



Newsletter 67 Spring 2018

Editor: Jonathan Prus email jonathan@avens.co.uk

Phone 01435 830155

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Data Protection

New general data protection regulations (GDPR) come into force on 25 May 2018. They apply to all organisations which hold personal data from the largest companies to small registered charities. By now you should have received a letter from Shiela enclosing a consent form to be completed and returned to her.

The new regulations require WIRG to obtain explicit consent from each of our members to hold your personal data. The consent form may appear legalistic (apologies to any lawyers) but takes account of advice provided by outside bodies such as the Information Commissioner and the Charity Commission.

The personal data that WIRG holds consists of each member's contact details which we need to send newsletters and bulletins and to keep you informed about WIRG's activities (summer and winter meetings, the AGM, forays, field trips and other events).

Although we now have to comply with new rules the manner in which we will handle your data has not changed. It will continue to be held by Shiela, our Treasurer and Membership Secretary, and made available to other committee members as necessary to enable mailings of our publications and notices by post or electronic means.

We will not share your personal data with any other organisation or individual, nor will we sell it.

Bob Turgoose

A celebration

WIRG 50th Anniversary Lunch

A booking has been made for 29 Sept 12 noon for lunch at the Middle House, Mayfield. Price £35 three courses with selection of four items per course (vegetarian option from main menu).

Menu and booking details to follow soon

WIRG Summer Meeting and AGM

The AGM and lecture will be held at Lewes Town Hall from 10.30 a.m. 14th. July

Lecture: Ethan Greenwood presents the results and conclusions of his research programme.

Visit: Anne of Cleves House in the afternoon

Diary of a visit to some blast-furnace sites in the Lake District

Friday 20th April. An horrendous drive up the M6 to our rdv at the southern end of the Lake District. Arrived at the house rented for the week-end, meeting up with other WIRG members. Looking forward to seeing the sites that are on the planned itinerary. This has been organised by Tim Smith, Kay Smith and Ruth Brown. Kay and Ruth have done a reconnaissance in preparation and expectations are high. My personal objective is to make a critical comparison of different charcoal-era furnace types.



We look into the Newland Furnace from the top. (Topmost masonry reconstructed.)

Sat. 21st. Up at about 7.30. A convivial breakfast with other members. We set out in various cars. First stop: Newland Furnace. This is a very late charcoal furnace that was closed down in 1890. It is in the care of the Newland Furnace Trust, three of whose members met us and gave us the benefits of their hard-won knowledge of the site.

An oddity of this site is that a hot-blast system was installed at a relatively late date. Together with the fact that it was changed from bellows-blast to cylinder-blast makes the interpretation of some of the buildings difficult. The boshes and the hearth are missing, but most of the superstructure remains in place. The huge (and hugely impressive) charcoal store is still in place and, appropriately enough, is now used as a store by a coal merchant.

Lunch at the friendly “New Kings Head”, Broughton-in-Furnace. They serve the well kept and well-flavoured ale from the Cross Bay Brewery in nearby Morecambe.

Then on to Duddon Furnace. This is a wonderful site with and extremely well-preserved structure, although here

also the hearth and boshes missing. The water system and the buildings themselves are easy to read. The thought crosses my mind that it looks so much like the textbook pictures that some of the textbook pictures could well have been drawn there!

Next stop Nibthwaite Furnace. This is an oddity! It looks like the entire furnace structure is now embedded in a house (a very posh-looking holiday cottage). The visible parts (essentially the back wall and part of the wall holding the casting arch) are very similar to the others we have seen today. However, an earlier archaeological investigation suggested that this site on an earlier furnace. It’s the earlier one I want to see. But can’t.

Brilliant weather all day. Shirtsleeves.

Pleasant evening meal in Cartmel.

Sunday 22nd. Up for 8.30 and breakfast with the rest of the party. The forecast for the morning is poor with the probability of precipitation >95% at 9.00. It rained at 9 on the dot. Some gloom. However, we set out and looked at the monument to “Iron Mad” Wilkinson and at the nearby house he built and that of his father Isaac. (The latter is the supposed location of their experimental blast furnace.)

Thence to Backbarrow furnace which has the distinction of being the last of the southern Lake District furnaces to close (1968). Rain stopped. This made life altogether better. Most of the Backbarrow site is deeply disturbed and part of its working area is about to be repurposed as a residential area.

The remains of the top of the Backbarrow Furnace



However, we gained access to the buildings that had been their fuel and ore stores. As a whole the buildings make sense as a flow of work from tram (and later railway) to

stores, via a bridge to furnace and on to casting area.

Lunch at the Eagle's Head in Satterthwaite. Another good beer. It turns out that Satterthwaite is the site of a bloomery.

On to Stony Hazel Bloom Forge in renewed and warming sunshine. This is a very difficult site to understand. At one time it was thought to be a Walloon process finery, but this is hard to believe. There is abundant slag. It is quite unlike the finery slag we get in the Weald. Two very small pieces of slag *might* have been bloomery smelting residue, but that's just guesswork. Stony Hazel gives rise to more conjecture and discussion than any other site visited so far.

On to our last site visit at Cunsey Forge. This is a multi-period site with records of several different processes. It is deeply disturbed, and modern rubbish is mixed in with many different types of iron-working residue. Most of it seems to be finery slag.

Back to our accommodation and one last evening meal together. A good trip.

Jonathan Prus



Duddon Furnace. Note the vaulted masonry arch of the casting arch on the right of the picture. This is unlike the bressemer-beam construction often pictured in textbooks.

Note of an oversight in a recent WIRG mailing

Recently a number of standing order and gift-aid forms were sent out without a return address. Sorry.

The correct email address for Shiela for the return of the SO & GA forms is, of course, treasurer@wealdeniron.org.uk

Meet WIRG Hon. Secretary Tim Smith

My interest in Industrial archaeology arose from an early age as I was brought up on the southern slopes of Dartmoor and spent much of my youth exploring the remains left by the old tin miners and clay workers on the moor. Indeed, I lived only a mile from the abandoned wolfram works of Hemerdon mine which operated in WWI and again in WWII supplying the strategic metal, tungsten, for the war effort. This mine is in the news again as Wolf Minerals have reopened it to produce tungsten and tin and have reported reserves of over 400Mt at 0.13% WO₃ making it the third largest reserve in the world! I recall being chased away from the mothballed plant by the caretaker back in the 50s and climbing the spoil heap with its aerial ropeway. Further, I was within easy reach of the 18-19th century tin and copper mines of the Tamar Valley and further west in Cornwall.

This led me to deciding on a degree course in metallurgy



which I undertook at Brunel University, Uxbridge. It was at this time I was introduced to the Historical Metallurgy Society which I joined in 1967 and am still a member today. I spent several stints on the HMS Council and attended annual conferences and site visits. After graduating, I spent two years in northern Somalia teaching chemistry and travelling around East Africa.

I returned to Brunel to undertake a PhD in 'kitchen sinks' (more precisely developing crystallographic textures

to improve the formability of stainless steels). It was while on a Royal Microscopy course that I met my wife, Judy, who was a Post Office research engineer. We married while I was still studying – which gave us a great tax advantage. I sort of slid onto the staff at Brunel while writing up my PhD, lecturing in physical metallurgy (mainly ferrous) and was also in charge of the x-ray diffraction laboratories.

With two children on tow, we decamped to the copper belt of northern Zambia in 1981 where I eventually ended up running the mining department at the then technical college in Kitwe training technicians for ZCCM.

We returned to England in late '87 where I undertook a short course in Technical Writing which enabled me to obtain the job of technical editor on Steel Times & Steel Times International. Over the course of time I became editor of these two trade publications and later that of Aluminium International Today. International travel was a major part of the job which gave me the opportunity to visit many sites of industrial historic interest in Europe, USA and Asia. I retired from editing journals in November 2013 which has given me more time to be active in various industrial archaeology societies that I have been a long term member of including, HMS, the Trevithick Society and the Dartmoor Tin Research Group.

In 1989 we moved to West Sussex and discovered WIRG during a visit to the Open Day at Fernhurst furnace. Soon after this I joined the Committee and became an active member of the Field Group and Experimental Furnace Group, including participating in smelting demonstrations at West Dean, Sussex in 2010 and Acton Scott, Shropshire in 2012.

I was elected Vice-Chairman of WIRG at the July AGM in 2010 and took over as Chairman in July 2013. I served in this post for three years. I became WIRG Hon. Secretary at the 2016 AGM.

I oversaw the digitisation of the two classic books on Wealden iron, Straker's 1931 'Wealden Iron' and Cleere & Crossley's second edition (1995) 'The Iron Industry of the Weald'. These out-of-print books are now available as free searchable downloads on the WIRG web site – as are all past Bulletins and Newsletters, thanks to the efforts of my predecessors.

In 2001, I co-organised the HMS Summer Conference held on the Weald and in 2005 co-organised a visit to the Walloon region of Belgium. More recently, I led a week-end trip to Sheffield in 2017 and am assisting with the trip to Cumbria in Spring 2018.

I have also been heavily involved in promoting WIRG at various events across the Weald including organising a three-day demonstration of smelting at Kew Garden's outpost in Sussex, Wakehurst which attracted some 2000 visitors last year.

My 'indoor' activities include spending a day a week at the E Sussex Record Office inputting and checking the Historic Environment Record against the WIRG database of iron-making sites.

John Collett



John Collett who at the age of 81 passed away on 6th of October 2017 at a care home in Hampshire. He was a WIRG member for many years along with his wife Rosemary.

They had run an Engineering Company in South London before moving to Surrey, where they acquired a 50-acre farm at Nutfield, Surrey, where they reared sheep and kept suckler calves (young calves up to the point of weaning).

Their interests were many and varied. They were keen beekeepers, entering competitions and supplying the local farm shop. In addition they particularly enjoyed exploring the British canal system in their aluminum narrow boat. On their travels they also visited many historic sites, in particular subterranean areas, of which John had a considerable knowledge.

John & Rosemary joined WIRG when they came to Nutfield and took part in many forays together. John also became involved with WIRG's bloomery furnace site at Pippingford Park where he used his extensive engineering knowledge and well equipped workshop at the farm to good effect.

He investigated, at some length, the structure and possible method of manufacture of sections of the old cast iron railings from St Paul's Cathedral. (This will be reported in the next WIRG Bulletin.)

John was also very active in the planning and construction of a new shed on the bloomery site at Pippingford. A couple of WIRG members and John were able to use flood damaged timber from Forest Row, Sussex, rescued by the

late Peter Goodall, cutting all the timbers at his workshop and providing metal cladding left over from a new barn and finally transporting the partially built shed to Pippingford in his van. Here the shed's foundations were prepared the structure built and is still in use today.

Very sadly Rosemary died suddenly in May 2013 which was a terrible shock to John and it was not long before his own health began to deteriorate causing him to leave the farm and move to a care home.

He was a very quiet and gentle, kind, clever man who did not care for modern technology, eschewing the virtual for the real world of machines, books, maps and pen and paper.

We shall miss John a great deal, not now having his considerable engineering experience to call upon, but having very fond memories of long discussions about issues which had raised their heads regarding our work at Pippingford. John invariably wrote down his thoughts on foolscap paper and posted this to us after a smelt, to which an equally long justification for the procedure was produced and posted back!

John & Marilyn Baillie and Brian Herbert

Progress with the publication of Brian Awty's *Adventure in Iron*

Making an index

Excluding the front matter - the title pages, preface, contents pages etc. - *Adventure in Iron* runs to 892 pages. Within those are mentioned a very large number of places and people, not to mention technical details of the process and activities associated with iron-making. To make all of that accessible, good indexes are essential, and the editors have been lucky to secure the services of Ann Hudson, a specialist in the indexing of archaeological, art, architectural and local history texts. For many years she has indexed the volumes of the *Sussex Archaeological Collections* and *Post-Medieval Archaeology*, and it was she who compiled the index for the 2nd edition of Henry Cleere and David Crossley's *The Iron Industry of the Weald*. So she is familiar with the subjects within the iron industry and the Weald. Early on a decision was made to have two indexes: a general index of places and other subjects, and a name index that would unravel the many and varied forms of the personal names of the personnel whose migration and occupations provide the continuity in the story of the development of iron making. Compiling an index of over 890 pages is a long task and until it is completed the eventual length of the book will not be known and full publishing details cannot be made available.

Jeremy Hodgkinson

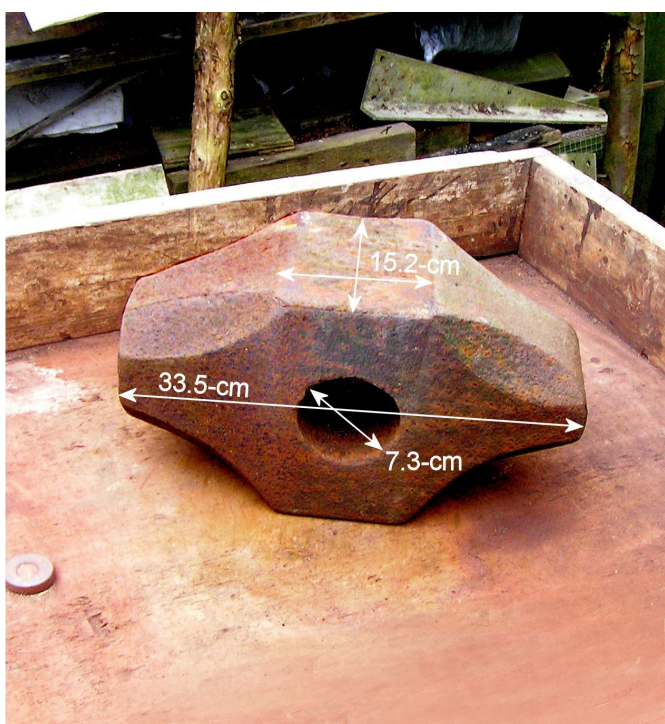
The unusual artefact corner.

Readers are invited to comment on the possible origins and uses of this orphan hammer. Comments to the editor of this newsletter please...

An Unusual Cast-iron/steel, Double-headed, Hammer Head of unknown Provenance

An interesting find by the late Roger Adams was a cast-iron/steel, double-headed hammer which he kept outside his back-door. It is unlikely to be from the Weald as it only weighs 39.6-kg (87-lb 4-oz); considerably lighter than the Wealden one on show at the Anne of Cleves museum, Lewes, Sussex, but unfortunately its provenance is unknown although this may come to light in Roger's notebooks.

The comments below point out some of its peculiarities although not all of these can be explained.



There are no signs of casting marks on the hammer which would show the method of casting, but rusting may have obliterated these.

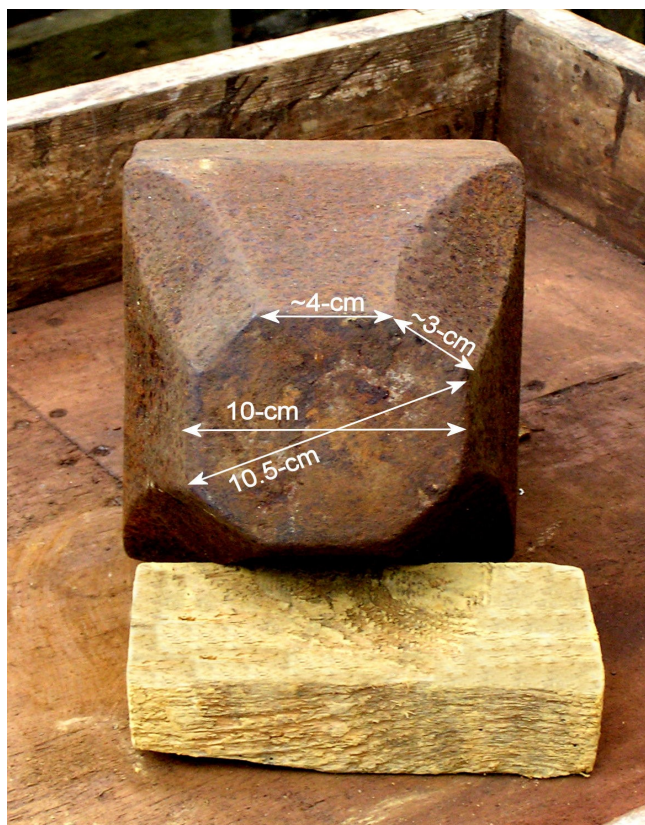
The central hole in which a helve is assumed to fit is NOT tapered, nor is there a keyway, and there is no visible way of stopping the hammer from slipping OFF or even passing along the helve unless it's diameter is increased.

One possible way to hold the hammer head in place, providing the helve is iron, is to "rust" it in place, but would this be reliable?

The hammer head is "double ended", with one end octagonal in section and with a flat face, whilst the other end is a "blunted" axe shape, possible suitable for forge-welding two or more pieces of iron together, say for edge tools.

The "blunted" axe shape might be used for "stretching" a

thick piece of hot iron as a first step to make a sheet of thin iron, then, the flat face could be used to make a smooth, surface finish.



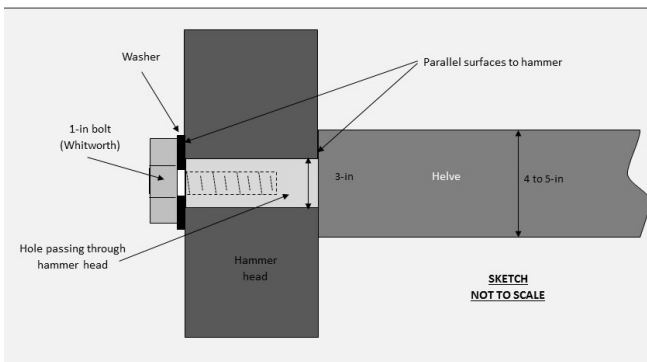
But how the change between hammer-head ends could be made is not immediately obvious; perhaps the hammer ends are not expected to be changed over quickly!



Continued on next page

Depending on the helve, and assuming it is iron, the hammer could be lifted as a “trip hammer”, “tilt hammer”, or “helve hammer”, but the overall shape of the hammer head is not conducive to being used as a “drop hammer”. Assuming the hammer head to be fairly modern, the following arguments would seem feasible:-

Use of a 1-in bolt, say, into the end of the helve, plus a large washer & firmly fixed using a long spanner is a possibility, but this depends on what period the hammer head was in use, see Fig.5 for a sketch. It would be also necessary for the two faces of the hammer helve’s hole to be perfectly parallel, otherwise the hammer head would slip round.



This scheme would also allow the hammer head to be quickly rotated although it would be necessary to align it correctly whilst resting on the anvil.

Brian Herbert

WIRG Winter Meeting

The annual winter meeting was held in January at Nutley Village Hall.

Lynn Cornwell (Hastings Area Archaeological Research Group “HAARG”) made a presentation of recent research into the *Classis Britannica* in Sussex and Kent. Much of this research was done by HAARG and by Lynn personally. The *Classis Britannica*, literally “The British Fleet” was usually a logistics wing of the Roman army rather than a naval force as such. It was heavily implicated in iron production in the Weald.

Lynn presented a good deal of new material, particularly from the newly discovered site at Northiam. Taken together with other work by HAARG and previously accumulated evidence, we now begin to see a more accurate picture of the *Classis Britannica* in the south-east (including an improved chronology) than anything previously published.

HAARG have recently published a report on this research: contact details— haarg.org.uk

DOCTORAL STUDENTSHIP

The Medieval Iron Industry in the Weald

Phyllis Pettitt’s generous bequest to WIRG in 2011 has enabled the group to undertake a number of projects that it would not have been able to contemplate in other circumstances. The boldest of these has been the co-sponsorship of a PhD Studentship in collaboration with the University of Exeter. Such sponsorships have generally been either philanthropic, by a major charity, or collaborative with other institutions such as museums. That a small, voluntary group such as WIRG should propose such a venture was a rarity, if not unique. WIRG’s principal aim is ‘to promote investigation ... concerning the Wealden iron industry’, and thus to enable an individual, financially, to devote three years to research an aspect of the industry fulfils that aim. The first studentship began in 2015, and focused on Roman iron production. The chosen applicant, Ethan Greenwood, has already amply demonstrated, through his presentations to the group and his involvement of members in his fieldwork, the success of the project. So it was not difficult for the committee to agree to a second studentship, building on the successful relationship established with the archaeology department at Exeter and with Dr Gill Juleff as supervisor.

This time the focus will be on the iron industry in the Weald in the Middle Ages. In many ways this will be a more challenging research project: the field evidence is less abundant than that of the Roman period; documentary evidence exists but requires specialised skills to read and interpret it; and previous study of iron-making in the period has been disappointingly scarce. There are some fundamental questions that need to be answered, of which the most pressing, perhaps, is, what are the distinctive characteristics of medieval iron-making in the Weald, in terms of processes and residues? A major site at Roffey, between Crawley and Horsham, has received little attention. The medieval heart of Crawley has been revealing significant evidence of iron production, but where else was production taking place on a similar scale to have satisfied the documented demands placed on the region by the Crown, say, in the 13th century? And were water-powered bloomeries a significant element in production?

Jeremy Hodgkinson

The excavation of the Romano-British iron-working site at Garden Hill, Hartfield – past, present and future

The site at Garden Hill was discovered in the Spring of 1968 by Fred Tebbutt. It was then part of the Pippingford Park Army Training Camp, and in a slit-trench helpfully dug by the troops Fred noticed iron-age pottery. The site was scheduled, in March 1969 a survey was undertaken by Eric Holden, and Tebbutt's limited excavation, essentially re-digging and extending the military trench, was published in *Sussex Archaeological Collections* 108 in 1970. Further excavations in 1972 by Fred Tebbutt and James Money led to the establishment of the Garden Hill Excavation Group, and work on a much larger scale continued until 1982, under the direction of Money (who provided or raised the funding) and Anthony Streeten. From 1973 interim reports were produced for contributors to the excavation fund, the circulations-lists them-

selves a tribute to James Money's networking ability. The first published interim appeared in *Britannia* in 1977, and subsequently in the *WIRG Bulletin* in 1979. Plans for the final season at Garden Hill were published in the *SAS Newsletter* in April 1981: the following year 'A camp with marquee, cooking equipment and a full-time cook will be established on the site'.

For a perspective on the importance of Garden Hill I am grateful to Dr John Manley, who writes:

"The role of hillforts in the Weald is poorly understood, and the excavations were extremely significant for a variety of reasons: a substantial area of such a site was examined; there appeared to be continuous (or at least multi-phased) activity within its boundaries, spanning both the Late Iron Age and early Roman periods; activity seemed to be focussed on iron-working; and there seemed to be an architectural transition from round to rectangular buildings, most



The Garden Hill Excavation in progress.

Continued...

notably a small bath-house. The site thus has the capacity to re-imagine the purpose of iron and iron-working in the Late Iron Age and early Roman periods, to reconsider the role of Wealden hillforts, and inform both on the nature of Roman colonisation in this area, and the nature and strength of indigenous continuity.”

Fred Tebbutt died in 1985 and James Money in 1991. The lack of publication of Garden Hill was keenly felt by Fred’s widow Margaret, who before she died in 2002 charged Pam Combes with the task of bringing it to fruition. Pam died in February 2016 and passed the baton to me; but within six months Anthony Streeten had himself died. At that point the extensive excavation archive was accepted by East Sussex Record Office on temporary deposit at The Keep while a solution to the problem of publication was actively investigated. A working-party consisting of David Rudling, John Manley and myself decided to commission a feasibility study – would the site archive contain material of sufficient breadth and depth to form the basis of an excavation report? Luke Barber of the Sussex Archaeological Society will undertake the work, and WIRG thought it entirely appropriate that the balance of the Tebbutt Research Fund should be committed to the task. The money is being advanced in two stages, subject to a favourable report once the first tranche has been spent.

The nature, length and format of any final excavation report remains to be seen. It is unlikely to be capable of being published in SAC, and in any event external grants will need to be sought to fund the work. We are confident that can be achieved – we have after all raised almost £10,000 towards the publication of Brian Awty’s *Adventure in Iron*, due out this year. I can think of no better way of marking the Group’s golden jubilee than to embark on the publication of Garden Hill, the discovery of which took place in the year of its creation.

Christopher Whittick

Excavations at Great Park Wood, Brede

Great Park Wood lies in the east of Brede parish close to Udimore. A slag heap was found beside a spring in the north west corner of the wood in 2015 at TQ 853 190. The slag area is broadly triangular with a surface area of some 150 square metres with its depth yet to be established.

With the permission of the land owners WIRG commenced excavations in February 2018, with Simon Stevens in the lead. The aim is to explore the slag area and the suspected working area upslope of the slag in the hope that bloomery remains have survived and to find dating evidence.

The Great Park Wood site before excavation



Work over two weekends by eight WIRG members has revealed that the likely working surface is deeper than expected, probably as a result of soil washing down the slope that surrounds the wood. A trench in the slag area has yielded a single sherd of pottery that has been dated to the first or second centuries AD.

Further work is planned throughout the spring and summer of 2018. Details will be circulated to members of the Field Group and publicised on our website.

Bob Turgoose

WIRG tent promotions 2018

We will once again be exhibiting at three events across Kent and Sussex over the summer including a demonstration smelt at Wakehurst.

Please contact Tim on 01403 710148 or e-mail secretart@wealdeniron.org.uk if you can help at any of the events.

Wakehurst Place Ardingly, W Sussex RH176TN	Biddenden Tractor Fes Biddenden, Kent TN27 8BH	Fernhurst blast furnace GU27 3NJ & Sealed Knot demo
MAY	AUGUST	SEPTEMBER
Fri 25 Set-up	Fri 17 set up (pm)	Fri 14 set up (pm)
Sat 26 Smelt & tent	Sat 18 tent	Sat 15 tent
Sun 27 Smelt & tent	Sun 19 tent & dismantle	Sun 16 tent & dismantle
Mon 28 Smelt & tent & dismantle		

Can you help? A valiant effort by Victor Kellet, John Vasey and Stephen Hall cleared a full grown fallen tree at Pippingford in March which was blocking the route we use to take equipment to our demo smelt at Wakehurst.

The chestnut tree had been coppiced years ago which created four trunks about 18" in diameter at their thickest. One was hung up in surrounding trees and a lot of tension in the wood had to be released to safely bring it down.

We now have enough firewood for the furnace to keep us going several years. If anyone would like to help chop and stack the wood please contact Tim on 01403 710148 or e-mail sec-



WIRG contacts:

Chairman: Bob Turgoose bobturgoose@yahoo.co.uk

Hon. Secretary: Tim Smith secretary@wealdeniron.org.uk

Treasurer: Shiela Broomfield treasurer@wealdeniron.org.uk

Editor of Wealden Iron, The Bulletin of the Wealden Iron Research Group: Jeremy Hodgkinson
jshodgkinson@hodgers.com

Newsletter Editor: Jonathan Prus jonathan@avens.co.uk

And finally, another appeal

Not for your cash, although any nice fat donations will be put to good use! Rather a way of husbanding WIRG funds. Postage is increasingly costly and most communications with members, including this newsletter, can be sent by email. A growing percentage of WIRG members now receive the newsletter and notices of meetings electronically. If you are willing to join in with this please email the treasurer [Shiela Broomfield](mailto:shiela.broomfield@clementi.demon.co.uk) s.broomfield@clementi.demon.co.uk and let her know.

If you get this by post it will be in black and white. The electronic version is in glorious technicolour.