



NEWSLETTER 60 AUTUMN 2014

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CHAIRMAN'S LETTER

Dear Fellow Members,

Accompanying this Newsletter is a copy of my report delivered at the 2014 AGM which will bring you up to speed, not only with what happened in 2013/14 but also what is planned for 2014/15.

The Robertsbridge project, which includes an excavation of a still unidentified structure, remains the main focus of the field group, but in addition we are also investigating the site of the blast furnace and forge at Pashley – a rather unusual site since both blast furnace and forge are located on the same bay.

In August, the experimental furnace group attended a smelt by two professional blacksmiths familiar with smelting in a bloomery. Using local Wealden ore they succeeded in producing a good bloom and the slag ran like milk from the furnace. From the iron, they will forge a poker to be presented to the land owner who gave us permission to collect the ore – all 1600kg of it! The other main activity of the group this year has been the building of a new shed at Pippingford.

We welcome two new members to the Committee, Bob Turgoose and Gerry Crawshaw. The remainder of the Committee were all re-elected to their existing posts. A list of the full Committee is included elsewhere in this Newsletter.

Tim Smith

WIRG SUMMER MEETING 12th July 2014 – Ticehurst

Prior to the formal business of the AGM several presentations were given by members. The first was an introduction to work in hand at Pashley Furnace site as background for those attending the afternoon visit. Three specialist presentations followed giving progress in examining strategic aspects of historical

iron making within the Robertsbridge area.

Introduction to Pashley Furnace Site

John Veysey, Victor Kellett and Tim Smith provided a combined illustrated introduction, history, timeline of ownership and key events and what would be seen during the afternoon visit.

In summary the furnace predates 1540 when it was mentioned in the sale of Pashley Manor to Sir James Boleyn. By 1574 records show the furnace in operation under the ownership of the May family. Overall furnace working life, under a number of different owners, was probably about 100 years. Records show last use was during 1660 and being in ruins in 1664.

Initial surveys by WIRG of this extensive site were started late April this year and so far only about half has been researched. Most likely positions have been identified for the main furnace and forge areas, furnace and forge slag heaps, a likely furnace wheel pit as well as routes of launders and tailraces through and around the site.

The site was described within the context of the local environment in terms of water capture, flows and storage. Highlighted were the many steams flowing through the area with three main water storage ponds aptly named Top, Middle and Furnace as well as at least one other not shown on earlier maps. Locations of other likely bays were described including one found to be spring fed. Whilst an ashlar stone culvert entrance, probably dating from Tudor or Georgian times, was found. Further examination showed water to be undermining its foundations leading to possible collapse. Overall this intensity of water storage and interconnections raised questions about possible water shortages at times needing extensive local storage to ensure continuous supplies.

Work is still needed to investigate nearby mine pits in Minepit Woods as well as hollow ways as main transport routes through the area and to the site, including some uncertainty about several of these breaching water flows.

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Historical iron making within the Robertsbridge Area

Firstly Jonathan Prus presented progress in looking at iron making activities and evolution within the Robertsbridge Landscape as an integrated system of labour, transport and raw materials through contexts of technologies, ownerships and natural resources. Secondly Tim Smith gave a detailed history timeline of Robertsbridge furnace and forge site over the period 1540–1801 covering its development, ownership and historical mapping. Thirdly Judie English rounded off the presentations with a summary of environment, progress and finds at Scotts Hollow excavation site. Especially important is the challenge for interpreting a significant stone built feature found in association with bloomery debris.

Jonathan Prus is focussing on the Robertsbridge landscape, south of the river Rother and after dissolution of the Abbey and acquisition by the Sidney family. His project includes a review of earlier work by others of the area and how this integrates as a system of labour, transport and raw materials resources.

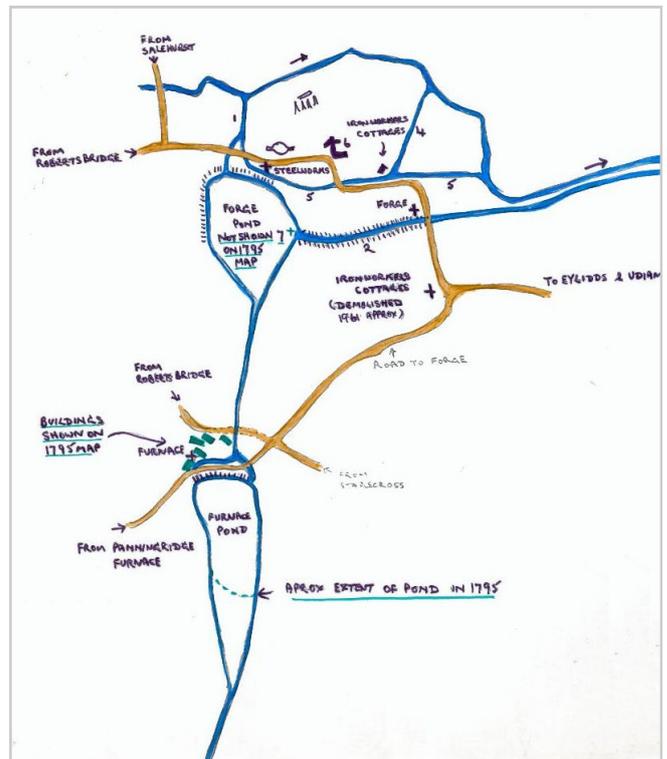
Maps and diagrams were presented showing locations of several bloomeries with evidence of stream side working, ore roasting and ore fragments. Also a reported bloomery site with no physical evidence found yet, a site prematurely destroyed some 30 years ago by farming activity and, at Scotts Hollow site, possibly three bloomery furnaces.

Mine pits found in Lower Margay Wood indicated capacities capable of providing up to six months of furnace ore supplies. Other nearby locations showed ore quantities for ten to twenty years of furnace operations whilst other places are thought to exist but need exploratory work to locate and determine capacities.

Transport routes were described using examples of lanes linking furnace sites to nearby Staplecross giving a route for movement of charcoal, ore and goods. Likewise road connections, metalled with blast furnace and forge slag, were found to nearby Mountfield. To the north a canal route, parallel to River Rother, provided goods carriage to Rye for onward transport to London. The local stream system was considered sufficient for many waterwheels and that the area was unlikely to run out of seasonal water. Examples were given of detailed water flows through and around the Sidney estate. Even a steel works, which lasted for less than ten years, had a draft blown furnace system in place of usual bellows.

Jonathan concluded with key historical questions from his work: Whilst monks were not operating iron working directly then what role might they have taken? and what method(s) were used and skills needed by the workforce to produce steel?

Tim Smith focussed on the background history of the Robertsbridge furnace and forge sites over the period 1540–1801 through its development, ownership and historical mapping. Underpinning this was his timeline of events for the whole period



A interpretation of the layout of Robertsbridge Furnace and Forge

(David Martin 1972)

starting with land being bought by Sir William Sidney in 1539. In 1540 a forge was built south east of the former Abbey and in 1541 a blast furnace was built SSW of the Abbey. Unfortunately bad flooding damaged this furnace severely needing a rebuild during 1542. (A full description of the Robertsbridge Timeline is given on the WIRG website).

Using examples of 16th-century maps Tim described how these helped clarify and confirm field names, locations of ponds, forge and blast furnace, metalled roads and early 19th-century water flows. Of particular note was cessation of blast furnace activities from 1546 for 27 years attributed to high sulphur content in local ore sources. During this time two steel works were set up.

Tim concluded his talk with a summary chart showing durations of successive ownerships during the 261 years of activities.

Judie English gave a succinct overview of progress and finds at Scotts Hollow excavation site. Located above but separated by a marshy valley from the River Rother the site is characterised by sloping land from an upper roadway, dating from 1840's, with outcrop finds of white clay, an iron pan zone, leading down to valley alluvium and loamy soil. Prior surveys identified areas of interest leading to multiple test pits being sunk with several giving finds of slag, furnace lining, an extensive charcoal platform and iron pan.

A find of especial interest is an excavated semi-circular low dry stone wall structure several metres across, with a large central core of clay, bedded into part of the site's hard pan layer. It comprises sandstones and, from nearby, fragments,

possibly some *paludina* limestone. Part of the structure is bonded using white clay to the iron pan as well as having extensions running northwards under the iron pan. Finds include several large charcoal pieces in proximity of the wall structure, a piece of 13th-century earthen jar and one dating from the Iron Age.

The function of this structure is proving problematic. So far, Judie reported, there is no supporting evidence or finds to show whether it is either a pottery, tile, brick or lime kiln. In consequence, and with evidence of very small quantities of slag, ore and furnace lining, the working hypothesis is a big 13th-century bloomery, related to the Abbey, that has collapsed and been abandoned. Work continues.

Visit to Pashley Furnace Site

Following completion of the formal AGM activities and lunch break, around twenty members and visitors assembled at the Pashley site car park for the site visit. Fortunately the weather was warm and sunny. After a short walk through open fields and into woods, with a fairly steep descent in places, then across a bridge over a stream, the site was reached.

Survey team members described and



Members assemble before visiting Pashley Furnace

discussed features and findings and how the site most probably operated. Further work is needed to explore nearby mine pit woods and how hollow ways found in the landscape linked and enabled site operations.

In conclusion the presentations by members gave different understanding and progress in exploring ownership and the development of iron making within the Robertsbridge area and from which several key issues still have to be resolved. Pashley furnace site visit gave an opportunity to explore an important iron manufacturing and forge site and see how its operations integrated into local topography and resources.

Alan Davies

THE 2014-15 WIRG COMMITTEE

Chairman: Tim Smith
Vice Chairman: Alan Davies
Hon. Secretary: Judie English
Hon. Treasurer: Vivienne Blandford

Shiela Broomfield · Gerry Crawshaw
Brian Herbert · Jonathan Prus
Tony Singleton · Simon Stevens
Bob Turgoose

A NEW SMITHING FORGE FOR PIPPINGFORD

Previous forges at Pippingford were built as small versions of the traditional style most used in England, where the tuyere is positioned at the back of the hearth and provides an adjustable blast to control the forge temperature.

In order to keep the work piece in a 'reducing' (carbon monoxide) atmosphere, the blacksmith has to keep fuel between the tuyere blast and the iron being worked. Any holes appearing in this fuel barrier allow oxygen to reach the iron. This will at least oxidise the iron or at worst burn it and render it useless. It was difficult to maintain this fuel barrier because of our forge size. It was decided to try a different construction using a bottom blast, instead of rear blast.

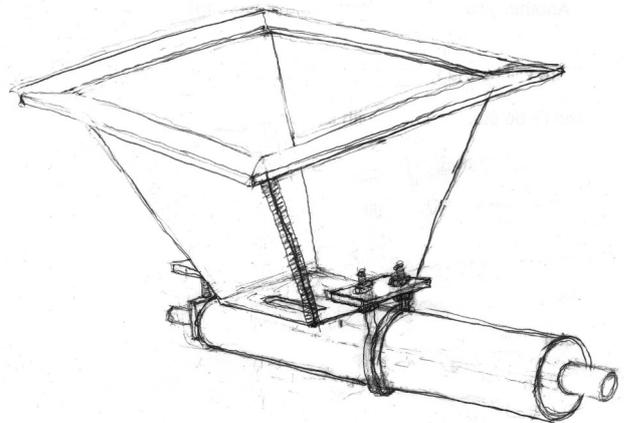


Fig. 1 - A sketch of the new forge

The sketch in Fig 1 shows the basic design. Four 10mm thick mild steel sides were cut to shape and welded together and a flange was added to the top edge which provided a means of supporting the new structure in the existing frame (Fig 2). Two opposite sides were shaped at the bottom to fit a large diameter (50mm) tuyere, Fig 3. The tuyere was slotted to provide the upward blast and mounted so that the tuyere slot could be rotated to control the blast, Fig 4.



Fig. 2 - The welded sides and flanges...



Fig. 3 - ...shaped to fit the tuyere



Fig. 4 - The completed forge showing the slotted tuyere background removed

A 25 mm long piece of tube was shaped to the slot profile and positioned over the slot, (Fig 5) and held in place with clay. This would isolate the rotatable tuyere tube from the fire built on top of this, thus protecting the tuyere tube from the fire. It is much easier to replace than the tuyere.

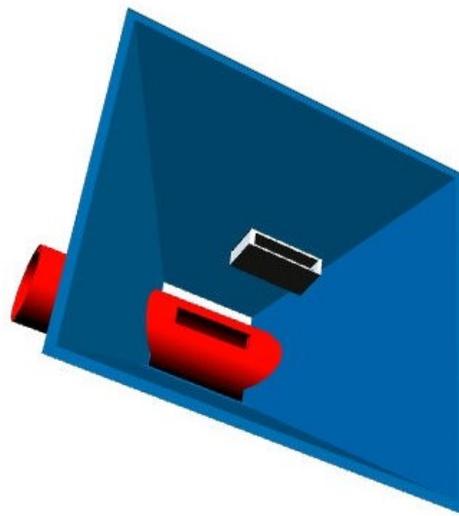


Fig. 5 - The replaceable tube

The forge lit easily and quickly enabling a simple fire weld to be made. In the past this has been difficult. Fig 6 shows a section through the weld.

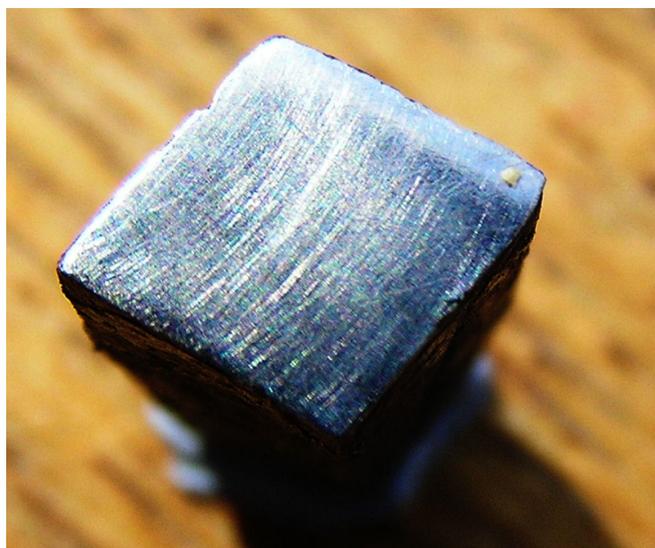


Fig. 6 - A section through the weld

Our next test was to try to consolidate a piece of bloom from a previous smelt, about 100mm in diameter (Fig 7). The forge heated it right through to a near white heat, ideal for consolidating as shown in Fig 8, and the resulting iron, with more work to do, is shown in Fig 9.

After about the third reheat it was noticed that the blast was considerably reduced so consolidating could not be continued. It was found that so much slag had run from the bloom that it had gradually blocked the tuyere. It was clear that this design was fine for working iron having minimal slag inclusions.



Fig. 7 - The test bloom



Fig. 8 - Consolidating the bloom



Fig. 9 - The semi-forged bloom



Fig. 10 - The upper tuyere sealed with clay

An upper tuyere was added (Fig 10) to blow from above with its aperture raised above the bottom of the forge, now sealed with clay. This worked well (Fig 11) and allowed the consolidation to be completed and a good piece of iron was forged. However even this method was eventually defeated by the volume of the



Fig. 11 - The new forge in action

slag.

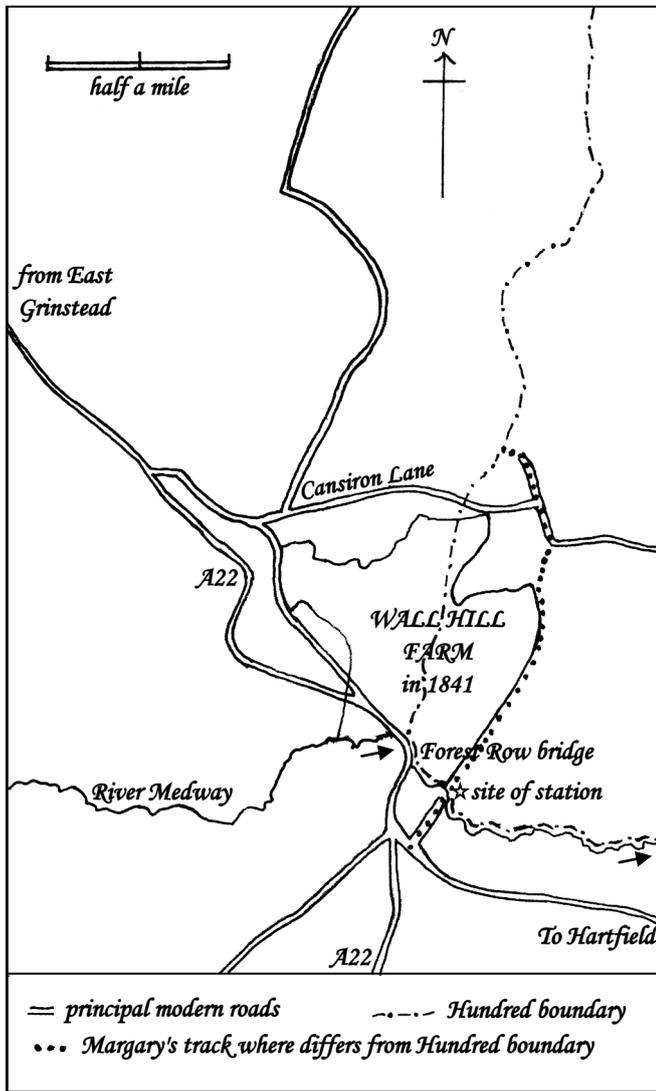
In conclusion, the bottom blast tuyere proved to be excellent for blacksmithing and no fuel barrier 'holes' appeared, enabling a flux-less fire weld to be completed. However for bloom consolidation we will use the upper tube tuyere and in future try to remove most of the slag from the bloom before the consolidation stage.

John Baillie

MARGARY'S EARLY TRANS-WEALDEN TRACKWAY AND THE BOUNDARY OF EAST GRINSTEAD HUNDRED

In 2012 I contributed to WIRG Newsletter 56 an article, 'A trackway to the Sussex iron field', drawing attention to the significance for early iron-working and -trading of the ancient route from the North Downs across Dry Hill Iron Age camp to the South Downs, as traced in Sussex (but not mapped) by Ivan Margary in 1946 (*Sussex Notes & Queries* **11** (1946), 62-4). More recently, in preparing an article on the elusive Domesday Book holdings in East Grinstead hundred *Sperchedene* and *Wildetone*, I have realised something of which Margary was not aware, that from the Kent Water to Cansiron Lane it coincides with the eastern boundary of the hundred of East Grinstead as recorded in 1564 and 1579 (see *East Grinstead Society Bulletin* **73** (Spring 2001), 5-10). Since such boundaries often followed ancient tracks, it supports Margary's conclusion part of the way but deserves discussion where it diverges. What follows expands my treatment of that aspect for its iron industry connection.

As traced by Margary the trackway crossed the Kent Water 'at Bazing Farm (an old house), continuing ... as a very distinct hollow way up another convenient spur [then] by the



The Trans-Wealden Trackway at Forest Row

Hammerwood drive ... to Bower Farm, and then by another old hollow way ... right down to the valley of the small Hammerwood stream. ... [It] formerly continued through the park to the south drive ... and here begins to follow a prominent but slightly winding ridge, which takes it past Thornhill all the way to the edge of the Medway'. He does not mention Cansiron Lane, part of an equally ancient ridgeway, nor the iron-working at Cansiron itself centuries later, but this easy access to a major trade-route could suggest there might be much earlier evidence there waiting to be discovered.

From there it diverges to the east past Grove Farm to follow the boundary between Wall Hill Farm and P.D. Wood's mapping of Lavertye (EGSB 58 (Spring 1996), 10-14); 'the track is very plainly to be seen all the way to the Medway at Pigsty (an old farm), just at the west end of Forest Row station platform' and so on. He cited the layout of old tracks and 'the situation of the older houses in Forest Row' as pointing to 'the neighbourhood of the station as the point where the river was anciently crossed', seeing 'the existing main road' (the A22) as a later short cut.

The hundred boundary also followed roads,

paths and a 'ride' through 'the land of Wilde', i.e. down the ridge of the central spur of high ground in Wall Hill Farm. A case can be made out for this route to represent the course of the 'early trans-Wealden trackway'. It gives directly on to the bridge leading into the village with its collection of old buildings (until 1929 including Trimmers Pond), whereas at Margary's crossing point the flood plain is wider and his 'older houses' seem to be the farmsteads round about.

But these are not the only roughly parallel tracks to the Medway from the ridge above, and having alternatives could have been advantageous. Comparison on the ground could be worthwhile, when any members are in the vicinity; my arthritic knees, alas, prevent my undertaking it myself.

N.B. In my piece in Newsletter 56 'Sussex Arch Colls.' at the foot of the first column on p.9 is a misprint for Surrey.

M.J. Leppard

Michael Leppard's article on Sperchedene and Wildetone will be in *EGSB 112* in Autumn 2014 (Ed.)

WEALDEN IRON PROJECT FOR PRIMARY SCHOOLS

Are any WIRG members interested in helping to create an 'activity pack' for the use of primary school teachers?

Please contact Gerry Crawshaw at gerrycrawshaw@gmail.com or call 01825 740236

**WIRG VISIT TO FOREST OF DEAN AND AREA
SAT 28- MON 30 MARCH 2015**

Members are invited to join this three-day foray

Programme:

- 28th: Arrive in Dean by 15.00
- 28th: Noxon Park mines
- 29th: Whitecliff blast furnace (Ian Standing)
- 29th: Tintern blast furnace (Neil Phillips)
- 30th: Lambsquay Wood ore workings
- 30th: Blaenavon ironworks (World Heritage Site)
- 30th: Return home after 15.00

This programme is provisional because the Blaenavon site is not normally open on a Monday. They will do special openings for groups, but cannot confirm this until the new year. The activities will need to be re-scheduled if they can't do a special opening for us.

Cost: The total cost will be £95. Travel is on the basis of car/cost sharing with drivers reimbursed for fuel. Accommodation is at the Dean Field Studies Centre, Parkend, with individual bedrooms but without any frills. The booking has been made on a "self-catering" basis and it is proposed to take the makings of simple uncooked breakfasts, coffee etc. Other meals are not

included in the cost. The Study Centre is almost next to a pub that does reasonable food.

Drivers: If you are willing to be a driver please say so when you book. The estimated total travel distance is 500 miles.

Interpretation and narrative: Ian Standing is known to WIRG members through the Historical Metallurgy Society and knows as much as anyone about the Dean iron industry. Neil Phillips is the archaeologist who has been excavating newly found parts of the Tintern site.

Booking for this trip: If you want to come please do this now. Confirm by emailing Jonathan Prus (jonathan@avens.co.uk).

Because the Study Centre requires a deposit please send £35 (or the whole £95) to Jonathan Prus, Dean Farm Oast House, Rushlake Green, Heathfield, E. Sussex. TN21 9QU. Cheques payable to Wealden Iron Research Group please.

SUSSEX ARCHAEOLOGY FORUM

WIRG is represented on this body and the following iron-related archaeological activity in Sussex was reported at a recent meeting:

Brede: Chitcombe Farm. (NGR TQ 813211). Magnetometer and Resistivity surveys have been conducted on this substantial Romano-British iron production site. Survey work is on-going. Features identified appear to be similar to those identified at other RB iron sites ie. Oaklands Park and Bardown. (Hastings Area Archaeological Research Group - HAARG).

Sedlescombe: Footland Farm project. (Centred NGR TQ 772200). Magnetometer survey has been conducted between Sedlescombe Church and Compasses Lane to trace the alignment of the Romano-British approach roads/tracks to Footland Farm iron production site. In total 32 hectares (80 acres) have been surveyed and the investigation area continues to expand. Features identified to date suggest an Iron Age enclosure, RB enclosure, field systems, additional trackways, a substantial quantity of bloomery type features, slag banks and ore extraction areas. The initial report has been published in the recent society journal. (HAARG).

Sedlescombe: Oaklands Park Roman Iron Working Site. (NGR TQ 785176). (Director David Staveley) Six trenches were excavated targeting various parts of the Roman iron works. It was hoped to find CL:BR stamped tiles but the excavations did not find much at all in the way of Roman tile. The main trench over the supposed administrative building proved instead that it was a smithy. Large quarries near the iron works seemed to be for clay extraction. Part of a post built building was found to the west of the main smithy building, along with its destruction layer. The part of the slag heap sampled

found little else but slag. A rubbish pit targeted provided a good quantity of datable pottery (Independent Historical Research Group).

Broadbridge Heath: land south of Broadbridge Heath and west of the A24. (NGR TQ 15065 30646). A final stage of excavation on this site involved the recording of a small Late Iron Age cremation cemetery, adjoining a small watercourse, comprising eight urned and eight unurned burials. Two Late Iron Age ring gullies, probably for round houses, were uncovered close to the cemetery. These were of Late Iron Age/ early Roman date, an iron working hearth existing within one of the ring gully enclosures (Archaeology South East).

Crawley: Crawley North East Sector. (NGR TQ 28952 39112). (Site code and director not supplied). Excavation of trial trenches on a large site to the east of the London - Brighton railway has so far revealed one or more possible Late Iron Age/ Early Roman ditches and a pit containing iron working slag. Work continues (Thames Valley Archaeological Services).

West Hoathly: West Hoathly Brickworks. (NGR TQ 37591 32555). During the most recent phase of monitoring of topsoil removal in advance of clay extraction, the top fills of a further two marlpits and 43 minepits were exposed in the former Mare Pit Wood, varying in diameter from 3 metres to 13 metres, adding to the 130 minepits previously recorded from 2004 onwards. The minepits are presumed to be medieval, on the basis of the radiocarbon dating of timbers exposed in one of several minepits exposed in the older, western quarry face in 1988 (WIRG), and of a few probably associated features. But as yet, reduction of ground levels in the present clay pit has not yet reached the base of any of the present spread of minepits, the upper minepit fills comprising redeposited clay. The number of apparently discrete minepits identifiable just below topsoil far exceeds the apparent number of minepits, identified from earthwork pits and spoil heaps, previously surveyed in the Wood. During the 2004-2014 monitoring, some pits filled with ironworking slag of medieval date, hearth pits, and the beam slots of a small medieval building have been exposed and recorded. Work continues (Cotswold Archaeology).

Date for your Diary

WIRG WINTER MEETING 2015

Saturday 31st January 2015
Nutley Memorial Hall

John Boothroyd
(Oxford Archaeology)

will talk on
**The Excavations at Upper Wilting farm,
Crowhurst**

NODDY

Under the title ‘Mount Noddy: Wealden iron or Wealden irony?’ I contributed a short piece to *Wealden Iron* second series no. 12 (1992) challenging the assumption, derived from Straker’s finding four Noddy field-names where there was evidence of a bloomery at Cowden, that ‘Noddy’ in place-names always implies iron-working. I also desired evidence for his parenthetical definition of Noddy as ‘a name for slag’, tracing it to W.H. Hills in the *East Grinstead Observer* in 1917, which then raised the question of Hills’s source. Upon finding that source in 1993 I sent a supplementary note to the editor, which was acknowledged but never used. A similar piece was printed, however, in the *East Grinstead Society’s Bulletin* 53 (Autumn 1993). Two decades on, I owe it to members of W.I.R.G. to share the information whose non-communication to them I had forgotten.

Among Hills’s papers in West Sussex Record Office (acc. 7986) is an undated cutting from the *East Grinstead Observer* in which he introduces and reprints in full an article ‘The iron-works of Sussex’ contributed to the *Penny Post* for August 1854 by the Rev. John Mason Neale, Warden of the almshouse, Sackville College, in East Grinstead, 1846-66. It includes the sentence ‘On the banks of many of these ponds are quantities of slug, slag, shag, noddy, or cinders - that is, the scoria of the iron ore’, the wording used unattributed by Hills in 1917. As for Neale’s source, he was born in 1818 and was well acquainted with Sussex long before his appointment to Sackville College, so it is possible that he heard the word so used by people to whom the last days of the Wealden iron industry and visible evidence of it were still living memory.

Neale was a versatile scholar of wide interests, so his article could be worth revisiting in the light of present-day knowledge of the industry, especially in view of his final paragraph: ‘There is a very interesting paper in the *Sussex Archaeological Collections*, Vol. II, with a supplemental paper in Vol. III, on ‘Iron-works in the County of Sussex.’ I have borrowed something from it, but I must in justice observe that the greater part of my notes had been made before I had the pleasure of reading it.’

I lack the expertise to evaluate Neale’s account, but I may add that I have never found an instance of ‘noddy’ standing as a word in its own right in the sense given by Neale. I therefore incline to support the ironic interpretation of Mount Noddy proposed by the East Grinstead solicitor A.H. Hastie in letters to the newspaper following the reprint (and accompanying the cutting) ‘simpleton’s mount’. The place-name, which is found in several locations, is the subject of a learned article by Professor (of linguistics) Richard Coates in the *East Grinstead Society’s Bulletin* 47 (1990).

M. J. Leppard

THE ROBERTSBRIDGE PROJECT

The effort to ‘decode’ the Robertsbridge ironworking landscape has progressed over the last year.

The positions of the sixteenth century blast furnace, finery forges and steel forges have been pinned down with more certainty than before. All of these sites have been ‘redeveloped’, the blast furnace most recently. The previously recorded positions of the blast furnace and finery are approximately correct. New map and document work has established the positions of the steel forges at the Abbey gate. A happy side-effect of flooding in March was that the exact position of the finery forge pond became clear (see photo). As a result of seeing this, the enigmatic ditch linking the pond to the forge makes sense (nowadays it flows the ‘wrong’ way, away from the forge). An additional pen pond has been found upstream from the blast furnace pond.



Flooding reveals the former extent of Robertsbridge Forge pond

However, more study raised more questions. The map work showed that the woodland belonging to the Sidney estate could not have fed both the blast furnace and the forges at the same time: charcoal must have been sourced elsewhere. Another riddle concerns the ore. It has been asserted that the local ore was sulphur-rich, and that this is why the blast furnace shut down in the late 16th century. The studies that provide the details of the sulphur content relate to other areas, not to Robertsbridge. But the furnace re-opened and large amounts of local ore were dug. Nonetheless, the area of ore-pitted land is almost certainly too small to have provided ore throughout the lifetime of the furnace. Another mystery that emerges is that no-one seems to know in detail of how the Westphalian steel making method worked. This process was employed at furnaces within the Abbey buildings for about ten years in the late 16th century.

The transport system connecting the ironworks to its suppliers and its customers was formed by an intricate set of roads tracks and waterways. We expect that these will be fully

described in a future edition of the WIRG bulletin *Wealden Iron*.

WIRG members have forayed into the woodlands on the cap of Wadhurst clay that covers the ridge south and east of the works around the Abbey. The task of mapping the ore-mines has begun and, with luck, will be completed next year and published as an example of a mining system supporting a specific ironworks. This work has revealed no new bloomery sites in the area, but we have established that one recorded by Straker in 1931 has been bulldozed out of existence. This happened when a nearby pen-pond was removed to improve a field on New Pond Farm.

The newly discovered bloomery production area at Scotts Hollow wood is still under investigation. If, as seems possible, this is dated to the mediaeval period it will be a new example of iron production on a Cistercian estate.

Twenty five WIRG members have been involved in re-exploring the area and in the archaeology at Scotts Hollow over sixteen days of forays and digs.

Jonathan Prus

BLOOMERY IN IFIELD MILL POND

During work carried out for West Sussex County Council to the pond bay at Ifield Mill, Crawley, this summer, the pond had to be drained. Revealed were the remains of two bloomery furnaces (TQ 2448 3636), one built inside the other, in the part of the pond to the north of the railway bridge. Little remained of their form and it is not known, at the time of writing, from what period they date. Another bloomery has been noted along the same stream about 1.5km to the north, but that too is undated.

HIDDEN IRON GRAVESLABS UNCOVERED AT MAYFIELD

The temporary removal of the choir stalls at St Dunstan's church, Mayfield, this summer provided a brief opportunity for five iron graveslabs to see the light of day after many decades being concealed. Although recorded in Rosalind Willett's catalogue of iron memorials published in *WIRG Bulletin* 2nd Series 8, in 1988, she herself admitted to having to rely, for the text of the inscriptions, on a description written at the beginning of the last century. Three of them, to members of the Houghton family, consist of simple two-letter initials in relief on otherwise plain slabs. The other two, however, to infant sons of John and Dorothea Baker, are finely incised not only with lengthy Latin texts but also with the family arms. Although more time-consuming to make than graveslabs cast with decoration in relief, those with letters and other shapes cut into the cast iron are not as uncommon as one might expect perhaps because graveslabs were one-off products. There are, also, a few iron headstones, four of which at Brightling have

incised inscriptions (though sadly now largely unreadable through corrosion).



The incised memorial to the infant John Baker, dating from 1669

AN EXPERIMENTAL BLOOMERY SMELT BY OWEN BUSH

On 20th August a small group of WIRG members and two members of the Wadhurst History Society (who had attended the WIRG Summer meeting at Ticehurst) congregated at East Wickham Farm in Welling, Kent (almost within sight of the Thames Dartford crossing) to witness a smelt by two professional blacksmiths, Owen Bush and Mick Maxen.

Owen had attended the WIRG visit to the excavations at Upper Wilting Farm (near Hastings) in July and Victor Kellett told him of our smelting experiments at Pippingford, whereupon Owen revealed he too was a smelter and invited WIRG along to his next smelt. We happily agreed but with the proviso that Owen should smelt the same local Wealden ore that we are currently using rather than the much richer imported ores he normally uses.

After roasting, typically this siderite ore contains around 38% iron, but this, and the other

constituents present, varies from piece to piece.

There is no claim by Owen that his technique represents an authentic method of early smelting, rather he is interested in producing a good bloom of forgeable iron.



Fig. 1 - Thin walled clay shaft furnace approx 1.5m high and 300mm internal diameter with copper tuyere inclined down 17 deg

After preheating the furnace, the first charge of charcoal – made from imported hard wood – was added, and the electric blower turned on. The first charge of ore was prepared weighing out 2kg charcoal and separately 2kg roasted ore crushed to about 10mm size and smaller. The charcoal was charged and the ore sprinkled in over the following 15 minutes or so, a little at a time. From the rate of consumption of the charcoal, Jonathan Prus has calculated the blowing rate at about 14.5 litres/sec.

After about 17kg of ore had been added a ‘burbling’ sound could be heard from the furnace indicating some slag build up. At this point Owen tapped the slag by pushing a 10mm diameter steel rod through the clay of the tapping arch near the base. On withdrawing this, slag flowed ‘like milk’ onto the ground solidifying into a very porous friable layer.

As the smelt progressed, further holes were made in the tapping arch clay to release more slag.

After 50kg of ore had been added, charging ceased and the charge allowed to burn down to a little above tuyere level. Blowing was then stopped and the slagging arch fully opened through which the bloom was extracted. While Owen held and turned this on the ground Mick hammered it to break off adhering



Fig. 2 - Tap slag flowing from 10mm diam hole made in closed slagging arch



Fig. 3 - Bloom with slag adhering to surface



Fig. 4 - Bar hammered from a piece of the bloom

slag. Owen then transferred the red hot bloom to a power hammer to start the consolidation process to a bar. When cool, sparking this indicated a ‘low carbon’ iron. Subsequent analysis by Alan Davies indicated a carbon content of about 0.16% - typical of a ‘mild’ steel.

For a more detailed technical analysis please visit the WIRG website and click on ‘Experimental Bloomery’

Tim Smith

Buried at Worth, Sussex, 2nd August 1590

Richard Winchester

“that was found drowned in a myne pitt in the little park of Worthe”

(Worth Parish Register)

WIRG BULLETIN 35 (2015)

Articles for inclusion should be sent to the Editor, David Crossley by 31 March 2015 (contact details on back page)

ORDNANCE NEWS

Outside the Summer Palace of Tipu Sultan at Srirangapatna, near Mysore, in India, stand six iron cannons of various sizes. The palace is a monument to Tipu’s military successes against the British East India Company in the Anglo-Mysore wars of the late 1700s; along with trophies of war, it contains vivid murals depicting Tipu’s triumphs, in some of which French officers can be seen looking on with approval. When, in 1799, Tipu sought a formal alliance with Napoleonic France, the British sent a force to deal with him permanently, one of the commanders being Colonel Arthur Wellesley, the future Duke of Wellington. The fort at Srirangapatna was besieged and taken, Tipu lost his life in the fighting, and more acceptable rulers were installed at Mysore.

Some of the Srirangapatna cannon are clearly British, and I wondered whether they might be of Wealden origin. Who better to ask than the editor of this newsletter, JSH? He replied:

‘Two of them could be Wealden : the small one (fig 1) with the crowned P and the weight 4 cwt. 3 qrs. 0 lbs. [about 532kg] and the one with the royal cypher and the weight 39 cwt. 0 qrs. 15 lbs. [about 1988kg](fig 2). The crowned P is probably an East India Company gun, the P indicating that it had undergone the Royal Arsenal proof but was not for government service. It is an Armstrong pattern, dating to after 1717 to about 1787. Trunnion marks (absent) would have helped in pinpointing which furnace it came from. Its weight suggests it was a two-pounder, which is a size not generally cast in the Weald, so it may have been the work of one of the London foundries. The one with the royal cipher of George II (fig 2) is also an Armstrong pattern but was for government service and dates between 1727 and 1760. The weight, 39.0.15 indicates that is a 24-



Fig. 1 - 2-pounder gun with the Woolwich proof mark at Srirangapatna



Fig. 2 - George II 24-pounder at Srirangapatna

pounder. Since the trunnions are missing, it is unlikely that we shall ever know where it was cast.”

Nobody at the palace could say whether the cannons were taken by Tipu in previous Anglo-Mysore conflicts or were left behind by the British after the siege.

Robin Fox

WIRG BULLETIN 34

Apologies to those who received their Bulletin a little later than usual this year. This was due to the printer sending too few copies.

TEBBUTT RESEARCH FUND

Grants are available towards research into any aspect of the Wealden Iron Industry or subjects pertaining to it. Applicants may be individuals or groups, and the application can include any associated expenses, such as travelling and photocopying. The applicant should write a letter giving details of themselves together with relevant information concerning the research envisaged.

Applications to the Hon. Secretary

FACE THE IRONMASTER



Thomas Sackville (1536-1608)
1st Baron Buckhurst & 1st Earl of Dorset

Sometime owner or lessee of eight ironworks in eastern Sussex

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EDITOR'S NOTE

Thank you for your contributions and please keep them coming. Newsletters are published in March and November each year. Items for publication, normally not exceeding 500 words, should be received by 14 February and 14 October, respectively, for inclusion in the forthcoming issue. Please send by email preferably, by CD or hard copy; I can work with most PC formats. Line drawings and photographs are welcome (colour or monochrome; the newsletter is published and emailed in colour but printed in monochrome). **Please send images as separate files, not embedded in the text. Captions should be included with the text, not added to images.** Digital images need to be at least as big as their expected published size (column width 86mm), ideally at 300 dpi or more.

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Cheques payable to **WIRG** (except where marked* - payable to J. S. Hodgkinson)