



NEWSLETTER NO 40 AUTUMN 2004

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For the first time since I joined WIRG, we were unlucky with the weather at the AGM. Normally it turns out to be the hottest day of the year. Nevertheless it was good to see so many members and to hear their news. Many members seem to be engaged in individual research projects, and I want to encourage them to consider putting pen to paper and submitting their work for the Bulletin. Assistance is readily available for potential authors, so please don't keep those interesting nuggets to yourselves – share them.

The committee was sorry to hear from Helen Pearce that she had to stand down for personal reasons. Living outside the Weald, she brought a different perspective to our discussions, which will be much missed. Since the AGM, however, we have co-opted Tony Singleton, who is running the Group's website. We are looking at ways to expand the site. The recent inclusion of all of the first series of the WIRG Bulletin is but a start. Any ideas for future features will be welcome. Indeed the committee will be pleased to hear of any suggestions you may have for future projects for the group.

My best wishes for the New Year, when it comes,

Jeremy Hodgkinson

LETTER FROM THE CHAIRMAN

Dear Fellow Members,

This time last year the group was embarking upon its first major excavation for three decades, and the work that has ensued, under the direction of Chris Butler and with the help of members of the Mid-Sussex Field Archaeology Team, has fulfilled all expectations. The largest Romano-British bloomery furnace excavated in the Weald to date has been uncovered, and other features of the site are being investigated. Excavations are to continue for the foreseeable future, so that as much of the site as possible can be revealed. Further details are elsewhere in this newsletter. For those of you who have not yet taken part in this dig, I urge you to do so. Notices of dates will be posted to Field Group members and published on our website.

ANNUAL GENERAL MEETING

Our Annual General Meeting, held at Broad Oak Village Hall, was well attended. Business was soon dealt with and then our Chairman introduced Chris Butler, who is directing our current excavation at Little Furnace Wood, Mayfield. Chris gave us an excellent talk about the work in progress. It was disappointing that the proposed visit to the excavation had to be cancelled due to prolonged rain. However, an excellent lunch plus the opportunity to exchange news and views with other members helped to make the meeting a success.

The following report by Chris and Jeremy covers the gist of Chris's talk:

LITTLE FURNACE WOOD, MAYFIELD - INTERIM REPORT

During a Wealden Iron Research Group (WIRG) foray to Little Furnace Wood in 2003, a test trench was dug into a slag heap in a search for some dating evidence. After a little digging it was apparent that the test trench had actually encountered the possible in-situ remains of a furnace.

Chris was asked to help WIRG with the excavation of the furnace, and so over a number of weekends in the autumn of 2003 and spring of 2004 with members of WIRG and the Mid Sussex Field Archaeological Team (MSFAT) we have uncovered the remains of a Romano-British iron furnace.

The furnace is situated on a terrace cut into a slope above a small stream. After abandonment it was covered by slag, which had presumably been dumped from later iron working further upslope. The furnace is roughly circular in plan with the rear third formed by the sandstone slope. There is some evidence for at least three earlier phases of construction with surviving linings preserved at the rear of the furnace. On the level surface above and to the rear of the furnace a number of stake holes were excavated. It is possible that these may have held a windbreak or simple structure on its upslope side.

The clay-built furnace structure is sitting on blocks of sandstone, with more sandstone blocks incorporated into the structure, especially on the east side. The sides of the furnace are made from clay 'bricks' which have been built up to form the wall and then smeared on the inner face with more clay. It seems likely that the furnace was originally domed possibly resembling the Type A Wealden Type. The bricks are broadly rectangular in shape with one rounded side. They vary in size, and frequently have finger impressions in one surface. Similar bricks were used in the construction of furnaces at Hartfield & Laxton.

Most of the furnace structure had been demolished or had collapsed, with the majority tumbling downslope to cover the furnace and the area in front of it. Some large pieces of structure with intact furnace linings of vitrified slag-like material adhering to the clay wall were found during the excavation. Within the centre of the furnace we encountered a thick charcoal rich layer, which was sitting directly on the floor of the furnace, and may represent evidence for its last firing. Amongst the many pieces of iron slag found were some interesting cylindrical pieces. These pieces are of variable length,

and around 10mm in diameter. They may result from liquid slag that has run into a tuyere hole and solidified, thus forming the shape, and to date our only evidence for the furnace having tuyere holes.



Charcoal staining in centre of furnace, stone blocks on each side and tumbled material between these

The area immediately in front of the furnace was very badly disturbed by a rabbit warren, and initially it was difficult to establish whether there was a slag-tapping pit located there. The sides of the funnel-shaped working area situated in front of the furnace are lined with blocks of sandstone forming walls, which are bonded into the furnace structure.

By the end of our work in the spring of 2004 we had removed most of the tumble of fired clay and uncovered a probable forging hearth immediately in front of the furnace. This comprised a number of flat pieces of sandstone forming a dished base, which contained numerous pieces of slag and charcoal.

Although most of our work concentrated on the furnace, we have also excavated a number of other test pits. Two small test pits were opened on a terrace below the furnace, one of which revealed a compact area of small-sized slag pieces. A further test pit was opened on a terrace above the furnace, and encountered a large pit, which contained pieces of roasted ore

Apart from the iron slag and structural pieces, the only artefacts found so far have been a few shards of East Sussex Ware pottery, which indicates a Romano-British date for the furnace. Type A furnaces tend to date from the late first century BC to the end of the second century AD.

Tebbutt Research Fund

The Trustees of the Tebbutt Research Fund believe that by undertaking this excavation WIRG has embarked on a very worthwhile, long-term project, that will expand our understanding of ancient ironsmelting. However, lacking time and expertise within the Group, we have been fortunate in securing help from the Mid-Sussex Archaeological Team under the direction of Chris Butler. In the absence of other applicants, the trustees have therefore agreed to donate interest from the Fund to help with excavation expenses.

DMM

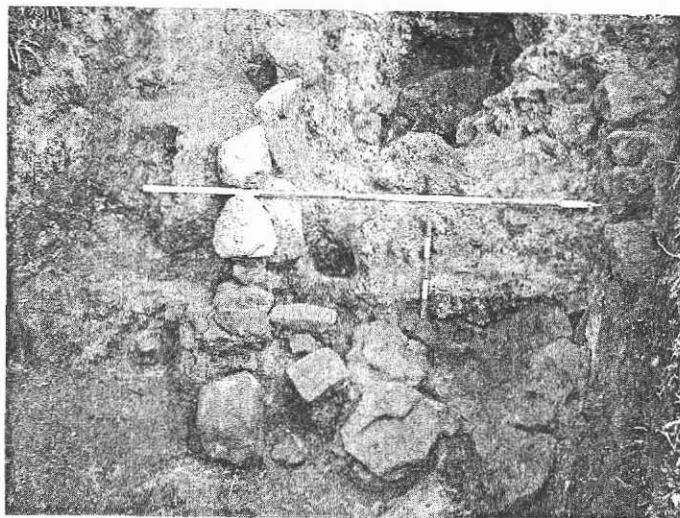
GPS CHECK ON PAST REFERENCES

Some years ago WIRG members excavated a group of bloomery furnaces at Cowpark, Pippingford, Hartfield. This site is part of land leased by the army and we were asked to identify it on the ground so that some protective marking could be put there to preserve it from inadvertent destruction during their exercises.

We set off, together with the army superintendent and a representative from English Heritage, the grid reference (C & C p 301) and a map. There was little in the way of landmarks and much natural growth had taken place in the years since the excavation. We did in fact find the site but it was so changed that we could not be sure. There was also some discussion as to whether the GPS would agree with its original grid reference. A second attempt was therefore made with the help of Mr Alan Morriss, who owns the land, has lived there all his life and, I do believe, knows every stick and stone of it! Tony and Dot Meades and Brian Herbert, led by Alan, confirmed the location of the site. Brian also collected slag samples for comparison and analysis.

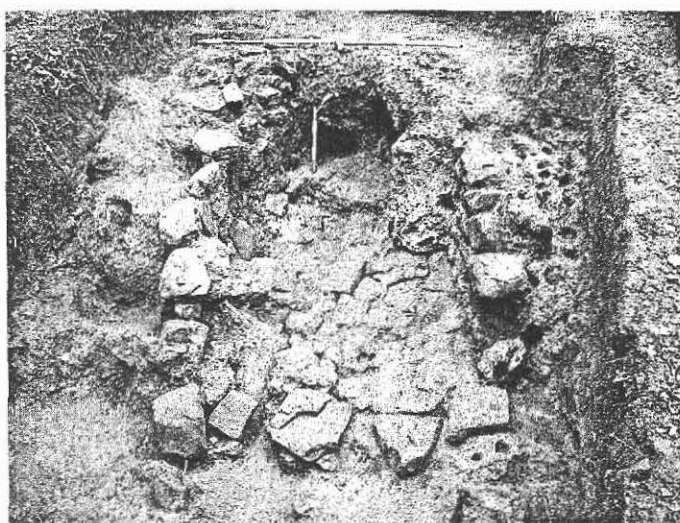
This time, Tony was able to check the GPS reading for the site and whilst we were in the locality he checked the GPS reading for Pippingford bloomery. Alan also took us to East Wood bloomery, about 950m from Pippingford, where we were able to measure the considerable spread of slag and to check its location. In all three cases, the grid references and GPS readings coincided. So the nagging doubt as to the whether GPS readings would confirm our previously calculated grid references has been laid to rest, at least so far as these sites are concerned.

Interestingly, all three of these bloomery sites are within walking distance of the Garden Hill fort, also of the late Iron Age/early Roman period. It is thought that the



Much of tumble cleared away revealing probable forging hearth in foreground

All of the charcoal identified to date has been oak. A sample of charcoal from the inside of the furnace was submitted to Groningen University for a radiocarbon date. The uncalibrated result was 1850±30BP, which when calibrated gives a date of between 80-250AD at 95% confidence and 125-220AD at 68% confidence.



Tumble now cleared and everything left in readiness for the next session

We hope to complete the excavation of the furnace this autumn, and at the same time excavate a number of other test pits to try and establish the extent of the site. This work will then be followed up with further excavation in subsequent years to try to learn more about this interesting site.

Chris Butler and Jeremy Hodgkinson

bloomeries may have been worked from the hill fort, or at least were supplying its needs.

DMM

NEWS FROM ELSEWHERE

Brian Herbert has kindly found and sent in a number of interesting iron-related items:

A medieval shipyard at Small Hythe

Some years ago, the Time Team investigated the area around Small Hythe, near Tenterden in Kent, where a mediaeval shipyard was known to exist. Many iron nails of different sizes were discovered, some from dismantled ships as well as unused ones. An obvious source for the iron would have been the Weald but it would be difficult to prove. An article¹ evaluates the results of this dig, with a suggestion of many half-finished excavations, but there is still much work necessary before a better picture of this shipyard industry evolves.

1) *Archaeologia Cantiana*, Vol. CXXIII, 2003; Peter S Bellamy & Gustav Milne; pp 353 to 382.

BH

Pen ponds and their uses

An article in the 24th of July edition of *New Scientist*, p. 5, set me wondering about another potential use for the "pen ponds" associated with iron-working sites; these being a subsidiary source of water that could be released in time of drought. It seems that the Xiaolangdi reservoir, on the Yellow River in China, had badly silted-up recently, but fortunately there was another dam, effectively a pen pond, upstream. To solve the silting-up problem, the reservoir was emptied to expose the caked mud and then the pen-pond water quickly released to flush out the silt.

Although no records or field names indicate this scheme was ever used to de-silt iron-working ponds, perhaps no one has thought about this use before. However, I do not recall any Wealden pond that could be emptied of all its water.

The primary reason for iron-working ponds which served overshot water wheels was to raise the water level to the height of the wheel; however, by raising the bay

an extra foot or two, water storage also became possible. A pen-stock was used to control the water that was taken from about 2 feet below the surface of the pond and run onto the top of an overshot water wheel via a flume [wooden trough].

Another type of reservoir, where all the water could be utilized, was that used to replenish canal water. When canals were dug to negotiate hills, around the middle of the 18th century, canal water was effectively used up whichever direction a barge travelled through a lock, up or downhill, and reservoirs became necessary at the highest point of each canal system. Assuming a barge went up one set of locks and down the other side, two locks-full of water were used-up and needed replacing into the canal at the top of the hill. If a barge only went half way up the hill then a different scenario was necessary. The dams for these reservoirs were constructed with a culvert or metal pipe at the base and with a stop-cock to control the outlet water-flow at the dam end.

This information was gleaned from a book by a late member of WIRG, Mr G M Binnie; *Early Dam Builders in Britain*; Thomas Telford, London; 1987; ISBN 0 7277 0395 1. Although the book is still in print, the publishers do not know when copies will be available again.

BH

A rare gun and other finds

Thanet amateur diving group are surveying the wreck of the "Stirling Castle", King Charles II's great 70-gun man o'war from the 17th century, weighing 1114 ton and 180 ft long. Some small items that were at risk of being lost have been retrieved, as well as a rare 17th century, 49 hundredweight, Prince Rupert patent gun¹, which has been put on public display at Ramsgate Maritime Museum².

Also retrieved was a large (about 18 pounder) iron cannon, complete with wooden carriage, axles and tracks, as well as recoil and securing tackle. This cannon remains submerged in seawater until the restoration program has been finalized; this is due to the many different materials involved.

The metallurgy concerning Prince Rupert's patent is not properly understood, although the process involved heating for months, (probably) standard cast iron cannon inside a furnace (not the smelting furnace). This process was called "turned and neil'd guns" and was kept a secret. The "neil'd" probably refers to the annealing process to remove brittleness from metals, whilst "turned" refers to turning the gun on a lathe. This latter

process could have accurately reamed-out the bore (making it coaxial with the outside) and also could produce an improved finish to the outside.

1. Prince Rupert's Patent Guns; Sarah Barter Bailey; Royal Armouries monograph No. 6, 2000; ISBN 0 948092 29 7.

2. <http://www.english-heritage.org.uk/default.asp?WCI=NewsItem&WCE=430>

BH

UNDERWATER ARCHAEOLOGY - DEPT. FOR CULTURE, MEDIA AND SPORT

I was so interested in Brian's account that I went to the English Heritage web site he mentions and was impressed by their enthusiasm for underwater archaeology and particularly by its relevance to our study of gunfounding. The following information taken from the site may be of interest:

Responsibility for underwater archaeology primarily extends to designating wrecks off English waters under the Protection of Wrecks Act 1973 and granting licences to dive on them.

It is the Department's policy to protect the best examples of our underwater heritage whilst encouraging greater access to it. The Secretary of State grants licences for permission to dive on protected wreck sites, following advice from the Advisory Committee on Historic Wreck Sites (ACHWS) and English Heritage.

The ACHWS was set up to advise on the suitability of wreck sites to be designated for protection on the grounds of historical, archaeological or artistic interest in accordance with the terms of the 1973 Act. They also advise on other general underwater archaeology issues, which may affect historic wrecks.

DMM

BOOK REVIEWS

M. Beswick, *Ironworking in Warbleton, Warbleton & District History Group Publication 15, 2003. 48pp., illus.*

This is an excellent little book. It is lucidly written and has the great advantage over many other local accounts of ironworking in that it does not merely assemble material from existing secondary sources, but adds

considerable primary material. Mercifully there is no wild or groundless speculation. Hypotheses, where ventured, are always backed by evidence and reason.

Ironworking is well represented in the Warbleton area with sixteen bloomery sites and seven water-powered sites listed. Prominent among the ironmasters active in the 16th century were Richard Woodman and Thomas Stollion, but other familiar names became involved later, such as Pelham, Baker and Fuller. The author places ironworking in the local context, drawing upon the backgrounds of the personnel concerned, their roles in the community and their family connections. What is amply demonstrated here is that no study of the iron industry is complete without an understanding of the financial, proprietorial and familial connections of those involved.

The main ironworking processes are outlined and each of the works in the parish and neighbouring areas is dealt with chronologically. No fuller histories of the sites mentioned have been published and the evidence for the earlier existence of Heathfield furnace is welcome. Inaccuracies are few – it was Richard, not Michael, Tapsell whose bankruptcy presaged the closure of Glazier's forge; and the repudiation of Saxon ironworking in the area is a little too dismissive – absence of evidence is not necessarily evidence of absence.

The book is illustrated with photographs, which have reproduced surprisingly well, and with a useful map. Line drawings illustrate the main ironworking processes, although there are some inaccuracies in these, notably in the dimensions and shape of the blast furnace. An index would have been useful.

The Warbleton & District History Group has a well-deserved reputation for producing thoroughly researched little books, and this latest volume has lived up to the standard of its predecessors.

JSH

Ebbw Vale – The Works 1790-2002, compiled and edited by B Caswell, J Gaydon and M Warrender Price £20 incl p&p is published by Ebbw Vale Works Museum, Corus Packaging Plus, Commercial Building, Queen Square, Ebbw Vale, NP23 6YL, UK e-mail pat.jaynes@corusgroup.com Tel +44 (0)1495 334225 (Tuesdays & Thursdays only)

Ebbw Vale works in South Wales closed for good in 2002 after 212 years of operation in one form or another.

A fully comprehensive 450 page book has now been completed by B Caswell, J Gaydon and M Warrender, former employees of the works and curators of the Ebbw Vale Works Historical Archive.

Ebbw Vale Works was started as a blast furnace in 1790 to supply a local forge. It prospered under various ownerships - including Abraham Darby & Co of Coalbrookdale - expanding (as is the latest trend) to ensure raw material supplies by buying ore and coal mines.

In 1854 it started to make steel using the Martiens process which was quickly bought out by Bessemer as it was similar to, and challenged, his own converter method. Bessemer and Siemens open hearth furnaces were installed. It prospered for a while after the 1st World War and a new sheet mill was added in 1912. However, decline followed and the works closed in 1929 only to reopen in 1935 under Richard Thomas & Co who built a new integrated plant. The first continuous hot strip mill in UK (and the third in Europe) was commissioned in 1936, and 1947 saw the first electrolytic tinning line outside USA installed.

In 1958 the Bessemers were replaced with the new LD oxygen converters which, along with open-hearth furnaces, operated until ironmaking ceased in 1975. One open hearth continued operations into 1978 to consume the scrap from dismantling the blast furnaces, steel shop and hot strip mill that closed in 1977.

Despite the end of steel making, a new tinplate line was commissioned in 1978 and Ebbw Vale continued as a tin and galvanising coating works until rationalisation under the ownership of Corus closed the works in 2002.

Tim Smith

The Historical Geography of the Wealden Iron Industry, by [Mrs] M C Delany, often occurs in references, but as the book was published in 1921 it is obviously out of print. At that time, the "Geographical Association", under their Honorary Secretary Professor H J Fleure (Geography and Anthropology at the University College of Wales, Aberystwyth) was arranging for monographs to be published on various subjects. This book was the first in the series to be published, by Benn Brothers, Ltd., 8, Bouverie Street, EC4, 1921, although it is not known whether further books in the series were printed.

It is difficult to review, with any degree of fairness, a book written 83 years ago, even predating Straker.

However, the list of references shows that all the best available material was used, Aubrey, Belloc, Dawson, Gardener, Lower, Mantell, Swank, Topley, & the VCHs, as well as some not so well known references.

Unfortunately, the two iron-making periods are not differentiated between until about half way through the book; even the site maps are deficient here, making it very difficult for a beginner to understand the historical sequence of events. One third of the book covers the numerous different Forests that are mentioned, over recorded history, for the three counties involved and each of the Rapes of Sussex. Although this seems excessive, the origin of place names is considered in detail, which is most useful.

Many of the now well-known documentary references are quoted, but one interesting item, from the Heathfield accounts, mentions "iron devils". These were portable iron grates covered with hot coals, that were slid into cannon moulds to dry them out.

Considering the space given to the Forests, it is surprising that nothing is mentioned about coppicing as a renewable fuel source, and the author gives the continuous felling of trees, for charcoal, as the reason why the industry failed in the Weald. The secondary reasons are said to be Dud Dudley's use of [coked] "pit coal" and the more successful coke-fuelled furnaces of Abraham Darby.

An interesting aside concerned the signs of coalmines at Heathfield in about 1810; these were said to be at the bottom of Geer's Wood in Waldron and belonged to John Fuller. Here a stratum 10.5" thick was discovered and experts gave a favourable report on this lignite bed but nothing came of it.

All in all, an interesting book, but had the author been better informed in metallurgy the book would have been more comprehensible; this was probably due to the multitude of different authors which she referred to, each having their own jargon.

I am indebted to Ken Day, from Wilmington (of Long Man fame), for noticing, buying and getting £1 off the price of this book.

BH

THE HISTORICAL METALLURGY SOCIETY CONFERENCE, 2004

The 2004 HMS Conference was attended by seven WIRG members. It was based this year at the Rees Halls

in Portsmouth and organized by English Heritage personnel working at Fort Cumberland, Portsmouth.

The initial Friday visit was to the Royal Armouries Museum at Fort Nelson¹, situated on the Downs above Portsmouth. Here, there is a wide range of artillery, the earliest being wrought iron bombards, including the one from Eridge in Kent that is mentioned in Ernest Straker's *Wealden Iron*, and a full-scale reconstruction of this type of bombard found on the Mary Rose. At the other end of the scale is one section of the Iraqi Supergun, having a 1m bore. The complete history of the many types of artillery pieces in between are to be seen in the display rooms whilst many examples of guns and cannon, both iron and bronze, can be inspected on the parade ground. The evening lectures were "An Introduction to Portsmouth" from a military point of view, and an overview of the "Archaeometallurgy of Hampshire".

The Saturday morning visit was to Fort Cumberland, where English Heritage has its technology and conservation labs. The most relevant work, from WIRG's point of view, was being carried out by Sarah Paynter who showed us the SEM [Scanning Electron Microscope]. This was being used to analyse ancient bloomery tap slag and then relate it to specific geological areas. If this is successful, it should be possible to match any slag embedded in iron artefacts to these geological areas, but only after suitable slag from each area has been analysed and classified.

The recent find and rescue of I K Brunel's cast iron bridge² built in 1838, which was still being used as a road bridge over the Grand Junction canal and towpath at Paddington, London, is being stored at Fort Cumberland. Recent research of Brunel's work by Steven Brindle, of English Heritage, fortuitously saved this uniquely designed bridge from destruction. David Crossley explained that an exceptionally small number of different component parts were required to produce the bridge. Eventually, it will be returned to the canal and placed a few yards away, but only for pedestrians' use.

The afternoon visit took us to Portsmouth's Historic Dockyard³, to visit the Mary Rose⁴ (1510 to 1511), HMS Victory⁵ (1565 to 1579) and HMS Warrior⁶ (1860). The Warrior was the first English ship to have been built with a cast iron framework, but still having a wood infill and a cladding of sheet wrought iron some 4.5 inches thick. The ship could be propelled either by a two cylinder, double-acting steam engine or sail, where

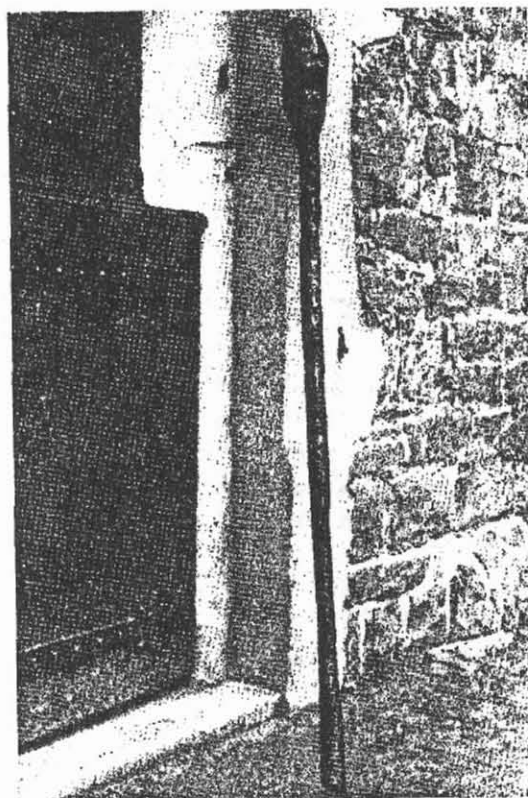
provision was made for the propeller to be lifted out of the water to eliminate drag.

After a Tudor Meal at the Mary Rose museum there were 10minute lectures:

Sarah Paynter expanded on our morning visit to the Labs.

Martha Goodway, of the Smithsonian Institute, then spoke about the apparent misnaming of picture in Schubert's book⁷, p. 294. He describes the picture as an iron "fining staff", guessed from the picture to be two to three metres long and 50mm diameter, and used in the fining of "Osmond Iron" from cast iron in Westphalia around the C16th. Osmond (wrought) iron was much sought after, and expensive, due to its negligible carbon content and, just as importantly, very few slaggy inclusions.

A typical fining technique was used, with the pig of cast iron being re-melted in the finery hearth. The drips of molten iron were caught on the end of a fining staff, which was then raised up to the blast and rotated. In this way, all the carbon was burnt off and any molten slag allowed to drip away. This latter was crucial in ensuring the iron could be "drawn" through a die without breaking, and so produce wire suitable for many different purposes



Schubert (plate XXV) describes this as "Staff with ball of Osmond iron coiled round the end"

The staff was then in the museum of the Castle of Altena in German Westphalia. It has recently been incorporated in the "Museum Berg Altena" (Deutsches Drahtmuseum) where it is now described as a staff that was used in the much more mundane process of puddling iron. A four-page note is available from the writer (see WIRG Contact List p 10) by e or snail mail.

The final, Sunday morning, lectures were on Wealden Iron working in the western Weald by Jeremy Hodgkinson and a talk by Dr V J L Fontana, expanding on Saturday's visit to HMS Warrior.

So ended an enjoyable, if exhausting, weekend. Next year's conference will take place in Swaledale, where the subject will be "lead", although other metals will get also get a look-in.

- 1) www.armouries.org.uk/extsite/view.jsp?sectionId=83
- 2) www.bridgeweb.com/magazine/FeatureDetails.cfm?ArticleID=690
- 3) www.flagship.org.uk/welcome.html
- 4) www.maryrose.org
- 5) www.hms-victory.com
- 6) www.hmswarrior.org
- 7) History of the British Iron and Steel Industry from 450 BC to AD 1775; H R Schubert; Routledge & Kegan Paul; 1957.

BH

FORTHCOMING EVENTS

Evening Class: From 12th January 2005 The Iron Industry of the Weald; tutor Jeremy Hodgkinson; venue East Grinstead Learning Centre, Queensmere House, 49, Queens Road, East Grinstead; 10 weeks starting Wednesday 12th January 2005 at 7pm. To enrol, phone 01342 321874

22nd January 2005. WIRG Winter Meeting at Nutley Memorial Hall. (Members will receive confirmation of date and place)

9th to 11th September. Historical Metallurgy conference to be held in Wensleydale, N Yorks. Theme

will focus on lead/silver smelting and refining but HMS are also looking for papers on iron metallurgy, and associated subjects, related to the Yorkshire Dales area.

Further information on accommodation and conference venue from <http://www.middlehamonline.com>. Enquiries and offers of papers, help, etc to Dr Peter Claughton, Blaenpant Morfil, Clynderwen, Pembrokeshire, Wales SA66 7RE email: P.F.Claughton@exeter.ac.uk

WIRG IRONWORKING TOUR OF WALLONIA

Immediately after **Easter 2005**, a three-day tour (two nights) is proposed to visit various iron working sites in the Walloon area of Belgium.

It was from this region that the blast furnace and forge technologies were exported, via the Pays de Bray, to the Weald. In Belgium and France, extensive remains of some Walloon blast furnaces still stand which provide a better understanding of the sites we see on the Weald.

The first stop will be in Liège, Belgium to visit La Maison de la Métallurgie et de l'Industrie de Liège where a Walloon blast furnace and forges have been reconstructed from the originals. The blast furnace was built in 1693 and worked into the 19th century. It was dismantled and moved to the museum complete with blowing house, tapping arch, equipment and sows. In addition, two forges are displayed, one set to resemble the activities in a finery, the other to display activities in a chafery. There are also two helve hammers, a slitting mill and numerous cast iron products including cannon, sculptures and fire backs.

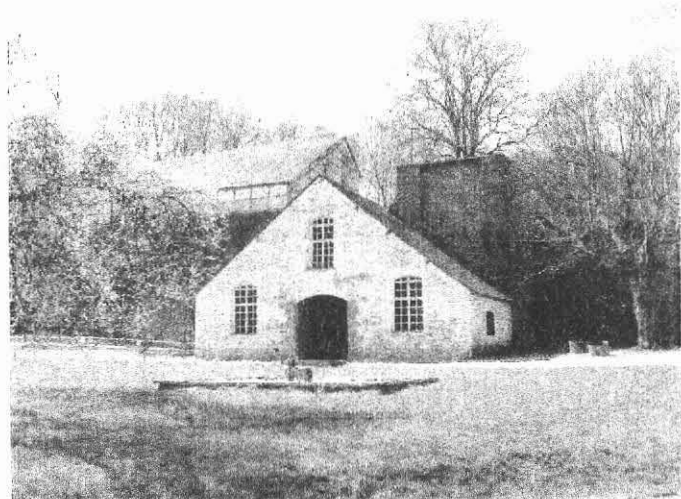
Elsewhere in the museum are a depiction of modern steelmaking, the application of water as a power source, oil and power, and a collection of early computers.

From Liège we drive south to St Hubert where we will be located for the next two nights.

On day two we start at the nearby Fourneau St Michel which is an in situ site with blast furnace, ironmaster's house, charcoal store and forge all standing, as well as the water supply to the furnace and forge. Built in 1771 by Abbot Dom Nicolas Spirlet, the site is now the centre of a museum of rural life.

The blast furnace is in excellent condition; in particular the bellows mechanism may be studied with its twin shaft drive to reverse the rotation transmitted by the back-shot water wheel located inside the blowing house

so that the cams can push down on the bellows top plate. There is also a well-appointed museum in the ironmasters house displaying a wide range of artefacts made in cast iron including intricate stoves – as well as the inevitable fire backs.



Fournau St Michel – Foreground Casting house with shaft to rear and charcoal store upper left.

Sadly, the forge has been gutted of all its equipment and is now used as a laboratory. However, the building shows the typical two-chimney construction for the finery and chafery hearths, and the hole in the outer wall through which the sow was fed into the finery hearth is still clearly visible – although now blocked.

In the afternoon we travel south to two more blast furnaces near Torgny, stopping en route for a short tour of Le Musée Gaumais in Virton which has, among other exhibits, some 200 firebacks!

The first blast furnace is of 19th century origin and is a complete site with associated work buildings. Built in 1838, the Bure d'Orval blast furnace has three arches and a water system which evidently operated blowing cylinders rather than bellows. Associated buildings seem to have been a charging house, forge and rolling mill, and there is a mysterious underground chamber that appears to have housed a boiler for a steam engine.

The second furnace, Le Haut Fourneau du Dorlon, is an older site dating from 17th century and operated until the 19th. Here, only the furnace stack still stands high, and the foundations of the associated buildings and a dry pond can be viewed from the road.

If time (and energy) permits, we can visit a third furnace to the south (in France). Le Fourneau de Cons-la-Grandville, built in 1865. Only the stack now stands in the village centre, all associated buildings having been demolished. The stack stands on iron pillars showing the evolution from the earlier solid square based furnace toward the freestanding stack design widely adopted in the 19th century.

On the third day we will explore the area South-East of Namur as we head north back to Calais. This region is where key individuals worked, whose later move to the Pays de Bray set in train the eventual introduction of the blast furnace to Sussex.

Transport will be by minibus to keep the group together. This will limit numbers to 17 and places will be allocated on a 'first come first served' basis, with a reserve list in case of any later withdrawals.

The cost has yet to be finalised but an approximate estimate for the hire of the minibus, share of fuel and cross channel fare and accommodation should not be more than £200 per person. The proposed dates are 29 - 31 March.

If you are interested in coming, please contact **Tim Smith** on 01403 710148 e-mail: tjsmith@waitrose.com.

FORAY PROGRAMME

The full foray programme is printed below, although some of the forays will have been completed by the time members receive this newsletter.

For the benefit of new members, all are welcome to join the foray group, which undertakes a variety of activities. As you can see from the list, these include excavation and fieldwalking of a designated area but can also include sites that have recently been reported to us which we think we should inspect. In the course of this we often find that we are welcomed to beautiful countryside which we might not otherwise be able to see - that is a bonus! I should like to reassure members who feel they have no great expertise and are therefore unwilling to join in forays - we all started by knowing little or nothing and you will be surprised how quickly you pick up some expertise.

If you would like to join the field group, please contact Hugh Sawyer. You will find his details and those of the leaders of our various forays in the WIRG contact list on page 11

DMM

FORAY PROGRAMME 2004/05

Date	Subject	Leader
Sat-Sun 18-19th September 2004	Lower Furnace Wood, Mayfield – continuation of excavations	Jeremy Hodgkinson
Sat-Sun 9-10 th October 2004	Lower Furnace Wood, Mayfield – continuation of excavations	Jeremy Hodgkinson
Saturday 6th November 2004	Trial excavation at Blackham – attempted dating of bloomery site	Brian Herbert/Roger Houghton
Saturday 11th December 2004	Fieldwalking in the area between Heathfield and Mayfield - continuing exploration of the area for new sites	Brian Herbert
Saturday 8th January 2005	Examination of postulated site of Bournemill furnace, Tonbridge - newly identified water-powered blast furnace	Jeremy Hodgkinson
Saturday 12th February 2005	Search for Iping blast furnace, near Midhurst – documentary evidence of the site has yet to be complemented by location in the field	Jeremy Hodgkinson
Saturday 12 th March 2005	Moat Mill forge and Old Mill furnace - examination of water-powered sites	Brian Herbert
Saturday 9th April 2005	Fieldwalking in the area between Heathfield and Mayfield - continuing exploration of the area for new sites (follow-on from December)	Brian Herbert
Saturday 7th May 2005	Indoor 'foray' at Brackenside, Normansland, Fairwarp – discussion of the preceding season + members' contributions	Dot and Tony Meades

FAME AT LAST - ON A MATCHBOX!

Some years ago a gentleman from Forest Row contacted me to say that he had an interesting illustration that I might like to use. He produced a matchbox that had the following illustration on its cover. This clearly showed most of the operations connected with casting and hammering; the only major omission being the conversion of the pig to wrought iron before it went under the hammer. There are even two charcoal burning heaps in the top right of the picture. I am intrigued as to where the artist who produced the illustration for use on the box obtained his information. He has certainly put it together very well. The illustration looks as if it could have been taken from a more extensive woodcut. I should be pleased to hear from anyone who has any more information about such boxes, or about the original of the illustration.

The owner of this obviously treasured matchbox very kindly lent it to me so that I could make a photocopy of the picture (see below). Sorry for the cut-off text - facilities for copying were not so sophisticated then as they are now; the Average Contents were, I believe, 50 matches. I like to think that whoever ran the Sussex Matchbox Company had some kind of connection with the Wealden Iron Industry, even if the box was 'Made in Austria'.



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FROM THE EDITOR:

Many thanks to our contributors, especially those stalwarts who regularly send in such interesting material.

It would also be good to hear from our wider membership, Do let me know of any interesting thoughts, local knowledge or hearsay, and written items that you come across, which may be connected with the iron industry. It is important that the source of already published material should be acknowledged, so please let me know details of the publication, date and author that you are quoting.

Another valuable way to help with our ongoing research would be to check up on any known sites in your own locality. Why not take few walks over Christmas and the

New Year and then let us know whether 'your' sites are still safe or whether they may be endangered in some way? This will help to keep our records up to date and save the field group valuable time. If damage to a site is taking place we may be able to do something to minimise its impact.

You don't have to belong to the field group or be an expert to find new sites. Just keep your eyes open when

out for a walk and take samples of any slag that you may find. Newly cultivated fields and small streams are the most likely places to find sites. Check where you are - a grid reference is very helpful. Then let someone on the committee have a look at what you have found.

Happy hunting and all good wishes,

Dot Meades