



NEWSLETTER

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these areas can inform us about the likely operation of sites in the Weald. I hope we shall continue to enjoy contributions to our meetings which broaden our perspectives beyond the confines of our region.

Conversely, an understanding of the variety of iron making in Britain in the Roman period, for instance (of which there is growing knowledge), can set the enviable amount we know of the Weald in context. Research in these other areas can also point to gaps in our own research, and my attention has been drawn, increasingly of late, to our lack of knowledge of the distribution of early iron making in the Kentish Weald. For this reason I hope that a wider awareness of the group's existence will result in those whose work brings them into frequent contact with the land, whether they be farmers and landowners, archaeologists or even JCB drivers, passing on information about discoveries they make.

At this year's AGM I was able to report on a full and interesting year for the group, and the Field Group's programme for the next season promises to be similarly varied. However, all good things must come to an end, and it was my regret to announce that Dorothy Hatswell had decided to stand down from the committee. To members who have attended our winter and summer meetings over the past few years, it will be her catering skills which will most missed. But she has been a valuable member of the committee, and I am most grateful to her for that.

My best wishes to you for an enjoyable 2000 AD.

Sincerely.....Jeremy Hodgkinson

ANNUAL GENERAL MEETING

We are indebted to Tim Smith for the following very full account of Ian Standing's interesting talk:

LETTER FROM THE CHAIRMAN

Dear Fellow Members

At the time of writing this, I have just returned from attending the annual conference of the Historical Metallurgy Society, which was held this year at Ambleside in Cumbria. The theme was the iron industry of the Furness district and, as well as visiting a number of fascinating sites, and marvelling at their state of preservation, I listened to various aspects of the industry in the region being described. Like many of you, at our AGM in July, I heard Ian Standing give a lucid survey of the iron industry in the Forest of Dean. In common with the Weald, iron making in both Dean and Furness rose in importance and declined at different times in the history of each, and has left its traces in the landscape. The better survival of industrial structures in both

The Iron Industry of the Forest of Dean

It is rare to find a speaker with the versatility of background of Ian Standing who addressed this year's annual meeting of WIRG at the end of July. He is known in his adopted Forest of Dean town of Coleford for his many years as a dental surgeon, an occupation he left in the late 1980s to become the curator at the Dean Heritage Museum, a post he held until 1996. He is currently the Community Heritage Officer for Herefordshire where his work includes managing sundry heritage centres and providing professional support to the voluntary museums of that county. At one time, Ian also worked his own small colliery in Dean Forest, having purchased a 'Gale' from a free miner; he is a qualified mine deputy. His most recent 'out of hours' pastime was the completion of a research based MA degree at Bristol University concerning the 17th century landscape of the Forest of Dean. Ian has also been active in the conservation of Whitecliff Furnace near Coleford. He is a recent past President of the Historical Metallurgy Society, and was for many years also its Conservation Officer.



The iron ore of the region is a rich iron oxide mainly limonite, occurring as a secondary ore within the carboniferous limestone. This was the source of the iron for the furnaces, supplemented in the 19C by imports from Cumbria. The hard limonite ore veins were first extracted by surface workings which leave their mark today as a network of deep channels known as 'scowels'. The ore was followed under ground, as early as Romano-British times, and archaeological excavations have revealed that coal was taken into these mines, probably to be used for 'fire setting' to weaken the rock to aid extraction.

Mining during the Middle Ages was by man and boy. An excellent brass survives in Newland Church (see above) depicting a miner holding a candle between his teeth (probably a technique used only when moving about), a mattock in his hand, and carrying the ore in a knapsack on his back.

Ian began his address - aided only by two cassettes of slides and a glass of water - by describing the remoteness and compactness of the region which lies between the rivers Wye and Severn abutting the boarder of South Wales, and measures just 12-15 miles N to S and 10 - 12 miles E to W. But this region is rich in high grade limonite iron ore, coal and timber - ingredients which ensured an almost unbroken iron industry from Romano-British times until the last iron was tapped in the 1880s at Cinderford.

The geology of the area is a continuation of that of South Wales giving rise to sinclines (dips) in the strata from which 14 different coal seams outcrop. Only one of these - the low delf - is suitable for coke making, this being partly the reason for the lack of success of earlier coke fired blast furnaces in an area where charcoal fired furnaces survived 100 years after coke was first used by Abraham Darby in Shropshire.

Cinder (bloomery slag) has been identified in large quantities in at least 25 locations within the Forest, and a further 11 around its borders. Blick (JHMS 24/1 1990) calculates that some 2.06 million tonnes of ore was smelted in bloomeries producing around 274kt of iron. The largest concentrations of slag today are found at Ariconium (E of Ross), Ross, Monmouth (strictly just outside the Forest), Parkend, Littledean and Blakeney. Bloomeries remained common in Norman times with reference to payments of iron being made in the Domesday Book and also to the manufacture of 'quarells' to tip cross bow bolts - over half a million being produced in the Forest.

The first blast furnace arrived in 1575 at Whitechurch, built by the Earl of Shrewsbury, and was followed in 1595 by one at Lydbrook built by the Earl of Essex. The 'cinder' from the bloomery period was a valuable addition to these furnaces, making up 70% of the charge according to a con-

temporary report in 1702-14 on furnace operation by Foley. Cinder was also exported to Ireland. In all, 20 furnaces were in operation (including Tintern - strictly outside the Forest) the last being in 1816 at Redbrook. An estimated 1.07 million tonnes of charcoal iron were made during this period (Blick 1990). Furnace operations were suspended in 1667 by 'order of the King' who wished to preserve the timber of the Forest for ship building; many furnaces were demolished, but a few continued or were later rebuilt. The remains of three charcoal furnaces survive, the most spectacular being Guns Mill (nothing to do with 'guns' but called after an early owner) in the north of Dean - the present modified structure dating from 1683.

Coke fired furnaces were introduced in 1798, the first being built at Cinderford with others following at Parkend (1799) and Whitecliff (1801). The remains of five coke furnaces have been found, including an experimental furnace built by David Mushet at Darkhill with the intention of refining iron direct from the furnace. His son, Robert, continued the work and built a steelworks alongside it which operated until 1871, and was the first works to produce tool steels. As well as the problem of identifying a suitable coal for coking, the arrival of the coke furnace also had to await the advent of the steam engine required to pump the iron mines dry as they were driven deeper following the ore.

The speaker has calculated the total amount of ore extracted in Dean from the extent of underground and surface workings as 8-10 million tonnes pre 1700, and 4-5 million tonnes post that date.

Similarities between the Weald and Dean seem few. The ore in Dean is a richer, phosphorus free material, certainly a benefit in the blast furnace era which came later in Dean (viz 1496 in the Weald). Dean furnaces at about 22 ft square at the base were larger than Wealden*. Bloomery cinder was also extensively resmelted in the Dean blast furnaces, a practice not believed to have happened on the Weald. (An interesting note regarding this was observed by Swedenborg c 1710, who states that '...ore of a pale blue colour is mined in the Forest of Dean. It is heavy, with white shining flakes, as a result of which the iron from it becomes brittle, unless it is mixed with old slag or cinders of mineral coal'. - See Wealden Iron Bulletin No 19 1999 p50).

Cyril Hart, in his book on the industrial history of

Dean, states that several skilled workmen migrated from the Weald to work in Dean, but there is little evidence to support this. There is record of a third party link, however, between the Midlands ironmaster, Thomas Foley, who operated a furnace in Dean and married the daughter of the Wealden ironmaster John Browne and operated in partnership with him on the Weald from 1652 to 1660. Also, Benidicta Hall, heiress of the Highmeadow Estate and ironworks, married into the Gage family of Firle.

One marked similarity between Dean and the Weald, Ian Standing concluded, was that neither successfully entered the steel age, the focus moving to the Midlands, the north of England and South Wales.

About 50 members attended the presentation, showing their appreciation by questioning the speaker in detail after the final slide had faded away.

Bibliography

'Ironmaking in the Forest of Dean' Rev H G Nicholls Facsimile of 1866 edition Pub Douglas McLean, Coleford (1980)

'The Freeminers of the Forest of Dean' Cyril Hart British Publishing Corporation, Gloucester

'The Industrial History of Dean' Cyril Hart, David & Charles, Newton Abbot

Schubert's History also includes a general account of the district and various papers of the late George Hammersley deal with aspects of the 17th & 18th centuries.

*Plan dimensions of excavated Wealden blast furnaces have varied in size from Batsford at 5.5 metres square to Pippingford I an ordnance-casting furnace at 8 metres square. (see Cleere & Crossley, The Iron Industry of the Weald p244) DMM

AGM VISIT TO WALDRON BLAST FURNACE SITE

This was the first time WIRG had visited the site since it was turned into a garden; perhaps 30 years ago. The bay is still in situ, the tail race and the... position of the wheel pit are still to be seen and it is possible to probe down to a large area of sand-

stone beside the stream; probably the furnace structure. The lawn (now), high above the furnace area, would have been suitable for the loading ramp, with the charcoal shed and ore shed; this was where a distinct "edge" was detected using the metal detector.

A very interesting find was a cast iron path in front of the farm house (possible the ironmaster's house). The path was 4.9m long and 0.8m wide, with the top surface curving down to the garden and showing the exact shape of the mould that it was cast in (the path being upside down now!). It is estimated that the path weighs about 2860kg (2.8 tons). Although it is now cracked into three parts the edges match, showing that the path must have been cast from one tapping of a furnace full of iron or perhaps a pair of furnaces operating side-by-side. Another artefact from the site is what appears to be a ladle, probably made of wrought iron, with the remains of either a metal handle or tang for a wooden handle. It was shaped like a deep, oval spoon, 11 by 8 inches and about 6 inches deep. It was in a poor state of repair, with sandstone embedded in cast iron on the inside surface and a large hole where a pouring lip might have been. It is assumed to have been used to pour molten cast iron into cannon ball moulds, or perhaps some other small mould.

Brian Herbert

FIVE YEARS DESPERATELY SEEKING SWEDENBORG

For those interested in the lines of enquiry which lead to a particular result, the preparation of the edition of the part of Emanuel Swedenborg's treatise, *De Ferro*, which appeared in Bulletin 19, this summer, was lengthy and may be considered worth the telling. In 1993, while browsing in the Science Museum Library, at Imperial College, London, researching an article for the Bulletin, it occurred to me that I might try to find a reference to Swedenborg, whose illustration of the Gloucester furnace, Lamberhurst, had appeared in the pages of Straker. In the indexes I tracked down the illustration in the volumes of the *Description des Arts et Métiers*. Written in the second half of the 18th century, they were a magnificent French do-it-yourself manual, and in them was included a translation of Swedenborg's treatise. Originally written in Latin, the translation was, of course, in French, so Swedenborg was laid aside after a brief, and somewhat fruitless attempt at a render-

ing into English.

Some time later, at a gathering at Dot Meades' during a particularly wet time of the for-aying season, when the streams were too full to walk up, I showed the photocopy I had taken of the French version of *De Ferro* to Anne Dalton. A student of the language in her youth, Anne was keen to attempt to put it into English, so took it away with her. A few months passed before I received a draft from her, with a sheaf of notes which she and her husband Peter, who had helped her with the draft, had compiled. What did this mean ..., and that...? and who was Emanuel Swedenborg anyway? Being Swedish, he had used many units of measurement from his native country, so an old friend, who had worked for a time in Sweden, was an early port of call in the search for meanings. I recalled once passing a shop in Bloomsbury with the name of Swedenborg above the window, so a search in the London phone book introduced me to the Swedenborg Society, who were able to provide me with some background information about the great man. Time passed, and revisions went back and forth. I had occasion to travel to America, and while in Boston I chanced upon the Swedenborg Bookshop in Newbery Street. Had anyone previously translated *De Ferro* into English? No one thought so.

Back in England I had begun to 'surf the Net', so what better to search for than Swedenborg. I was astonished at the number of sites on the World Wide Web devoted to him. Soon I was corresponding with Swedenborgians in Ohio, and learnt about his life and a little about his teachings (for most of the information I gleaned was from the Swedenborg Church). Later I joined the arch-metals mailbase, an internet discussion forum on matters concerned with early metallurgy. An enquiry about Swedenborg brought more interest and correspondence, from Switzerland and Denmark as well as the UK, answering some obscure questions about unfamiliar terms. But a nagging doubt lay in Anne's and my mind: how accurate was the translation from Latin into French. Ought we to be looking at the original Latin? Again the internet came to the rescue. With internet access to the library catalogue of London University I tracked down a copy of the original treatise, and on the morning they were closing before Christmas 1997 I called in at Malet Street, and was allowed to read and copy the microfilm they held of the New York City Library's copy. Oh, the folly of youth! I gave up Latin at the age of fourteen.

Who might know enough Latin to be able to have a stab at a translation? I phoned a clergyman friend, and he put me in touch with Tom King, a retired public school classics master, whose name had already crossed my mind as I had answered an enquiry of his concerning Ardingly furnace. I rang him to ask if he knew of anyone, and he volunteered himself.

If any one is in search of an absorbing hobby, it is hard to beat such detective work!

JSH

MARK BRACEGIRDLE

10.9.1912 - 22.6.1999

Many WIRG members will have fond memories of excavating alongside a jolly, enthusiastic, highly knowledgeable figure with flowing white locks, at various sites during the 70s and 80s. Mark Bracegirdle, who died in June at the age of 86, assisted James Money, David Rudling and Nick Wickenden at Garden Hill, the Cansiron Roman tile kiln and other Ashdown Forest excavations, enlightening students with his expertise and amusing all with his wit.

"A polymath who stood against imperialism," as The Guardian described him in its obituary, Mark had lived a very varied and adventurous life. Born into an artistic, left-wing Chelsea family, he emigrated to Australia with his mother and brother in 1928 and worked on outback sheep farms during the Depression. Then he was apprenticed on a tea plantation in Ceylon, where the working conditions of the Tamil labourers inspired him to organise a protest movement. The subsequent - unsuccessful - case against him became a cause celebre in the independence struggle there. During the war Mark was involved in clandestine refugee work, helping to smuggle Jewish women out of Germany. He then qualified as an engineer, and, married, settled in Gloucestershire and worked on aircraft engine design. In the 70s he had a spell as transport manager for the flying doctor service in Zambia, before becoming a lecturer in engineering at North London polytechnic. After retirement, he helped in London University's extra-mural department of archaeology, working on the bone finds from the excavations at Runnymede, Islay and Orkney.

When I arrived to dig at Garden Hill, 20 years ago, the first person I met was Mark. His cheery welcome was an encouraging start, and when we

discovered that we were near neighbours in Wandsworth, it was the beginning of a lasting friendship. Seven years ago, Mark was afflicted with a stroke which half paralysed him but in no way diminished his joie de vivre, his insatiable curiosity and his warmth. Bon viveur, bon buveur, inventor, expert on and lover of plants, birds, bees, art, science, history, fungi, cookery - Mark seemed interested in everything under the sun, and, as many at his funeral said, he seemed to know everything about everything - though he wore his learning lightly and gracefully.

His funeral was of the simplest - entirely out of doors, the only service being readings and impromptu words from family and friends. He was buried, admirably ecologically, in a cardboard coffin, next to his wife Mary. And although the graveyard lies off Garratt lane between Wandsworth and Tooting, the setting is appropriately rural - an open grassy knoll with trees, wild flowers and butterflies around. RIP, Mark.

W Cater

TRAVELLERS AS AN AID TO DATING FURNACE OPERATION

A writer in the *Sussex Family Historian*, vol. 13, no.5 (March 1999) mistook the traveller who died at Heathfield furnace in 1743 for a *travailleur*, a worker. In the next issue (no.6, June 1999) I cited evidence from the East Grinstead parish registers and the Cowden parish accounts to show that travellers, vagrants, are frequently recorded as dying at furnaces, attracted by the warmth.

WIRG members know this already, of course, but it occurs to me that such entries would be worth tracking down as evidence of the dates when particular furnaces were operating that might add to what is known from other sources.

M J Leppard

MEDIAEVAL PLACE NAMES AS EVIDENCE FOR IRONWORKING

In Newsletter 29 (Spring 1999) Mr Herbert asks whether Isenhurst in Heathfield, where three bloomery sites have been found, derives its name from a word for iron. The English Place-Name Society, citing early forms from 1279 onwards, suggests it means 'iron wood'.¹ Mr David Padgham has recently drawn attention to Simon atte Synderford in the vill of Isenhurst in 1296, after which date that surname is no longer found

there, though in 1327 and 32 atte Forde is².

Other examples of the surname Cinderford/Synderforde are found in 1292 in the manor of Hauekeherste, apparently in East Hoathly³, and in 1392 in Herstmonceux⁴.

Isewo(r)de in Kaymer and Claytor may be another iron name. It is a family name there in 1296 and 1327⁵ and land called Isewodes was part of Keymer manor in the 17th century.⁶ Isfield, first recorded in 1215, and the lost place-name Isecumbe in the tithing of Ashurst in East Grinstead, first noted in 1287⁷, could also be iron names, though the Place-Name Society relates both to a personal name Isa⁸. The Iron River and Iron Cut near Isfield⁹ and the name of Richard Faber (Smith) in Ashurst tithing in 1285 and 1287 support the iron interpretation¹⁰.

Such names may suggest fresh areas for investigation. M J Leppard

References:

- PNSx = Mawer, A & Stenton, F M, *Place-names of Sussex*, PART 2 (1930)
 SRS = Sussex Record Society
 1. PNSx p32
 2. Locus Focus (forum of the Sussex Place-Names Net) vol 2, no 2 (Autumn 1998) p 10 citing SRS vol 10 (1910) pp28, 204, 315
 3. SRS col 60 (1961), p 18
 4. PNSx 482
 5. SRS 10 pp45, 177
 6. SRS. vol 34 (1933) pp 32, 35
 7. Rev W Budgen's notebook 110, Barbican House, Lewes
 8. PNSx pp 396, 328
 9. Sussex Notes & Queries vol 3 (1930-31) p 89
 10. as note 7

NEWS FROM ELSEWHERE

Rebuilding the past by Tim Smith

A remarkable project is under way in Finland; the rebuilding of a 19th century timber clad blast furnace for which only the lower stone walls, standing some four metres high, had survived. An authentic reconstruction of the timber built top half of the furnace is possible as the original drawings have survived along with a detailed photographic record.

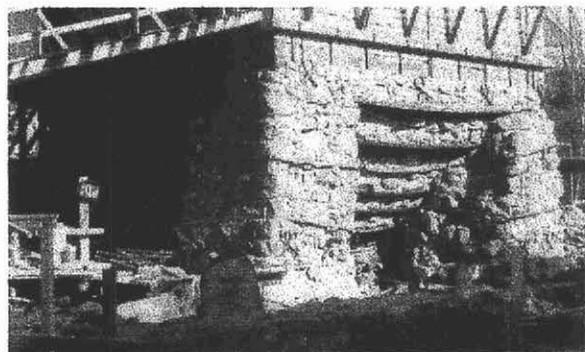
Located in the small town of Karkkila, an hour or



The Hogfors blast furnace, conserved with a modern roof, prior to reconstruction

so's drive north-west of Helsinki, (see map p7) the furnace is one feature of several surviving buildings of the Hogfors ironworks. (The Swedish sounding name is a result of the area having been part of the Swedish Empire in the 16 and 17 centuries).

Built in 1823, the blast furnace is relatively modern, but is constructed to the traditional Scandinavian 'German' design consisting of a square stone lower section with one blowing arch and one tap-



Detail of blowing arch (right) showing 'steps' of iron lintels and iron reinforcing ties

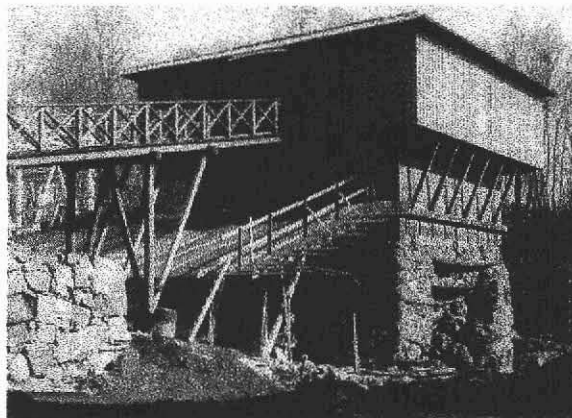
ping arch in adjacent walls, surrounding a circular firebrick shaft rising some 15-20m in height. The upper third of the shaft was surrounded by timber walls, continuing the square stone construction, and capped with a covered charging platform. The space between the outer square walls and the shaft was infilled with soil to provide insulation, and the throat was surrounded by a charging platform and covered by a roof, a section of which could be slid back to provide ventilation when the furnace was in use.

An unusual feature of the Hogfors furnace is that the charging platform is cantilevered out beyond the stone walls providing additional space to prepare the charge which was brought up to the top of the furnace by means of a ramp.

In a £1m project commenced in 1996, the National Board of Antiquities of Finland, is nearing completion of a project to rebuild the missing timber

work, including the construction of an adjacent roasting kiln. By comparing the photographs of the conserved furnace prior to reconstruction with that nearing completion, the remarkable reinterpretation of the evidence is revealed. The work is being carried out to a very high standard using craftsmen and long term unemployed, and materials to specifications as close as possible to those of the original furnace. This posed a particular problem in finding sufficiently large timbers to reconstruct the walls - built of rough hewn logs - as modern forestry practices do not allow trees to mature to the size demanded, requiring timber to be imported, to Finland!

Hogfors ironworks was established in 1820 to provide iron for the local foundry - which still



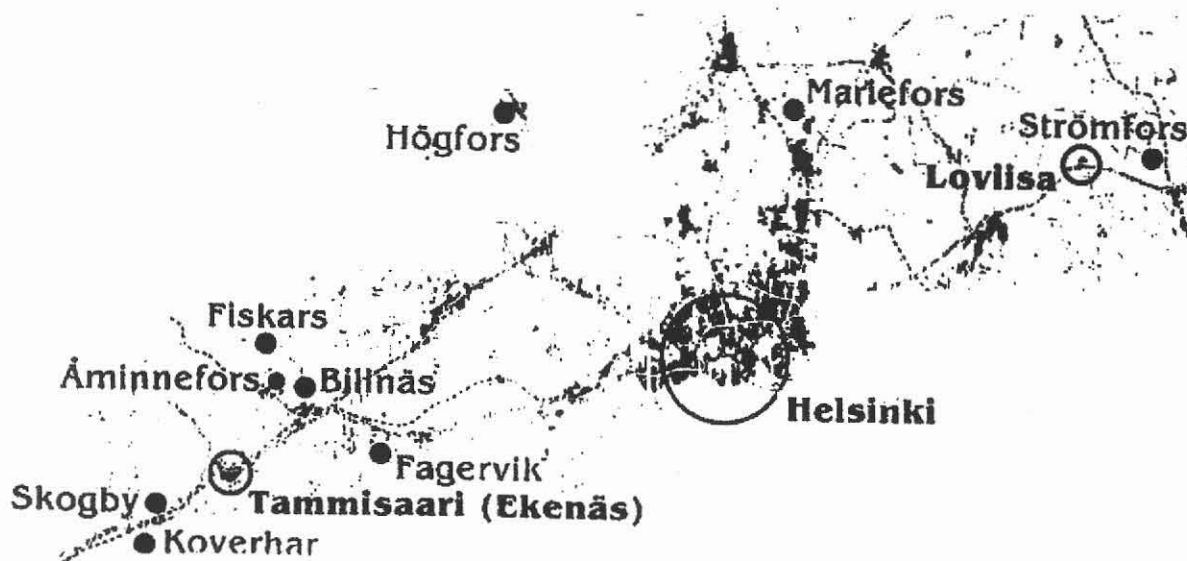
Restoration of the Hogfors Blast Furnace in Finland, built in 1823, is nearing completion

survives today as the JOT company. The charcoal fired blast furnace which used local ore was commissioned in 1823 but operated only intermittently and was closed in 1915. Although primarily built to supply the foundry with cast iron, at a later date some of the iron was refined using the 'modern' Cort's puddling process (patented in 1874) - unlike most

charcoal blast furnaces which refined iron using the traditional hammer forges.

The Hogfors furnace was particularly 'old fashioned' in that it used a cold blast and water driven bellows; although the 'cold iron' produced was preferred for certain applications it was made at the expense of a considerably higher fuel consumption.

The puddling furnaces were supplied with air from water driven bellows, an old photograph of the time showing a series of four waterwheels downstream of the blast furnace to provide the power. Water was no problem since the site is built alongside a fast flowing river where it emerges from one of Finland's 186000 or so



Southern Finland showing main surviving ironworking sites

lakes!

There is an excellent museum alongside the site housed in the ironworks' office. Essentially devoted to the foundry industry, the Suomen Valimomusea devotes one gallery to ironmaking including a full size model showing the gathering of 'lake ore' - an iron-rich precipitate scooped up from the bed of lakes into which iron rich water flows. The gallery also illustrates prehistoric bloomery ironmaking, the operation of the charcoal blast furnace and refining by forge, puddling and Bessemer converter.

Other 'Iron Villages' (see map p7)

Although ironmaking relics are not as prolific in Finland as in Sweden, nevertheless there is plenty to see in the country.

Some 60 miles southwest of Hogfors, is the old ironmaking town of **Fiskars**. Little plant has survived here, but many splendid buildings of the era still stand including a copper foundry and a museum housed in old stables. Close by is **Billnas**, which also used to make iron, but now boasts one of the oldest hydroelectric power stations still in working order. This can be visited.

Not far to the south is **Skogby** blast furnace which stands in a rural setting alongside a lake. This is unfortunately not sign-posted and requires some diligence in searching.

Fagervik to the east boasts a complete forge complex. One belly helve hammer of unusual design has survived, but unfortunately not the Franche-Conte hearth which was used to refine the iron. (This hearth was an intermediate between the single German hearth and the two hearth finery-chafery Walloon concept. It had two tuyeres in a single bed of charcoal to provide separate fining and a reheating zones as a fuel saving measure).

Further afield, some 55 miles east of Helsinki, is **Stromfors**, where, like **Fiskars**, a complete ironworks village has survived, but this time a large and a small forge hammer have been conserved and a replica hammer built which can be worked for demonstrations.

In all, some nine 'ironmaking villages' have been preserved across the country - mainly in the south - and are described in an excellent brochure in English 'Ironworks Villages Finland' available free from the Finnish Tourist Board.

Opening times:

The sites are open all year, but during winter months (September to April inclusive), access to the buildings is only on weekends or by prior arrangement.

Contacts

Hogfors Foundry Museum +358 9 (0)2250 5261

Stromfors +358 (0)19 618 474 (Fax 475)

Fiskars Tourist Office +358 (0)19 237 041

A brief description of Fiskars is available on the internet at <http://www.fiskars.fi/village/indexe.htm>

Acknowledgement

Thanks to Wendy Horton of Ironbridge Gorge Museum whose original article in 'Ironbridge Quarterly' No4 1997 prompted me to visit Hogfors and adjacent sites.

A RUNAWAY APPRENTICE

An amusing item from 19thC USA, via www.connerprairie.org/cp/fuel.htm

6 ¼ CENTS,

And a Basket of Charcoal REWARD!

6 CENTS,
And a Basket of Charcoal REWARD!

RUNAWAY from the subscriber, living in Fairfield, Franklin county, on the 14th instant, an indentured apprentice to the Blacksmith business, named **DANIEL MOORE**, between 14 and 15 years of age; dark complexion; and heavy built. All persons are forbid harboring or trusting said boy on my account. Whoever will return said boy shall receive the above reward, but no thanks.

WILLIAM OSBORN.
Fairfield, July 15, 1833. 20-3w

RUNAWAY from the subscriber, living in Fairfield, Franklin county, on the 14th instant, an indentured apprentice to the Blacksmith business named **DANIEL MOORE**, between 14 and 15 years of age, dark complexion and heavy built. All persons are forbid harboring or trusting said boy on my account. Whoever will return said boy shall receive the above reward, but no thanks.

WILLIAM OSBORN
Fairfield, July 15 1833.

The diagram to the left of the text is a blacksmith's vice. The description of the apprentice is not exceptional; most blacksmiths are of a "heavy build" and anybody working with charcoal will have a "dark complexion"; as the smelting team

well knows.

Brian Herbert

Brain Herbert & Dot and Tony Meades & Peter Goodall did the investigation. BH

1999 (PART 2) FORAY REPORTS

A Possible Bloomery on "Domesday Ferrara" area

A field on Tablehurst Farm, where the Domesday Ferrara might be situated, has recently been dug-out for a small reservoir. The bay almost corresponds to the south end of Cow Field, TQ43133578, whilst the centre line of the reservoir is the stream to the north. The excavated field is between the Minepit Wood, TQ43403578, and Spanden Wood, TQ43003585.

Mr Billings, the collier who supplies charcoal for the experimental bloomery furnace, and whose charcoal kiln is close by, discovered a small area of slag when the mechanical scraper was digging out the pond area.

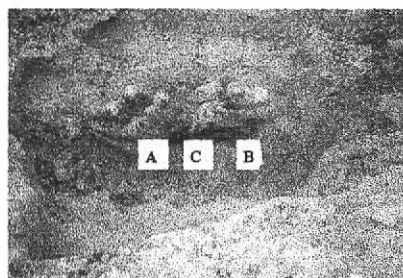
It turned out to be a small bloomery furnace site, although only the base of the furnace remained, consisting of a layer of charcoal fines with a few pieces of the furnace wall covered in once-molten



Bloomery remains in foreground of excavation for reservoir – about 1m below present-day surface

slag. A rough sketch was made as the furnace was dismantled and a piece of charcoal saved from within the furnace structure. There was negligible slag around the furnace, and very little in Cow Field.

The committee will decide whether it is worth getting a carbon 14 dating for this site, as it is the only bloomery furnace which has been pinpointed in the area. It has been estimated that the base of the furnace must have been about 1m below the land surface, although this does seem unlikely; there is a considerable slope to the field which is Ashdown Sand some 10s of metres below the bottom of the Wadhurst Clay.



**Close-up of remains: A-B=14ins. (40cm)
Top (excavated) surface to C = 5 ins (13cm)**

These remains seem to indicate a very tiny furnace such as the prehistoric ones described by Schubert DMM

Photographs by kind permission of Peter Goodall:

Blechingley, Surrey, to search for a Straker bloomery site

The bloomery furnace site in Blechingley (variously spelt) noted by Straker in "Wealden Iron" p 457, and called "South Park", was also noted in Uvidale Lambert's books on Blechingley in 1921. Mr Lambert lived in South Park Farm, close by, and his granddaughter lives there today. He also stated that "there is some evidence that before the middle of the 14th C some of the population of Blechingley had moved south to the growing hamlet of Horn, where iron ore was being extracted in large quantities". This would include the village of Outwood, where WIRG tried to date a bloomery furnace site at TQ33604538; without success. Other finds of slag, in the area, have also been recorded by Robin Tanner at TQ306457, TQ322449 and TQ322446.

The obvious place to search was "Cinderfield"; however, the foray group also studies the surrounding landscape and geology. We were well equipped to do this with our president and geologist, Bernard Worssam taking part in the foray. Although an ore seam is not noted on the geological map for this northern extremity of "Weald Clay" geological stratum we know that bloomery furnaces are usually built near to a source of ore. As we hoped, a seam of ore was duly found, which, passed close to the two bloomery furnace sites considered below.

With nothing discovered by midday, we ate beside "Cinderhill Wood" in "Scrubbles" or "Scribbles Pasture", and not surprisingly found some bloomery slag. However, the actual site was at TQ33854830, which is the boundary of the above field and "Seven Acres" or "Barn Acre". The slag covered an area about 100ft in diameter and was at least 1ft deep, the slag was full of air holes and very little tap slag was visible.

Moving on to "Cinderhill", where we expected Straker's site to be, we were confronted with a 15 acre field under grass. A decision to aim for the highest point was well rewarded by a site of about the same size as the previous one; as near as the metal detector could detect. Once again the site bounded two fields at TQ33204823, noting that the field to the north was woodland in the recent past. Should it be possible to section this site for dating purposes, the woodland looks to be the better place because there are some large pieces of slag here, probably because it has not been ploughed so much.

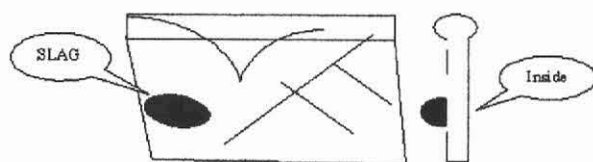
A world war two site was found at TQ33604830, consisting of a hard standing of concrete, maybe for a searchlight although a possible barrage balloon tether was noted. A concrete road to this site passed over the bloomery site at TQ33854830.

This foray will be the subject of a full article in the next Bulletin.

Foxhunt Green

The foray started near the stream at TQ546179. This proved to be very successful, with another quite large bloomery site discovered at TQ54671752.

Much of the slag is on the 10 feet high east bank



Heathfield Bloomery Furnaces. Markings on one piece of pottery, 1.5 by 3.5 inches, found at Tilsmore Wood, Roman bloomery site, Heathfield, TQ57632174 with slag attached

of the stream in Ralph Wood; the site will be named "Ralph Wood 1". A bloomery on a high bank beside a stream is common to many of the large Roman sites in the eastern Weald, although

this site is much smaller.

There was much slag in the stream, probably due to the bank collapsing. Pottery finds have been dated to the Roman period. We also discovered a new bloomery site on the side stream; undated: to be called "Ralph Wood 2".

Further down stream a very small stream cascaded in from the east; looking very unnatural! This turned out to come from a secret, man-made valley containing three pits, one very large, with a 30 foot deep bank on the north side, and two other much smaller pits. The pits are some 400 yards south of the bloomery site. The geology is suitable for ore and/ marl digging. Continuing south to Minepit Wood, TQ54651675, no minepits were to be seen until, further east in the same wood at TQ55101680, one large and many small pits were found. BH

High Hurstwood

We were alerted to this site by Graham Weller, who operates a mechanical digger. He had found slag whilst levelling a field to the rear of 'Tilgate', Perryman's Lane at TQ4918 2605, owned by Mr and Mrs Gribble.

With the owners' permission, Graham scraped a shallow trench with the digger, revealing patches of heavy charcoal staining, containing much slag, some burnt ore and in one place a patch of very light grey and pink clay. The rest of the area, about ten metres square had already been lightly scraped and showed a scattering of slag. There may have been more beneath the surface. Scraping with a trowel revealed some quite large pieces of rather soft black pottery within one of the black, slaggy patches in the trench. Another piece of rather similar ware but from a different pot was found in the spoil heap where the digger had placed soil from the area. The pottery has been tentatively identified as late Romano-British but will be submitted to experts for their opinion.

There was also a piece of clay formed from 'sausages' and vitrified on one side, similar to finds from the Cowpark excavation which were interpreted as furnace lining, or re-lining. In 1982 A Roman coin of the emperor Honorius AD 393-423 was found in the same field which date ties in well with the tentative date of the pottery. DMM

EXPERIMENTAL IRON-SMELTING

As well as repairing the fence around the site, two more smelts have been made this year, both successful, now making three in succession. They have all produced a 10% yield of iron, but with a vast consumption of charcoal; this was even more noticeable when the latest bloom was consolidated in a charcoal-fired hearth.

For example :-

1. 10kg of pre-heating charcoal.
2. Charcoal equal to 10 times the weight useful iron smelted.
3. 3kg of charcoal whilst smelting down the last ore.
4. 10kg of charcoal for forging

This amounts to some 30kg of charcoal, costing about £17, for 750g of consolidated iron, i.e. £21 per kilo.

The attempt to forge the latest bloom produced 10 pieces of but fairly consolidated iron. One piece was later filed and polished to show a beautiful, shiny, steel-like surface:

We have not yet managed to get the molten slag running from the furnace; it just builds-up inside.

There are two possible reasons :-

1. The heat at the bottom of the furnace is being drawn into the ground by the 300mm thick furnace walls.
2. The tuyere might need to be pointing down at a greater angle, increasing from 10° to 30°, to heat the lower part of the furnace.

The first item will require a furnace rebuild (when the present one collapses), but the second item will be tried during the next smelt.

We welcome a new team member, Peter Goodall, of Forest Row; assuming that he can stand the heat of the furnace, grime of the charcoal, hard graft of pumping the bellows, not to mention the delicious cakes and biscuits that Margaret Tebbutt so often brings for us!

Brian Herbert

JOE PETTITT 22.10.09 - 12.10.99

I first met Joe at a meeting convened by David Crossley and Henry Cleere at Brighton Pavilion in late 1967. He and I and a roomful of people listened to the convenors as they outlined their plan to gather more information about the Wealden

iron industry, building on the achievement of Ernest Straker. Their aim was to produce book which would incorporate new field research and their own new research into ancient techniques. At the end of their talks they asked for volunteers who would organize field groups in different areas of the Weald. Joe was one of a number of people who offered to do this and, as it turned out, the only leader who managed to form and keep a group going. Three of us who lived near Buxted joined his group. Pauline Archibald, Mr Hines who was a journalist and myself, heavily pregnant!

Nothing happened for some time. I had my baby and he was about three weeks old when we had our first foray. We met at our house and set off along the river which runs past Iron Plat and along the boundary of our farm. Only Joe really knew what we were looking for - iron slag. Pauline brought along a piece of slag and was somewhat mortified to be told that it came from a domestic boiler! I hadn't a clue. Typically, Joe set us at ease, remarking that he had just got on the train a little earlier than we had. My only contribution, since I was the only one with wellies, was to get into the river, the better to search for slag; we did find some iron slag and that spurred us on.

After that, the Buxted Group went from strength to strength. Our meetings fell into a pattern: Once a month, we would meet at our house, chat about the last foray and bring everyone up to date and Joe would show us information and field names that he had gathered, on which we would base our new foray. This would occupy Saturday afternoon and Sunday morning, after which Joe would return to his home in Reading. These forays were doubly illuminating for Joe knew a lot about plant life and would point out interesting species as we went along. Due to his documentary work, we were usually successful in finding 'new' sites and his and our researches later formed the basis of much published work.

It was Joe who found the documentary reference, complete with map showing Langles Forge which led us to the previously lost site mentioned in the Hogge accounts.

Joe's wife Phyll was a great support to him and so was his friend John Edmunds, who soon became a valued member of WIRG and often drove them all to forays.

Those of us who accompanied him on those early forays, which often included mums and their children, will always have very happy memories of Joe. Historian and history teacher, with a great love of literature and music, Joe was a hardworking, kind and modest man, with a delightfully quirky sense of humour and immense historical and general knowledge, who provided WIRG with its initial impetus. We thank him for that. Rest well, dear Joe. Dot Meades

DATES FOR YOUR DIARY

Winter forays have been arranged as follows:-

9/Oct/99 Walking study area west of Herrings Farm – Brian Herbert

13/Nov/99 Walking at Lavertye, E Grinstead, seeking Domesday bloomery site BH

11/Dec/99 Excavation – Blechingley, Surrey. BH

8/Jan/00 Walking wood next to Sharphorne Brickworks where there are known and dated minepits....Jeremy Hodgkinson

12/Feb/00 Excavation at Ralph Wood 2, Foxhunt Green.....Ashley Brown

11/Mar/00 Walking at Ashour Wood, Blackham (East of East Grinstead) to search for bloomery sites.....BH and Peter Goodall

8/Apr/00 Further excavation of slaggy area near Misbourne Gill on Ashdown Forest Dot Meades and Margaret Tebbutt.

NB The objective of the above excavations is to find datable pottery in the slag heaps which are attached to bloomeries. This usually involves staking out one or more measured rectangles in an area where slag is thickest and therefore a furnace is unlikely to be found. If a structure were to be found a decision would have to be made about its future, carefully planned, excavation. DMM

New members wishing to take part in the above forays should contact Hugh Sawyer, 96 South Meadow, Crowthorne, Berks, RG45 7HP, Telephone 01344 780439 (after 1500H). Email hugh-sawyer@compuserve.com

Saturday & Sunday 20th and 21st May 2000

Ironsmelting in the Weald

Two Day Schools

Jeremy Hodgkinson

The technology, history, geography and economics of Wealden iron. We examine iron smelting from a practical standpoint at a furnace on Ashdown Forest.

10am - 5pm; site visits to Pippingford included.

Fee £65; Venue: Nutley War Memorial Hall, Nutley, near Uckfield.

To enrol: phone University of Sussex CCE, 01273 678527.

5th February 2000 – WIRG Winter Meeting Members and friends welcome. You will be receiving a notice from our Secretary with full details of this but please note the date and try to come..

27th November 1999 2.30-6.00 pm

Dr Peter Brandon – a one-day school at CCA Hall, Park Road, Crowborough on The Sussex High Weald – **Changes in the Landscape and Society up to the 16th Century**. To be followed in the new year by The 16th Century and Beyond Contacts: Mrs Janet Locke 01892 661274 and Miss Pam Gifford 01892 652436.

BOOKS AND PUBLICATIONS

Geddes, Dr. Jane Medieval Decorative Ironwork in England 411 pages and 600 photographs, hard-back £75

Published by Oxbow Books, Park End Place, Oxford OX1 1HN

The book arose out of work undertaken for Dr Geddes doctoral thesis and deals with the development of design and techniques in the period 1050-1500.

The Journal of the Historical Metallurgy Society Vol 32 No 2 for 1998 Peter Crew: Laxton revisited: a first report on the 1998 excavations.

FROM THE EDITOR

The NEW (shorter) address for WIRG Web site: is: <http://www.np03.dial.pipex.com/wirg>

The NEW e-mail address for Newsletter contributions is: wirgnews@freeuk.com

Many thanks to all our contributors. Please send in your iron-related observations, finds, news of what is happening to your local sites, etc.

Items can be legibly written, typed, emailed or on disk. This is your newsletter Please contribute if you can.

Copy date for next newsletter will be February 1st or thereabouts.

Wishing you all "Good Wirging" in the year 2000 . Dot Meades

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