



Newsletter 83 Spring 2026

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Icklesham Roman Road Update: March 2026

Newsletters 81 and 82 reported the uncovering in November 2024 of a section of a Roman road, metallated with iron slag, between Icklesham and Winchelsea in East Sussex.

During the winter of 2025/26 further geophysical surveys have been conducted in several locations around Icklesham. They have identified targets for future examination including possible bloomeries and hitherto unsuspected settlements of uncertain age. The alignment of the Roman road west of Icklesham has not been found. It is possible the present A259 follows the route of the Roman road.

A programme of excavations in 2026 is being prepared by Cam Ross, the lead archaeologist. WIRG members would be much welcomed, especially when suspected bloomeries are being excavated. It is the intention to expose a sizable section of the road between Icklesham and Winchelsea so that it can be seen by visitors to the Rye Show in mid-August

Dates of the excavations in 2026 have not yet been finalised. If you wish to participate at any time please let Bob Turgoose know by email at bobturgoose@yahoo.co.uk

As the times and details of the 2026 programme become available notices will be placed on the WIRG website

Bob Turgoose

Notice of AGM and Summer meeting

Save the Date

August 1st WIRG Summer Meeting and AGM

Fairwarp Village Hall TN22 3BT

Visit to Hendall Furnace in afternoon

Details to follow and on web site

Captain Cook's Abandoned Guns

In WIRG Newsletter 38 (Autumn 2003) I reported seeing, on a visit to Sydney, Australia, a gun cast by John Churchill at Darwell Furnace. It had been one of six 4-pounders that Captain Cook had to jettison after his ship, *Endeavour*, had been holed on the Great Barrier Reef in June 1770. The guns had lain on the reef for almost 200 years until, in 1969, a team of divers recovered them. The coral that had grown over them was carefully removed revealing them to be in remarkably good condition, even to the point that two of them were found to contain shot and gunpowder in readiness to fire at the time they had been dropped into the sea.

(Fig. 1)

Recently I was in correspondence with a member of the Captain Cook Society, who enquired as to the founders of the guns, and a discussion ensued about the markings on each of them, where they were made and where they are located now. All six guns bear the cipher of George II so will have been cast no later than 1760. On each of them their engraved weight is still clearly visible, all about 11½cwt. The trunnion marks indicate where or by whom they were made, a system which was made compulsory for guns cast for the government from about 1703. Three of the *Endeavour's* guns bear a letter **G** in relief on the right trunnion indicating that they were made at the Gloucester Furnace at Lamberhurst. The other three have a **D** in relief on the right trunnion and **IC** on the left, products of John Churchill's furnace

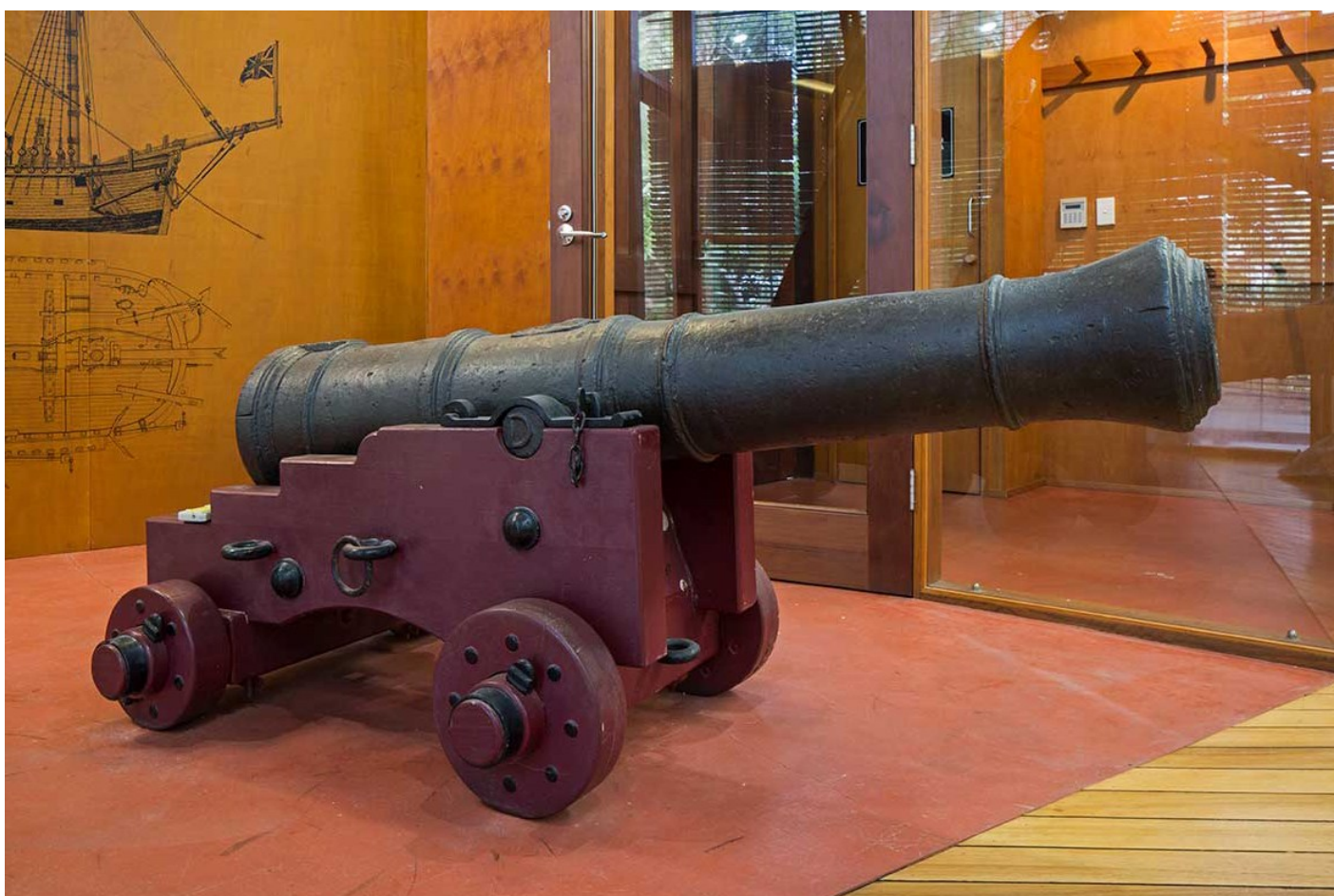


Fig. 1 Four-pounder gun cast by John Churchill at Darwell Furnace. Mountfield, Sussex, in 1759 and jettisoned from *HM Bark Endeavour* in 1770; Cooktown Museum, Queensland

at Darwell. Churchill also operated the furnace at Robertsbridge and there is a 12-pounder at the Royal Armouries museum at Fort Nelson, Fareham, with **R** on the right trunnion and **IC** on the left.

Churchill leased Robertsbridge in 1754 (the correspondence leading up to this and the lease are in *Wealden Iron* 2nd ser. 11, 1991), and he must have taken on Darwell soon after, so there was only a short period before 1760 when his guns could have been cast there. Three warrants for a total of 48 4-pounders of 5½ feet were issued to Churchill by the Board of Ordnance in October 1759, and another retrospectively for nine more in February 1760, the only warrants for guns of that size that he made in that period. These were all paid for in December 1759. Whether they were all cast at Darwell or some at Robertsbridge is not known.

The guns cast at Gloucester Furnace were probably made during the tenancy of Richard Tapsell, who had taken over from John Legas in 1752. Lamberhurst was one of four furnaces – the others were Beckley, Brede and Waldron – that were operated by the partnership of Tapsell, Robert Bagshaw and Andrews and John Harrison. The Board of Ordnance Bill Books for the period 1750-60 list a small number of warrants for guns issued to Tapsell on his own, but none of these was for 4-pounders. The partnership were the recipients of three warrants issued for a total of 118 4-pounders in January and March 1757 with the March batch paid for in June of that year, and the rest not until 1760. A further two warrants had been issued in July 1756 and March 1757 to Harrisons and Bagshaw alone, for 82 4-pounders, which were both completed in 1757. Thus it is not possible to identify which or

how many of the guns of that calibre were cast at Lamberhurst, but it is most likely that they were among the batches in the former group. All the guns jettisoned, therefore, had been cast at least seven years prior to being used to equip the *Endeavour* when it was purchased by the Admiralty in 1768.

In 1970, after the conservation of the *Endeavour's* guns and the construction of a wooden carriage for each, the Australian Government made gifts of them to places associated with Captain Cook:

IC D

11cwt 2qrs 15lb; Cooktown Museum, Queensland (where Cook beached the *Endeavour* for repairs);

11cwt 3qrs 0lb; Museum of New Zealand, Wellington (Cook's first landfall in Australasia);

11cwt 2qrs 21lb; National Museum of Australia, Canberra (formerly in Sydney; the one I saw in 2003);

G

11cwt 2qrs 5lb; Kurnell Visitor Centre, Botany Bay, New South Wales (now in the Australian Maritime Museum, Sydney).

11cwt 2qrs 7lb; National Maritime Museum, Greenwich, UK;

11cwt 2qrs 2lb; Academy of Natural Sciences of Philadelphia, USA (which led in the recovery of the guns from the sea).

The preservation of the six cannon was undertaken by a team led by the late Dr Colin Pearson at the Defence Standards Laboratories of the Australian Defence Scientific Service and a full report was published by the service in June 1972. In the same year, Pearson also published a paper on their preservation in the journal *Studies in Conservation*. In both

he drew on identifications of the trunnion marks made by Mendel Peterson in his book *History under the Sea*, published in 1965, which claimed that those marked with a **G** had been cast by a firm called Graham and Son, that the guns with **IC** were apparently made by a Joseph Christopher and those with a **D** were by Dawson & Co. or a George Day. None of these appear in the Ordnance Board records in the National Archives for the period up to 1760 (indeed Joseph Christopher and George Day do not appear at all).

A later writer, Dennis Callegari, whose book, *Cook's Cannon and Anchor*, published in 1994, related the whole story of the guns from the 18th century to their recovery, preservation and display, reprinted Peterson's attributions that Pearson had accepted. However, Callegari noted that the assumption that Joseph Christopher had made guns had been challenged in a letter written to Pearson in 1987 by Major JDG Elvin, a retired British artillery officer, who had compiled and privately published an early catalogue of gunfounders and their marks. Major Elvin dismissed Joseph Christopher as a small-arms manufacturer and suggested that John Churchill, operating at Darwell, was the likely maker of the

guns marked with **IC** and **D**.

The trouble with Pearson's and later writers' acceptance of Peterson's attributions, however, and notwithstanding Major Elvin's correction, is that they have become deeply embedded in the catalogues of the museums where these guns have been deposited. Graham and Son, and Joseph Christopher, therefore, have been given some undeserved authority.

A subsequent internet search brought me to four English naval guns in The Mariners' Museum at Newport News, Virginia, USA. From the photographs on their website, a **G** can be seen on the trunnions of two of them, but all four have been attributed to Graham and Son in their catalogue, presumably deriving that attribution from Peterson. The museum also has two 32-pounders marked, respectively, **IC** and **R**, and **MR** (for Master & Raby at Warren Furnace, Worth) and at least one 12-pounder marked **A**, for Ashburnham. My next task is to convince the relevant museums to amend their catalogues ... watch this space.

Jeremy Hodgkinson

Putting it out there:

WIRG on Display

By Tim Smith

The Heritage weekend of 13 & 14 September saw WIRG make its annual pilgrimage to Fernhurst (North Park) Furnace, the grounds being opened for the weekend by WIRG members, Robin and Carla Barnes. This year, Robin and Carla handed over organizing the event to their son. A variety of events and stands make the

The WIRG display shows bloomery and blast furnace ironmaking



day interesting to old and young. Demonstrations of Civil War skirmishes by the Sealed Knot has drums, firearm drill and 'bangs'. Saxon iron-making by blacksmith Joe Tyler, wood turning and carving, timber beam shaping by means of a hand adze while a variety of food stalls including spit roasting of lamb, bacon butties and a vegetarian stall provide refreshments, and of course a beer tent and ice cream van.

Conducted tours of the furnace site – by far now the best preserved in the whole of the Weald following major conservation work which started in 2021 - take place throughout the day. An added bonus this year was access to the gun pit which had been excavated during the previous week in just two days by a team of volunteers. Attendance was busy both days despite occasional light showers on Saturday and more continuous rain from 2pm on Sunday resulting in

the early closure of the event at 4pm. However, the absence of sunshine provided the bonus that an excellent model of the furnace could clearly be viewed beneath its Perspex cover, which fogs up in sunshine.

Visitors to the WIRG stand included one person who brought along an 80cm long Saxon spear head found near South Harting and dated by the British Museum. (picture no next page)

The Museum had conducted some chemical analytical work, the limitations of which we discussed in depth. Another interesting find was a box of spherical stones ranging in size from around 10 to 25mm, some of which had split in half revealing a hollow centre. Found in a garden in Rake, W Sussex, the finder had researched these on the internet suggesting them to be grape shot. However, the low density of the balls and their appearance suggesting them to be sandstone put this theory in





An 80cm long iron Saxon spear head was brought by a visitor

doubt. Subsequent review of a photograph of the balls by geology trained WIRG member, Alan Davies, suggests they are a naturally occurring concretion found in sedimentary sandy environments where minerals precipitate around a nucleus of ancient vegetation or small shells.

If you have never visited Fernhurst Furnace be sure to put next September's heritage weekend in your diary 12 & 13 September 2026 – not only to see the best preserved furnace on the Weald, but also to enjoy a day of activities for old and young. Entry is FREE but donations welcome towards the cost of preserving the furnace which dendrochronology has dated construction at 1560, becoming disused around 1780.

Rye Show

WIRG also had a stand at the Rye Show in August alongside an open excavation of a previously unrecorded Roman Road at Ickelsham. WIRG Chairman, Bob Turgoose has been assisting with this project which is tracing the route which appears to be heading for the former port of Old Winchelsea.

Attendance of the one-day event was estimated at some 3000 visitors to experience a variety of stalls and a large gathering of Classic cars and vintage military vehicles, a dog show and storytelling.

What Bloomery Smelting Trials Reveal About Gases Turbulence & Slags Types

Alan F. Davies

Recent bloomery trials show how combinations of furnace operating conditions and burden features influence the way ore converts to iron, typify furnace slags and enables a smelter to pre-plan re-enactment smelting conditions.

An awareness of how air flows through a bloomery furnace is crucial for explaining different smelting modes and why furnace slags can vary widely between smelts. My comparative trials show how the rate of air blown through a furnace tuyere influences markedly gases behaviours in the furnace shaft, the ore reduction pathway to produce iron and the minerals forming in the furnace slags types.

Causes of Turbulency in the Furnace Shaft

As air enters the furnace, its speed, density and viscosity interact with the furnace's internal structure, the evolving burden voidage and temperature differences. At low blowing rates gases move more slowly up the furnace shaft through the ore/charcoal burden mix. This smoother, more laminar flow enables slower diffusion-controlled reactions between combusting charcoal and ore fragments chemical oxide changes, forming slag and aggregating iron particles. In contrast, at higher blowing rates, the gases are forced to flow more quickly through ever more diminishing burden void spaces, momentary flow channels and turbulent regimes where gases eddying and instabilities begin to dominate.

Reynolds Number value provides a basic measure for laminar, transitional or turbulent gases flow for the furnace size and operating conditions. The underlying calculation uses temperature-dependent gases mix properties and reveals how a higher blowing rate, a decreasing burden void-

age and smaller furnace shaft diameter each add to increases in turbulence. Regression modelling of such smelting factors shows the relative importance of how even modest variations in tuyere blowing rate affect the ore chemical reduction and slagging sequences in the shaft.

Trial Smelts Show Turbulency Effects on Smelting Behaviour

Two controlled smelts using the same furnace and identical ore/charcoal ratios illustrate the significances of smelting modes and the sensitivity of bloomery furnaces to airflow alone.

With low rate blowing, more alike to bellows blowing, the smelt follows a near-equilibrium pathway. Ore hematite reduces to magnetite, then to wüstite, with iron nucleating within a formed fayalitic slag. Furnace slags minerals separations are clearer from more orderly completion of diffusion fractional crystallisation from the slag melt.

At higher blowing rates the stronger, more turbulent air flow raises the carbon monoxide level in the upper furnace shaft. Magnetite now reduces to iron at lower temperatures. Diffusion and chemical reaction rates increase causing disruption of 'steady-state' mineral fractional conversions. This leads to a mix of intermediate and chemically different furnace slags.

Characteristics of Slags Formed

Recovered and analysed slags from a smelt reflect these differences. Slags from a low-blown rate furnace show: a higher proportion of iron olivine (mainly fayalite), a silica-rich white slag and a darker silica-rich slag with only very minor other silicates. A lack of more viscous iron silicate mineral indicates furnace conditions enabled conversion to lower viscosity fayalite and extra silica in the mix. In contrast, the higher blown rate smelt produces lower proportions of

high silica slag types, may be some retained magnetite plus several additional calcium silicate mixes type minerals.

This correlation between slags types and smelting mode offers useful markers for investigators to relate historical slag finds to local smelting skills and capabilities.

Conclusions

Furnace blowing rate is a decisive factor for bloomery furnace behaviour. Different turbulence levels create diverse smelting reduction pathways, different stabilities of the smelting zone and especially a distinctive furnace slags mineralogy. These differences:

- Provide significant markers for assessing furnace operating conditions, smelt outcomes and the local skills available for historical and modern smelting activities
- Facilitate building a regression model turbulence prediction tool for pre-planning re-enactment smelts trialling outcomes for key operating factors values
- Establish an operational context and boundaries for historical bloomeries results by aiding more informed re-enactment smelts.
- The effects of blowing rate is a critical factor to consider whether designing a new furnace, planning a demonstration re-enactment smelt or interpreting slags from a smelt.

Same Design, Different Fireback

In the late-17th-century Petworth House there is a fine fireback dated 1608 (Fig . 1). It may have been one of the 21 backs noted in an inventory of the earlier house on the site that was

Fig. 1: 1608 fireback; Petworth House, West Sussex.



drawn up in 1632 on the death of Henry Percy, the ninth Earl of Northumberland. It is not an uncommon fireback as many copies exist, but it is a curious one nevertheless and interpretation of the various elements of its design is open to debate. In the centre, between two classical pilasters, is a cabled anchor. This is traditionally associated with the office of Lord High Admiral. Prior to his death in 2021 the post was held by Prince Philip, Duke of Edinburgh. In 1608 it was Charles Howard, Earl of Nottingham, who had been commander of the fleet when the Spanish Armada was sent packing. And from 1638 the post was held by Henry Percy's son, Algernon, the 10th Earl of Northumberland.

A symbol of rebirth, resurrection or revival, the phoenix rising from the flames above the anchor cable has no known significance for Howard but may have done for Henry Percy. In 1605 he had been sent to the Tower of London for his somewhat tenuous association with the Gunpowder Plot, so perhaps the phoenix symbolises his hope for release. It did not work, if that was its purpose, for the Earl remained in the Tower until 1621, although in comfortable confinement.

On each side of the anchor is a faun – half human, half goat – disgorging a vine. Fauns were mythological, woodland creatures and symbolic of peace and fertility, hence perhaps the vine. What prompted their inclusion in the design, who can say. Whatever its meaning, the original wooden pattern, with which the mould was formed, had been executed with great skill and precision, for the casting is very fine, with all the elements crisply detailed.

A curiosity is the 4-foot-wide fireback of 1633 (Fig. 2), which was discovered in the 1960s walled up behind a later grate in a farmhouse in Dunsfold, Surrey. It is a pastiche of the Petworth back. Executed in an altogether more, dare one say, ‘modernistic’, style, but characteristic of strapwork designs in the Jacobean period, it has all of the same elements but deliberately more crudely modelled. Some of the elements, such as the pilasters, have been changed and the phoenix no longer has flames beneath it. Was it intended as a satire on the 1608 fireback? for even then it would probably have been easy enough to obtain a casting from its pattern.

Thee two pairs of initials in the spandrels above the anchor are presumably for a husband and

wife. Below are the recessed initials, IM, which are themselves of interest because several other firebacks in the next decade were also the work of someone with the same initials, some of whose earlier work, although largely unsigned, demonstrates a similarly naïve style (Fig. 3).

Firebacks that ape the basic designs of other backs are not uncommon, such as early-18th century English versions of late-17th century ‘Dutch’ ones, but to go the trouble of copying a distinctive fireback, three-quarters of its width, in a different style a quarter of a century later is puzzling and begs the question, why?

Fig. 3: Fireback with two halberdiers, and initials IM;



JSH



Fig., 2: 1633 fireback; in private hands, Dunsfold, Sur-

In pursuit of odd place names

I was recently asked to see if I could find any trace of iron working near to some places with *Cinder* in their name. This was an area north of Cinderford Lane which runs from Cowbeech towards Hellingly and Horam. The name-place hint came from the mid-nineteenth century tithe apportionment maps which included a patch of woodland called Sinderford Shaw and a field called Sinderford Mead. There are twenty cinder~ site names in the WIRG database, none of which relates to the Cinderford Lane area. A ground-inspection of the places revealed nothing of relevance.

Getting a negative result on a search like this is not special. It is easy to miss slag and other residues in large cultivated fields. It is also easy for places to pick up names from other associations. A further look at the WIRG database under *S* for sinderford revealed that Cinderford had already been logged on the supposition that Sinderford suggested bloomery working nearby. Moreover, this record contained an image of the relevant part of the tithe apportionment map.

An oddity of Cinderford lane is that it crosses neither stream nor river, and so has no ford on or under it.

There is an area of mine pits approximately 300m. southwest of the *Shaw* and the *Mead*, and they might overlap a bloomery working area. However, they are on the opposite slope of a stream passing *Shaw* and *Mead* which should not make them “*cindery*”. These minepits could well have fed Cralle during its furnace phase, but that is just conjecture.

Another word widely associated with Wealden ironworking sites is *black*. There are fourteen *black*~ site names in the database including a blackpit and a blacknest. Almost all of the *cinderford* names near Cralle appear to be part of (or adjacent to) Blackford Farm. This large hold-

ing is partly bordered by the upper reaches of the Cuckmere River and bordered by the site of Cowbeech Forge and Furnace (aka “Cralle”). It is plausible to suggest that where Hammer Lane crosses the Cuckmere that there was once a ford metaled with slag. However, modern re-shaping of the land makes this hard to verify. (Hammer Lane is now a boundary of Blackford Farm.)

However, the solution to the riddle may be in the person-name evidence set out by Jeremy Hodgkinson below. There obviously were cinders, and somewhere a ford. But they were attached to a person who was connected with the land. The cinders and the ford were quite possibly somewhere else altogether and imported on the back of a person.

Jonathan Prus

The Akehurst-Cinderford connections

In volume 45 of the WIRG Bulletin (2025) I drew attention to Sinderford Shaw and Sinderford Mead, a couple of field names near Cowbeech, on the western edge of Herstmonceux parish, and to the nearby Cinderford Lane. In his will of 1708 Thomas Tisehurst of Battle left that property to his grandson, also Thomas, noting that it was then in the occupation of John Akhurst. The Akehurst family stayed in the area, for in the 1851 census two Akehurst families were living at Cinderford. But the Akehursts were connected with the Cinderford area in two other ways: firstly, John Akehurst of Cralle in Warbleton, the next-door parish, had operated the Cowbeech iron works and the Steel Forge in the 1640s and 50s, and his son, another John, still retained the Steel Forge property when he wrote his will in London in 1693; and secondly, because in 1731 John Akehurst of Laughton had married Susanna Cinderford at Framfield, and

their youngest, and sadly short-lived, son was named Samuel Cinderford Akehurst. He died, an infant, in 1752. Furthermore, a Richard Senderford was baptised the baseborn son of an Akehurst parent at Arlington in Sussex in 1772. The Cinderford family were not confined to Framfield, for a John Cinderford had been buried at Herstmonceux as far back as 1555.

JSH

Is there a surveyor in the house?

Is there a WIRG member who is skilled in the art of surveying? Back in the late 1980s, 90s and early 2000s the late Reg Houghton, a retired architect and the group's Treasurer, used to work with other WIRG members to produce surveys of water-powered ironworking sites for publication in the Bulletin. Half a dozen or so surveys resulted – they can be found on the website in the copies of Bulletins - and they provided an excellent focus for research into individual sites as well as, cumulatively, identifying characteristic features of furnaces and forges. There are many more sites that could be surveyed and it would be a worthwhile activity for the Field Group to be involved in. The group possesses some basic equipment - a Dumpy Level, scale and ranging rods – but what it needs is someone with the skills to direct ground surveys and draw up the results. Are you that person? If so, let us know.

Members' Research Interests

The Research page of the WIRG website includes, among other things, a list of Members' Research Interests and, in some cases, their email addresses. It has been a while since it was last revised so if any members wish their research interests to be made known to users of the website, I shall be happy to add their names on receipt of the necessary details. Conversely, if any whose names are already there wish them to be deleted, or you are aware that someone listed is 'no longer with us' I can make the appropriate changes.

Glossary

A Glossary of terms associated with the Wealden iron industry has been added to the Research page. If members can suggest any amendments, corrections or additions, I shall be pleased to hear of them.

*Jeremy Hodgkinson, Webmaster and editor of WIRG's journal **Wealden Iron***

Contact info on page 1 of this newsletter