

THE IRONWORKS AT ALDERWASLEY AND MORLEY PARK: A POSTSCRIPT

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Since the publication of my study of the Hurt family's ironworks in last year's *Journal*,¹ various pieces of new information have come to light. None substantially alters the picture I presented on that occasion but the material is sufficient to warrant a short additional note.

The major new discovery is another photograph of the furnace at Alderwasley, this time of sufficiently high quality to be suitable for publication.² Although obviously of about the same date as the picture showing W.H. Bailey holding a scale in front of the furnace and coming, like that print, from amongst the papers of Frank Nixon recently deposited in Derby Industrial Museum, the view reproduced here as Plate 1 was taken on another occasion (the undergrowth around the furnace is significantly different) and shows rather more clearly the remains of a stone-built furnace standing against the natural bank on the western edge of the works at Alderwasley. The facing stone on the outside of the furnace appears to have been robbed, leaving a quantity of uncoursed rubble, on the inside of which is a well preserved section of lining extending upwards from the boshes probably almost to the throat. The shaft appears to have been circular in section, as would be normal in a furnace of this period, whether charcoal or coke was the fuel. There is no scale on the photograph, although notes written on the back of the other picture (not reproduced here) give the basic dimensions as inferred by the investigators who saw the site before its demolition twenty-five years ago.³

A little more light has been shed on Francis Hurt's activities from a new study of his family's papers deposited in the Derbyshire Record Office, where a fuller list has been prepared than was available when I worked on the collection in 1987. For example, the purchaser's copy of the conveyance recording Hurt's purchase of Heage and Morley Park of 1767 does survive, whereas before I had only found the vendor's copy. Hurt also acquired a substantial quantity of prior deeds relating to the estate with this transaction, which provide additional evidence for earlier coal-mining in Morley Park.⁴

A rather more important document that has now come to light is an agreement made in January 1765 between Hurt and Godfrey Wentworth of Hickleton, the owner of Heage and Morley Park, giving Hurt liberty to sink for and get ironstone on Heage Common and to repair an old sough near the school house on the common to assist his mining operations. The rent was £5 p.a. and the agreement is endorsed with a receipt for the payment in June 1766 of one year's rent due the previous January.⁵ These arrangements were entered into after Hurt had initially approached Wentworth in the summer of 1764 about coal and ironstone at Morley Park and were evidently still operative in the summer of 1766 when Hurt was negotiating either a mineral lease at Morley Park or, as he eventually decided on, the outright purchase of the freehold of Morley Park and the manor within which it lay. This agreement also makes comprehensible the



Plate 1 The remains of the blast furnace at Alderwasley, probably photographed about 1962. The view is from the NE and shows the lining of the shaft and the uncoursed rubble core of the shaft, built against the natural bank which runs down the western side of the works at Alderwasley. (*Courtesy Derby Industrial Museum; from the collection of the late Frank Nixon*)

complaints of the commoners of the manor of Heage about Hurt's mining activities there, which are mentioned in correspondence between Hurt and Wentworth towards the end of 1766.⁶

What is particularly interesting about this document is that it shows that Hurt was interested not merely in refining pig iron at a forge at Alderwasley but that, at the very beginning of the year following that in which the forge is said to have been built, he was making arrangements to mine ironstone to supply a blast furnace. It thus becomes clear that not only the forge but also the furnace must date from 1764 and that Hurt planned from the outset to establish an integrated ironmaking enterprise, controlling all stages from the mining of ironstone to the rolling and slitting of rod iron himself.

It is obviously impossible to say what prompted Hurt to enter the iron industry on such an ambitious scale at this date. It remains unclear whether he intended to use charcoal in both furnace and forge in the traditional way or whether he wished to experiment, apparently for the first time in the East Midlands, with the use of coke in the furnace. There is certainly no evidence, for example from the list of plant at Alderwasley in 1794, that he tried the potting and stamping process or refining, in which coke could be used.⁷ It may or may not be significant that Hurt's agreement with Wentworth of January 1765 related only to ironstone and said nothing about coal. Indeed, his main motive in establishing an ironworks on his estate may have been to exploit the water-power and coppice-wood available at Alderwasley and he found himself obliged to build both furnace and forge so as to secure a reliable supply of pig iron for refining.

In this context, it is worth stressing that, by the 1760s, almost the whole of the iron industry in the East Midlands had come into the hands of Walter Mather, who had been buying charcoal from Hurt in the 1750s on a large scale. Apart from *Staveley* furnace in the *Rother* valley, which was operated by a *Sheffield*-based partnership, the furnaces at *Wingerworth* and *Kirkby* (and possibly also *Hartshorne*) are known to have been in Mather's hands in these years; the *Lloyds'* furnace at *Melbourne* shut in 1772; and that at *Whaley* near *Bolsover* was apparently more or less abandoned.⁸ In other words, unless Hurt was prepared to buy pig from Mather (and transport it several miles by road), he probably had no option but to build a furnace of his own and bring ironstone to Alderwasley from the nearest suitable location, which proved to be Heage. One possible explanation for Hurt's action is that there had been a rift between him and Mather, perhaps over the supply of charcoal from Alderwasley for *Makeney Forge*, and that Hurt decided to go into the industry on his own account, if only to provide a better outlet for his cordwood than rely on sales to a single customer. As contemporaries appreciated better than some historians, the market for charcoal for the iron industry was essentially artificial. Ironmasters had little choice but to buy locally, since charcoal was not easily transported more than about five miles; similarly, landowners with coppice-wood could generally only sell to a nearby ironworks, since by the mid-eighteenth century there were few other customers for charcoal and they too had to confront the problem of carriage.⁹ If a relationship based on mutual dependence broke down for some reason, such as inability to agree a new price when a long-term agreement ended (and it is clear that Hurt was selling charcoal to Mather under such an arrangement in the 1750s), then both ironmaster and landowner would have to change course. Since *Makeney Forge* lay on the edge of *Duffield Frith*, an area of former forest which remained comparatively well wooded in the eighteenth century, Mather might have been able to find an alternative source of charcoal. Hurt, on the other hand, might have decided that his best chance of retaining profitable coppicing at Alderwasley was to establish an ironworks which would consume most or all the charcoal previously sold outside the estate.

An argument on these lines must remain speculative but provides one explanation for Hurt's

entry into an industry in which, at this date, there was little if any other new investment in the East Midlands and furnaces going up elsewhere were, without exception, coke-fired. Perhaps what is needed is a study of the Mather family, whose dominant position in the East Midlands iron industry in the closing decades of the charcoal era has yet to be fully appreciated.

One final point remains to be considered, the question of the fuel used in the blast furnace at Alderwasley and its source. Elsewhere in this issue of the *Journal*, Miss Marion Johnson draws attention to the existence of coal in Alderwasley and demonstrates that it was being mined as early as the mid-seventeenth century.¹⁰ This is undoubtedly true and I was wrong to describe the blast furnace as lying several miles from the nearest coal. Indeed, it is not difficult to find additional evidence for mining in the township up to the early nineteenth century, when John Farey listed a colliery there.¹¹ This may have closed fairly shortly after Farey's time, since by 1841 the tithe map merely records a number of field-names indicating the site of old pits, rather than indicating that coal was still being mined.¹² None of this, however, actually confirms that coal mined in Alderwasley was used in the furnace. The compiler of Bulmer's *Directory* of 1895 was convinced that charcoal alone was used as fuel, whereas Prof. Marsh, in his analysis of slag from the ruined furnace, felt that coke (or raw coal) was more likely.¹³ Both statements, of course, could be correct, since the furnace might initially have used charcoal and later, as Hurt became interested in the potential of the new process being adopted in other parts of the country, have been tried with coal. Slag removed from the shaft would presumably reflect the operations of the furnace towards the end of its life, rather than the start.

Despite the closer proximity of coal than I first appreciated, I continue to hold the view that Francis Hurt built the furnace and forge at Alderwasley in 1764 mainly to exploit the charcoal and water-power resources of his estate. Hurt appears to have become interested in the use of coal for smelting and to have tried the process at Alderwasley. The results may have been unsatisfactory in a water-powered furnace built for charcoal, apart from the question of high carriage costs if coal was coming from Morley Park rather than Alderwasley, and so he decided to move his smelting operations to Morley Park, where suitable coking coal was available and where a steam engine could be used to provide a better blast, while keeping the forge at Alderwasley, where there was an abundance of both water-power and charcoal.¹⁴ Morley Park furnace was evidently built about 1780 and, although not quite the first coke-fired furnace in Derbyshire, was certainly amongst the earliest.¹⁵ Francis Hurt, therefore, should probably be regarded as one of the more innovative ironmasters of his day and nothing in my previous article was intended to suggest otherwise.¹⁶

REFERENCES

- 1 P. Riden, 'The ironworks at Alderwasley and Morley Park', *Derbyshire Archaeological Journal*, 108 (1988), 77-107 (hereafter referred to simply as 'Riden').
- 2 Derby Industrial Museum, F. Nixon Collection.
- 3 Riden, p.80.
- 4 Derbyshire Record Office (DRO), D2535M/165-166 (lease and release of the manor of Heage and freehold of Morley Park, 19-20 April 1767). All the other pieces in the collection between Nos 161 and 213 (except these two) appear to be prior deeds and other papers passed over with the sale. Cf. Riden, pp.81-2 and n.22.
- 5 DRO, D2535M/207.
- 6 Riden, p.81.
- 7 *Ibid.*, p.78.
- 8 P. Riden, *A Gazetteer of charcoal-fired blast furnaces in Great Britain in use since 1660* (Cardiff,

- 1987), pp.22-6; cf. Riden, pp.77-8 for cordwood sales to Mather.
- 9 For a full discussion of this important point see G. Hammersley, 'The charcoal iron industry and its fuel, 1540-1750', *Economic History Review*, 2nd series, 26 (1973), 593-613, esp. p.608.
 - 10 M. Johnson, 'Coal at Alderwasley: a note on "The ironworks at Alderwasley and Morley Park"' by Philip Riden', *Derbyshire Archaeological Journal*, 109 (1989), p.173.
 - 11 J. Farey, *General view of the agriculture and minerals of Derbyshire*, I (1911), p.189; Farey also recognised the remains of the charcoal blast furnace at Alderwasley, p.396.
 - 12 DRO, D2360/DL36A-B, notes three occurrences of 'Coal Pit Close', as well as 'Coal Flat Meadow', 'Upper End of Pits' and 'Nether Pit Close', distributed fairly widely across the township.
 - 13 Riden, pp.80-1.
 - 14 Cf. Riden, p.92: as late as 1874 one of the main attractions of the Alderwasley site to the present occupiers, R. Johnson & Nephew, when they first leased the forge, was the ready availability of water-power, which they harnessed using large turbines.
 - 15 Riden, p.80.
 - 16 Cf the concluding paragraph of Miss Johnson's note, in which I fear she may have misunderstood my use of the phrase 'more perceptive ironmasters' (Riden, p.78) as a category from which I excluded Francis Hurt. This was not the meaning I intended for the sentence from which this quotation is taken.