

**THE  
JOURNAL  
OF THE  
WILKINSON  
SOCIETY**

**IRON BRIDGE BICENTENARY NUMBER**

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Editor : N.J. Clarke

## THE WILKINSON SOCIETY

The Society was formed in 1972 to meet the demand for an organisation to preserve the material and documentary evidence of Broseley's industrial past. Since an important part in this industrial past was played by John Wilkinson, who lived for a time at "The Lawns", it was decided that the organisation should be known as The Wilkinson Society.

The aims of the Society are :-

- (i) to act as custodian of any relevant material and information and to make such material and information available to interested individuals and organisations ;
- (ii) to promote any relevant preservation activity and to assist individuals or organisations in such activity where deemed appropriate ;
- (iii) to provide a link with the community of Broseley for individuals or organisations undertaking local historical research.

Any available material will be added to the existing collection of Broseley and Wilkinson relics at "The Lawns", Church Street, Broseley. This collection is open to the public on Saturdays and Sundays between Easter and September, from 2 p.m. until 6 p.m., or at other times by appointment.

Administration of the Society is by an annually elected committee. Membership is open to anyone interested in the Society's aims and activities. These activities include illustrated lectures, social evenings, researching and exhibiting the collection, field trips and coach tours. Members are kept informed by newsletters, and this annual Journal presents articles on the history of the Broseley area, John Wilkinson, and industrial archaeology in general.

### EDITORIAL

As one of the Society's contributions to the Iron Bridge Bicentenary Year, we are devoting this number of the Journal to JOHN WILKINSON, one of the prime movers of the bridge project. In the words of the most recent work on the subject ('The Iron Bridge : Symbol of the Industrial Revolution', by Neil Cossons and Barrie Trinder; Ironbridge Gorge Museum Trust & Moonraker Press, June 1979), "the proposal to build an iron bridge between Madeley and the south shore of the Severn originated in a letter written in 1773 by Thomas Farnolls Pritchard, the Shrewsbury architect, to John Wilkinson the ironmaster ... It was ... entirely within Wilkinson's character to be connected with the first iron bridge. He was, except for one short period, a major shareholder in the project throughout the time when the bridge was being built. There is no evidence whatever that he was directly concerned with the erection of the Iron Bridge, but it does seem highly likely that it was he who took the first steps towards making Pritchard's proposition a reality."

In this special number we are reprinting articles relating to John Wilkinson from earlier issues of the Journal and Society Monograph No.1. on Wilkinson and the two Willey Ironworks (all now out of print). In addition, we include in this issue a short article on Wilkinson's mines and ironworks at New Hadley and a note on the reputed remains of an iron boat connected with Wilkinson at Helton Tarn near Lindale. Finally, a complete list of the lectures and field-trips organised by the Society relating to John Wilkinson is appended.

The regular features of the Journal, together with articles on mines in the Broseley area, the remains of river craft in the Severn at Coalport and an analysis of the 1851 census figures for part of the parish of Broseley, are being held over until the next issue (No.8, 1980), which will be published in January.

## "KING OF THE IRONMASTERS"

There are probably more legends surrounding the name of John Wilkinson than that of any other industrialist, either of his own time or since: born in a market cart, later a discoverer of coal-gas, coal-tar, the coke-smelting process in iron, improver of steam-engines, and even (in one learned encyclopaedia) the builder of the famous Iron Bridge ! The fact that few of these tales have any basis of truth must not, however, obscure the fact that Wilkinson's achievements were immense. He was, of course, what we in Britain call a "character"; he was also his own publicity agent and would be the last one to disagree with anyone who laid extravagant claims to his inventive genius. One notion that Wilkinson himself never claimed was the foundation of the "Wilkinson Sword" Company, a firm with which he had nothing to do, despite popular belief to the contrary !

Whilst remembering the fact that Wilkinson had an enormous industrial "empire" around which he circulated his own coinage (minted at Soho, not in Broseley, I hasten to add), it is with his doings in the Broseley area that this short article is concerned. Nevertheless, let us not forget the "chief cities" of his "empire", before looking at his work in the Broseley region; Bersham, Bradley, Hadley, Hollinswood, Snedshill and Brymbo, where he ran extensive and important ironworks; Castlehead and Brymbo, where his agricultural improvements drew forth much contemporary praise from farming experts of the day; his ventures in copper and his big lead concerns at Buckley, and around Minera, Brymbo and Mold, as well as at Rotherhithe; his important shareholdings in three or four canals, and his banking enterprises. Add, too, that in his seventies he sired three children by his housekeeper at Brymbo Hall and one has at least a somewhat remarkable man !

Before settling at "The Lawns" in Broseley, Wilkinson had been an iron merchant in Cumberland and an ironmaster under his father at Bersham. When he arrived at Broseley in 1757, it was to join several Bristol and Shropshire businessmen in the taking out of a lease from Lord Forester on a furnace site at Willey. This was confirmed in a further lease of 1759, where it appears that Wilkinson was to be a kind of technical adviser to a company which would specialize in the manufacture of guns for Board of Ordnance contracts, Britain having in the meantime gone to war with France. It is said that Wilkinson swindled his Willey partners by informing them that the whole venture was a waste of money: the partners therefore sold their shares cheaply and quickly to the ironmaster, who then unearthed a store of good-quality iron which he had buried under Willey, and sold it at a goodly profit ! Wilkinson had arrived at Willey as a widower, with a small daughter who was being brought up in Shrewsbury, but in 1763 he married a Wroxeter lady of 40 and settled at "The Lawns".

In 1774, Wilkinson patented a new type of cannon-borer, an engine with which he could bore iron with astonishing accuracy. His skill as a caster and borer brought him to the notice of James Watt and the latter's partner, Boulton, whom Wilkinson already knew. Wilkinson now produced a cylinder-borer and, in doing so, provided Watt with cylinders "bored to truth". This was the answer to perhaps the most difficult of Watt's problems, and with this skill the Broseley ironmaster was to make himself indispensable to the Soho partners, who insisted that all of their engine parts should be made by, and bought from, Wilkinson. The second Watt engine was assembled at Willey, where most of the parts had been bored and fashioned. Watt himself came to look over the workmanship and the setting up of the engine, staying with the ironmaster at "The Lawns". He expressed his complete satisfaction with Wilkinson's results and in 1776 the finished engine was working at what Wilkinson had termed, since his acquiring control in 1763, the New Willey Company. It was set up to blow his blast-furnace at Willey, the first use for a steam-engine other than

raising water, whether for pumping or fountains or providing water for wheels to work bellows.

Between 1768 and 1770 Wilkinson set up a new ironworks, this time at Bradley, near Bilston, in Staffordshire. Here he had another mansion as well as coal mines and blast-furnaces, in which he used coke, as he had at Bersham. In time, this became his mightiest ironworks. At Bradley in 1782 - 83 he set up another "first", in this case a steam-powered forge-hammer, driven by the new 'Sun and Planet' gear. Another house purchase was made in 1778 - 79, this time a solitary, marine residence at Castlehead, near Grange (N.Lancs.) on a piece of marshy land which became an island at high tide.

In 1779, Wilkinson's name appears as one of the chief shareholders in the Iron Bridge project over the River Severn, connecting the two parishes of Broseley and Madeley. In 1787, the ironmaster produced the world's first iron boat; it was a long narrow barge, made at the Willey ironworks and launched at the Willey Wharf to a salute from Wilkinson's Willey guns. Other such boats appeared from Wilkinson, mostly for use on the canal near Bradley.

At about this time, too, he completed what was surely one of his most gigantic tasks, that of casting and making 40 miles of cast-iron piping for the Paris Waterworks. Some of these pipes were made at Willey, where they were taken down Wilkinson's Tarbach Dingle tramway to the wharf on the Severn and from there to the trans-shipment port of Chepstow. Other pipes were made at Bersham from whence they went overland to Chester and from there by sea to Chepstow.

In the 1790's Wilkinson's terrible fraternal war took place with his brother, William; and one of the results of this was that William informed Boulton and Watt that his elder brother had been erecting Watt-type steam-engines, not only for himself, but for other customers both at home and abroad, unfortunately without premiums! After a long, undignified period of wrangling, Wilkinson had to pay up, much to his annoyance, for, rightly or wrongly, he considered that his part in the eventual success of the steam-engine had been at least as important as Boulton's had been. The end of the century found him spending more and more time between Bradley and his new ironworks (acquired in 1792) on the rich Brymbo Estate in North Wales, not far from Bersham which seemed to be declining in importance. It is not surprising, therefore, that in 1800 he leased his Broseley home to John Rose, the famous Coalport China manufacturer.

In 1804, with Snedshill and Hollinswood having been relinquished some years earlier (1793/97), Wilkinson began producing iron again in that area, on the New Hadley Estate, acquired in 1791. By now Wilkinson was a father again: his house-keeper at Brymbo Hall produced three children between 1802 and 1806. His appointed heir, however, was his nephew, Thomas Jones; provided, of course, that he took the name of Wilkinson - which he did! In 1808, the mightiest ironmaster of the day died at his home in Bradley and he was buried, after several attempts, in his huge cast-iron coffin in the front garden of his home at Castlehead. The grave was surmounted by a tall obelisk, also of cast-iron, on which was inscribed his own epitaph, or at least a watered-down version of the somewhat vitriolic original!

In the years between 1812 and 1817 the Wilkinson empire was brought down in ruins through useless, unprofitable litigation, largely the work of his heir and nephew. In 1828, his coffin and obelisk were removed to the village of Lindale, in order to expedite the sale of his former house, and the end was complete.

Before his death, Wilkinson had threatened his Bradley workers that, seven years to the day after his death, he would come back to see his beloved furnaces, mounted on his big grey. It is surely a testimony to the power of the man's personality to read in the faded press notice of July, 1815, that several

thousands turned up to see their former squire and master ! Thomas Telford had recognised his stature. When he went to discuss the plans for the new Ellesmere Canal in October, 1793 he wrote : "I had the support of the great John Wilkinson, King of the Ironmasters ....."

Wayne Turner

(Journal NO.1, 1973)

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THE BROSELEY HOME OF JOHN WILKINSON

John Wilkinson was just under thirty when he came to Broseley as a partner in the New Willey Company in 1757, leaving his father and young brother, William, to carry on the ironworks at Bersham. His first wife, Ann Maudsley, a woman of ample wealth, had died four years earlier, and his young daughter Mary was in the care of Mr. & Mrs. Flint of Shrewsbury.

He was by no means the senior partner in the new Company, but he was the only working Ironmaster among the ten partners and would no doubt have acted as Manager. Where he stayed or lived in or around Broseley for the next few years is not known, but in 1763 he married for the second time, having taken over the New House in Church Street. His second wife, Mary Lee of Wroxeter, was also a woman of wealth and in the same year he became sole owner of the Company.

The New House, now known as The Lawns, was then over thirty years old, having been built in 1727 by Mr. Stevens, a local mine owner. The name and Phoenix embossed on the magnificent lead rain head, suggest that it was built to replace the builder's previous home.

The house was originally a typical square Georgian Mansion with the usual central front door, approached by a short flight of steps. The ground in the front was generally lower than it is now and what is now a cellar was then a basement with sunken windows. The area in front of the house was probably bounded, as now, by a low wall, but with a single entrance through a pair of drive gates. The present wall adjoining the road appears to be original, but that separating the stables and domestic entrance from the front lawn is part of the 19th century alterations. Wilkinson provided a new pair of iron gates.

The front door opened into a passage or lobby which, with the main stair well beyond, divided the house from front to rear. Three reception rooms of almost equal size occupied three quarters of the ground floor, while the remaining quarter accommodated what may have been a servants hall and a servants staircase direct to the second floor. The kitchen, back kitchen, scullery and shoe room appear to have been accommodated in a single storey domestic wing on the north side of the house, and one of two very small extensions at the rear. The second of these two small extensions provided what may have been an office, 'Mr. Wilkinson's Room' or 'The Smoking Room'. There was also a malthouse, a brewhouse and stables apart from the main structure. With garden, paddocks and possibly orchards at the back, it was a well designed, compact and practical professional man's residence. It would undoubtedly have had an air of solid, homely comfort, typical of the age.

In spite of extensive alterations around the mid-19th century, many features of the original lay-out can still be seen. The original and very fine main staircase with its twisted balusters remains, as does the panelling and beautifully proportioned overmantle in the one reception room which has not been altered. The large rain-head previously mentioned has the date 1727 on the square down spout and a lead pump in the cellar almost certainly dates from the

time the house was built. This pump, with its wooden piston, can still be made to work. That part of the present outbuilding adjoining the road appears to be original, as does a small square building behind the later extensions. This attractive little structure has a bulls-eye glass window.

Although tradition has it that he added two new wings, it is doubtful if Wilkinson made any extensive alterations to the original, and, if he did, they cannot now be traced. The ground floor of one of the small extensions at the back was, or later became, a butler's pantry with a steel door and barred windows. These and other security measures have been attributed to Wilkinson, but are much more likely to have been part of the later alterations. He certainly did, however, employ Thomas Farnolls Pritchard, the Shrewsbury architect, who designed the Iron Bridge, to provide a new chimney piece of wood and marble in the panelled room. This chimney piece can still be seen together with a copy of the original working drawing which includes a time sheet for Pritchard's three workmen. There are signs that the chimney piece is a replacement, indicating that the panelling and overmantle are original.

In 1800 Wilkinson leased the New House to John Rose, China Manufacturer, for thirty guinease per annum ...'the said John Rose paying the whole of the window tax'. We have a copy of the inventory of effects taken over by John Rose which mentions a best parlour with 'wainscoting all round from top to bottom of room', and 'a chimney piece and marble stone'. The inventory also mentions a new grate in the kitchen 'in place of a very old one now believed to be in the malthouse', and in the garden 'two large furnaces for soft water'. Presumably these were water tanks and two very old cast iron tanks still to be seen may well be those referred to.

From the New House John Wilkinson could have seen the glow in the sky from his furnaces at Willey and from those at Bradley. It was here that Brigadier Marchant de la Houliere was entertained when he was investigating the superiority of British cannon on behalf of the French Government; as was James Watt when he was superintending the installation of one of his first two commercial steamengines at Willey. It seems likely that the first iron boat was designed in 'Mr. Wilkinson's Room' and in his many applications for patent rights up to 1794, he styles himself 'Ironmaster of Broseley'. Although his Willey works were eclipsed in size by later enterprises and he moved on to more pretentious homes, the foundations of his fortunes were laid in Broseley, and Willey must have played its part in the development of his many improvements to the iron industry. The New House was his home for over thirty of his most active years and the comfortable Georgian House seems to have served him well.

After a period during which debris from a nearby iron foundry appears to have reached almost up to the back door, the house was extensively altered during the mid-19th century. The enlarged reception rooms and huge kitchen, with its elaborate and in some ways impractical cooking arrangements, the high boundary walls and the separation of the main and domestic entrances, indicate a more formal way of life and a change in master and man relationship which would have been quite foreign to John Wilkinson. Similar features can be seen in other contemporary buildings in Broseley and show something of the immediate local effects of the Industrial Revolution.

Ralph Pee

(Journal No.1, 1973)

### JOHN WILKINSON'S TRADE TOKENS

After 1775 the Royal Mint suspended the striking of copper coins and therefore the need for small change had to be answered by the issue of what are now known as industrial tokens. Copper half-pennies, countermarked in 1786 by the Adelphi Cotton Company, Deanston, Perthshire, seem to have been the first to appear; these were to pass as 4s. 6d. In 1787, Thomas Williams, the "Copper King", struck coins of farthing, halfpenny and penny denominations, bearing a druid's head upon them. Wilkinson, a partner of Williams in many copper ventures in North Wales and Cornwall, soon followed suit and between 1787 and 1798 his money was circulated in several Midland, Western and Welsh counties. As well as copper coinage, tokens of silver and leather were issued, along with guinea notes, and this money was used for large-scale commercial transactions, apart from payment of wages. Wilkinson, like others (Coalbrookdale, for instance), was forced to do this due to the aforementioned lack of small change but one suspects that here was a wonderful opportunity for self-advertisement, a chance not to be missed; for while Williams, Reynolds, Darby and others merely mentioned their companies (Parys Mines Company, for example, in the case of the former), Wilkinson, alone of the industrial token issuers, had his own effigy stamped on his coins, together with the words - JOHN WILKINSON, IRONMASTER - ! The only face to appear on British coins of the 18th century is that of the monarch, with, of course, the notable exception of John Wilkinson. He literally "made" money, too : his coins were at 32 to the pound weight, which made them 2s. 8d. at face value per pound. He paid 1s. 11d. per pound ( the mint charge), for these, thus making a profit of 9d. per pound, say 40%, and he ordered them by the ton ! Odd forgeries appeared too and one of these shows perhaps a knowledge of Wilkinson's character, as it bears the legend : "And he said, Let us make pennys after my own image" ! Wilkinson's tokens show on the edges, the places where they would be redeemable : Willey, Snedshill, Bersham and Bradley, at first, and later on, Anglesey, London and Liverpool. The forgeries have some interesting places : Beccles, Warley Camp, Ballymurtagh and The Temple of the Muses.

Contrary to local legends around Bersham, Broseley and Bilston, Wilkinson did not have his own mints at these places though he may have had a store for coins at these centres of operations. His tokens were at first supplied by Matthew Boulton, who patented a steam-powered mint, and John Westwood. The latter seems to have been unable to cope with the ironmaster's demands for by 1792 Wilkinson was dealing solely with Boulton for his tokens. Boulton replied to Wilkinson : "You have been petitioning Westwood for 15 cwt. of coin weekly. Allow me to remark that I expended more than ten guineas in dies to coin for you -- cwt. of copper and that when I found you had pitted Westwood against me I stopped short ..... yet nevertheless if you choose to order any quantity of halfpence worth engraving new dies for, I will contract to make you as many per week as you please." (October, 1790). In accepting this offer, Wilkinson replied (8th December, 1790): "I shall be perfectly content provided I can have about 5 tons more speedily, which are in immediate demand. A further quantity will be wanted for 1791. The old forge, as well as my resurrection upon it, is approved by those who have seen it as well as by yours ever, John Wilkinson." On December 11th, however, Wilkinson complained that the halfpence were four in the pound less in number than those which Westwood used to make for him and he asked for coins of "proper size" and ended with the moan, "If you knew my distress in the want of copper I think you would have supplied me sooner." In February, 1791 he ordered a ton of coin from Westwood and, in the same month, another order was placed with Boulton. In this letter he said that he was willing "to be plastered again" if Boulton wanted a new die for the effigy. In October, 1792, he launched a further



attack on Boulton : "It has been from inaction or indecision on your part that I have been obliged to get any of that article elsewhere .....  
beefsteak to a man that is hungry will be preferred to venison, where waiting for it is a condition."

On March 3rd 1797, he informed Boulton : "I am engaged in preparing small notes for my workmen as change, similar to what I issued in '73 and '74 previous to Sir George Savile's Act. That was a measure I then adopted on the great scarcity of silver which since has been plentifully supplied by the coiners of bad money. Good notes will cure the evil of base metal better and more effectively than the gallows." The ban resulting from Savile's Act of 1775 was not due to be lifted until 1798. Wilkinson's brother, in a letter to Watt in March 1797, describes these notes as "a new coinage of 1/-, 6d. and 3d. notes on cards." These may well be the leather tokens cashable in Wrexham, but so far none of these have been discovered; however, the Wrexham historian, A.N. Palmer, in his booklet, "John Wilkinson and the Old Bersham Ironworks", prints a copy of a Wilkinson guinea note, issued by his Brymbo trustees, 18th January, 1814. The Wilkinson coat-of-arms appears on it and it is quite likely to be a descendant of the 1797/98 issues.

To return to the examples of Wilkinson money which does, not infrequently, make appearance, the copper coins. The first issues were in 1787 with the name wrongly spelt, as WILKISON, on one side, and this appeared with each yearly issue, with the face of the ironmaster himself, a right profile, surrounded by the words, JOHN WILKISON IRONMASTER. On the edge were the names of some of his concerns, Bersham, Bradley, Broseley; on the reverse side, a different design appeared each year, though designs of previous years were repeated. In 1787, a worker is shown putting a lump of iron under an automatic hammer; for 1788, a boat is shown, not necessarily the iron boat; for 1790, a woman leans on a cog-wheel; for 1791, with the name now misspelt WILKESON, a naked man (Vulcan ?) sits holding a hammer over an anvil and the rigging of a ship is just visible. Around the edge are the names Bradley, Bersham, Willey and Snedshill. For 1792, the words on the edge said, Payable at London or Anglesey and the design shows a crown surmounting a harp, with the words, NORTH WALES. Quite often, a 1792 issue shows the 1791 design. In 1793, there is a new effigy, Wilkinson doubtless having been "plastered again"; on the reverse a woman holds a pair of scales, there is a Latin legend, MEA PECUNIA and on the edge the town names, Birmingham, Brighton, Liverpool. Coins can be seen in the Coalbrookdale Museum and Bilston Art Gallery while Wrexham Public Library has the following coins :- 1787(3), 1788(1), 1790(4), 1792(1), 1793(1), 1795(1). The silver token of 1788, worth then 3s. 6d., is rarely reported.

Perhaps "The New London Magazine" of December, 1787, should be allowed the final word on Wilkinson's copper coins :-

"In Greece and Rome your men of parts,  
Renowned in arms, or, formed in arts,  
On splendid coins and medals shone  
To make their deeds and persons known.  
So, Wilkinson, from this example  
Gives of himself a matchless sample.  
And bids the 'Iron Monarch' pass  
Like his own metal wrapt in brass !  
Which shows his modesty and sense  
And how and where he made his pence !  
As Iron when 'tis brought in traction

Collects the copper by attraction  
So, thus in him 'twas very proper  
To stamp his brazen face .... on copper."

Wayne Turner

(Journal No.2, 1974)

(Note : A recent publication on this subject is 'The Token Coinage of John Wilkinson', I.G.M.T. Information Sheet No. 2. Ed.)

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#### THE TWO WILLEY IRONWORKS

Well before Wilkinson's time the Broseley area had something of an industrial tradition: coal, ironstone and limestone were all available in economic quantities near the surface, wood was plentiful, and the River Severn gave relatively easy access to a great part of the Kingdom. By 1600 the area round Broseley was one of the most important coal-producing areas of the country. We find for example that at least three flanged-wheel wooden railways were in use in the Broseley/Jackfield coalfield in 1605 - 8 to carry coal from the mines to the river. If, as is probable, this type of railway was in use in the area for some years before 1605, then Broseley may well claim to be the birthplace of the now world-wide flanged wheel railway. At the time of the Civil War, in 1645, the fate of coal mined at Benthall was a matter of some strategic significance; by 1758 it is recorded that some 100,000 tons of coal were being shipped each year from Broseley and Madeley to places down the river; and the number of vessels registered in Broseley (i.e. in Jackfield, which was part of Broseley at that time) was greater than in any other port between Welshpool and Gloucester. This is a story of continuous expansion, not only in the coal-mining industry, but also in associated transport systems, including developments of national and perhaps even inter-national importance.

The iron industry developed more slowly; small ironworks or "bloomeries" appeared early in the 16th century, and the first blast furnaces in the area appeared in Shifnal in 1564 and at Lilleshall in 1591. Some of these early ironworks were located in the valley we know as "The Smithies", about two miles south of Broseley, and a chain of ponds built to provide water power for the hammers of a bloomery or forge, or possibly the bellows of a blast furnace, may still be clearly seen on the right-hand side of the Broseley-Bridgnorth road where it crosses the valley. The first known reference to a blast furnace at the Old Willey site suggests that it already existed in 1618, and the first Coalbrookdale furnace as we see it to-day is dated 1638. Whatever the origins of these furnaces may have been, they heralded an expansion which was to make the iron industry in East Shropshire of major importance. In 1754 there were three blast furnaces working in the area, one at Old Willey and two at Coalbrookdale; by 1759 there were twelve, including the furnace built in 1757 at the New Willey site. In 1788 Shropshire blast furnaces produced 37% of the total pig-iron made in the country, and one recent writer has observed that "in the 30 years between 1776 and 1806 the Shropshire iron trade reached the apex of its prosperity".

The overall picture that emerges is of an area which, for the two hundred years between 1600 and 1800, cradled the expansion of a very prominent part of the British coal and iron industry. The story of the two Willey ironworks spans this period almost exactly, and may be seen not only as a piece of local history, but also as a story which reflects what was happening elsewhere at the time, links with national developments at many important points, and in its later stages highlights the contributions of John Wilkinson to the industrial revolution.

The first point to be made clear, in developing the Willey saga, is that the sites of the two Willey ironworks are a considerable distance apart. Old Willey ironworks was located on Linley brook, not far upstream from "The Smithies", where a dam may still be seen from the Willey-Smithies road. The site is about two miles south of Broseley. New Willey ironworks was on the Dean or Cod brook, about half a mile south of Broseley. The site is indicated by a sign erected by the Wilkinson Society, near the toll-house on the Broseley - Barrow road. The two sites are thus about one and a half miles apart.

We do not know a great deal about the Old Willey ironworks in its very early days. However, it is clear that when Sir John Weld bought the Willey Estate from Sir Francis Lacon in 1618 he was keen to carry on the iron-producing and coal-mining activities of the Lacons. It has been established that Weld spent around £500 on the furnace at Old Willey about this time, a sum of money which, though large for the time, may well point to the conclusion that he was merely rebuilding it, and not building it from scratch. For the next hundred years or so references are scanty, but it is known that Old Willey was working in 1631, 1657, and 1687 - 88. After this it seems to have been leased to one Richard Baldwin. Then in 1733, this lease was taken over by Ford and Goldney, acting on their own accounts while they were partners in the Coalbrookdale Company. They also took over the lease of a furnace at Bersham, near Wrexham, at about this time. Ford and Goldney operated Old Willey, using coke, until their lease ran out, presumably in 1754; the furnace then seems to have fallen into disrepair, but was eventually taken over by the New Willey Company in 1757 and operated by them until 1774, when it was finally closed. Thus the Old Willey furnace, having seen many changes of ownership and fortune, operated on and off for at least 150 years; and from 1757 to 1774 it was operated in conjunction with New Willey by John Wilkinson. One of the difficulties which may have led to its closure was that the water supply was inadequate in dry seasons.

The story of the New Willey ironworks ought properly to begin in 1757, with the setting-up of the New Willey Company; but in fact it is relevant to start by going back a few years earlier than this. In 1753 Isaac Wilkinson and his son John took over the Bersham furnace from Ford and Goldney, of Coalbrookdale. One year previously, one John Wilkinson was buying coal from the Weld Estate at Willey. If these events refer to the same man, as seems likely in the light of subsequent events, then it may be concluded that John Wilkinson first came to Broseley in 1752 to buy coal. He may well have heard or seen that Old Willey was about to become untenanted, spotted the potentialities of the area and the imminent developments at Coalbrookdale, and hatched in his mind the plot which led to the formation of the New Willey Company. In the event, the New Willey Company was formed in 1757, with John Wilkinson as a junior partner and as technical manager. The Company was seen at this stage as a supplier of armaments and pig-iron. There were nine other people involved besides John Wilkinson, but he was the only working ironmaster amongst them. In 1757 Wilkinson was 29 years old, well educated, ambitious and skilled in his trade. His first wife had died a year earlier, leaving him with "ample wealth".

The location of the New Willey ironworks is hardly ideal, as the area is cramped and the way to the River Severn is over a steep river terrace. The brook is now very small and it seems likely that the water supply could not have been more than barely adequate in 1757. This may not have been very important, since by that year steam power had been used elsewhere to pump water back from tail-races to storage ponds. It seems probable that New Willey was designed from the outset to operate in this way using a Newcomen engine; there certainly was a Boulton and Watt "Topsy Turvy" engine on the site from 1777 to 1796, and it is thought that this type of construction indicates a conversion from a Newcomen engine. It seems reasonable to conclude that a Newcomen engine was installed originally in 1757, and was converted to a "Topsy Turvy" engine in 1777. The water complex for the New Willey works appears to have consisted of four dams, but these were not, as is usual, in a single chain. One very large dam, now breached, may still be seen some distance to the W.N.W. of the site, near the Lodge Farm. Two smaller dams may be seen, one on each side of the Broseley - Barrow road; they seem to have been on a tributary which is now dry. The location of the fourth dam, the one nearest the works, is not absolutely clear, but it seems highly probable that the embankment impounding the present pool and carrying the old road to Dean Corner and Willey, is on the site of the fourth dam and may even be that dam.

There are still many questions to be answered about the details of the site of the ironworks itself, which is immediately to the S.E. of the large dam. Although we know that the New Willey Company received authority to build one or more new furnaces, an excavation of the site is still needed to prove the existence of a second furnace. The distinct remains of the top of one furnace can be seen: this was built into the bank which forms the southern boundary of the site and is about 50 feet from what is now a large house. It is possible that this house was originally the engine house for the Watt blowing engine installed in 1776; and that the space between it and the furnace(s) was occupied by the 'regulating bellies' referred to below. Next to the large house is part of a row of workmen's cottages, very typical of the period, and still occupied. The cramped nature of the site is indicated by the proximity of these cottages to the works. From evidence found in the field to the South, it is thought that the coke hearths were situated in the area above and behind the furnace(s).

Just off the Barrow road, next to the Society's sign, are the remains of a small building, which is traditionally known as, and probably was, the weigh-house. It is reasonable to suppose that the works entrance was here. The line of a very obvious old track, generally accepted as being that of the Willey railway to the River, starts from the same spot. Much of the ironstone and coal for the works seems to have come from Benthall, and the remains of a pack-horse track may be seen in the field opposite the weigh house. There may have been a second railway route to the river going northward via Benthall; but the most used route was the railway built by the Company in 1757 from the works to a junction with an existing railway which ran from Rowton down Tarbach Dingle to the Severn. Wayleave was obtained from George Forester. The output of the works must have been considerable, as one track was evidently not enough. In 1759 the Company was granted the right to lay new tracks and make a double railway, the width not to exceed 10 yards, at a cost of £12 a year. Part of the wharfage on the Severn, about Gitchfield, became known as the Willey Wharf. The distance between the Works and Willey Wharf is about 2½ miles.

Since the Company was formed to produce, amongst other things, cannon, there would certainly have been a cannon boring machine on the site before 1774, at which date Wilkinson patented his improvements. In view of the paucity of the water supply, this earlier cannon-boring machine may well have been horse-driven. Hearsay evidence of a hoard of lead shot found on the site some years ago suggests that there may have been a shot tower, but for the present this must remain uncertain.

In 1763 John Wilkinson married his second wife, Mary Lea of Wroxeter, again a lady of some means. He moved at this time into the "New House" now known as "The Lawns", in Church Street, Broseley; and a chimney piece designed by J.F. Pritchard (the Shrewsbury architect who designed the Iron Bridge) is still to be seen in the house, together with a copy of his original drawing which names John Wilkinson as the client.

At some time between 1763 and 1774 Wilkinson gained complete control of the New Willey Company, and it seems to have continued its normal business during this period, J.W. being busy with his works at Bradley and Bersham. In 1773 he wrote from Bradley to his manager in Broseley saying that after four years' experimenting he had not only succeeded in using raw coal for smelting, but he had also doubled the output of the furnace. In 1774 Wilkinson patented a new method of casting and boring cannon, using a machine which caused the work to revolve while the tool was advanced along slideways. In the application for this patent he addressed himself as "Ironmaster, of Broseley", and it is tempting to surmise that the machine, which produced the first accurate cylinder for the prototype of the Watt engine, was developed at New Willey. In any case, Wilkinson was subsequently given a virtual monopoly for the manufacture of cylinders for Boulton and Watt engines. However, his big cylinder boring machine developed for the production models was at Bersham - the New Willey works did not have the room or power necessary.

After the success of the prototype Watt engine, Wilkinson lost no time in ordering a Watt engine for New Willey, which was the second production model. It had a 38" cylinder and was used for blowing the furnace(s) direct. We have a complete diagram of this blowing mechanism which shows two "regulating bellies" giving a continuous blast of 4lb/in<sup>2</sup> through a 3" tuyere. James Watt personally superintended the erection of this engine, completed in 1776, staying at the "New House" in Broseley whilst doing so. Brigadier Marchant de la Houliere remarks on the associated regulators which he saw under construction whilst he was investigating the reasons for the superiority of British cannon, on behalf of the French Government. He also stayed at the "New House".

As already mentioned, the "Topsy Turvy" engine (1777) discussed by Watt is thought to have been a conversion of an earlier Newcomen engine. As the furnace(s) were by now blown direct by the 38" Watt engine, the "Topsy Turvy" engine was used to supply a water-wheel and thus drive a boring mill. The last steam engine at New Willey was one with a 30" cylinder used to drive a boring mill direct; it was apparently built without licence from Boulton and Watt in 1787. Wilkinson built a number of engines without licence, and they are usually referred to as "pirate" engines.

Wilkinson's famous iron boat, the first in the world, was launched at Willey Wharf in 1787. One of the products of the works at this time was bar iron, which the iron boat, and others like it, carried via the Severn and the Staffordshire and Worcestershire canal to the forges in the Birmingham area. From 1778 onwards Wilkinson executed an order for 40 miles of iron pipes for the Paris waterworks and also supplied steam engine parts to France. Some of this work was done at New Willey and taken down the Severn for shipment. As England was at war with France at this time, the pipes gave rise to charges of "gun-running". They were 12" and 24" in diameter, in sections weighing up to 8 cwt each. The business was legitimate by the ethics of the time, but caused Wilkinson "a lot of worry for little profit".

Wilkinson moved from Broseley in 1780, though it was not until 1800 that he leased "The Lawns" to John Rose, the Coalport china manufacturer. New Willey works seems to have closed in 1804; since this was also the date of the opening of Wilkinson's Hadley works, it indicates that he was one of the first to realise that the area south of the Severn Gorge was doomed to become the first part of the East Shropshire coalfield to suffer the eastward retreat of industry because of the exhaustion of mineral resources.

Maurice Hawes and Ralph Pee

(Note : This is a shortened, revised version of Society Monograph No.1, 'John Wilkinson and the two Willey Ironworks', first published with full references in 1973 - 74.

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#### THE NEW HADLEY COLLIERY AND IRONWORKS

John Wilkinson's last industrial undertaking in Shropshire appears to have been the setting up of the New Hadley furnaces (1804), in an area where he already operated coal-mines. This short article examines some of the evidence we have relating to the colliery and the ironworks.

1. Letters relating to the operation of the furnaces (1804 - 7)

- (a) Letter from Cornelius Reynolds of Broseley to Thomas Pearce, manager at New Hadley, dated 29 March, 1804, in which Reynolds gives instructions for charging the furnace

(full text quoted by John Randall in V.C.H. of Shropshire, volume 1, 1908, p.469).

- (b) Letter from Gilbert Gilpin to William Wilkinson, dated May 1804, in which Gilpin gives a list of the blast furnaces operating in Shropshire, including Hadley where there was one furnace in blast producing 30 tons of pig-iron per week.

(Shropshire Record Office, Shackerley Collection, 1781/6/28).

- (c) Letter from William Wilkinson to James Watt junior, dated 28 March, 1807, in which William suggests that the ironworks was not notably successful and that most people in the iron trade thought his brother had been mistaken in not confining his activities at Hadley to the colliery

(Birmingham Reference Library, Boulton & Watt Collection, Box 20, Bundle 2, quoted by B. Trinder in 'The Industrial Revolution in Shropshire', 1973, p.62).

2. Map of New Hadley, showing the extent of the estate (1809)

Entitled "Hadley Estate late the property of John Wilkinson Esq." and drawn to a scale of 33 yards to one inch, the map shows two blast furnaces about 100 yards to the north of the road from Hadley to Wombridge (part of the "Turnpike Road from Wem to Shifnal), immediately before it crossed into the latter parish, and a total of 27 working pits on both sides of that road. Three of the pits have "engines" for winding, and there are also three "water engines" for drainage. Numerous buildings associated with mine-working and pig-iron production are shown: counting house, warehouse, smithy (3), machine house (2), saw pit, stable (2), powder house, stove, clay mill, weighing machine, reservoir. There are also coke-hearths between the furnaces and the road, and on the opposite side of the road; two rows of workers' cottages (Rag Row and New Hadley); and a "railway" heading northward towards the Shrewsbury Canal.

Attached to the map is a sworn affidavit of John Jones of Red Lake, collier, dated 1 January, 1831, which refers to this estate as "sold in or about the year one thousand seven hundred and ninety one by Catherine Freeman, widow, and Richard Emery to John Wilkinson late of Broseley, deceased".

(Ironbridge Gorge Museum Trust, Lilleshall Company Collection).

3. Geological section of the New Hadley mines (1812)

Entitled "Parallel Section of Hadley Colliery taken by Chas.W. Pearce, April 10th 1812", this is the earliest illustrated geological section of a mine in the Coalbrookdale Coalfield. It shows that some ten seams of coal, seven of ironstone and one of fireclay were being worked at this time in strata aggregating 300 ft. thickness. The shafts were up to 400 ft. deep and the mine equipment included seven horse gins, four whimsey (i.e. steam winding) engines and three steam pumping engines (each of the latter with hand capstan - type winders, probably to assist with shaft repairs). Also shown are the two blast furnaces, the two rows of cottages and some of the other buildings from the 1809 map.

(Apley Park Estate Office, and published in I.J. Brown's 'The Mines of Shropshire', 1976, pp.8 & 9.)

4. Other evidence

- (a) From the Brierly Hill Tunnel Accounts (S.R.O., Coalbrookdale Collection, 241/145) and the Horsehay Day Book (Shrewsbury Borough Library, now the Local Studies Library, M.S. 334), both quoted by Trinder, op.cit., p.62, it appears that Wilkinson was buying timber for the mines on the New Hadley Estate in 1793 - 94, and pumping equipment in 1796.

- (b) In addition to the references to the winding and pumping engines noted above, further information on the steam engines used by Wilkinson at New Hadley comes from the Boulton & Watt Collection (quoted by Trinder, op.cit., pp.172 and 408): one of the winding engines was a 'pirate' engine with a 24 in. cylinder built at Bersham in 1795; the engine blowing the blast furnaces was a Boulton & Watt type engine with a 52 in. cylinder, date unknown. Also, it is just possible that the 'hybrid' engine which survived to be photographed in 1899 at the "Rats Pits, beside the Great Western Railway line between Wellington and Oakengates" (i.e.: a double-acting beam engine, apparently without a condenser, geared for winding a pit - see 'An Industrial Relic' in Transactions of the Shropshire Archaeological Society, vol,53, 1949 - 50, p.23) was the winding engine at pit No. 3 on the 1809 map of the New Hadley Estate.
- (c) Further evidence for the continued operation of the ironworks after Wilkinson's death in 1808 is given by John Randall in 'The Wilkinsons' ( no date) pp.50 - 51 and in V.C.H., op.cit., p.470 : in 1813 John Bradley and James Foster made an agreement with the executors of John Wilkinson's estate to buy the iron made at the two furnaces at New Hadley for seven years. Trinder (op. cit., p.244) adds that when this agreement expired, the stock at Hadley was valued by Foster's partner, J.U. Rastrick, and the works was apparently taken over by Foster in partnership with Thomas Jukes Collier, a Wellington wine merchant, who had been one of the original partners in John Bradley & Co. of Stourbridge. According to H. Scrivenor ('The History of the Iron Trade', 1967, p.96), the two New Hadley furnaces produced 2,080 tons of pig-iron in 1823, but no iron was made there in 1830. In fact, the end of the ironworks was marked by the sale of the blast-engine in 1835 (Salopian Journal, 2 September, 1835 - quoted by Trinder, op. cit., p.244).
- (d) There is little physical evidence of the Wilkinson period in New Hadley to-day. Over the years waste tips and quarrying for sand and clay for the nearby Blockley's brickworks have obliterated the site of the blast furnaces (Grid Ref : SJ 685 116). Brick masonry, visible until a few years ago in the bank on the opposite side of the road to, and about half way between, the Methodist Chapel and the Granville Arms P.H. (Grid Ref : 681 117), was probably the remains of the housing for the "two large water engines" shown on the 1809 map. This 'structure' was photographed in about 1965.

N.J. Clarke



## WILKINSON'S IRON BOATS

The 'Trial' of 1787 is usually regarded as the first iron boat (see 'The First Iron Boat', by Ralph Pee in the Shropshire Magazine, 1972); but there is a tradition that Wilkinson built an earlier iron boat for use on Helton Tarn, near Lindale (Cumbria). Richard Barker writes (June 1979):

"The Ironbridge Gorge Museum has recently been in touch with the Windermere Steamboat Museum about the possibility of organising a search with modern techniques for the reputed remains of an iron boat connected with John Wilkinson. It appears that the Steamboat Museum has an option from the landowners to search for and display any remains which might exist. IGMT has expressed interest in any such boat, and asked to be kept informed of progress. It is not thought that a search is imminent. It is not clear whether the 'boat', if it existed at all, was constructed near Lindale, or with Wilkinson's barges built for the Severn. Thus it may have been either earlier or later than an iron boat reported in Yorkshire in 1777, but would clearly be of enormous interest. Hopes for its existence are based on nineteenth century reports that such a boat was abandoned in the silt-filled peat workings in the River Winster known as Helton Tarn."

We await further developments with interest.

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### LECTURES AND FIELD-TRIPS

- organised by the Society on the life and work of John Wilkinson.

27. 10. 72 : John Wilkinson in Shropshire,  
a talk by Barrie Trinder.
26. 5. 73 : Wilkinson sites in the Wrexham area,  
a field-trip organised by Wayne Turner.
4. 5. 74 : Historic sites in Broseley, Bridgnorth and North Telford,  
a coach tour organised by Maurice Hawes, Ralph Pee  
and N.J. Clarke.
8. 6. 74 : Day Conference on John Wilkinson and the two Willey Ironworks :  
lectures by R. Machin (Documentary and archaeological  
evidence),  
Maurice Hawes (Willey tramway),  
Ralph Pee (First iron boat),  
Wayne Turner (Wilkinson's trade tokens);  
and field-trip to the sites.
28. 2. 75 : The travels and exploits of John and William Wilkinson in  
France, the Netherlands, Scandinavia and Silesia,  
an illustrated talk by Dr. W.H. Chaloner.
21. 11. 75 : L'Ecomusée at Le Creusot in Burgundy,  
an illustrated talk by Barrie Trinder
- 26/27.6.76 : Weekend field-trip to Backbarrow and Lindale, Cumbria.
10. 11. 78 : The Bradley Ironworks of John Wilkinson,  
an illustrated talk by W.A. Smith.

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