NEWSLETTER 61 SPRING 2015

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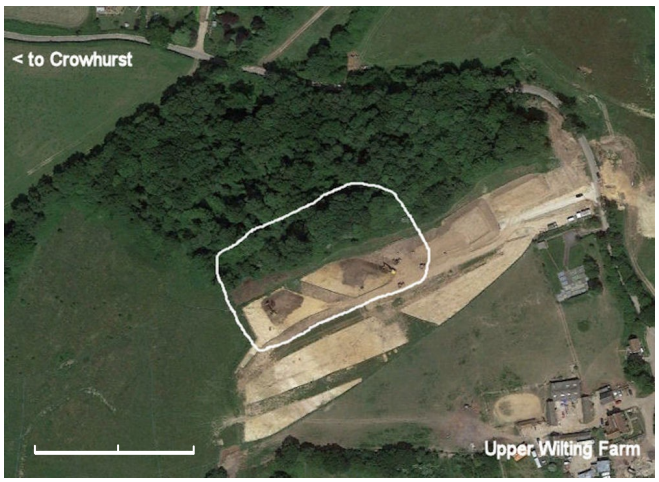
FOURTEEN BLOOMERIES AT CROWHURST ROMAN SITE

WINTER MEETING
Saturday 31st January 2015

It was no surprise that the turnout for this meeting was larger than usual given that the subject was the recent excavation of the Roman ironworking site at Upper Wilting Farm, Crowhurst. The speaker, John Boothroyd, of Oxford Archaeology, which was the contracting archaeological unit, began by describing the background to the project. The construction of a link road between Sidley, in the north of Bexhill, and Hollington, north-west of St Leonards extended across a series of small valleys which in prehistoric times were probably inundated by the sea. A preliminary evaluation of 106 test trenches along the length of the route provided the foci for subsequent archaeological work. This was by watching brief, stripping and sampling, or by full excavation. Of significance were over 100,000 worked flints recovered, and the discovery of a Bronze Age barrow and a 'burnt mound'. The extent of the occupation of the site at Upper Wilting Farm, which lies at the eastern end of the route, was not fully appreciated at first. The most recent feature was a lynchet, caused by centuries of ploughing, which overlay a boundary ditch. The foundations of a beam-slot building typical of the Saxon period and the remains of corn drying ovens probably of the early 8th century suggested a post-Roman presence.

A mid-2nd century Romano-British enclosure



Aerial view (2013) of excavation showing extent of ironworking site (scale 100m)

south of the later lynchet, dated by a piece of Samian ware, had post holes filled with iron slag, indicating that iron-making was contemporary or soon after.

North of the lynchet on sloping ground was the iron-working site. Machine stripping identified the extent of the slag area as well as revealing several masses of slag. A geophysical survey was carried out by HAARG but the subsequent excavation did not tie in with the survey results. The slag extended 20m N-S and 55m E-W and a trench was hand dug over a four-week period across the slag revealing a depth of at least 1m in places. Other trenches across the slag were machine cut to reveal the deposits making up what were found to be a series of heaps reflecting periodic

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Section across one of the smaller bloomery furnaces (photo: J. Boothroyd)

use of the site. Samples for bulk analysis and detailed examination were taken. Machine stripping of the 500-700 tons of slag enabled the identification of specific areas of interest. These included ore-roasting areas and the remains of 14 bloomery furnaces, each of which was excavated in plan, a half at a time so that a section across each furnace could be recorded. Ten of the furnaces were of 30-50cm diameter internally, and a group of six showed that disused furnaces had been covered over before later furnaces were built. Four furnaces were much larger, having an internal diameter of up to 1.5m. A striking example, with the contents of its last firing intact, was built into a mound of re-deposited clay. Evidence of re-use was seen in two of them and of possible reductions in size. the large furnaces were built in a line successively further up the slope. Comparisons were drawn with contemporary furnaces excavated at Laxton, Northants., and in France, SE of Paris. The similarity with the furnace excavated in Little Furnace Wood, Mayfield, was also noted during questions afterwards. As is the case with many

Section across a large, free-standing furnace built into re-deposited clay (photo: J. Boothroyd)

Roman sites in the Weald, no evidence of smithing was found nor of any iron products.

John Boothroyd concluded by showing the current excavation of an ironworking site near Scunthorpe, Lincolnshire, which may prove to be the earliest in the country. Questions touched on the evidence of tuyeres, of which none was found in association with any particular furnace, on the presence of slag 'plugs', of which there were many, and whether the site had petered out or been abandoned, the former being the most likely. Post-excavation work has barely started so a full report cannot be expected for several years, but a website will go on-line in due course where the latest results will be revealed.

NEW MEMBERS

We welcome the following:

Gordon Mabb – Barming
Mary Harris - Crowborough

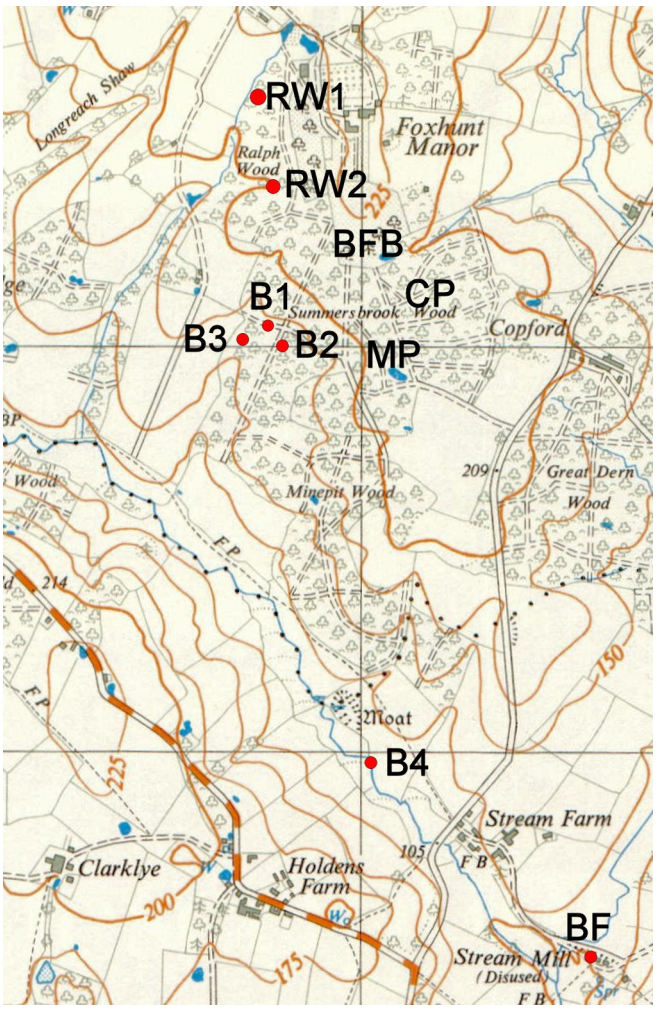
FORAY TO LITTLE DERNWOOD FARM, WALDRON 22 November 2014

At the invitation of the land owner, Chris Bannister, 11 of us assembled at Little Dernwood Farm (about 2.5km west of Horam, East Sussex) to explore Summersbrook and Minepit Woods and a moated site about 1.5km to the south of the farm. Despite threatening rain we were fortunate to miss the showers forecast for the afternoon.

Two bloomery sites had already been recorded in the NW part of the wood – known as Ralph Wood (RW1 & RW2 on the map, overleaf) but nothing had been recorded further south. Chris Bannister, however, had found various samples of iron related debris, possible charcoal platforms and mine pits, and David Brown recalled finding slag in the southern part of the woods some two years ago.

Chris first took us to two possible charcoal platforms (CP on map). One, we concluded, was probably the site of a stationary steam engine and the other, which had a mound towards its centre, was similar to ones found on Ashdown Forest which are identified as field kitchens for prisoners of the Napoleonic wars. Chris Bannister understands that Napoleonic prisoners were camped in the area to put in field drainage systems.

Continuing to an area pitted with old mine pits and a larger flooded pit – with no spoil around its sides – (MP on map) we concluded this was probably



Map of the Dernwood Farm area (OS 1:25,000 1959)

also an ore pit. The wood to the south of this region is called Minepit Wood.

Continuing NW we left the woods passing through a field where Chris had found a large piece of blast furnace bear during ploughing some 30 years before (BFB on map). This had been roughly squared to about 50cm each side and most probably had been carried from Stream Mill blast furnace 1.5km to the SE (BF on map). It possibly served as a threshold stone for a hovel which would leave little permanent trace.

Turning SW, we re-entered coppiced woodland to examine the first known bloomery site. Bloomery slag was found on the surface conveniently excavated by badgers.

Some 20m away more bloomery slag was found in a small brook. Probing and digging above the bank we found atypical bloomery slag with a dark central core, similar to some off medieval origin.

Crossing the brook heading west we discovered a third concentration of bloomery slag about 20m from the stream (B3).

After lunch we drove south about 1.5km to a moated site just south of Coneyburrow Wood. Here we found bloomery slag in about a 20m length of a boundary bank (B4) and a single piece of blast furnace slag probably brought there from Stream Mill blast furnace 0.5km to the SE to improve the track. A previous excavation by another group had found artefacts in the area ranging from a flint scraper, Roman pottery and a clay pipe. The bloomery had been recorded in 1981 by WIRG members.

Tim Smith

FACE THE IRONMASTER

THOMAS HUSSEY (1680-1735)

Clerk at Ashburnham, then partner with Maximilian Gott at Beckley and Westfield, and with John Legas at Lamberhurst, Hawksden, Bivelham, Waldron and Brightling ironworks.

SUSSEX ARCHAEOLOGY FORUM

The following notices, in which references are made to iron industry-related discoveries, were received recently by the Forum:

Ashburnham: Kitchenham Farm. (NGR TQ 677126) Four trenches were excavated. These confirmed the alignment of the Roman road leaving the site, a wooden building constructed on beam slots, a cremation burial and further iron working residue (demolished furnaces, slag etc.). All features are of a Romano-British date and finds processing is now underway. (Kevin & Lynn Cornwall, HAARG).

Catsfield: Catsfield Road Solar Farm. (NGR TQ721126). Geophysical survey and evaluation excavation identified a Bronze Age ring ditch / barrow site, a late Iron Age / Romano-British iron production site and post medieval field system. The barrow and bloomery area is to be preserved in-situ (Richard Greatorex, Cotswold Archaeology)

Crawley: Ifield Mill Pond. Archaeological watching briefs undertaken during groundworks associated with the draining of the north mill pond, extraction of underlying sediment and creation of a new spillway have revealed remains of at least three phases of potential medieval and post-medieval industrial activity on the site.

Potentially the earliest of the features are the remains of two bloomery furnaces (for iron smelting) found in the base of the drained pond. These have been excavated, recorded and samples taken for archaeomagnetic dating by the University of Bradford (reported in Newsletter.

The most expansive findings were made in the north-east corner of the site where the culvert for the new spillway has been excavated. Here the remains of a timber and stone structure were found – most probably the early post-medieval iron forge that is documented from 1574 and was later destroyed by Parliamentarian forces in 1643, at the beginning of the English Civil War. In association with the structure was a well-made timber-lined culvert that would have drained into the brook to the north. Elsewhere, another timber structure has been found to in the north-central part of the drained pond, in front of the existing dam. Here a substantial dump of ironworking slag overlay a small funnel-shaped timber structure fed by a timber flue and downpipe. This may relate to the re-use of the site for corn-milling in the latter part of the 17th century. Site works are on-going and it is hoped that the interpretation of these regionally significant findings can be refined through analysis undertaken at the post-excavation phase of the project (Archaeology South-East).

Crawley: Forge Wood. (NGR centred TQ 29053 39242). Excavation of trial trenches on the western part of this site (west of Balcombe Road and Steers Lane) has found an Early Bronze Age gully and discrete areas of iron working bloomery activity. One small area of iron working activity, with pits containing furnace or forge slag, is probably associated with the former Tinsley Forge, very close by. (Thames Valley Archaeological Services).

LARGE MASS OF WROUGHT-IRON DISPLAYED AT THE ASHDOWN FOREST CENTRE

On a recent visit to the Ashdown Forest Centre, 4.8 miles SE from East Grinstead, a mass of iron and slag, shown above, was on display; unfortunately its find position has not been recorded. The magnet scale is a 20mm square. The surface is very pitted with some over 2.5cm deep; it is assumed that large pieces of charcoal/wood were embedded in the iron/slag surface and over the years the wood has rotting away whilst the wet charcoal has turned to dust when frozen.

It is roughly spherical with an average circumference of about 66.8cm giving a diameter of about 21.3cm and a volume of 5060cm^3 and weighing 12kg.

Assuming that it is a solid wrought-iron sphere, having a density of 7.7gm/cm^3, it would weigh 38.9kg. Due to the slag having a lower density than iron, holes over the surface and probably charcoal within the mass this would account for the difference between the calculated and measured weight.

It is speculated that it is most likely to be a partially consolidated bloom of wrought iron from a bloomery furnace. A considerable amount of slag is evident over the surface to which the magnet is not attracted. It may have been lying around for 2000 years and if the surface was not consolidated by hammering the sponge-like bloom, often mentioned in the literature, this may have rusted away to give the quite smooth surface.

The other possibility is that it is wrought iron resulting from the finery process, where brittle cast-iron, from the blast-furnace, was remelted to burn off the carbon causing this brittleness. The resulting wrought-iron was hammered spherical by hand; the

final hammering under a water-powered tilt hammer to form bar iron was not undertaken.

Without knowing its find position it is difficult to make many further comments, unfortunately; even if local to Ashdown Forest there are numerous bloomery furnace sites and a blast furnace and finery forge at Newbridge which, in 1496, was the second to be established in England and the Weald.

Brian Herbert

DID WEALDEN IRON FOUNDERS CAST BRASS DOMESTIC WARES?

A recent observation has drawn attention to the possibility that some Wealden iron founders also turned their hands to casting brass, i.e. bronze, skillets, three-legged saucepans.

On a recent visit to Anne of Cleves House in Lewes, I was showing someone a Stuart armorial fireback which had associations with Robertsbridge and Beech Furnace. The connection was the addition, when it had been recast, of a label with the name, James Standen. A man of that name had been founder at Beech from 1728-9 and then at Robertsbridge. I had seen this fireback many times, but only on this occasion had I recognised that the name label had been formed from the handle of a skillet. It has a distinctive, slightly triangular, shape and a hollow diamond between the two parts of the name. I contacted Roderick Butler, an expert on

Detail of a Stuart armorial fireback showing the name of James Standen formed from the detached handle of a bronze skillet (Anne of Cleves House, Lewes)

skillets, and he informed me that another skillet was known to bear the name of Standen on its handle and that he had thought that it had come from the south-east of England but knew nothing more about it. This went some way to answering the question.

Roderick's book, *English Bronze Cooking Vessels & their Founders 1350-1830*, which he co-wrote with Christopher Green, mentions another family of founders from the south east: Kemp, from Ticehurst. A Lawrence Kempe was noted as a pot-founder at Wadhurst in 1640 and a Harry Kemp was gun founder at Waldron in 1760. It may not be a coincidence that a John Kemp is buried beneath an iron headstone in Wadhurst churchyard. Another name in his book that set me thinking was Rumens. A George Rumens operated Lamberhurst Furnace briefly in the late 1760s, and a Will Rummins was the last founder at Ashburnham in 1813. This led me to search in my bookshelf, where I was rewarded by a brief reference in a volume my father had acquired, Edmund Austen's *Brede, the story of a Sussex Parish*. At the end of some paragraphs on Beckley Furnace was the sentence, "Another speciality at these works during the 18th century was the manufacture of brass skillets by a man named Rumens."

Bronze skillet of 1697 with the name of Edward Rumens on the handle.

One wonders how many other ironworks or iron founders, several of whom are described as pot-founders, were producing bronze as well as iron wares. Any information that readers can supply would be most welcome.

JSH

REVIEWS

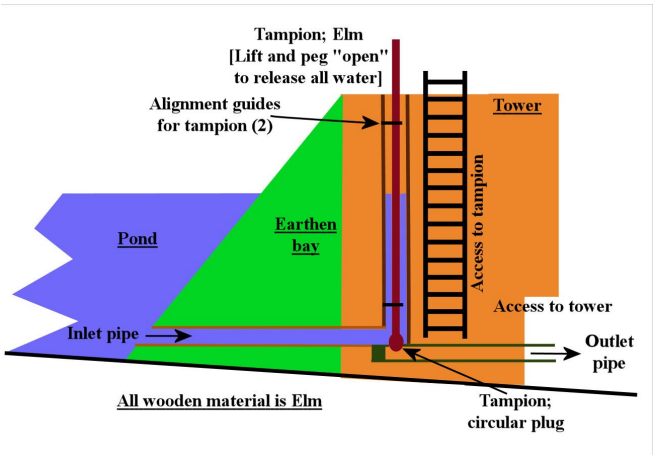
John Taverner, *Certaine Experiments Concerning Fish and Frvite, [Practised by Iohn Taverner Gentleman, and by him published for the benefit of others];* Anchora, Spei, London, Printed for William Ponsonby, 1600.

Even if this is not the oldest book reviewed, it will be the least well-known, shortest, and most expensive at $15,000 for a 1st edition. It seems that this book is John Taverner's only claim to fame and very little else

is known about him apart from his father, Roger Taverner, being Surveyor General of the King's woods south of the Trent, to which John Taverner succeeded in 1582.

It is his first chapter that is of interest because fish, an important source of food at the time, often became unhealthy and required the pond to be completely emptied, once the fish were removed to another pond. The emptying of the pond should be compared to a pen-pond up-stream of a blast furnace of this period, say, which, during times of drought was used to let water into the furnace pond and allow smelting to continue. This should not be compared to the 'pen-stock', a mechanism for controlling the top two or three feet of furnace pond water for adjusting the bellows blowing rate; this cannot be used to empty a deep pond due to the excessive effort required to lift the pen-stock gate.

The mechanism that John Taverner used to release the pond water was called the 'tampion' and was used in conjunction with other features; the diagram below is one embodiment of the general scheme. Further pictures of actual tampions are available in Geoffrey Binnie's *Early Dam Builders in Britain* (Thomas Telford 1987).



Author's suggested method for using the tampion for a pen-pond.

The tampion is effectively immersed in the pond-water via the input pipe, this produces a downwards force on the tampion so sealing the outlet pipe with the tampion's circular plug. Once the tampion is lifted up, using manual labour, water can flow from the pen -pond but to maintain this flow the tampion must be pegged in position. Calculations show that providing the plug's diameter is less than about 4 inches, one man is capable of lifting the tampion in ponds up to 15 feet deep. A 1663 map of the Mayfield ironworks shows some six pen-ponds, each with a tower-like structure, in the bay, from which the water emerges; this is indicated in the diagram.

He also gives a detailed description on how to build a dam across a valley to make a pond and allow the stream to pass through, this being more suitable than digging out the land to form a pond because the fish are not so healthy although adequate for the winter months. This again applies to the Wealden iron Industry.

This author has a copy of John Taverner's book which may be borrowed, but it does not mention the iron industry. It is anticipated that an article expanding this book review will be published in a forthcoming WIRG Bulletin.

Brian Herbert

J. S. Hodgkinson, Waste heaps as a potential indicator of regional iron production and organisation: An example from south-east Roman Britain (in B. Chec and T. Rehren (eds.)*Early Iron in Europe* (Editions Monique Mergoil, Montagnac 2014) . ISBN 978-2-35518-041-5 €56.00).

WIRG president Jeremy Hodgkinson has just had a paper published in a new book called *Early Iron in Europe*. It's about using estimates of slag heap sizes to work out the distribution and importance of ironworking sites within a landscape. It builds on his earlier work published in *Historical Metallurgy* in 1999.

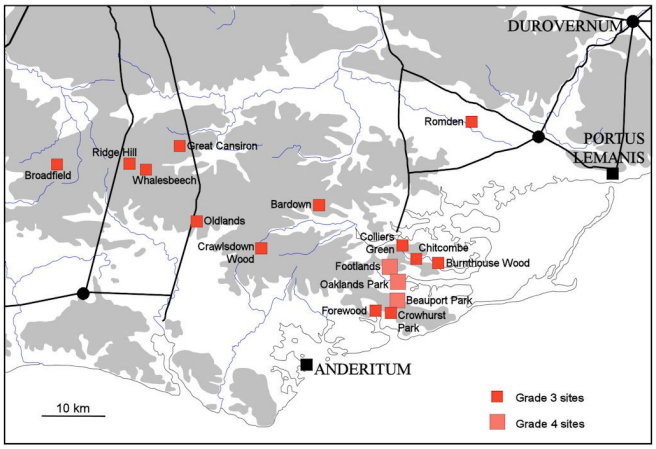
We don't really know how much iron was produced by bloomeries in the Weald (or, indeed, anywhere else). You can find estimates of production. For example Cleere and Crossley in *The Iron Industry of the Weald* tell us that the six largest Roman sites may have produced about 90,000 tonnes of iron but, as they say, the evidence is "slender". We only have the slag to go on; to work out iron production you have to know how much slag there used to be and how much slag was produced per tonne of iron made. We know neither of these things. The 90,000-tonne estimate might be out by a factor of ten.

It is hard to find out the mass of slag in a slagheap. Any heap is almost sure to be irregular in shape. It will have wiggly sides, it might sit in a pit of unknown shape and its top probably won't be level. If this isn't bad enough, the percentage of slag in its make-up will vary. A common approach is to estimate average depth from pits and surface area as nearly as it can be measured. Then an estimate of the proportion of the heap that is slag is made and the numbers multiplied out. There does not seem to be a published calculation of the uncertainties that go with this method.

The difficulty of estimating production from a

given amount of slag is an even more vexing problem. Estimates from experimental work vary by a factor of at least five. There is no agreement about how to use slag analyses to get a slag-to-iron ratio.

Jeremy's contribution is to begin to classify sites by relative size: he places them in size classes. Each site is classified by the estimated volume of the waste heaps (less than 100 cubic metres, 100 to 1000 cubic metres and so on.) This is known as an "ordinal statistic" and a study of the distribution of ordinal values cannot produce a numerical result. However, the estimates which put the individual sites into a category may be. He has used these estimates to help explain the relative importance of sites of different sizes for the Roman industry in the Weald. The spread of sites of different sizes is used to shed light on the possible technical, social and geographic organisation of the Romano-British iron industry in the Weald. The way in which this is done takes the methods to the limits of its validity but no further; the use of the system in this context seems to be sound. The highlight of the paper (for me) is the way in which the size-classification of the sites is put on a distribution map. It tells a story.



Major production sites in the Roman Weald, based on estimated slag volume.

We may expect geophysical methods to give us more information about the mass of slag heaps at some time in the future. Improved analytical methods may tell us more about smelting yields. In the meantime Jeremy's paper provides one useful starting point. His contribution sits comfortably among 21 others presented at the same conference. Although the data deployed concerns the Weald, the article is there as an example of a method that may have wide applicability.

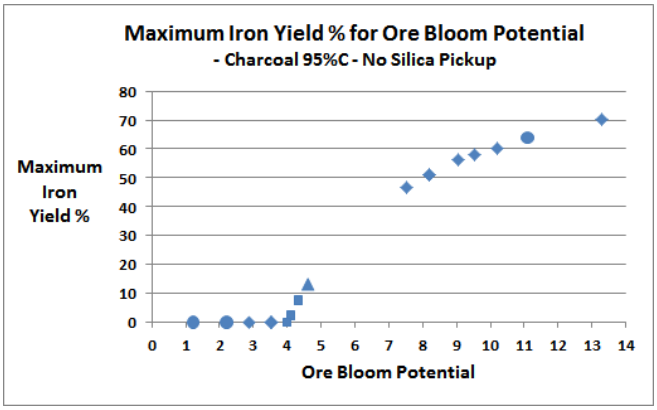
You get an impression of real progress in early iron studies from this volume.

Jonathan Prus

WILL I GET A GOOD BLOOM OF IRON? — MAYBE!

A forthcoming Bulletin article explores how interactions between several key smelting variables influence bloom yields. Underpinning any bloomery smelting trial is the usual desire for a good yield of 'useable' iron. However achieving smelting success or even good yield quantities can sometimes be unpredictable for many reasons.

To create a bloom, under good furnace smelt management, a calcined ore must provide more than a 4:1 proportion of iron to silicon, as its bloom potential, to give surplus iron over slag forming needs. This is a well-known aspect of bloomery smelting. The diagram shows this basic relationship between an ore's bloom potential and maximum smelting iron yield.



However even for 'good' Wealden siderite ores with bloom potentials above 7:1 clay furnace wall and tuyeres liquation or erosional losses will raise melt silicon content. At progressively higher quantities this will reduce and eventually prevent bloom formation.

Iron yields are influenced also by efficiency of burden ore calcining, minerals content of charcoal as well as furnace gases ratio and reducing zone temperature. The article shows how combinations of these factors can influence likelihood of smelt success.

It offers support also for combining analyses of archaeological finds of ore type, charcoal quality, furnace structure and slag morphologies with possible influences on local and regional historical iron production efficiencies, throughputs and economics.

Alan F. Davies

WIRG BULLETIN 2ND SERIES 35 (2015)

Articles for this year's Bulletin should be sent to David Crossley by 31st March

For contact details see back page

ORDNANCE NEWS

DETROIT, MICHIGAN, USA
A British cannon that sat at the bottom of the Detroit River for more than two centuries is now on display at Dossin Great Lakes Museum on Belle Isle after undergoing a three-year restoration.

Members of the Detroit Police Department dive team view an 18th century British cannon that was found in 2011 by Detroit police divers in the Detroit River during a training exercise.

Detroit Police Department divers found the cannon six metres — or 20 feet — underwater during a training exercise behind Detroit's Cobo Center in July 2011. That's when Detroit Historical Society Senior Curator Joel Stone and the team at the Society's Collections Resource Center got to work. The cannon first went into wet storage until a conservation protocol was established with the assistance of maritime archaeologist Dan Harrison.

Restoration work began at the Cranbrook Institute of Science in 2013, where the cannon was put on public display for a special exhibit.

During the restoration process, the cannon's past started to become clear. The barrel was embossed with the crest of King George II, who reigned from 1727-1760. Additionally, it was marked with a 'P', an 'X' and an 'M.' The 'P' indicates approval from a civilian approval board, and the 'X' is a failure mark by the military ordnance board; while the 'M' stands for Mangles, the arms dealer that sold the cannon.

On the right trunnion, an 'H' was discovered by a group of children working with toothbrushes at Cranbrook. This represents Hamsell Furnace, East Sussex, England, where the cannon was manufactured in the mid-1740s.

The Detroit Historical Society says it is likely the weapon was used in various conflicts, eventually finding its way to Fort Lernoult in Detroit. When the British abandoned Detroit in 1796, rather than leave it to the Native Americans or Americans, troops were ordered to destroy it.

From the fort, soldiers moved the cannon down to the riverbank, near the site of present-day Cobo Hall. Speculation is they slid this gun, along with five others, onto the winter ice. When the ice thawed, the cannons sank, where they remained for more than 200 years.

(Compiled from a report by CBC News, Windsor, Ontario)

UNIVERSITY OF EXETER - WEALDEN IRON RESEARCH GROUP COLLABORATIVE DOCTORAL STUDENTSHIP Ref: 1656

About the award

In collaboration with the University of Exeter's Archaeology Department, the Wealden Iron Research Group (WIRG) is seeking to establish a UK/EU PhD studentship to work primarily with their data but including all available sources to address a broad subject area.

The Organisation of Iron Production: the Weald in Pre-Roman and Roman times

The region known as the Weald, spanning Sussex, Kent and Surrey, is recognised as a centre of intense iron production in the past, in particular during the Roman and post-medieval periods. During the early Roman occupation, and again, in the 16th and early-17th centuries, the Weald was the most important iron-producing region in the British Isles. Over 800 iron-making sites have been identified in the Weald, and more are discovered each year. The Wealden Iron Research Group (WIRG) is a well-established research group dedicated to investigating and disseminating knowledge of the role the Weald has played in the development of metals technology in Britain (www.wealdeniron.org.uk). Amongst its achievements is the publication of the standard reference work on the subject, *The Iron Industry of the Weald*, by Henry Cleere and David Crossley in 1985. As well as being actively involved in field survey, excavation and experimental iron smelting, the group has amassed a substantial database which is available online, www.wirgdata.org.

Under the broad heading of the studentship (*the Organisation of Iron Production: the Weald in Pre-Roman and Roman times*) a number of potential research questions can be defined.

- *How does the distribution of production sites correlate with the location of settlements and fortified sites, communication routes and the region's geology, both geographically and chronologically?*
- *What evidence exists for the evolution and dissemination of production processes both geographically and chronologically?*
- *Can slag morphology be used as chronological evidence and, if so, what characterises pre-Roman, Roman and post-Roman contexts?*
- *How has our understanding of the production of iron and organisation of the industry advanced since the publication of Cleere and Crossley's* The Iron Industry of the Weald *in 1985?*

We are seeking candidates with an interest in archaeo-metallurgy and the archaeology of metal production who are able to develop their own research proposal that addresses some aspect of the broad subject area. The research questions above are intended as guidance and candidates are strongly encouraged to familiarise themselves with the work of WIRG and the archaeology of the Weald. This can be done through the WIRG web site and by direct contact in person. We are looking for a proposal that defines clear research aims (without being overly ambitious), engages with existing data and material and describes the methodology that would be applied. Candidates should note that the emphasis of their project should be weighted towards field and macro-morphological studies rather than complex laboratory analysis, although the latter is not excluded. While academic supervision of the project will be based at Exeter there is an expectation of close collaboration with WIRG throughout the project with an aspiration to publish results, with WIRG support, on completion. The primary supervisor will be Dr Gill Juleff, with a second supervisor from within Archaeology based on compatibility of expertise.

Duration and value of award

The studentship will be for a period of 3 years and will cover full Home/EU tuition fees and an annual maintenance grant of £13,863.

How to apply

Entry criteria

The successful applicant will normally have a good first degree (at least 2.1 or International equivalent) in Archaeology (or cognate discipline), and have, or be about to complete, a Master's degree (at Merit level or International equivalent) in a relevant field of archaeological enquiry. If English is not your native language then you will need to satisfy our English language entry requirements (www.exeter.ac.uk/postgraduate/apply/english/).

Summary

Application deadline:
26th April 2015

Number of awards:
1

Value:
£13,863 maintenance award plus full Home/EU tuition fees

Duration of award:
per year

Contact: Humanities Graduate School Office, 01392 725306
Email: humanities-pgadmissions@exeter.ac.uk

To apply

To be considered for this doctoral award, you must complete an online application form (www.exeter.ac.uk/postgraduate/money/studentships/application/ - please be sure to indicate the correct programme) where you must submit some personal details and upload a covering letter, a full CV, your research proposal, transcripts, the details of two academic referees and, if relevant, proof of your English language proficiency, **by 26th April 2015.**

In addition you must also ensure that your referees email their references to the Postgraduate Administrator at humanities-pgadmissions@exeter.ac.uk by **26th April 2015**.

Please note that we will not be contacting referees to request references, you must arrange for them to be submitted to us by the deadline.

References should be submitted by your referees to us directly in the form of a letter. Referees must email their references to us from their institutional email accounts. We cannot accept references from personal/private email accounts, unless it is a scanned document on institutional headed paper and signed by the referee.

Please note that if you have already submitted references to support your application to one of our MPhil/PhD programmes you may re-use these to support your funding application. However, this is

not automatic and you must email us at humanities-pgadmissions@exeter.ac.uk to confirm that we have two references on file to support your application, and to request that they be used to support your funding application.

All application documents must be submitted in English. Certified translated copies of academic qualifications must also be provided.

More information

For more information contact:
Dr Gill Juleff: G.Juleff@exeter.ac.uk
http://humanities.exeter.ac.uk/archaeology/staff/juleff/
Morwenna Hussey, Senior Administrator
Email: humanities-pgadmissions@exeter.ac.uk
College of Humanities Graduate School,
University of Exeter
Queen's Building, The Queen's Drive
Exeter, Devon, EX4 4QH
Visit http://humanities.exeter.ac.uk/archaeology for more information on the department.

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

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.

The ruins of Whitecliff Furnace in the Forest of Dean

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.

RESEARCH SUGGESTIONS

In an earlier Newsletter a number of suggestions were published for members who might be interested in pursuing some individual research. A list is available on the Group's website, but an amended version is reproduced here as a stimulus for those keen to engage in some intellectual activity:

Discrete Studies

Dispute involving an 'iron mine' near East Grinstead,1263, between Agnes Malameins and Isabel de Aldham [National Archives JUST1/912a, m. 17d];

Ironworks of John de Lynleghe at Withyham 1320 [National Archives SC6/1146/2];

Horsmonden family, scythe makers, of Goudhurst [East Sussex Record Office Courthope Mss SAS/CO];

Affray at Plaistow 1580 - background to a dispute between ironworkers, resulting in a death [R. F. Hunnisett, 1996, Sussex Coroners' Inquests 1558-1603 (Public Record Office), 53];

Records of Holmsted Forge, Cuckfield, in the records of the Manor of Plumpton [East Sussex Record Office];

Possible records of Prinkham Farm Forge; originally property of the Manor of Starborough and Princkham, records of which may provide clues to its operation (Surrey History Centre 2373; Kent History and Library Centre U908/T76).

Pelham ironworks accounts (Waldron furnace, Bivelham & Brightling/Glazier's forges) [British Library Add Mss 33154-6];

Humphrey Tuckey - Alexander Courthope correspondence [East Sussex Record Office Courthope Mss SAS/CO].

General Studies

Ironworking landscapes – case studies of ironworks and the landscapes that supplied them with fuel, ore, labour, transport etc. (e.g. Fernhurst, Ashburnham);

Case studies of individual ironworks - their sites, raw material sources, water management, personnel and operating history;

Case studies of ironmasters or families of ironmasters;

Identifying charcoal and ore sources for individual furnaces and forges;

Minepit mapping - mapping iron ore extraction sites in a parish or larger area.

TRAGEDY AT IRONWORKS (in 1588)

from the Coroner's Inquest, Lamberhurst, Sussex, 20 December 1589.

On 23 July 1588, when Richard Smyth of Lamberhurst, 'hammerman', was working in 'an ironforge' called 'Hoodelye hammer' and Joan Blackamore late of Lamberhurst, an infant, was near the stream flowing from 'the hammer gate', Smyth, in order to work the forge, lifted 'the hammer gate' whereby the gate itself, the wheel of the great hammer, the beam on which the wheel was fastened, the ? fixtures *[certes]* above the beam and 2 'le goies' fixed on it, the upper beam called 'the counter beame' with 2 posts on which it lies, 'the greate hammer' of iron, a piece of iron called 'a bloome' and clasps were all moved at the same time so that Blackamore by misadventure fell into the stream flowing from the gate and was killed by the wheel.

Extracted from R. F. Hunnisett (ed.), *Sussex Coroners' inquests, 1558-1603*, Kew, PRO Publications, 1996 .

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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.

PUBLICATIONS FOR SALE

		PRICE BY POST (UK)	AT MEETINGS
British Cast-Iron Firebacks of the 16th to Mid 18th Centuries, J. Hodgkinson (2010)		24.99*	**24.99***
The Wealden Iron Industry, Jeremy Hodgkinson (2008)		15.99*	**15.99***
Excavations of a Late 16th/Early 17th c. Gun-casting Furnace at Maynard's Gate, Crowborough, Sussex, 1975-1976, O. Bedwin.		2.00	**1.50**
A Middle-Saxon Iron Smelting Furnace Site at Millbrook, Ashdown Forest, Sussex, C.F. Tebbutt.		2.00	**1.20**
The Fieldwalker's Guide and an Introduction to the Iron Industries of the Weald, B.K. Herbert.		4.00	**3.50**
Metallurgical Analysis of Ferrous Alloy Produced in a Primitive Furnace. R. C. D. Sampson & B. K. Herbert.		5.00	**4.00**
The Penhurst to Ashburnham leat: a first foray + map (2007)		2.25	**1.50**
The Penhurst to Ashburnham leat: a second foray + maps (2007)		2.25	**2.00**
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Index for Wealden Iron, WIRG Bulletin 1st ser. Vols. 1-17 and 2nd ser. 1-20		2.50	**2.00**

Publications are available from the Publications Officer, Brian Herbert (see Contact List above)
Cheques payable to **WIRG** (except where marked* - payable to J. S. Hodgkinson)