



NEWSLETTER

Autumn 1993

Number 18

From Our Chairman

Dear Fellow Members,

Sitting, staring at my computer screen, waiting for the muse to descend and help me write this letter, I began to think of the name of the Group, and my mind alighted on the word Research. Having recently undertaken a prolonged bout of research, it struck me how little qualified I had been to do so but how much more so I was for having done it.

For many members of WIRG, membership is an acknowledgement of interest in the subject, but a lack of experience should not be a bar to the satisfaction of curiosity. The pages of the Bulletin suggest that there are relatively few who are actively engaged in research into the iron industry in the Weald, when the number of members hints at a potentially greater number. Some years ago, when Cleere & Crossley's book was fresh off the press, I outlined to the Group, at the AGM at Fernhurst, a number of areas of research which needed work; some have been tackled, the rest, and others I did not mention, have yet to be. There is much to do; why not have a go yourself?

That much-travelled researcher, Brian Awty, has decided to step down from the Committee this year, and his knowledge of iron industry research beyond the Weald will be greatly missed. We are joined, however, by Bob Smith, who is a senior conservator at the Royal Armouries, and much involved in research into early ordnance.

One of the many things which makes the job of Chairman so interesting is contact with members. Please keep in touch and let us know of discoveries and other news. My best wishes for another year.

Yours sincerely, Jeremy Hodgkinson

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Field Group Forays 1993/94

Members may like to be reminded that the WIRG Fieldgroup will meet once a month from October to April in order to carry out various field activities. New members are welcome to join the field group. No special expertise is required - you learn from others as you go along - and there is no extra charge.

Activities already arranged for next year include fieldwalking, site and resistivity surveys, exploratory and trial trenching for datable material on bloomery sites and tracing a Roman road.

If you are interested in joining the field group for any or all of these activities please contact Mrs D M Meades, Brackenside, Normansland, Fairwarp, Uckfield, TN22 3BS (tel: 0825 712367) for a full list and further details.

October 2nd. Cansiron

An initial foray will be made to the Roman bloomery site at Cansiron known as "Far Blacklands", some 2 miles east of East Grinstead at TQ44753820. On this foray a "whole area" survey will take place, where a 1 metre grid (say) will be placed over the site and all pottery, density of slag, and any other artifacts will be noted (but not moved). These facts will be plotted on a map for further use on a further foray to this site in March.

November 13. Little Forge

The top of the bay of Little Forge has recently been bulldozed away, leaving some forge bottoms just visible in the soil along part of the line of the bay. One of the streams on this site has been culverted, which may in time affect other remains there. As the site is a scheduled monument and we already have permission from English Heritage to do a resistivity survey there, it seems sensible to combine this with a site

survey of the remains as they are now.

December 11th. Little Forge (2)

January 8th. Glossoms Place

The Field Group has been invited by the East Sussex County Archaeologist to investigate the extent of a Romano-British bloomery discovered during exploratory excavation work at Glossams Place, Beckley (TQ 860216), by the Hastings Area Archaeological Research Group. The site has been disturbed by the construction of the moat of a medieval dwelling. It is intended that one or two small trenches be dug.

February 12th. Roman Road

A fourth section of the London to Lewes Roman Road will be investigated, this time from Bassetts Manor at TQ46503575, to the Medway at TQ46953915, and perhaps on to Gallypot Street at TQ47153515 if time permits.

March 12th. Cansiron (2)

This second foray to Cansiron, see October's foray, will be used to carry out a resistivity survey of the site and then overlay the results of this survey with results from October's density of finds (which have been left in place) survey, in this way it is hoped to discover the layout of the buildings which are thought to have been on this site.

April 9th. Leigh Bloomery

Following the unsuccessful attempt to date the bloomery at Cinderhill, Leigh (TQ 533459), by trenching the slag heap, it is intended to make a further attempt this 2season. The site is in a field on the north escarpment of the High Weald to the north of Penshurst Place.

First Reserve. Mine pits at Fairwarp

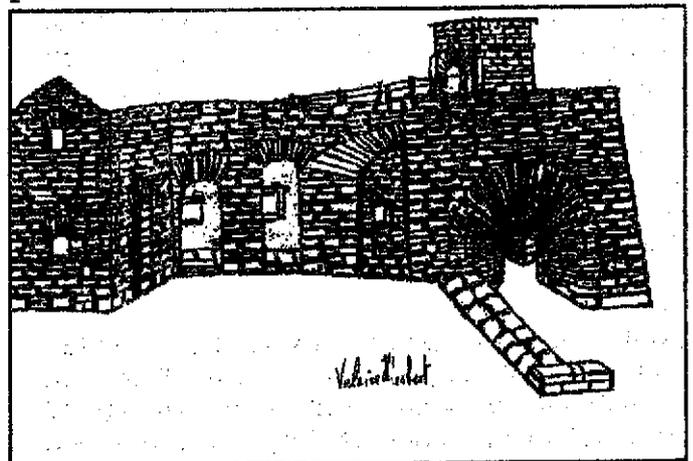
This has been kept as a reserve foray in case permission is not forthcoming for one of the others. The area to the south of Fairwarp has a very large collection of pits stretching along a geological fault for half

a mile or more. This is not altogether surprising, for the area was worked by the Romans at Oldlands, and both Hendall and Oldlands blast furnaces were operating nearby in the post-medieval period. Marl was also dug there, so we shall have an interesting time deciding which were marl and which mine pits. Add a stone quarry or two for good measure!

Cumbria & Scotland

My suggestion in the last newsletter that members might like to write a note on iron sites visited during the summer holidays has borne fruit. Here Valerie and Brian Herbert describe their visit to Duddon Bridge Blast Furnace, Cumbria.

The iron furnace at Duddon Bridge was visited by the authors whilst holidaying in the Lake District. It is situated on the river Duddon in the district of Furness, and was one of the last furnaces in England to use charcoal as a fuel, blowing out in 1867. In June 1962, G.R. Morton wrote an article in the "Journal of The Iron and Steel Institute" describing the remains of this furnace site. The site has now been consolidated and preserved.



Duddon Furnace, drawn by Valerie Herbert

In its early years, the furnace operated using a conventional pair of bellows 18 feet long, by 2.5 feet wide at the nozzle end and 4.5 feet wide at the cam end; the cams being operated by a water wheel of unknown size. However, in 1828 the furnace was taken over by Harrison, Ainslie and Co., and a pair of all metal "blowing cylinders" was installed.

These were 5'2" in diameter and 3'4" high, giving, perhaps, 60 cubic feet of air blast per depression.

A new water wheel was probably installed for the blowing cylinders, and this blowing system continued in use until the furnace was blown out in 1867. The breast operated water wheel was 27 feet in diameter; this type operating with the water flowing onto the wheel about half way down at about axle level. The water was brought to the furnace via a half-mile-long leat from the river Duddon. Where the leat veers from the river, (very wide and fast by Wealden standards) the foundations of a weir across the river may still be seen. Only a small proportion of the river water was diverted into the leat, probably with the aid of the large boulders, still in place, to protect the entrance from erosion in times of flood: the leat is lined with stone for some distance, again to protect against flood.

The associated stone built buildings on the furnace site were built up a slope, with the furnace at the lowest level. The ore store, some 30x28 feet in area and perhaps 20 feet high, was built into the slope, enabling the ore to be tipped in at triforium level. The charcoal store was built yet further up into the sloping site, this being 27x96 feet in plan; again allowing the charcoal to be tipped in from a high level. The furnace was loaded via a ramp, leading from the two store houses, which, due to the sloping site, required only a gentle incline. The site layout seems to have been ergonomically thought out; the store of (heavy) ore was closer to the furnace than the (light) charcoal. The other building associated with the furnace structure, is the office to the left, with a room below the loading ramp.

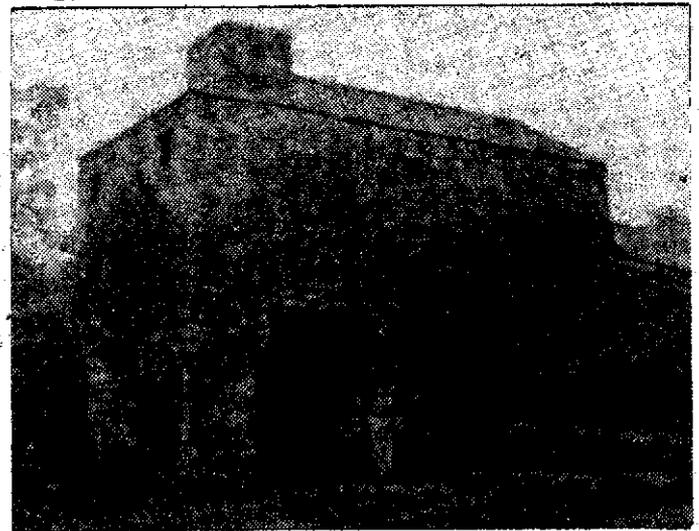
The furnace was originally built in about 1736, having outside dimensions similar (according to documentary sources) to the Wealden "Lamberhurst Furnace" built in 1696. Records indicate that about 32 tons of pig iron was produced each week using the leather bellows, this was three to four times the output of a Wealden furnace.

Although the 27 feet diameter water wheel may seem impressive, it is only operating as a breast wheel, making it rather inefficient, perhaps similar to a Wealden 12 feet diameter overshot water wheel. However, the Duddon wheel was probably 3 to 4 feet wide compared to Wealden ones

at 1 foot wide, thus providing the extra power for the air blast and allowing a greater output of iron from this furnace.

And Jeremy writes of his trip to Bonawe furnace, Scotland.

This is an impressive sight. For those wanting to see what a Wealden blast furnace site might have looked like, a visit to Bonawe is about the closest you can get this side of the Atlantic. It can be found along a narrow road, rather insignificantly signposted, just west of Taynuilt, off the A.85 between Dalmally and Oban, in what used to be Argyllshire.



Built in 1752-3, the Lorn Furnace, as it was otherwise known, was set up by the Newland Co., of Furness in north Lancashire, at a time when considerable interest was being paid to the extensive wood resources of the western highlands of Scotland. So plentiful was the wood that it was considered viable to carry ore by sea from Furness to smelt at Bonawe, returning with pig iron.

The works comprise the furnace tower, with an integral charging house, the foundations of the blowing and casting houses, together with surviving buildings for the storage of ore, charcoal, bark and pig iron; the water courses are still well defined. In addition, at some distance from the furnace, are cottages built to house the ironworkers, a works manager's house, and a quay for the loading and unloading of vessels carrying ore and pig iron.

The furnace tower is approximately similar in size to the west furnace excavated by David Crossley at Pippingford (approx. 8 metres

square at the base), and supporting the blowing and casting arches are cast iron lintels similar to that recently identified as coming from the Gloucester furnace at Lamberhurst (see Bulletin 13 1993, 44-6). Bonawe is not the only charcoal furnace in the area; the ruins of Glen Kinglass furnace are situated further along the shores of Loch Etive, to the north of Bonawe, and the reasonably well preserved remains of Craleckan furnace can be found at the village of Furnace, a few miles south-west of Inverary, on the western shore of Loch Fyne.

A.G.M 1993

Hendall Furnace and what else?

A halcyon day gave respite from a wet July to find some 50 members of the Group assembled for the AGM and the attraction of an interesting talk. Dot Meades, speaking on home territory, drew back the curtains of Fairwarp to reveal the evidence of considerable iron activities - from pre-Roman times to the 17th century - over a wide area of the district. Hugh Sawyer reports.

Five sites - Hendall, Marshalls, Iron Plat, Langles and Oldlands - had successfully exploited the local resources of siderite (in the Wadhurst clay) and charcoal from Ashdown Forest which itself provided the source of water for rivers and streams suitable for damming. The Sandstone (Ashdown and Tunbridge Wells sand) was used for furnace building.

Human factors were just as important as geological considerations. Iron working gave an additional opportunity to the local labour force, who worked on harvesting in the summer. At less busy times of the year people turned to woodcutting for the charcoal-burners, building maintenance and the digging of ore. Many also worked as carriers for the industry, bringing in raw materials and taking out the products of the furnaces and forges.

The precise date of the construction of Hendall is not known, although Pelham made reference to workers being employed in 1544 and a "Pope's furnace" existed in 1560. The 'lists' reported Nicholas Pope's furnace at Hendall as operating in 1574 and it was one of three or four in the charge of

Ralph Hogge who, as the Queen's official gunstone maker produced "great shotte" there in 1577.

Road links between the sites were an important element in the operation and development of ironworking. Hendall was in the centre of a network of tracks linking it with Marshalls, Iron Plat and Langles. An additional track led to Boringwheel where local tradition has it that guns, cast on a core, were later reamed out. Frustratingly however, it is not known which furnaces were actually casting the guns.

Concluding her talk, Dot cast a light on the cryptic title of her topic: Hendall is known to be a furnace site, but recent finds suggested the existence of a refining forge - as well! In the afternoon, members were able to view the site for themselves; attention was drawn to the unusual right-angled bay with heavy charcoal staining. The discovery of a substantial wooden leat lying in the river added to the lingering mystery of Hendall, and made a fitting end to a most interesting talk.

Roman Road Excavation

Hugh Sawyer and Brian Herbert, on the road again.

A small (1) excavation is underway on the London/Lewes Roman Road south of Edenbridge, at TQ45204285. This is situated in Cobhambury Wood, as noted in WIRG Bulletin No. 13, where The Road was found to be metalled with slag for some 300m.

A 2m wide by 7m long strip has been uncovered across The Road, with the length exceeding The Road width to allow the edges to be investigated.

After over 100 man hours of work, the surface has been shown to be in a very poor state of repair, unlike the area excavated by I.D Margary (which is open to the public some 3 miles to the south of this excavation) which is remarkably well preserved. Initial indications suggest that The Road has been resurfaced, again with slag, at some undefined date. Although the west edge of The Road is very well defined and solid, the surface degenerates to loose pieces of slag after some 8 feet, whilst the east edge is being investigated at the moment. An interesting feature of the metalling is the amount of water-rolled and broken flints that have been found, although whether from the

initial Road or the resurfacing remains to be discovered.

It is hoped to make this dig part of the afternoon outing for the 1994 AGM, if the owner agrees.

(1) One of us is of the opinion that it is a "medium sized" excavation after considering the immensity of the spoil heap!

Tebbutt Research Fund

Some of the more recent members of WIRG may not be aware of the background to the Tebbutt Research Fund, and I am indebted to Margaret Tebbutt for the following notes about her late husband, on whose death in 1985 the fund was inaugurated. Fred Tebbutt had been an active member of WIRG from its inception and had served both as Chairman and, later, as President.

Fred came to Sussex in 1966 after many years of amateur archaeology in his native Huntingdonshire, and immediately became involved in local research. In addition to his interest in the iron industry, he carried out a programme of field walking on and around the Ashdown forest the results of which did much to dispel the old idea of the 'impenetrable Weald' - uninhabited in prehistoric times.

It is particularly appropriate that one of the conditions of the award is that the results of the research should be published. Fred's opinion was that information unpublished was useless, and he was meticulous in ensuring that every discovery, however small, appeared in print. He would surely be happy to be remembered in the very practical way of the research fund.

Applications are invited from individuals and groups for grants towards research in the Wealden iron industry. It is anticipated that approximately £200 will be available from the fund in 1994 and anyone interested in receiving a grant should write a suitable letter of application, giving details of themselves, together with relevant information about the research envisaged.

Applications should be sent to the Hon.

Secretary of WIRG, Mrs S. Broomfield, 8, Woodview Crescent, Hildenborough, Tonbridge, Kent, TN11 9HD, to reach her by 31st March 1994.

Recent Publications

C. Cartwright (ed.), 'The Excavation of a Romano-British ironworking site at Broadfield, Crawley, West Sussex,' *Sussex Archaeological Collections*, 130 (1992), 22-59.

The saga of the report on the ironworking site at Broadfield, excavation of which was concluded in 1975, is long and somewhat bitter and has been tactfully omitted by Caroline Cartwright in undertaking the difficult task of drawing together the fragmentary remains of the work carried out there in the early 1970s. Her efforts deserve our thanks. Poor surviving site documentation has meant that the resulting report is inevitably less than satisfactory. The Conclusions are therefore essential reading if the more detailed aspects of the report are to be understood.

Earliest remains are from the second century BC when ironworking is believed to be associated with a settlement in Goffs Park. The appearance of shaft furnaces apparently dating from this period is notable. Expansion took place in the mid-first century AD when the Broadfield settlement was established to exploit the iron. Activity increased towards the end of the century and of particular interest is the range of furnace types employed at the site in this period. Ironworking continued at other locations in the area until the late-third or fourth century, with settlement being re-established to the north east, in the Southgate West area.

The importance of the site, for the length of its working life, and for the variety of its furnaces is undeniable for, in spite of, or perhaps because of, the extensive fieldwork undertaken by WIRG and others, the only major excavations of the early iron industry in the Weald have been Broadfield, and Henry Cleere's excavation at Bardown. On a factual point, the finds are housed not at Iford Mill, but at Ifield Mill which is in Crawley.

C. Place & O. Bedwin, 'The sixteenth-century forge at Blackwater Green, Worth, West Sussex: Excavations 1988,' *Sussex Archaeological Collections*, 130 (1992),

147-63.

Blackwater Green is only the third Wealden forge site to have been excavated and, like the other two, work was carried out in advance of development. Of similar dimensions to the others (approx. 10 m wide, though of indeterminate length), few of the original structures survived. Two well-preserved timber water channels were found, in each case with eventual capacity for two water wheels suggesting two finery hearths. Also surviving was the substantial base of the anvil, which was unlike those found at the forges at Chingley and Ardingly in design or construction. Dating evidence was poor and a short working life is postulated.

P.Riden, 'Early Ironworks in the Lower Taff Valley,' *Morgannwg, XXXVI* (1992), 69-93.

Those who attended the Group's AGM in 1992 heard Philip Riden describe the involvement in South Wales of Sir Henry Sidney and his partners, in the 1560s, in exploiting a rich source of iron ore for steelmaking in Sussex. The location of his furnace in the Taff valley has been a matter for some debate, between Pentyrch and Tongwynlais, both north west of Cardiff. The case against the former and in favour of the latter is argued persuasively in this paper, which describes the early history of ironmaking at both sites. Offprint copies are available from the author at the Department of Continuing Education, University of Wales, 38, Park Place, Cardiff, CF1 3BB.

P.Riden, *A Gazetteer of Charcoal-fired Blast Furnaces in Great Britain in use since 1660* (second ed. 1993). 174 pp., maps, photographs, index.

This is a most useful volume, the second edition of one published six years ago. It lists the furnaces by region and draws together the available information about them. In this respect the Wealden sites are covered in less detail because of the work of Straker and Cleere & Crossley; comprehensive coverage which most regions have not received.

Each region's furnaces are shown on maps, although I feel that it would have been useful if the appropriate river systems had been shown on each. Also there are illustrations of some of the better remains

and contemporary illustrations; scope here for a detail of the 1748 Cowden Furnace map perhaps. The bibliography is a mine of information and the index has been greatly enhanced to include the persons referred to in the text. The A5 format is more convenient than the A4 size employed earlier.

The benefit of a book like this, apart from the information it provides, is in the incentive it gives to supplement existing knowledge. I hope that a further edition will be considered in the fullness of time to amend it with the research it inspires. I commend it to members because the iron industry in the Weald can only be fully understood in the context of the iron industry in Britain as a whole. Copies are obtainable through WIRG from Brian Herbert, 1 Stirling Way, East Grinstead, Surrey.

Books from WIRG

All the publications listed below are available from:

Mr. B.K. Herbert, 1, Stirling Way,
East Grinstead, SUSSEX RH19 3HG

The normal price includes postage within the UK, prices in brackets are available only when publications are collected at meetings.

The Excavation of a Late 16th/Early 17th Century Gun Casting Furnace at Maynard's Gate. O.Bedwin. £0.90 [0.60]

The Fieldwalker's Guide and an Introduction to the Iron Industries of the Weald. B.K. Herbert. £3.00 [2.50]

The History of Watermills, the Wealden Iron Industry, and Geology of the South-East. C.E. Woodrow, B.K. Herbert, & C. Smart. 3rd updated edition. £1.60 [1.30]

Bombards, Mons Meg and her Sisters. A description of early wrought-iron cannon. R.D. Smith & R.R. Brown. Royal Armouries Monograph No 1. £6.50 [6.00]

Parson Levett and English Cannon Founding. B.G. Awty. £1.20 [1.00]

A Cast-Iron Cannon of the 1540s. B.G. Awty £1.20 [1.00]

Identifying 18th Century Trunnion Marks on British Iron Guns: a discussion. R.R. Brown. £0.70 [0.50]

The Woolwich Proof Registers, 1780-1781.
R.R.Brown. £0.70 [0.50]

Guns Carried on the East Indiamen.
R.R.Brown. £0.70 [0.50]

The Fuller Letters; Guns Slaves and
Finance.
(Ironmaster at the Heathfield Furnace in
Sussex)
D.Crossley and R.Saville. £20.00 [17.50]

A Gazetteer of Charcoal-fired Blast
Furnaces in Great Britain in use since 1660
(second ed. 1993) P.Riden, 174 pp., maps,
photographs, index. £11.00 [£10.00]

Old Series WIRG Bulletins. Volumes
1,9,11,13,14,15,16,17. each £0.80 [0.50].
OLD SERIES VOLUMES 2,3,4,5,6,7,8,10,12
ARE OUT OF PRINT AND WILL NOT BE
REPUBLISHED.

New Series WIRG Bulletins.
Volumes 1 to 7 (1981-1986) £1.30 [1.00]
Volumes 8 to 12 (1987-1991) £1.80 [1.50]
note: Volumes 5 & 10 have an index

P. S.

Again I am indebted to all those who have
contributed items for this newsletter.
Inevitably the bulk of the work is falling on
the same shoulders, and I really would like
contributions from other members.
Everyone of you has a special interest of
one kind or another, so please, send me an
article and let us all share your
enthusiasms. My address is 18b Chapman
Way, Tunbridge Wells, TN2 3EF. Telephone
0892.541629.

Additionally I would like to acknowledge
the help of Philips Research Laboratories,
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appreciated.