1710	William, 2nd Baron Ashburnham	
1710	John, 3rd Baron Ashburnham	
c.1717	John, 3rd Baron Ashburnham	Thomas Hussey
1730	John, 1st Earl of Ashburnham	
1737	John, 2nd Earl of Ashburnham	
c.1739	John, 2nd Earl of Ashburnham	John Crowley
1812	George, 3rd Earl of Ashburnham	
1813	<i>Closure</i>	

JSH

ASHBURNHAM FURNACE: A TRADITION IN GUNFOUNDING

On the 2006 AGM Lecture by Ruth Rhynas Brown

Ruth reminded us that Ashburnham was one of the great gunfounding furnaces of the Weald. In the course of her lecture it became apparent just how important and long-lived that connection was. The earliest guns that might be attributed to Ashburnham are two dating from the 16th century that bear the initials IA, possibly standing for John Ashburnham, although he and his wife Isabella rented other furnaces so the verdict must be 'not proven'. We do know that Ashburnham cast guns were purchased by the Board of Ordnance in the 17th and 18th centuries whenever there was war or the threat of war, and were often required to arm new warships. The only exception to this seems to have been the Civil War, when bronze guns were preferred.

In this short account of a long and erudite lecture, it has been necessary to omit much interesting detail. Not least, Ruth's discussion of who should be designated 'gunfounder': owners, lessees, and/or those who worked the furnace.

Workforces were itinerant and might move from furnace to furnace when required, or even take on other work than founding at the furnace. Skills were highly valued by employers and jealously guarded by employees, such as various members of the Diamond family who successively worked furnaces at Horsmonden, Ashburnham and other furnaces and for the Fullers. A

reluctance to teach their skills to any except family members, kept the Diamond family reputation for 100 years. Another such was John Hart, moulder or founder, whose father and grandfather were also gunfounders. The Wimble family, who were resident at Ashburnham, were also described as founders. Again, they may not have worked at Ashburnham all the time.

Others who might be called gunfounders were the managers, such as Roger Hamner a Crowley employee, Bannister, who is mentioned in the Fuller letters, and Isaiah Millington also with Crowleys.

Owners and occupiers of the Ashburnham works in the early 17th century were successively the Relfe family, John Gyles and Benjamin Scarlett. Later, the Ashburnham ironworks rarely worked alone, usually being used as part of a larger consortium, so that working out how exactly it was used is difficult. Gunfounders often used short leases or subletting in periods of emergency such as when a large order for cannon and shot had to be fulfilled. (Ashburnham furnace was especially useful as it was one of only two which was able to cast the largest guns then in use, the other being Horsmonden). In 1666 it was one of five different furnaces used by George Brown and his partners (premier gunfounders to the Board of Ordnance for many years) to supply their contracts to the Ordnance Board. Out of 408 guns cast in the five furnaces, 70 were produced at Ashburnham: demi-cannons, 24 pounders, culverins of two lengths and a pair of demi-culverins as well as a few sakers.

Thomas Westerne and a partner initially worked from Brede furnace, supplying cannons. At first they were usually in second place to the Brownes but by the later 17th century they had largely superseded the Browne family as premier gunfounders. Again, Westerne needed a number of furnaces to fulfil his orders. He took a seven-year lease on Ashburnham furnace, forge and boring mill in 1677, which was subsequently renewed and only relinquished in 1701.

Ruth suggested that the practice of identifying guns by the furnace and not the founder might have arisen at this time. Earlier, Western had marked his guns with his initials TW. However, from the late 1690s the letters on their trunnions indicated the furnace where the guns were cast. The Westernes might have adopted this new practice, copied from the Swedes, at a time when they were running a number of furnaces and needed to distinguish the products from different sources.

Later, there was a short-lived innovation at Ashburnham under Thomas Hussey, a works manager, who supplied guns to William Harrison, a London ironmonger. A new pattern of cannon designed by Albert Borgard was produced. However, it failed to find favour and was quickly replaced. Harrison and his sons and Legas, with different partners, went on to dominate the Wealden gun supply until the end of the Seven Years War and briefly occupied the Ashburnham works.

The next great ironmaking family to occupy Ashburnham, the Crowleys, had works in the Midlands and the North and offices and warehouses in Thames Street and Greenwich. They supplied wrought-iron goods such as anchors and tools to the Navy, the Board of Ordnance and the East India Company. By 1727 they were supplying the East India Co. with guns and in January 1745 they delivered their first iron guns to the Board of Ordnance and quickly became one of the major suppliers (285 in the first year). Unfortunately, water shortages sometimes affected the supply during the following years. Even so, they continued to supply guns and in 1749 it was stated that 50 had been sent from Ashburnham.

In 1755, after John Crowley died, Mrs Theodosia Crowley continued to supply iron guns (at higher prices because England was again at war) firstly for sloops that were built and ready and then 50 9-pounder guns. 21 3-pounders were delayed at Hastings, because there was no vessel to carry them. All of the 3-pounders were successfully proofed at Woolwich within a few weeks. Later, there were orders for ½-pounder swivel guns as well as many other cannons. At this time, the tonnage ordered by the Board of Ordnance from the Crowleys was almost identical to the Fullers' orders.

In addition to the work for the Board, iron guns and gun carriages were regularly supplied to the East India Company; the Crowleys were shareholders in that Company and also in individual East Indiamen.

For the Crowleys, gun casting was a very small part of a large iron empire, although later it may have had a more special significance as Mrs Crowley arranged for her eldest daughter, Elizabeth, to marry the owner of Ashburnham furnace, now elevated to an earldom in the summer of 1756!

However, at the end of the Seven Years War, Mrs Crowley was unable to match the low prices of the Carron Company for supplying guns to the Board of Ordnance and, moreover, it was decreed that guns had to be bored from solid. Mrs Crowley, however, continued

to supply the East India Co.(in which the family had a financial interest) and other merchants and ships chandlers, as well as supplying foreign governments such as that of Catherine the Great of Russia.

The last official outlet for Ashburnham guns happened during the War of American Independence, when the Board had to hire armed ships to carry stores and soldiers to America and the West Indies; these did not have to be so strongly armed, nor did the guns themselves have to be solid-bored. The contractors Muir and Atkinson and Eade and Wilton supplied guns marked A, although we don't know if they were newly cast or old guns.

Mrs Crowley died in 1782, having outlived all her children. The company was taken over by the Millingtons, previously the managers, and survived into the 19th century. Millington and Company rented the furnace from the Earl of Ashburnham in 1785 for £300 and it was still standing in 1787. The last date on which Isaiah Millington sent iron guns to be proofed at Woolwich was in 1789, and that appears to represent the end of the long gunfounding tradition of Ashburnham.

Dot Meades

WEALDEN IRON AROUND EAST GRINSTEAD

Several notes or articles that I have recently contributed to the *Bulletin of the East Grinstead Society* and to *East Grinstead Museum Compass* have some bearing on the Wealden iron industry, as briefly summarised below.

In *Bulletin 85* (Spring 2005). Pp 4f 'The early history of Ridgehill', I have argued for the possibility that Ridgehill, with known Roman iron-working remains but a name not recorded before the 16th century, could be identical with the lost Iscombe, recorded in the 13th and 14th centuries and capable, according to Professor Richard Coates, of meaning 'iron valley'.

In *Bulletin 87* (Winter 2005-06, p4, 'Our Ferraria and Surrey's', I have drawn attention to the presence of a Domesday Book *ferraria* at Chertsey Abbey, apparently unconsidered in any published Wealden Iron literature. In that location it must be a smithy rather than a bloomery, which could have implications for what WIRG should be looking for when seeking and interpreting the well-known but still enigmatic one in East Grinstead. The same number records the naming in 2005 (at my suggestion) of a road on an East Grinstead industrial estate Willard Way, after Ralph Willard, an

armourer who died here in 1599 (according to the Victoria County History, the only one in Sussex) and who must have been a member of the Willard family active in the Wealden iron industry in much of Kent and Sussex.

In *Compass 18* (Autumn 2005) p5, 'An iron fireback at Great Cansiron, I have reproduced a drawing by Mrs D F Neville of a variation on the 'Armada' design, with brief discussion.

In *Compass 19* (Spring 2006) pp 4-8 'The great Feld' discussing and mapping the place-names beginning with -feld (open country) on either side of the Surrey/Sussex border near East Grinstead, I have shown how they exemplify K P Witney's observation that in the Kentish Weald place-names ending in 'field' (derived from *feld*) can be interpreted as clearings created by the Roman iron industry, for they are adjacent to the Roman road through Felbridge and the Roman iron-working site at Smythford. I have discussed Smythford in more detail on pp 8f and questioned whether its name indicates awareness of the Roman activity 1250 years after it was abandoned or some mediaeval ironworking there of which as yet no physical remains have been discovered.

The publications cited can be obtained from me at £1 each post free. I shall be pleased to receive any comments or to learn that they have inspired anyone to investigate further, whether on the ground or in documents unknown to me.

M J Leppard,

THE FIREBACK TRAIL

While visiting the Town House Museum in King's Lynn I was pleasantly surprised to see this fireback in the grate of their "Stuart/17th Century Room". I estimate the size to be approx 3 feet high by 2 feet wide. Two men in 17th century attire are depicted shouldering between them a branch bearing a huge bunch of grapes, with a large vine leaf overhead. Initials G and K are placed in each top corner of this scene, while an "arched" border of grapes and vine leaves surrounds.

I made enquiries about its provenance but unfortunately the Museums Officer had no information about it. Lynn is famous for having been a Hanseatic League port, warehousing many continental goods including wine, although wool and grain were the predominant imports.

Given this and the fireback's shape and vine symbolism, I suspected it to be brought in locally from Germany or the Low Countries.



Fireback from King's Lynn Town Museum

However, Jeremy Hodgkinson advises me: "There is an example of the same fireback at Petworth ... Others with different designs, but also with GK, are at Hastings and Guildford. One is dated 1700 and all are well modelled and quite large. They are of 'Dutch' origin, which may mean Belgian." The Lynn fireback probably did not therefore arrive there.

There has long been a trend for local history museums to dedicate rooms to different historical periods. Many feature a fireback or two, usually in a "Tudor" or "Stuart" room, but occasionally elsewhere. It is a shame that few have any knowledge of the origin of their firebacks.

The Town House Museum can be found at 46 Queen Street, King's Lynn, PE30 5DQ
Tel 01553 773450

A publicity leaflet for the Boship Farm Hotel, in Lower Dicker, East Sussex, inaccurately boasts of a "wrought

iron" fire "plate" in their bar. The fireback is just about visible on their website, and appears to bear the Lion and Unicorn stamp.

Helen Pearce

The Lenard Fireback

The celebrated fireback portraying Richard Lenard is rightly taken as a symbol of the iron industry in the Weald, illustrating, as it does, the man and the tools of his trade. However, there is some value to be gained in taking a closer look at what the fireback actually shows.

Firstly, of course, there is the lettering along the top of the main panel which identifies the figure: RICHARD LENARD FOVNDER AT BRED FOVRNIS. In each instance the Ds are reversed. Below that, separated by the head of Lenard, is the date, 1636. Many of the items illustrated on the fireback tell us about aspects of the industry; most important of these is the image of the furnace in the bottom left-hand corner. We see about two-thirds of the furnace stack. The dressed stone from which it is constructed can be clearly seen, as can the wooden framework which strengthened the structure and prevented it from collapsing, by allowing a degree of expansion and contraction as a result of the heat within. At the front of the furnace there is a covered area with a gabled roof. Its size may be representational rather than accurate as it is likely that a substantial barn-like building would have been erected in front of the casting arch to provide a covered space in which the founder could carry out casting and observe the colour of the furnace flame in a darkened environment – this being one of the few ways he could judge the temperature of the furnace. Fire is seen issuing from the top of the stack. The implements of the founder's trade can be seen on the left side of the fireback. Lenard himself is holding a sledge, or heavy hammer, on either side of the handle of which are a wheelbarrow, for carting ore, sand or charcoal around the furnace site, and a basket, for measuring ore and charcoal for charging the furnace. It is not clear what the third object is next to the handle. Other tools are displayed as if they were heraldic charges quartered on a shield in the top left corner of the main panel of the fireback. In the top left quarter is a hand hammer, not unlike a modern bricklayer's hammer, which might have been used for that purpose or for breaking small pieces of ore. Below it is a weight from a set of scales. Iron produced at the furnace or at a neighbouring forge would have been measured by weight, and a weighing beam would have been an



The Lenard fireback, version 1



The Lenard fireback, version 2

essential instrument at an ironworks. In the bottom right-hand quarter is a pair of pincers or tongs, used for lifting pieces of hot iron, such as recently cast products. One such product, a firedog, is shown above in the fourth quarter of the shield. Other implements are illustrated in the fireback: next to the furnace stack is a long, hooked

iron bar used for pulling any remnants of slag off the surface of the iron before casting. At the bottom of the main panel, between the founder's feet (which, somewhat oddly, are both pointing to the left), are another weight, a pot and an elliptical ladle with a long handle. An example of such a ladle has been preserved at Waldron furnace, and would have been used for making small castings by ladling iron from the fore hearth and pouring it into a mould.

On the right side of Richard Lenard's figure the images reflect the domestic life of the founder. Firstly, there is his dog, jumping up at his master. Beside Lenard, on a shelf are three symbols of the good life his profitable occupation enabled him to enjoy: a jug, a tankard and a goblet. Since the Middle Ages, and probably before then, drink had been an essential part of the life of the ironworker, and an allowance for it was part of the worker's wages. Richard Lenard's collection of vessels reflects, perhaps, his status as both worker and as aspiring gentleman, with the tankard for ale and the goblet for wine. Even the pseudo heraldic shield already mentioned may have suggested his aspirations. The shelf with the drinking vessels is supported by an elaborate bracket with floral trimmings. Beneath it, in the bottom right-hand corner of the main panel, is a fireback with the initials, RL, of the founder; a nice touch. The top of the main panel is surmounted by floral-inspired moulding, which echoes the bracket beneath the cupboard. This moulding is a feature of other Brede firebacks.

To achieve such a design, a pattern was made in wood, and the image to be reproduced in iron was carved on it. Plank lines can be seen level with the top of the furnace, and at the top of the main panel, level with the top of the shield. This indicates that the pattern board was assembled from three boards probably fixed by a couple of battens which would have extended from top to bottom at the back of the pattern. Who the carving was executed by is not known, but other contemporary firebacks said to have been cast at Brede all show a similar, naïve style of figuration, particularly of facial features. Whoever the craftsman was, other examples of his work may still survive in the Brede area.

Another version of the Lenard fireback exists and seems to have been executed as a copy of the original. Although of approximately the same size, it differs in a number of subtle ways. Firstly, it bears the date, 1639, which may or may not be the date when it was first cast. Secondly, there is no inscription identifying the founder or the place where it was made. The general layout of the second version follows the original, with a central figure,

a representation of the furnace in the bottom left-hand corner and a shelf bearing three vessels in the top right corner. Several of the objects which cover the field of the fireback are the same as those on the original, although in each case they are modelled slightly differently. The floral pattern which surmounts the original fireback is fairly faithfully copied on the second version. However, two elements on the original are missing from the second version: the quartered shield in the top left corner, and the fireback in the bottom right corner. Each of these has been replaced by what can be described as a form of escutcheon, orientated so that they are facing towards the centre of the plate. Although on surviving copies of the second version some of the features on the lower half of the fireback have been rendered indistinct by erosion by the heat of the fires they have been placed in, it may be generally observed that the skill of the pattern maker for this second version was somewhat more accomplished than that of his predecessor. This is particularly the case in the modelling of the central figure of the founder. In the second version, he is better proportioned and his feet are arranged so that they face outwards. His clothes hang more naturally, although the high waist of his coat has a more feminine style. His hair is more wavy and the features of his face are more naturalistic, with a goatee beard and moustache. The naïve figuration of the original is missing in this second version.

It is that naïve figuration that may be the clue as to when the second version of the Lenard fireback was made, or rather, not made. Other firebacks that, because of their characteristic figuration, were reputedly cast at Brede can be dated to a period that extends for more than twenty years after the original Lenard fireback is dated. Yet the second version purports to date from a mere three years later. That the second version is of considerable age is undeniable given the degree to which the metal on the downcast side (i.e. the side bearing the image) has been eroded. Yet why should someone have gone to the trouble of carving a new pattern to cast a fresh fireback so soon after the original was made, and when the original pattern probably still existed or there were original firebacks still in good condition from which copies could be made? I suspect the second version is an old fake, made many years later, by which time the original pattern was no longer available and original firebacks had all become too worn with use to make a fresh copy. Perhaps a different date was put on the second version out of respect to the original but close enough to it chronologically to give some pretence of authenticity.

JSH

ST DUNSTAN AND THE WEALDEN IRON INDUSTRY

For the period between the Romans and Domesday Book, Straker could find only one documentary reference to iron-working in the Weald, the legend of the encounter at his forge in Mayfield between St Dunstan and the devil, augmented by the preservation there of his alleged tongs and anvil. Cleere and Crossley, sternly preferring factual documents and archaeological evidence, ignore the story completely. Even so, such legends are not entirely devoid of factual information, as, for example, John Blair showed in his discussion of the life of St Cuthman in *Sussex Archaeological Collections* Volume 135. What follows attempts to outline why I believe serious attention should be given to some elements of that of St Dunstan.

Dunstan, c909-988, appointed archbishop of Canterbury when Edgar became first King of all England in 959, was already known as a monastic reformer, royal counsellor and supporter of education. He and the king embarked on thorough reform of church and state. Within his archiepiscopal estate of South Malling Dunstan built a palace at Mayfield and founded the church there. He left behind a reputation as a musician, illuminator and metal-worker.

Mayfield is well known as a centre of ironworking in Iron Age and Roman times and again in the 16th century. So are many other places in South Malling's jurisdiction, including nearby Buxted, where we now know that Archbishop Morton was responsible for the first Wealden blast furnace at Queenstock in 1490. (See B Awty and C Whittick, 'The lordship of Canterbury, ironfounding at Buxted and the continental antecedents of cannon-founding in the Weald', *SAC* vol 140, pp 71-81.) That also explains why Parson Levett and other members of the clergy were so prominent in the Wealden iron industry at the time.

What is less well known is that Newbridge, where the blast furnace established in 1496 was previously thought to have been the first, was also South Malling territory. The deanery of South Malling and its secular equivalent the hundred of Loxfield included detached portions in the parishes of Worth, East Grinstead, Hartfield and Withyham, termed peculiars because their ecclesiastical allegiance was to the archbishop of Canterbury, not the bishop of Chichester. Newbridge is in the Hartfield peculiar. According to the Rev A D Way, speaking at a meeting of the Wealden Settlement Study Circle on 11th June 2003, on the route between Newbridge and the main South Malling territory at Lindfield were two small

pockets of land, also under its jurisdiction, both of which in historical times were occupied by smithies.

Similarly Smythford, the Romano-British iron-working site in Worth, was in that parish's peculiar area and was held of the dean and college of South Malling (*SAC Vol 70, p 191*). Its name, first recorded in the 13th century, suggests awareness of either past practice of iron-working or potential for it, or perhaps mediaeval activity whose remains are yet to be discovered.

These instances, though not the result of thorough research, seem to me to suggest that their links between the archbishopric of Canterbury and the Wealden iron industry are more than co-incidence, that when the South Malling lands were demarcated there was deliberate inclusion of areas with a history of iron-working or the potential for it, and that St Dunstan was a significant exploiter of those resources. His forge at Mayfield does not have to be one where he worked personally; it could be one he established and possibly also the administrative centre for the others in his Sussex territory. Perhaps he even deserves the epithet 'in effect England's first ironmaster' that Awty and Whittick bestow on archbishop Morton.

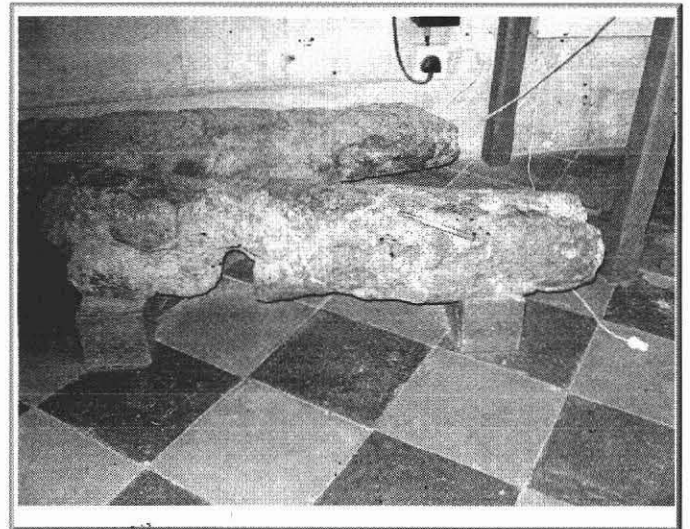
All this can be, however, is speculation until those properly equipped to do so (as I am not) investigate thoroughly the relevant documentary and archaeological evidence and maybe even have the relics at Mayfield subjected to some scientific testing.

M J Leppard

THE CHEDWORTH BLOOMS

Three immense blooms are to be found at the Roman Villa of Chedworth (OS Ref SP 053 135) some 8 miles NE of Cirencester. Their purpose is unknown, and any information as to their composition or origin seems to be lost since the excavation of the villa commenced in 1864.

Today, in the care of the National Trust, they are identified as 'possible supports for a boiler' (the villa has two bath houses and several hypocausts) or as 'raw material' for further working. They comment that the amount of iron 'reflects on the great wealth of the villa'.



Two of the Chedworth blooms

All three blooms have similar cross sections of approximately 165 x 165mm (6.5 x 6.5") square and the longest is a little over 1600mm (5' 4") long (see picture – the pen is about 150mm long). A calculation of its weight from these dimensions comes out at 342kg (753lb).

To be of this size, they were evidently formed by forging many small blooms together.

Dot Meades has found a reference to the blooms in Schubert¹. He comments they must have been made from a number of blooms welded together (p51). 'There were three of them: No.1; 64in long, 26in round; weight 484 lb. No.2: 38 in long, 26in round; weight 356lb. No.3: 39in long, 25in round; weight 256 lb.

Further, Schubert pp53/54 notes that the weight of blooms depended on the size of the furnace. "The heaviest blooms known are those of which the ponderous iron block found at Corbridge was built up by welding. The exact weights of the various blooms used cannot be ascertained, but as there were at least twenty single blooms, it is estimated that the average weight would hardly have exceeded 16lb (7.3kg) apiece." (Schubert acknowledges *Newc.Tr.*, vol pp50 and 197-198.)

It is probable that Schubert weighed the Chedworth blooms (indeed a sample has been taken from one by drilling) and the 269 lb (36%) discrepancy between his weight and the calculated weight – taking the density of iron as 7.86g/cm³ – can only be explained by voids and slag within the bloom and the irregularity of the surface. This suggests a poorly consolidated bloom with 25-30% of the mass slag or voids. A bloom of this size would

indeed be difficult to consolidate and supports the idea of numerous smaller blooms being pressure welded together by hammering.

One interesting aspect is where were the blooms made? Although slag finds are reported on the site, there is nothing like the quantities required to produce and work blooms of this size. Also, where did the ore come from? The nearest rich supplies of ore that are known to have been worked in Roman times are the Forest of Dean and Exmoor, both considerable distances from Chedworth.

1. Schubert, H R *History of the British Iron and Steel Industry from c 450BC to AD 1775*. London. Routledge & Kegan Paul Ltd 1957.

Tim Smith

CORRESPONDENCE

Composite blooms: In the course of extensive email correspondence about smelting and the production of large composite wrought iron artefacts such as the Chedworth Blooms we received some interesting comments from India. Dr Henry Cleere, who has had experience of Indian smelting and who has kindly passed on an interesting collection of photographs of Indian bloomery furnaces writes:

"I am taking this opportunity to offer some comments of my own on the 'Comments from India.' It seems to me that there is some misunderstanding about the Delhi Pillar (or the Roman composite blooms, for that matter). My understanding was that individual blooms were made in the usual way and then reheated to $>1250^{\circ}\text{C}$ in a separate reheating hearth, while at the same time the intended target area was brought to a similar temperature using some form of blowlamp. The two would then be brought together and hammered very strongly, resulting in effective forge welds. This is certainly the case of the Catterick blooms, where the process was very clear when one of them was sectioned, and work in the National Metallurgical Laboratory, Jamshedpur, in the 1950s by B R Nijhawan and others gave the same picture. Or have I missed the point?"

Henry Cleere

Help needed: the Maybury family

Don Collins, who lives in the United States, writes:

I'm researching John Maybury (Meberie, Mayberrie, etc. in earlier documents). Using parish registers we have found a number of his family events which allow us to associate him with several places in a very small area of Sussex:

1565: married 1 at Brightling
1567-70: children baptised at Etchingham
1571-78: children baptised at Mayfield
1576: married 2 at Mayfield
1579-87: in residence at Hartfield
About 1587 he left the Weald.

We know that he was a hammerman. My present goal is to find something about the works where he might have worked in or near the above communities. I doubt that the focus of most of your researchers is such that they would have turned up John Maybury's name. On the other hand, Brian Awty did a considerable amount of research on John Maybury's family! But I would at least like to know where he might/probably have worked. So it would seem to be a matter of finding information about furnaces, forges, etc. associated with the above communities at the times John Maybury was there.

Another question. I know that from at least 1587 until about 1607 John Maybury seems to have been employed by a man named Robert Chantrell. During this time frame Maybury was in at least the following places: Ellastone, Staffs.; Monmouth; Langley (Fawley) in Hampshire. I would like to know more about Robert Chantrell and his relationship to the iron industry. By any chance have you come across his name.

Final question. Can you point us to a researcher or group of researchers whose expertise would include the iron industry at Monmouth?

Visit the Maybury Family web page at:
www.mayburyfamily.org

Some interesting internet sites:

<http://medievalhistory.mysite.wanadoo-members.co.uk/chap5.html>

The research on this site includes the PhD thesis of Randall Storey, University of Reading 2003, 'Technology and Military Policy in England, c.1250-1350' as well as articles on the Tower of London and Thomas Aquinas's philosophy of technology. Whilst not directly relevant to Wealden Ironmaking it does give a good quantitative account of armaments manufacture for that period.

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J J Greenwood

There are a number of people around the world that are now engaged in producing iron in bloomery furnaces. While some are concerned primarily with recreating historic and pre-historic bloomeries, others are working on the dynamics of bloomery operation. Lee Sauder and Skip Williams of Rockbridge Bloomery have come up with a couple of novel plans which make it possible for just about anyone to smelt iron. My 17 year old daughter did it last year for her science project (OK she had a lot of help). Directions for a couple of "backyard bloomeries" are available at:

<http://iron.wlu.edu/reports/Little%20Princess.htm>
<http://iron.wlu.edu/Coatedtype%20Construction.htm>

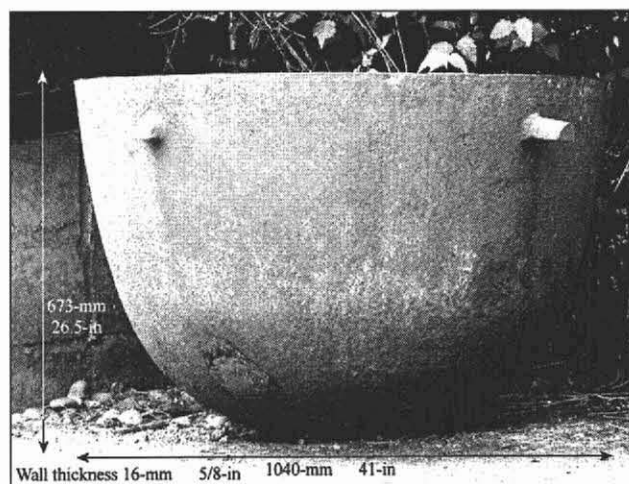
For those interested in iron technology there are two conferences devoted to it in the US. Ironmasters is primarily academics and consists of papers and a tour. It is usually held in the Spring, but given its informal nature can be difficult to locate. Another meeting is held in October at the Farmers' Museum in Cooperstown, NY. This group is primarily smiths and experimental smelters. Last October everyone, who wanted to, got to run a bloomery. There is also ample opportunity to get a little training in smithing and work in the forge.

James Brothers, RPA
 jhbiv@erols.com

CAULDRON FROM ASHBURNHAM FURNACE

A recent find is a large, cast iron cauldron that originally came from Ashburnham Furnace, although it is not known whether it was cast there; see photograph below. It is not the usual "pot belly or missionary pot shape" as its diameter increases from bottom to top, so making it much easier to make a mould.

There are four lugs towards the top, indicating that it was not used for tipping liquids.



The Ashburnham Cauldron

In Diderot's book¹ there is a woodcut showing sugar refining in Haiti, where several such cauldrons are used to boil-off the water, each having four lugs to allow the cauldron to be mounted on walls, whilst a fire with a horizontal flue ran beneath them all. As already suggested, the liquid was not tipped-out but ladled from one cauldron to the next. Fuller, the ironmaster of Heathfield Furnace, had sugar plantations and may well have sub-contracted for cast iron cauldrons...or perhaps another use was found for one of them at Ashburnham Furnace. There is slight damage towards the bottom of the cauldron, see photograph, where the iron is delaminating, this may be due to it being heated after it had boiled dry.

1. Diderot, Denis [1713-1784]; *A Pictorial Encyclopedia of Trades and Industry, Vol. 1*; Dover Publications, Inc, New York, 1959; ISBN 0-486-27428-4.

Brian Herbert

EXCAVATIONS AT LITTLE FURNACE WOOD

Work has continued for two more weekends this autumn, concentrating on the uncovering of the remains of a second smelting furnace. It is located about 10m west of the first furnace and is orientated towards the north-west. It appears to be smaller than the first one discovered on the site and, although only a small section has been cut across it, it is apparently set in a depression in the ground. What has been uncovered so far suggests that it is also of a domed type, and that the dome has largely collapsed, although a flue above the dome, inferred in the first furnace from remains found adjacent to it, has partially collapsed *in situ* above the second furnace. No datable material has been recovered so far.

Elsewhere on the site, several test pits, which were excavated to ascertain the location of other features, have been backfilled. A section across a charcoal burning platform has been dug to explore evidence of possible reuse over an extended period, but activity was probably confined to the last few centuries.



Little Furnace Wood – second furnace

It is anticipated that there will be two further weekends of excavation at the site in the Spring before the dig will be brought to a conclusion.

JSH

FORAY PROGRAMME

All members are welcome to join the foray team, which undertakes a variety of activities during the winter months. These include discovering new iron sites, small excavations, checking on the state of known sites, etc.

Please let David Brown (below) know if you are interested and he will forward you details of what is proposed, where to meet, etc. The following is an outline of work to be undertaken in the remainder of the 2006/2007 season:

2006

November 11th Hendall Wood, Maresfield. Foray and bloomery dating. Leader: Brian Herbert

December 9th Three woods near Handcross. Forays to identify sites of water management. Leader: Jeremy Hodgkinson

2007

January 6th Cullinghurst Wood, Blackham.

Continue with dig to attempt to date the bloomery.

Possible foray at roasted ore site. Leader: Brian Herbert

February 10th Two woods near Nutley. Forays to identify sites of water management. Leader: Jeremy Hodgkinson

March 3rd Warbleton. Investigation of two areas of possible iron working. Leader: Jonathan Prus

April 7th Ashburnham Furnace. Foray to record the route of the leat. Leader: Brian Herbert

May 5th Indoor foray to be held at David Brown's house.

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EDITOR'S NOTE: Thank you for your contributions and please keep them coming. Our next newsletter is due out in March 2007 and it would be helpful to receive items for publication by February 14th at the latest. If sending by email please, if possible, put pictures into JPEG format in greyscale and send them as attachments. We cannot at present publish them in colour.

Please note my new home and email addresses above and at the top of page one.

DMM