W I R G

Wealden Iron Research Group

N E W S L E T T E R No 6 November 1985

Editor: Mrs. M. Tebbutt, The Pheasantry, Wych Cross, Forest Row, Sussex.
Secretary: Mrs. S. Swift, Hamfields, Withyham, Hartfield, Sussex.
Tel: Groombridge 754

Editor's Note

With the publication of this sixth Newsletter I come to the end of my period as editor, and I am pleased to announce that Mrs. Dorothy Hatswell has agreed to take over the task. We are most grateful to her, and she looks forward to receiving comments and contributions at:

Squires Cottage,
Squires Close,
Crawley Down,
CRAWLEY,
Sussex,

I must express my warmest thanks to Sue Swift for her help in the compilation and typing, and to David Combes for undertaking the printing.

This may be an appropriate time to remind ourselves of the purpose of the Newsletter, as set out in the first issue in 1980, where it was stated that it was not intended to be a permanent record. Newsletter material has not been included in the index which is published from time to time in the Bulletin, and so is not readily available for reference. The short articles which we have published in recent issues have certainly been of interest to members, and queries and interim reports are all most welcome. However, if you have a contribution which should form part of our permanent record please send it to the Editor of the Bulletin: D.W. Crossley,
Division of Continuing Education,
The University,
SHEFFIELD,
S10 2TN

Margaret Tebbutt

ERRATUM

The Iron Industry of the Weald. Cleere and Crossley. Leicester University Press, 1985.

p. 182 lines 10-12 should read

"although it is clear that their contribution to the total income of the Pelham estates was a significant one. This was despite the poor location of the works; ....."

Letter from the Chairman

Dear Fellow Members,

One subject has been uppermost in our minds in the last few months and I am very pleased at last to have this opportunity of congratulating Henry Cleere and David Crossley on a very fine book in "The Iron Industry of the Weald", and of thanking them on behalf of all the members of WIRG for the work which they have undertaken in drawing together their own work and that of other members of WIRG over the past eighteen years. There is no doubt that it will be the standard work on the subject for many decades to come, as was Ernest Straker's pioneering work to which such an appropriate tribute is paid in the opening pages of the new book.

Those of you who attended the AGM at Lamberhurst in July were witness to a touching ceremony when, after Henry Cleere had paid tribute to WIRG, David Crossley presented an advance copy of the book to Fred Tebbutt, to whom it is dedicated. I am sure that you will agree with me that the dedication echoes the esteem in which we hold Fred.

WIRG's original aim was the publication of a book to take account of new research. This aim has now been accomplished, but what is plain is that by no means have all the questions about the Wealden Iron Industry been answered and that WIRG's role now is to identify and try to answer those questions.

Medieval ironworking in the Weald is one of the areas where there are many unanswered questions, so the very limited rescue excavation at Roffey last Easter was especially interesting and WIRG was able to co-operate with Horsham Museum Society. Successive examinations of this site have pointed to it being one of the most important medieval iron sites in the Weald.

WIRG is increasingly called upon to provide speakers for societies and groups. Most notable in the past year have been invitations to speak at the Surrey and Sussex Archaeological Societies' Conferences, and at the South East Region Industrial Archaeology Conference at Canterbury.

I should like to take the opportunity presented by this letter to promote two long established WIRG institutions. Our Bulletin is our organ of research and finds its way into an increasing number of libraries in this country as well as one or two abroad. It is the repository of WIRG's "referenceable" written material, but it is neither the sole domain of the committee nor of scholars outside WIRG. What it is, is the vehicle by which WIRG members who have done careful research into the Wealden Iron Industry may have it published, for the publication of research, particularly where it is archaeological and therefore destructive, is not an ideal but an obligation. So I commend the Bulletin to you.

Likewise I commend to you the work of the Field Group, which meets once a month from September to April. No special skill is required apart from an observant eye and and enjoyment of the countryside. The more who can attend forays, the more experience in field archaeology is built up and passed on and the more effective our field research continues to be. Attendance has fallen a little of late; it would be a pity if one of WIRG's real strengths were to decline.

The other members of the committee and I are always happy to hear from members, to answer queries or to put you in touch with others with similar interests. Until such time as we shall meet again, I wish you an enjoyable Christmas and an interesting New Year.

Yours sincerely,

Jeremy Hodgkinson.

Field Group Activities for 1985/86

There was a meeting of the Field Group on 1st September 1985 at which members discussed ideas for forays for the coming season. The following programme of events was arranged:

21st September - Beech Furnace Proof Bank - a visit to examine the site of a proof bank to determine where cannonballs are, where fired from, etc.

19th October - Footlands - a study will be undertaken of this large Roman site, possibly surveying and making a proper record using the new site recording cards. Three forays will be devoted to this project.

16th November - Bore Place, Kent - excavations have taken place conducted by the Institute of Archaeology and slag and Roman pottery have been found at the bottom of a bank. The Institute would like WIRG to examine the site.

14th December - Footlands - as above 19th Oct.

18th January - Footlands - as above 19th Oct.

15th February - Dating of sites along a stream - this project will attempt to date all sites along a certain stream in the study area to compare dates.

22nd March - Dating of sites along a stream - as above 15th Feb.

19th April - Great Surries, Nr. Ashurst Wood - this foray will examine the bay and series of ponds at this site.

If any members would like to join the Field Group and take part in these activities please contact: Mrs. S. Swift, Hamfields, Withyham, Hartfield, Sussex, TN7 4BH.

The following projects are to be undertaken by individual members. If you would like to join them on their expeditions please contact the leader direct.

Nuthurst, Nr. Horsham - Minepits: Giles Swift will examine this site to ascertain if pits found there are minepits. Tel: Groombridge 754.

Lamberhurst - watercourses: Brian Herbert will visit the Lamberhurst Furnace site to discover the extent of watercourses and leats. Tel: East Grinstead 27032.

Hodges Wood - survey: Reg Houghton will finish the survey of the field by the wood. Tel: Copthorne 714539.

Verdley Wood: David Combes will undertake a detailed examination of this site using a level, etc. Tel: Crowborough 5205.

Winter Meeting

The Winter Meeting was held on 2nd February 1985 at Mayfield Memorial Hall and was attended by over 60 members and friends of WIRG. We watched the most interesting film "Noces de feu" made by Nicole Echard in Niger among the Hausa people. The film showed the methods used by the Hausa people to make iron, and was accompanied by a very illuminating commentary by Henry Cleere.

Tea followed the film and members were able to get together for a chat.

Annual General Meeting 1985

This year's meeting was held at Lamberhurst and once again a full day's programme was planned. The President welcomed about 60 members and friends, and introduced the first speaker, Jonathon Coad of the Historic Buildings and Monuments Commission. His interesting and splendidly illustrated talk on the Users of Wealden Ordnance covered many examples of coastal defences, from the early sixteenth century part of Camber Castle to the nineteenth century additions at Dover.

Then followed a fascinating video film by Dot Meades of iron casting at Rye Foundry. This small craftsman enterprise still employs some old techniques, the judgement by hand and eye of the founder remaining of paramount importance.

The AGM followed. The Chairman's report covering the year's activities was circulated and the following officers and committee were elected:

Chairman:	J. Hodgkinson, 7 Kiln Road, Crawley Down, Crawley, Sussex.
Vice-Chairman:	Mrs. D.M. Meades, Huggetts Farm, High Hurstwood, Uckfield, Sx.
Hon. Treasurer:	R. Houghton, 17 Woodland Close, Crawley Down, Crawley, Sx.
Hon. Secretary:	Mrs. S. Swift, Hamfields, Withyhams, Hartfield, Sussex.
Hon. Editor:	D. Crossley, Division of Continuing Education, The University, Sheffield, S10 2TN

Executive Committee:

Miss L. Funnell, The Sheiling, The Straight Half Mile, Maresfield, Uckfield, Sussex.

D. Combes, Fairlight, Croft Road, Crowborough, Sussex.

B. Herbert, 1 Stirling Way, East Grinstead, Sussex. (Special responsibility for distribution of publications)

A. Scott, 36 Clinton Crescent, St. Leonards-onsea, Sussex.

Mrs. S. Broomfield, 8 Woodview Crescent, Hildenborough, Tonbridge, Kent.

G. Swift, Hamfields, Withyham, Hartfield, Sussex.

Mrs. D. Hatswell, Squires Cottage, Squires Close, Crawley Down, Crawley, Sussex.

We were pleased to welcome the joint editors of the long-awaited book "The Iron Industry of the Weald" to the meeting. Henry Cleere spoke of the inauguration and progress of WIRG and the achievement of its original objective with the publication of the book. David Crossley then paid particular tribute to Fred Tebbutt, to whom the book is dedicated, and presented him with the first copy. Unfortunately, due to a printing error and consequent delay, copies were not available for distribution at the meeting as had been hoped. However, the occasion was celebrated with wine, generously provided by the Chairman, to accompany the excellent ploughman's lunch prepared by Mrs. M. Hilary.

In the afternoon a visit was made to the site of Lamberhurst Furnace where Brian Herbert gave a talk about the history of the furnace and led a tour of the site.

Some observations on Robert Baker's bankruptcy in 1708, see Wealden Iron Second Series No 3 (1983), 8.

An article by Anne Dalton refers to the effects of Robert Baker of Hamsell Furnace and Birchden Forge Sussex, bankrupt in 1708 and with guns lying at Battlebridge Wharf in Surrey and in the charge of one William Harrison.

The list of effects as originally quoted in E.M. Bell Irving's book (1903) on Mayfield (p 177) includes:-

"Item Fifty guns qty about 50 Tuns in the Custody of Mr. William Harison lyeing at Battellbridge wharf in Surrey at £5 p. Tun" ("Surry" surely at this date). The first entry lists Nineteen Guns - about 27 Tuns at "Woolwich Warren in Kent" also valued at £5 per ton and yet another entry is for "Six Tun and four hundred wt of square bar Iron at £10 p. Tun" ..... "lyeing at Caverlyesplaine in Tunbridge in Kent".

However the values quoted here are curiously low - perhaps figures inserted to minimise Baker's assets, but £5 p. Tun for proved ordnance is about one third of the true market value in 1708 and bar iron fetched about £19 p. Tun (delivered).

Is it significant that the Harrison concern - also agents for the Fullers of Heathfield and gunfounders in their own right, at some later date acquired Hamsell Furnace and cast guns there in the 1740's.

If the coincidence of the spectacular "Harrison Rocks" near the site of Birchden Forge (Eridge) can be relied on as evidence, then the Harrisons acquired this site as well (date unknown to the writer).

Were the low prices mentioned previously due to rejection by the Board of Ordnance at Woolwich? £5 is about the price of gunheads and scrap (i.e. burst cannon), but delivery to a Thames-side wharf suggests rejected guns but still suitable for merchant ships and having a market value of about £10 p. Tun.

Perhaps all this has something to do with the cause of Baker's bankruptcy and did the Harrisons benefit ultimately from such misfortune to their fellow gunfounder?

T.E. Evans

Sand and Loam in the Wealden Iron Works

There has been a reference (possibly Ernest Straker) that the sand and loam used in the Weald was helpful in the casting of cannon in the 18th century.

Experiments were made in the 1920's in an iron and steel foundry where it did appear that certain sands influenced the making of better castings, all other factors remaining the same.

The assistance of members about other possible early references to the selection of local moulding materials or modern comments on the need for careful selection for specific needs might throw some light on possible benefits enjoyed by local 18th century gunfounders.

The failure rates of gun castings in the Weald do not appear to have been recorded but would seem to have been less than in other areas. The empirical skills of long established families with gunfounding experience, both as craftsmen and technicians, must have been of major importance. However men who went to Carron in the 1760's experienced the greatest difficulties in making satisfactory gun castings there. It would be easy to say that they failed to take all the skills with them but there were a number of variable factors such as local ores, fuels, furnace control and supervision. It was probably mould and core making that was the source of the greatest number of failures.

This opinion is justified by the results of the introduction of the gun cast solid and bored out. Anthony Bacon, M.P., of Cyfarthfa, entered the gunfounding industry in 1773-74, employing John Wilkinson of Broseley as his sub-contractor, sending to the Board of Ordnance the first British cast iron gun made in this manner. The success of his completely new approach led the B of O to make this type of manufacture mandatory before 1776 and removed the manufacture of guns from the wood-water economy of the Weald to the coal fueled-recycled water system of the north and Scotland. The improvement in the quality of the guns and lower rejection rate was marked.

The weakness of core making and placing in the earlier method of gun casting appears to have been problems with gases present during pouring, flaking of the surface of the core and the displacement of the core. The latter was possibly mechanical because the location of the suspended core had to be firm enough to resist any sideways pressure of molten metal and to maintain support until the metal began to solidify. Modern founders would be very careful to evolve a satisfactory technique.

The washing away of the surface of the core by molten metal would leave sand inclusions in the wrong places, with weakening of the structure and possible leakage paths for exploding gunpowder on firing. Cores and mould would give off gases from any organic inclusions and steam from any moisture, possibly lifting the surface in contact with metal, but more seriously creating gas bubbles to form blowholes. Not only were these weakening, but left holes in the bore of the cannon that the reaming operation for smoothing often failed to remove.

Recently available Russian and French material makes the immensity of Russian gun casting problems very obvious, despite bringing in foreign technicians during various periods in the 18th century. The initial introduction of the blast furnace was circa 1632 by the "Dutchman" Vinius (the term "Dutch" was often used for Germans).

Carron also had massive failures in their attempts to cast cannon in the period 1763-1773 but a letter dated 1790 from James Baird in Russia refers to their latest practice in 1786 before he left them. They then thought a failure rate of 10% reasonable but this must be compared with earlier rejects of 60% some 20 years before.

A technical analysis of methods, with little committed to paper at a time when the average technician was not academically educated, besides lacking technical education, leaves serious gaps in our knowledge of the reasons for failures. If the sand and loam of the Weald was so important, a geological analysis of the other less successful districts might give reasonable leads to other investigations into a less obvious factor in the successful casting of cannon.

D. Braid

The End of the Wealden Iron Industry: Some Footnotes

The definitive date for the end of the Wealden iron industry is the last operation of the Ashburnham blast furnace in 1813 (1). Hope for the industry's revival, however, seems to have persisted considerably longer.

For instance a printed notice of sale by auction on 25th May 1826 of a freehold farm, houses and lands "about one mile from the Market Town of East Grinstead", now in the East Grinstead Town Museum, states "The Lands are supposed to contain Iron Stone, Ore, &c.", the only information given about them beyond the acreages of the several lots. (From documents epitomised in Sussex Archaeological Collections, vol 66 (1925), 119-22, checked with parish records, the lands can be identified as Brockhurst and Pawleys between East Grinstead and Ashurst Wood.)

Much later, on 29th October 1850, Gideon Mantell the geologist noted in his diary: "Earl Delaware wrote to me last week respecting the expediency of making trials for ironstone on his Sussex estates where the old iron-works formerly were; the facility of transport by railway having induced some speculators to apply to Lord D. for the purpose" (2). Mantell does not record his response.

By then, however, the industry had been long enough dead to be the subject of historical investigation, for it was in 1849 that M.A. Lower published his pioneering study in Sussex Archaeological Collections, vol.2. Much less well known is an independantly researched article, "The Iron-Works of Sussex", contributed to the Penny Post for August 1854 by the Rev. J.M. Neale, the versatile Warden of Sackville College, East Grinstead, best known today for his hymns. Neale knew Lower's work but comments "I have borrowed something from it, but I must in justice observe that the greater part of my notes had been made before I had the pleasure of reading it". Neale had a long-standing interest in Sussex but it may well also be significant that the patron of Sackville College was that same Earl De La Warr (the more usual spelling) who had approached Mantell about the potential of the old iron sites on his estates. He and Neale worked closely together and were very much in sympathy with each other.

References

(1) Sussex Industrial Archaeology Society Newsletter 39 (July 1983), 3f.

(2) E.C. Curwen (ed.), The Journal of Gideon Mantell (1940), 261.

M.J.Leppard

Casting of 42 pdr guns in the Weald. Newsletter No. 5 (1984) 5-6

This note was initiated by a letter from C.T.N. Trollope and was followed after publication by a letter from Arthur Dunn, Ottawa, Ontario. Some members are puzzled about the apparent statement in a Fuller letter that metal could be held in a Wealden furnace for more than a day to accumulate enough to cast heavier guns.

David Crossley has subsequently outlined further his references to unpublished Fuller letters. He says that Richard Savile has prepared an edition but there appears to be some difficulty in finding sponsorship for publication. It is hoped to clarify this position and report success or failure of this venture in a later Newsletter.

David Crossley gives these references:-

ESRO/SAS RF 15/25. 17th October 1751 -

"When 32 pounders done, it (the furnace) was more intensely hot by being obliged to keep a larger quantity ...." Note:- Use of the word "keep".

See also:- ibid, 10th October 1747.

"will not make 42 pounders at £20 a ton - a gamble at £80 a throw, also when making 4 tons of metal 1 ton is burned away ....."

Note:- indicates 4 tone was considered practicable.

5th September 1744 - lowering or raising the hearth for lesser or greater guns.

9th September 1738. "they made special hearth, being so large" - referring to guns.

David Crossley sees no references or signs of Fullers using double furnaces.

The Browne Archives in the Kent Office (KAO/TRI295/69) have an interesting paragraph to be analysed and commented on in due course.

1664 - "in regard they will be so heavy of iron metal (which cannot run at one time in the mould) being so long as four nights if not more in the hearth, which will be in great danger of cooling in the hearth when it should run which when it happens (as in the casting of great pieces .... is frequently to be expected) is the loss of the piece".

Note:- Is this an explanation of some of the "bears" which various people have ascribed to mechanical failures of bellows, wheels and water supply in the middle of a run? Some of them might be due to experiments in holding or failures during a recognised practice of building up larger casts.

Readers contributions of comments on this special technology would be welcomed.

D. Braid

Bog Iron Deposits in the Weald

In WIRG Newsletter No. 5 (1984),6, D. Braid asks for information regarding bog iron in the Weald. Field work by WIRG has identified a number of these sites. One example was in the left bank of the Mill Brook at Harts Farm, Hartfield (c. TQ 463 333) where the owner thought it was cinder. Another was at Framfield (c. TQ 489 199) where the farmer had ploughed up great lumps of bog iron and called our attention to it, again thinking it was cinder. A third example was at Barcombe (c. TQ 442 172). Here the owner thought that a hard layer in the field represented a subsidiary Roman road, joining the main London-Lewes road at the end of the field. We excavated here and found a layer of bog iron, which could also be seen in the bank of the river Ouse close by. A further example occurred at Wivelsfield close to Slugwash Lane, where at TQ 350 216 is a field called Cinderberry bordering the south side of a stream. The field was found to be grass, but the stream had recently been dredged bringing up masses of bog iron.

It would seem that popular local belief equates bog iron with cinder, and probably many of the field names incorporating the word 'cinder' relate to the presence of bog iron. We have not been able to prove the use of bog iron in actual smelting in the Weald.

C.F. Tebbutt

Alexander Raby. WIRG Newsletter No. 5 (1984),4.

As a postscript to this item members may be interested to have details of a book published by Llanelli Borough Council, price £3.25, from: The Borough Librarian, Vaughan Street, Llanelli, SA15 3AS. (371 pages)

The book is by M.V. Symons - "Coal Mining in the Llanelli Area. Vol.1. 16th Century to 1829" and gives much interesting information on Alexander Raby's coal, iron and copper mining activities, also a considerable network of waggonways, canals and harbour works serving his mines and ironworks.

Raby was a much bigger operator in South Wales than in Surrey (from 1792 - 1823) and the book describes the demise of his fortunes resulting in the sale of his properties in South Wales and Surrey.

T.E.Evans

The WIRG Exhibition at Horam

A new Wealden Iron exhibition has been set up by Jeremy Hodgkinson, at the "quiet corner" Horam, Sussex, TQ 5763 1722, with photographs supplied by the writer. An old barn has been reconstructed to house displays for societies and individuals. At the moment these cover Horam Manor, forestry and brick-making, but will no doubt be added to by next year. There is also a nature trail, where it is possible to see a good selection of iron-ore pits. These include mine pits, 6 to 20 feet in diameter, seen as water filled depressions. Recent dating of similar pits at Sharpthorne brickyard has proved these to be a method of mining from the 12th century. There are also several large open-cast pits, 100 feet across, which, it is thought, may originate from the Roman period.

Also to be seen on the nature trail is a large piece of cast-iron beside the pond in front of the barn. Investigations are under way to discover if a blast furnace operated here, but on the face of it, there would not appear to have been enough water in the stream to drive the water wheel operating the bellows.

The WIRG exhibit covers the whole Wealden period, under the following headings, each mounted on a separate display board:-

1. Ore, fuel and power.
2. The bloomery process.
3. The blast furnace and forge.
4. Saxon and Medieval ironworks.
5. The Roman iron industry in the Weald.
6. The iron industry 1496 to 1825.
7. Products of the iron industry.

We have room to expand our exhibit and it would enliven the whole barn if an animated display could be made, or even some form of visitor-interactive display. One idea, by the writer, would be a bloomery furnace, a la Roger Adams, complete with bellows which the visitor could work by hand. It is envisaged that the furnace would have a transparent side to display the burden inside.

The exhibits are spaciously laid out and well lit in a barn-like building which has a glass side facing south. Unfortunately this makes the atmosphere very hot and dry and the artwork is deteriorating rather quickly, and will not be helped during the cold damp winter. This rather fine (despite what the birds in the barn think of it) all-embracing exhibit will be well worth a visit when in re-opens at Easter, 1986.

B.K. Herbert

A WIRG Display at East Grinstead Library

A two week display was set up during October, at the East Grinstead library, to advertise two new books published this year concerning the Wealden iron industry. These are: "The Fieldwalker's Guide and an Introduction to the Iron Industries of the Weald" by B.K. Herbert and "The Iron Industry of the Weald" by Henry Cleere and David Crossley.

The display showed, in a flow diagram, the main differences between the bloomery furnace and blast furnace periods. Coloured cables were taken from the diagram to the appropriate samples on display, and to complement this, photographs were used to show other evidence of the local iron industry.

Lloyds Bank Award

On 20th March 1985 Giles Swift received a Lloyds Bank Award of £50 for the purchase of augering equipment to enable him to take cores from minepits. The award was augmented by WIRG and equipment bought. Mr. Swift has donated the equipment bought with the Award to WIRG.

S. Swift

Furnaces and Smelting Technology in Antiquity edited by P.T. Craddock and M.J. Hughes
British Museum Occasional Paper No. 48: British Museum £11.00 post free.

This publication incorporates the papers presented at a symposium held at the British Museum in 1982 which was attended by several WIRG members. Readers of the papers came from many countries and several dealt with iron smelting. Of particular interest were details of experimental work carried out in replicas of ancient bloomery furnaces, of which those described by Professor Tylecote and J.F. Merkel in England and by Elzbieta Nosek in Poland were outstanding.

Jeremy Hodgkinson read a paper on behalf of WIRG entitled "A fieldwork study of the Romano-British iron industry in the Weald of southern England" describing our field walking in the study area and excavation at Cowpark, which was well received.

This volume makes a useful addition to further research into the technology of ancient iron making. Order forms may be obtained from the WIRG Secretary.

C.F. Tebbutt

Recent Articles in other Journals

1. Iron gun founding in the mid 17th century: The winter blowings at Horsmonden 1656 and 1659.
G.W.E. Farrow Journal of the Historical Metallurgy Society. Vol.18 No. 2 (1984), 109-11.

2. Ashburnham Blast Furnace: A Definitive Date for its closure.
W.R. Beswick, P.J. Broomhall & J.D. Bickersteth, Sussex Archaeological Collections Vol 122.(1984), 226-7.

3. The Roman Road at Icklesham
Z. Vahey. Journal of the Hastings Area Archaeological Research Group Vol.4 No.3(September 1983).

ANSWERS TO CROSSWORD ON PAGE 13.

Across

1. Coalbrookdale
7. Sword
10. Groan
12. MI
13. In
14. Abraham
17. Ivy
19. pit
21. RA
22. Sandpit
23. MS
24. End
25. Apt
26. Stengun
28. So
29. If
31. Clang
33. Black
34. Stagnant water

Down

1. Cast firebacks
2. Atom
3. Bed
4. Keg
5. Aeon
6. Ernest Straker
8. Ria
9. Wealden iron
11. Rim
15. Blast
16. Adieu
18. Van
20. Imp
26. Son
27. Nil
28. Saga
30. Fact
32. Gun
33. Bow

Publications for sale

The following publications are for sale from:-

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

Prices quoted include postage. [Prices at meetings or collected by hand].

A Gun-casting Furnace at Scarletts, Cowden, Kent. By: D.W. Crossley	£0.90	[0.75]
The Excavation of a Late 16th/Early 17th Century Gun Casting Furnace at Maynard's Gate, Crowborough, Sussex, 1975-76. By: O. Beawin	£0.75	[0.60]
A Middle Saxon Iron Smelting Site at Millbrook, Ashdown Forest, Sussex. By: C.F. Tebbutt	£0.90	[0.75]
The History of Water-mills, The Wealden Iron Industry, and Geology of the South-east. By: B.K. Herbert, C. Smart, C.E. Woodrow	£0.65	[0.50]
The Finch Foundry Trust and Sticklepath Museum of Rural Industry. (A Water powered Smithing Forge on Dartmoor). By: R.A. Brown	£1.15	[1.00]
The Fieldwalker's Guide and an Introduction to the Iron Industries of the Weald. By: B.K. Herbert	£2.85	[2.50]
Bulletins of the Wealden Iron Research Group:-		
Volume 1, 3, 4, 9, 11	each £0.75	[0.50]
Volume 13, 14, 15, 16	each £0.90	[0.75]
Volume 1 to 5, new series	each £1.65	[1.50]

VOLUMES 2, 5, 6, 7, 8, 10, 12, 17 ARE OUT OF PRINT AND WILL NOT BE REPRINTED

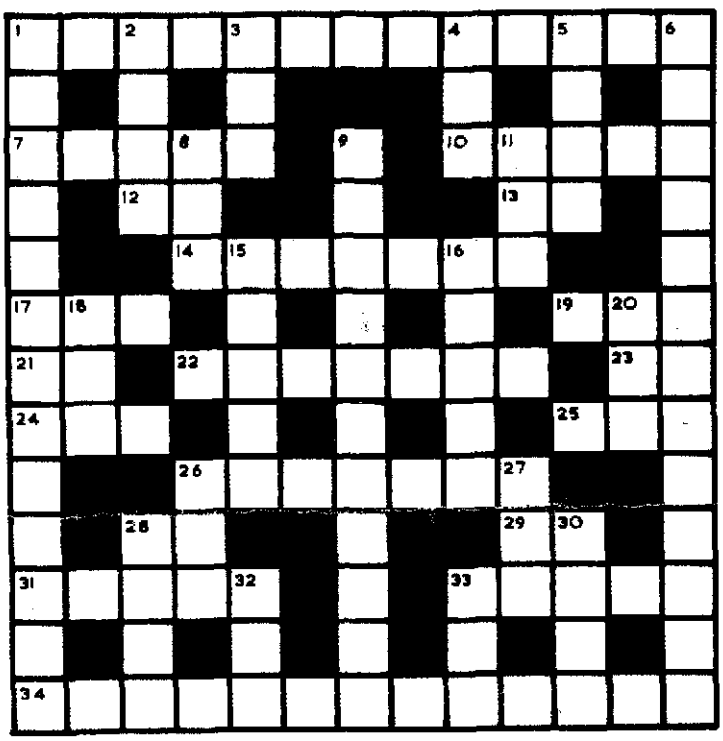
WEALDEN IRON CROSSWORD

This crossword was originally started with the intention of keeping to a Wealden iron theme but it proved impractical, and so archaeological clues were introduced. However, as the last few clues were being fitted, it became clear that some other words would have to be used as well. So here is the first Wealden Iron puzzle, which it is hoped, will be enjoyed by everyone.

Brian and Valerie Herbert.

Clues ACROSS

1. Local ore bed OK, (anag), (not in the Weald).
7. Weapon.
10. Painful noise.
12. 1001.
13. A measure, (abrev).
14. He ruined the Wealden iron industry.
17. Tree killer.
19. Cannon casting enclosure.
21. Cannon troops, (abrev).
22. Quarry.
23. Archival record, (abrev).
24. Finish.
25. Suitable.
26. Modern firearm.
28. Accordingly.
29. Whether.
31. Metal against steel.
33. As charcoal.
34. Still liquid, (8,5).



Clues DOWN

1. Ornamental heat resistors, (4,9).
2. Small particle.
3. Stratum.
4. Wooden container.
5. A long period of time.
6. Treks earn rest, (anag), (6,7).
8. River mouth formed by submergence of a valley.
9. We in ore land, (anag), (7,4).
11. Dateable find.
15. Fast air.
16. Good bye.
18. Leading military troop.
20. Devil's child.
26. Heir.
27. Nothing.
28. Long story.
30. Truth.
32. Another weapon.
33. Yet another weapon.

Answers at bottom of page 11.