

Hampton Loade Furnace - David Poyner

Many individuals will know of the forge that operated at Hampton Loade from 1796 to 1866; indeed last year I contributed a short article on a tunnel system apparently connected with the forge. However, far fewer people are aware that there was a blast furnace on the site in the middle of the 17th Century. My colleague, Dr Gwyneth Nair of Paisley University, had for some years been aware of the existence of one John Legas, a potfounder, living in the north of Highley in about 1660. Neither she nor I could work out why a metal worker should be in Highley at this date as the village was almost entirely agricultural. The mystery was solved by a chance conversation I had with Peter King, an expert on the iron industry of the early modern period, particularly in the West Midlands. Peter had catalogued the huge mass of Foley papers at the Hereford Record Office, which deal with the local iron industry at this date. Not only was he very familiar with the Legas family, he was also able to tell me of the existence of the blast furnace at Hampton Loade. In this article I will review what I have so far been able to discover about this furnace.

The West Midlands Iron Industry in the 17th Century.

It is worth spending some time considering both the technical and economic background to the local iron industry. By this period, all local iron was made in blast furnaces. Iron ore was mixed with charcoal (the fuel) and usually limestone (to act as flux) inside the furnace.

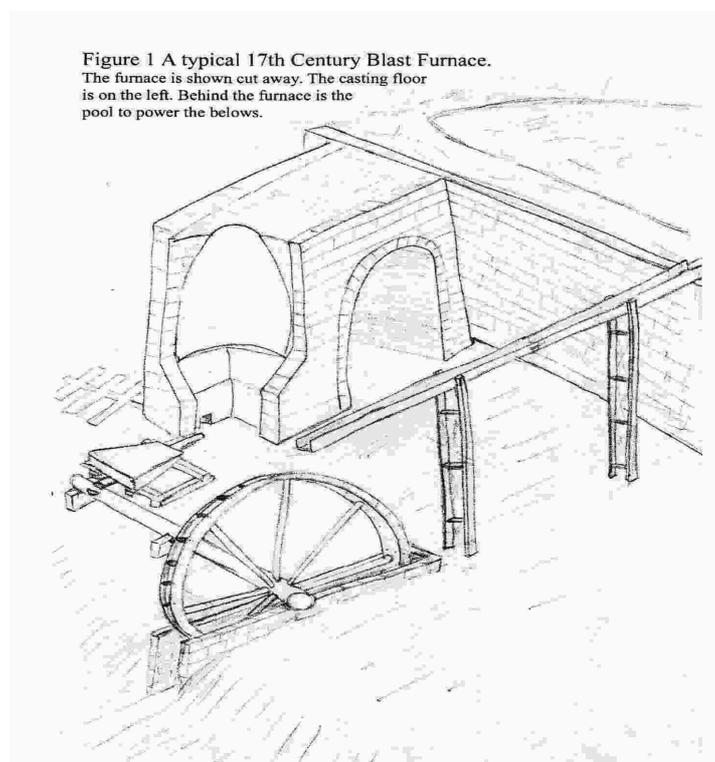


Figure 1. shows a typical blast furnace of this period. The furnace contents were ignited and a temperature of over 1000°C was reached, helped by regular blasts of air from bellows. The bellows were worked by a water wheel. The typical furnace was set close to a source of ironstone in a well wooded area on a stream. Metallic iron was released from the ore and at once melted; the molten metal could then be run out of the furnace into moulds. This produced cast iron. This form of iron could be cast directly into objects such as pots, pans, kettles, fire grates and backs or smoothing irons. These found a ready market through retail ironmongers. However, cast iron is a brittle material and much was converted into the more resilient wrought iron. The iron was cast into bars called pigs and passed onto the iron forge. Here they were remelted, perhaps after blending with other types of iron and refined to reduce their carbon content. They were then drawn out under the forge hammer to give bars. These could be sold directly to iron merchants, or passed to slitting mills. At these mills the bars would be rolled and cut into thin rods, particularly suitable for nail making (1).

Shropshire had numerous blast furnaces in the Seventeenth Century, associated with the Coalbrookdale and Clee Hill coalfields, where iron ore could be found. Most pig iron was turned into bars and rods for the metal workers of South Staffordshire. Particularly along the River Stour there was a very high concentration of forges and mills (see Figure 2).

From the late 1630s the local iron industry came to be dominated by the Foley family. The founder member was Richard Foley (1580-1657), the son of a Dudley nailmaker, who built up a collection of works along the Stour in Staffordshire. One of Richard's sons, Thomas (1616-1717) of Stourbridge and Witley Court added other works in Worcestershire and Staffordshire as well as in Shropshire, Gloucestershire and Sussex. Thomas gave up full time

management of his empire in 1668 and his youngest son Philip (1653-1716) took over the Stour works. From the start of the Eighteenth Century the Foley family gradually lost their pre-eminence in the West Midland iron trade to be replaced at least partly by the Knight family. The Knights owned numerous forges on the Stour as well as furnaces in Staffordshire and Shropshire (2). Both the Foley and Knight family businesses largely revolved around the production of bar and rod iron. Pig iron from their furnaces was blended at their forges with superior iron from elsewhere in the country and then used for the manufacture of bars and rods. This trade made much use of river transport and warehouses.

Hampton Loade Furnace - Outline History

The first references to Hampton Loade Furnace come in the 1640s. In 1623 Thomas Gervois granted Lye Hall in Quatt to Richard Nash, Margaret his wife and Mary their daughter.

In 1647 there was a settlement on behalf of Margaret for £42-10-00 pa between Richard Nash on the one part and Seabright Nash and Thomas Beardsmore of the other part. This document indicates that the lands included in the original 1623 lease now included portions sublet to Edward Richards, Walter Blunt and also “one furnace known as Hampton Loade furnace in the holding of Thomas Foley”. The Lye Hall estate forms the boundary between Quatt and Alveley, just north of the present Paper Mill Brook. This strongly suggests that the furnace was roughly on the site later occupied by the Hampton Loade Forge. The furnace had been in existence for several years by the time of the 1647 document, for on 13th April 1641 Thomas Foley reached an agreement with John Heath of Alveley, a miller. Heath held a mill known as Elliot’s or Moorehouse Mill. Foley had built a dam across the stream below this mill, to divert it to his furnace. The dam had raised the stream above its normal height, causing damage to the mill. Foley agreed to pay Heath £1-6-8 pa for 7 years to indemnify him against claims for damages by Launcelot Lee, the mill owner (3).

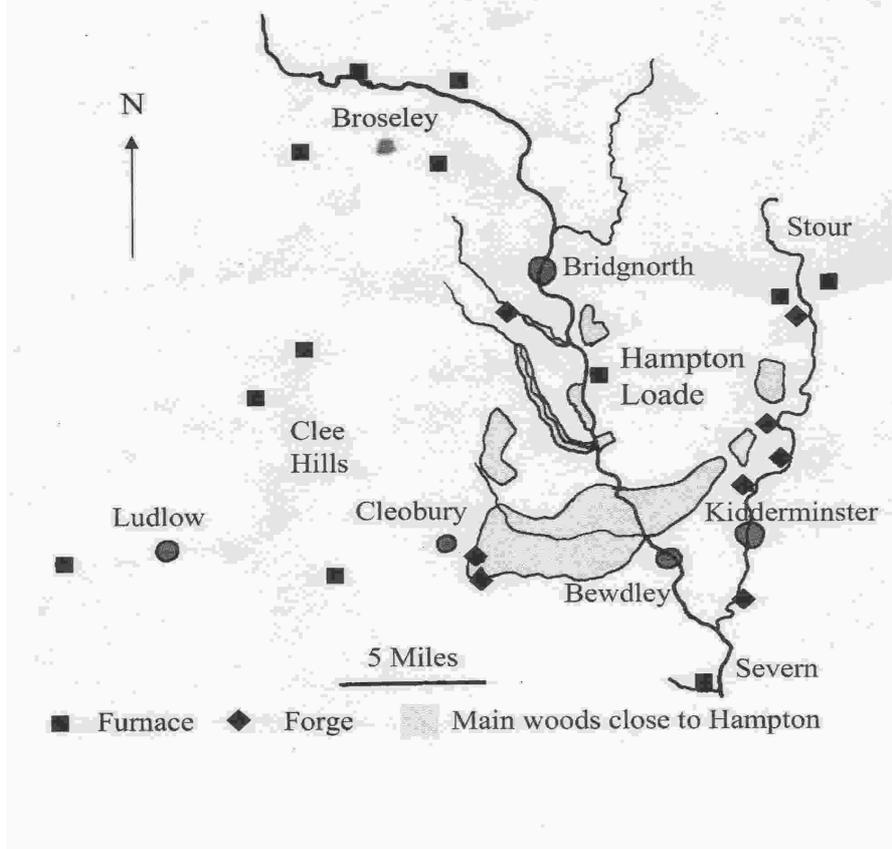
It seems likely that the furnace must have been built about 1640. John Heath would have wanted to settle the problem with flooding as soon as possible. Furthermore, Thomas would only have been 24 in 1640, it seems unlikely that he would have taken out a lease much earlier. This would make Hampton a contemporary of a number of other Shropshire furnaces. Both Bouldon, on the west slopes of the Clee Hill, and the famous Coalbrookdale furnaces were established about this time. These furnaces were to have considerably longer lives than Hampton. The next mention of Hampton comes in 1653, when Thomas Whitmore paid £13-2-6 for 1 ton 6cwt 1qr of “cast necessities from Hampton Loade” (appendix 1). Whitmore was probably a member of the local Whitmore family originating from Apley, north of Bridgnorth. His bill was reduced as he supplied 36 cords 6 feet of wood for charcoal making in 1652. The cord was the traditional unit in which wood was supplied and was defined as a stack of wood 4’ x 4’ x 8’; thus Whitmore was supplying about 4700 cubic feet of wood. The nature of his the “cast necessities” are unknown.

The final direct reference to Hampton Loade furnace comes in 1662, with the survival of a receipt for £1 for the casting of pots and other objects by John Legas at Hampton Loade, Grange and Coven furnaces (the latter two being in Staffordshire) (5). John first appears in the locality in 1648 when he baptised his son Richard at Chelmarsh. It seems that he and his wife Ann moved to Highley in about 1655. Their eldest son, John purchased 14 acres of land in the far north of the parish in 1660 and in 1668 Ann described how they owned a number of cattle and leased land elsewhere in the parish. John was still a potfounder but, perhaps significantly, his work meant that he often had to travel away from Highley. In fact it seems unlikely that Hampton Loade furnace was still working in 1668. The works were not transferred to Philip Foley and the detailed accounts that survive from that and subsequent years do not mention a furnace at Hampton Loade. Indeed, an inventory of Hubballs Mill in Morville, part of the Foley empire in 1668 records the presence of “materials from Hampton”, perhaps suggesting that the furnace had been dismantled and various items salvaged. John Legas was still living in Highley as late as 1672 when he paid Hearth tax. He was buried in Diddlebury in 1688. A Sebastian Legas, probably a son, was also living in Diddlebury at this period and perhaps worked at Bouldon furnace. Sebastian also seems to have worked at Tislop furnace (south of the Clee Hill) and Cleobury ironworks. John the eldest son worked at Leighton Furnace. Another John, son of Sebastian and so probably grandson of John of Hampton became a partner in ironworks in Sussex (5).

Hampton Loade Furnace - Operation

The success of any furnace was determined by the ease both with which it could get its raw materials and dispatch its products to market. Hampton Loade was just outside the main iron producing districts, although it was not unique in this respect. However, on the banks of the Severn, it was in a good position to receive and send out materials. Its general location was probably determined by its proximity to iron ore and particularly woodland for charcoal supply (Figure 2). The immediate site was dictated by the presence of a stream that could power its bellows and the attractions of easy river transport. Iron ore could have come from two sources to Hampton Loade. Some doubtless came downstream from the Ironbridge Gorge, brought to the furnace by boat. However an alternative source would have been from the Wyre Forest Coalfield, in Billingsley and Chorley. In the mid Sixteenth Century there was no other local outlet for this ore and it would have involved a relatively short journey of about 5 miles by packhorse to bring the ore to the furnace. Crossing the river would have involved few problems as the furnace was next to a ford and the ferry was also in existence at this time. In the next century, ore from Billingsley and Chorley was to be sent much further distances (6).

Figure 2: Ironworks in the vicinity of Hampton Loade
 This figure is representative. Not all works shown operated at exactly the same period.



The main cost of a blast furnace at this date was for charcoal, the fuel used to smelt the iron. Wood was cut in nearby forests and converted to charcoal on the spot, the finished product was then carefully transported to the furnace. Charcoal is bulky and fragile, crushed material was no use to the furnace masters. The maximum range from which it could be bought overland was about 10 miles, if this distance could be kept to below 5 miles, so much the better. To a first approximation, something like 100 acres of woodland a year would be needed for a furnace producing 200 tons of iron p.a. Once cut, the wood would take something like 20 years to regrow before another crop could be taken from it. We do not know the capacity of Hampton Loade Furnace, although other furnaces of this date in the West Midlands produced about 300 tons of iron a year. Very roughly, it seems likely that Hampton Loade would have consumed about 150 acres of wood each year and would have needed access to about 3000 acres of woodland for sustainable production. Whilst we do not know for certain the extent of local woodland in the mid 17th Century, it was probably not that different from that existing at present. A 10 mile radius from Hampton Loade covers the entire Wyre Forest; 6000 acres of woodland. Within 5 miles there is probably over 2000 acres, including Arley Wood, woods in Kinlet and Chorley, along the Borle and Severn Valleys and at Dudmaston. (The presence of this woodland belt may have been a crucial factor in the decision to build a furnace in the vicinity of Hampton Loade). There would also have been perhaps another 1000 acres or more around Kinver and Enville. Against this, it needs to be recognised that these woods were used by other iron works. The woods at Kinver and Arley must have supplied the various Stour iron works and these certainly drew on sources further into the Wyre Forest in the 1670s. There were iron forges at Clebury and Morville and other furnaces around the Cleve Hills, East Shropshire and Worcestershire (Figure 2). In the short term, Hampton would have no problem in meeting its needs for charcoal. In the Foley papers there are a number of transactions for charcoal from local estates which might be connected with Hampton Loade Furnace and these are shown in Appendix 1. In the longer term, some skill would probably be needed to ensure an adequate supply of fuel, perhaps having to bring charcoal some distance along the Severn (7). It would have been desirable to use limestone for flux. Small quantities of limestone are available in Alveley with larger amounts in Trimpley. However, the furnace would probably have needed to bring in most of its material from Wenlock, Benthall or perhaps even the Cleve Hills.

We know nothing about the details of how the furnace operated. Seventeenth Century furnaces often worked

intermittently; with periods of inactivity stretching over several months. Hampton may well have fitted into this pattern. When it was working, it certainly was busy making castings as the presence of John Legas the potfounder demonstrates. Some furnaces specialised in castings; thus Abraham Darby essentially used the furnace at Coalbrookdale for this purpose in the early 18th Century. In the Civil War there would have obviously have been a market of armaments and Thomas Foley subsequently supplied these to the Navy, However the main thrust of the business was the production of bar iron; the furnaces in the 1670s existed to supply pig iron for the forges. As far as I know, there is no evidence to show whether Hampton Loade was involved in this trade, although it would be surprising if it did not supply at least some local forges (8).

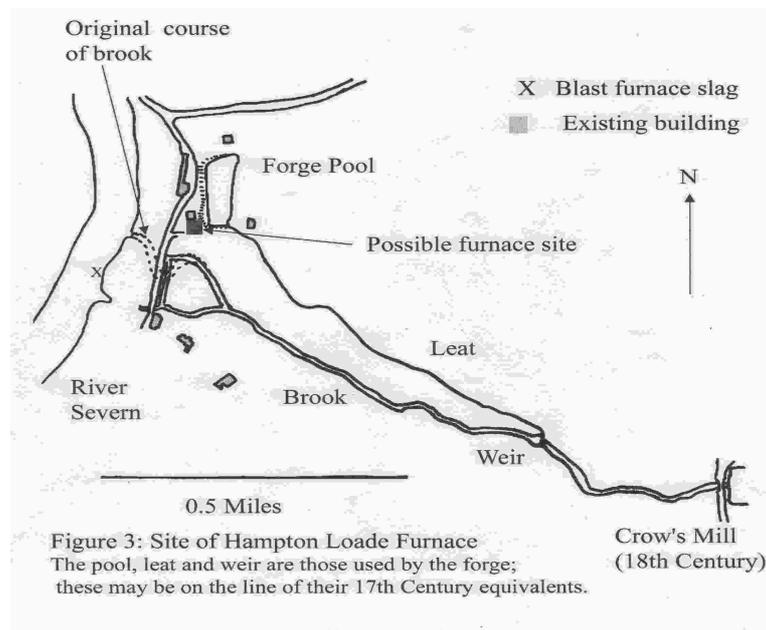
In the absence of accounts, it is impossible to say why the furnace probably closed in the 1660s. Its life of 20-25 years indicates that it achieved at least modest success. Presumably the Foley's found that they could supply their needs more effectively from other furnaces. If it really did specialise in castings rather than iron for forges, it may have become too peripheral to the main family business. There may have been local problems ensuring a steady supply of charcoal and the expenses of transporting ironstone must have also added to its costs.

Hampton Wharf

The closure of the furnace was not the end of Hampton's involvement in the iron trade. The Foley accounts from 1668 frequently refer to a warehouse at Hampton for storing iron. However, Peter King is of the opinion that this was located in Wolverhampton not Hampton Loade and logistically this makes much more sense. The Foleys had a large warehouse at Bewdley to serve the Severn Valley. However in the 1730s there are references to a wharf at Hampton Loade in the Knight family accounts. Richard Knight owned a blast furnace at Charlecotte (in Aston Botterell parish, east of the Brown Clee) and a furnace and forge at Bringewood, west of Ludlow in Herefordshire. Pig Iron from Charlecotte went to a number of places including the Bewdley warehouse, a warehouse at Roundthorn near Ludlow and the wharf at Hampton Loade. At the end of the 1730s a new wharf at Bridgnorth owned by William Oates appears to have largely replaced Hampton as a place of despatch (9).

Surviving Remains.

As the likely site of the furnace and warehouse was extensively redeveloped at the end of the Eighteenth Century for HamptonLoade Forge, it is not surprising that there are now no obvious remains of earlier activity. However, there are a few intriguing pointers (Figure 3).



The most long-lasting memorial to any ironworks is the slag that it produced. There is no shortage of slag at Hampton Loade, almost all of it coming from the forge. Fortunately the slag from a charcoal blast furnace is quite distinctive; it forms green, glassy lumps. When the Alveley Historical Society visited Hampton Loade two years ago, I recovered a single lump of this material from the much more extensive forge slag on a beach besides the Severn. Most of this material had probably been washed down Paper Mill brook. Under other circumstances this would hardly be compelling evidence; however, given the later disturbances the site has seen, including the deliberate removal of slag at the end of the last century, it is perhaps as much as could be expected. Of course, the Severn can carry material many miles, but as the rest of the beach was entirely made up of slag from the forge, the simplest explanation is that the blast furnace slag was also from the site.

On a subsequent trip this May, Paper Mill Brook was followed upstream from its confluence with the Severn for about

0.5 miles. Through the site of the old forge complex, the stream bottom is covered in silt, but just above this it becomes rocky. No slag was visible here or anywhere further upstream. This strongly suggests that the furnace was close to the Severn, on the site of the later forge. If it had been further upstream, there should have been traces of slag in the brook. As expected, there is no sign of the furnace upstream of the forge and indeed the next man-made feature is the weir that fed the water course for the forge. The latter can be traced on the ground all the way back to just before the former holding pond on the forge site. No other leat can be seen. We know that Thomas Foley "diverted" Paper Mill brook for his furnace; this presumably means he constructed a weir, water course and holding pond. In undisturbed woodland some trace of these features would be expected to have survived. It is a distinct possibility that the forge reused the weir, leat and holding pond originally constructed by Thomas Foley for his furnace. There would certainly have been significant repair and reconstruction of these features; however, I suspect that they still preserve much of Foley's work. This would suggest that the furnace would have been somewhere close to the current cottages. One other possible survival from the time of Foley is the small cottage, just to the east of the old forge pool. This has not been examined in any detail, but superficially it appears that it could date from the mid-17th Century. However, it is not shown on a map of Quatt of 1817 so its outward appearance is probably deceptive (10).

Conclusions

Hampton Loade has a long association with the iron industry, first with a furnace then a warehouse. Particularly if the warehouse was on the site of the old furnace, then memories of this industrial past would still have been fresh when the Thompson brothers arrived looking for a site for their forge. If the water works associated with the blast furnace were still visible and reusable, this could have been an important factor in the siting of the forge at the confluence of Paper Mill Brook. I believe much can still be discovered about the earlier phases of the iron industry at Hampton Loade, both from research in the archives and especially a survey on the ground.

Appendix 1

Possible charcoal purchases for Hampton Furnace

E12/VI/KAc/83 Wood and mines from Thomas Cooper, pp Earl of Leicester.

552 cords 2.5' @8/6 per cord in Hawkeswood

347 cords 2.5' @8/- per cord in Leigh Park

524 loads of mine, whereof 250 loades allow unto the price of wood.

(Not a strong candidate, unless Hawkeswood can be linked with Hawkbatch, in the Wyre Forest. "Mines" is a term for ironstone)

E12/VI/KAc/84 Thomas Whitmore for cast necessities from Hampton Loade

1 ton 6cwt 1 qr at 10s, £13-2-6

Credit of 36 cords 6' of wood rec'd in 1652. Henry Shaw says not worth more than 5/- per cord but I allow 5/6. £10-2-1½.

(See text; almost certainly cordwood for Hampton)

E12/VI/KAc/105 Thomas Wolryche's account 1656-61

550 cords 6' @ 6/6, £178-19-10

1284 cords 4' @ 5/-, £321-12-6; this payment for cutting cords by John Sharp.

(Wolryche owned Dudmaston Hall and was ultimately Foley's landlord, having purchased Ley Hall from Thomas Jervois in 1628)

(References are to Foley Papers, Hereford Record Office).

Appendix 2 Elliot's Mill

Elliot's/Moorehouse Mill appears to be previously unrecorded as a mill in Alveley. Its approximate site can be established from the present Moorehouse Farm, in the north-west of Alveley, although from at least 1770 its lands did not border on Paper Mill brook. The indemnity granted by Foley to Heath indicates that it was upstream of the furnace weir; it is unlikely to have been much further downstream Paper Mill Brook than Crow's Mill which survived into this century. It must have been close to Crow's Mill; it is possible that the two mills are same, the older name being forgotten as it changed ownership. A survey of Paper Mill brook might clarify the relationship between them (11).

John Heath, the miller is mentioned in the Alveley Parish Registers. He baptised two children, Thomas in 1639 and Elizabeth 1642 before Elizabeth his wife was buried in 1649. It seems that if there was periodic flooding of his mill, this did not put him out of business. Why the mill was called Elliot's is not clear. The parish registers record the burial of Thomas Eliotes in 1584 and assorted baptisms and burials associated with a Francis Eliotes from 1600 to 1614. Perhaps one or other of these men held the mill.

Acknowledgements.

I would like to thank Mr P. Foley for access to the Foley papers in Hereford Record Office. I am grateful to Peter King for commenting on a previous draft of this article. Mr and Mrs Ibottsen gave access to their land at Hampton Loade and Tim White assisted with fieldwork.

References

- (1) Most textbooks of industrial archaeology give an account of the working of a charcoal blast furnace; in my opinion the best Coalbrookdale has at its core a charcoal blast furnace of 1658, albeit subsequently used for coke smelting and expanded to make the Iron Bridge. A “pure” charcoal blast furnace that is approximately contemporary with Hampton Loade is on the Dick Brook at Astley, Worcestershire (*The early industrial complex at Astley, Worcestershire*, P.J. Brown, *Post Medieval Archaeology*, 16 [1982], 1-19).
- 2) The role of the Foley family has been examined in numerous articles; see *The Foley Partnerships; the iron industry at the end of the charcoal era*, B.L.C. Johnson, *Economic History Review*, Series 2, 4, (1952), 322-340; *Masters and Men in the West Midlands Iron Trade before the Industrial Revolution*, M.B. Rowlands, Manchester University Press, 1975, 56-109; *The Records of Philip Foley's Stour Valley Iron Works, Part 1*, Ed R.G. Schafer, Worcestershire Historical Society, New Series 9, (1978), xi-xxiii, 34-38. The career of Richard Foley is described in detail by an article by P.W. King in *Trans. Staff. Arch. Soc.*, 38, (1996/7). For the Knight family, see *The Knight family and the British Iron Industry 185-1902*, L. Ince, Ferric Publications, 1991.
- 3) Hereford Record Office (HRO); E12/VI/KAc/161, Lease 5th April 1623; E12/VI/KAc/162 Settlement 19th July 1647; E12/VI/KAc/64 Agreement 13th April 1641.
- 4) E12/VI/KAc/92
- 5) See Chelmarsh and Highley parish registers (baptisms) for John Legas's early movements. Evidence of Ann Legas, Public Record Office E134/21&22 Chas II/Hil 29. For ownership of Legas lands in Highley, see Shropshire Records and Research Office (SRRO) 6000/593, 541 and 609. The movements of Sebastian and John can be followed in the parish registers for Diddlebury, Cleobury Mortimer, Milson and Leighton. The career of John II in Sussex has been documented by P.W. King in *Sussex Arch. Coll.* 133 (1995), 255-62 and Jeremy Hodgkinson (*ibid.*, 134 (1996), 155-67). The inventory of Hubball's Mill is in Schafer, 30, *op. cit.* Peter King is of the opinion that Hampton was worked on a 21 year lease from 1641-1662 and closed when this lease expired. (*Early statistics for the iron industry; a vindication*, P.W. King, *Journal of Historical Metallurgy* 30 [1996] 23-46).
- 6) See *The Wyre Forest Coalfield*, D.R. Poyner and R.E. Evans, Tempus, 2000.
- 7) I have based my estimates of charcoal consumption and furnace capacity on those derived by Prof. G. Hammersley, *The Charcoal Industry and its fuel*, *Economic History Review*, 2nd Series, 26 (1973), 593-613. The Foley papers in HRO contain many accounts for coppicing and purchase of charcoal. At this date coppicing may have been on a 16 year cycle, but given the uncertainties associated with other parts of my calculation, I have not corrected for this.
- 8) For a general account of the West Midlands iron trade at this time, see Rowlands, *op. cit.*
- 9) See *Charlcombe Furnace 1733-1779*, N. Mutton, *Bulletin of the Historical Metallurgy Group*, 1966, 36-42
- 10) SRRO BB/E/1/5/1/8,9. This map together with the tythe map and the 1:2500 OS First Series map has been used to produce Figure 3.
- 11) Crow's Mill is marked as a paper and leather mill on a 1770 map of Alveley and is still shown by the OS in 1928 (A.J. Nicholls, *The history of Alveley*, 1994, maps 1 and 6).