

## **THE INTRODUCTION OF THE TIN-PLATE INDUSTRY TO THE LOWER WYE VALLEY AND THE NEWERNE VALLEY OF THE FOREST OF DEAN.**

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Even a fairly cursory examination of the details given in the censuses of 1841 and 1851 for Lydney shows that there were very many incomers among the Lydney residents. The biggest group of incomers were those working at the iron and tin plate works in 1851. The population of Lydney, and particularly the number of employees of the tin plate works, increased appreciably between 1841 and 1851. The significance of these works for the growth of Lydney between those dates was evident. Relatively little published material about the early period of that industry's growth could be found. Much more of what is available relates to the late 19th century Richard Thomas ownership. This study originated in an attempt to find more about the growth of the Lydney tin works in the early period, the origins of its employees, their skills and the dynamics of their settlement in and impact on Lydney.

### **The Development of Tin Works in the Forest of Dean**

Lydney's iron industry was long established and particularly significant in the 17th century, but Lydney was not one of the early sites of the tin plate industry. A very interesting sequence of the spread of tin plating around the lower Severn becomes apparent.

In South Wales tin plate making was established in Pontypool and Kidwelly in the early 18th century.(1) Rowland Pytt, in 1731 described as *of Lydney, ironmaster*, took the lease of Ynys-y-gerwn tin works near Aberdulais, Glam. In 1742 he took the leases of Redbrook furnace and 2 forges at Lydbrook, and in 1747 leased Lydney furnace and forges from Benjamin Bathurst.(2) There is no evidence that he began tin plating at any of these Forest sites. The first dates claimed for tin plate works in the Dean were in 1798 at Lydbrook, probably in works said to have been started in 1760, in 1774 at Redbrook and 1781 at Lydney.(3) However, the earliest clear evidence of tin plated sheet being produced in the vicinity is probably from Framilode on the south bank of the Severn, opposite Newnham in 1775 (see below). Parkend tin works were built north-west of Parkend by John James and his son-in-law Charles Greenham only in 1853. Hawkwell works, north of Cinderford, was started even later, in 1879. At Lydbrook the works were run by the Allaway family, who also took the lease of Lydney in 1847, and bought Parkend in 1856. In 1871 Richard Thomas and sons leased Lydbrook and Lydney. They closed finally in 1957. In 1875 Edwin Crawshay bought the Parkend works which closed in 1881.(4)

**Framilode Mill** was part of the larger concern of the Purnell family of Dursley. They owned iron works drawing wire, principally to make cards for the woollen industry.(5) In 1760, in partnership with Joseph Fairthorne, brazier, of Dursley, William, Thomas and John Purnell took Fromebridge Mills.(6) At nearby Framilode Mills in that year, George Wilding leased an iron slitting mill, which in 1767 his widow sub-let for 34 years to *John Purnell, Ironmaster of Frampton-on -Severn*, William Purnell, Gent, and Joseph Fairthorne. They were to leave intact, among other things, *the two slitting mill water wheels...* but were permitted to add forges and mills.(7) In a partnership agreement of 1765 these men had been described as in the trade of wire drawing, and in 1775 Frombridge, too, was described as iron mills.(8) A memorial to Elizabeth, the wife of Henry Hathaway of Framilode, *Tin Plate Manufacturer*, who died in 1775 is recorded from Frampton churchyard,(9) and Framilode Mill, near where the Stroudwater Canal entered the Severn, was referred to as the *Tin Mill* in the same

year.(10) In 1779 an agreement described the partners as *together in the Iron, Tin and Brass Work*.(11) It appears that the new forges and mills, permitted to be added in the 1765 lease, had been built and by 1775 were in operation as a new tin work.

As with most similar undertakings at the period, the business appears to have had limited capital.(12) Mortgages were taken out in 1778, 1786 and 1790.(13) When a new partnership agreement for 20 years was signed in 1791, the name of John Purnell, ironmaster of Frampton, was missing.(14) This appears to have been a period of financial difficulty and marks the loss of the partner principally concerned with the Framilode site. In 1790, too, Henry Hathaway's second wife, Edith, died. In 1792 William Coley, who had described himself as *of Frombridge Mills, clerk .... agent...*, and Henry Hathaway went into partnership themselves, at Redbrook.(15) No details of machinery at Framilode have been found except the slitting mills and 2 wheels of 1765, until in 1803 a Boulton and Watt steam engine was supplied for rolling tin plate.(16) In sale particulars of 1824 there were 2 watermills for rolling black plate, a Boulton and Watt steam mill, a cold roll mill, '*and all the necessary trade buildings*' equal to produce about 23,000 Boxes of Tin Plate a year.(17)

At **Redbrook** a claim for a Tin Plate works at Lower Redbrook by 1774 in buildings erected by Messrs Townsend and Wood after 1771 has been made.(18) P G Harris says that in 1771 Townsend and Wood leased a part of the copper works site and erected a tin plate works on the site. His study includes a diagram from 1799 of *a steam engine for rolling tin plate* designed by W Taylor, constructed by John Wright and used in the works before 1790.(19) The engine appears to be for rolling iron sheet into plates ready for tinning rather than being evidence of the tinning process itself being conducted on site. In 1790, John Wright, *copper refiner*, still occupied one of the dwelling houses of the Redbrook Copper Works before moving in the same year to manage Taibach copper works in Glamorgan, owned by the Company of Copper Miners.(20) This suggests copper working was still carried on in Redbrook to 1790, if only on a small scale. The Company of Copper Mines in England sold the site to David and William Tanner in 1790.(21) Having introduced a new steam engine, the Tanners mortgaged the works to James Sevier of Bristol in 1791, calling it a *freehold iron work lately used as a copper work and converted to an ironwork*.(22) The record hitherto makes no mention of tin.

In 1792 David and William Tanner went into co-partnership with *William Coley of the Parish of Frampton on Severn, Glos, and Henry Hathaway of the Parish of Freethorne in the said County of Glos, Tin Plate Manufacturer, as joint traders manufacturing tin plate at Redbrook, as Coley, Hathaway and Company, for 21 years at £500 p.a., (ie until 1813). David Tanner was to erect a new mill and build the necessary furnace, tinshops and finishing shops fitting and proper for the said manufactory. William Coley was to direct the partnership, Henry Hathaway is to undertake the rolling and tinning branches .....and to be paid at the same rates and prices upon and for which he now performed the like branches at Trade at Farmilo..... that is to say for Rolling at and after the rate of 15 pence per box, for Tinning at and after the rate of 22 pence per box.....*(23) This appears to be the effective commencement of tin working at Redbrook, developing the skills used at Framilode. Shipments of tin plate via Chepstow, of 43 tons in 1796, are known.(24) The tin plate output for 3 years of the Tanner regime was, 1794 - 22.5 tons; 1795 - 27 tons; 1796 - 43 tons.(25) The tinning process itself was clearly undertaken by Coley and Hathaway and output and market appear to have slowly increased.

In 1798 David Tanner was bankrupt. In that year his mortgagees gave a new lease of Redbrook tin works to William Cowley and John James for 21 years at £700 a year (until 1819).(26) Henry Hathaway may have remained at Redbrook, but no longer as a partner. Remaining accounts from the *ironworks at Redbrook*, show bar iron delivered to *Cowley and Hathaway* from January to April 1799, and refined iron to *Cowley and Co.* in January to March 1799.(27) In 1801 *Lower Redbrook Works* were still said to be held under Mr Tanner's assignees *Messrs Cowley, Hathaway & Company* and consist of *two rolling mills, two forges and an extensive work for rolling tin plates*.(28) The *forges and mills* may represent the iron work of 1791 and *the extensive work for rolling tin plates* the additions made by David Tanner after 1792.

In 1802 Lower Redbrook Works was advertised for sale by Auction at Monmouth.(29) It contained a forge, 2 refineries, 2 balling furnaces, 2 rolling mills worked by steam engines, 4 tin furnaces, 2 shear shops and 2 tin cutting shears, 2 scaling houses, and tin, wash, grease and 'lesting' pots for finishing and washing.(30) The equipment and methods included the full range of tin making processes and appear to be up to date for the period.(31) There appears to have been no sale, as Mr. Cowley now of *Stourbridge, Worcs* was in 1803 in partnership at Redbrook with John James. Both partners remained involved. They complained about maintenance of water flow to the works in January 1804, (32) and John James was still there in 1813 when John Pidcock wrote to Charles Bathurst of Lydney recommending *Mr. James at Redbrook... whose lease at Redbrook will shortly expire* to apply to work up some old iron available at Lydney.(33) In 1814 John James took the lease on the Lydney ironworks site. Whether he continued to work Redbrook until the expiry of that lease is not clear, but seems likely, [see below, Lydney]. In January 1818 his former home and offices at Redbrook were described as *dilapidated*.(34) By 1825 Benjamin Whitehouse of Monmouth and Henry Bickerton Whitehouse of Coseley Iron Works, Staffs, had invested heavily in improving and diverting a stream to the works, and Philip Jones let to Mr. Whitehouse the Dwelling House, *since of John James and now of Whitehouse, and also the forges, foundries and machinery ... occupied .... since by the sd. David Tanner and sd. John James successively as a tin plate manufactory*.(35) There seems to have been no other significant occupier between John James and Benjamin Whitehouse. In 1828 Messrs Whitehouse renewed the lease for a further 27 and a half years.(36) An inventory of 1827 shows that Mr. Whitehouse had purchased items of machinery from Framilode.(37) If Redbrook works were neglected in the period 1814-20, skilled workmen would have needed to follow Mr James to Lydney or look elsewhere for employment.

**Lydney.** On 1 Oct. 1814 John James took the lease of the Lydney works from Charles Bathurst for 30 years, to expire 25 Dec. 1844.(38) Whether Lydney was already producing tin plated sheet is unclear.

In 1778 David Tanner took a lease for 99 years of the Lydney Upper, Middle and Lower forges on the Newerne Brook (also called the River Lyd). Tanner was financed by Thomas Daniel the elder and younger, John Fisher Weare and John Scandrell Harford to whom he agreed to sell the whole lease for £17,228 17s 2d. In 1781 Tanner's Lydney iron works, included *Pill Forge, now a Tin Work*. (39)

On 8 November 1790 they assigned the Lydney works, with forges at Rowley, Clanna and Barnage, to Messrs Pidcock of Stourbridge. (40) James, John and Robert Pidcock are recorded as supplying iron from Lydney to the forges of the Stour Partnership, (Shropshire) in 1792-1793.(41) Despite the 1781 sale description, in 1907 a letter from R. Gillam, an

employee of Richard Thomas & Co. at Lydney, to F.S. Hockaday, said that the first manufacture of tin plates at Lydney was in 1798, (during the Pidcocks' tenure from 1790-1813).(42) The Pidcocks produced iron at Lydney until 1813. A newspaper cutting shows the lease offered for sale by auction at Bristol in 1810 with viewing by application at the works to Mr. G. Pidcock and for further particulars to Messrs Pidcock at Stourbridge and to solicitors at Birmingham.(43) When the Pidcocks advertised their lease of the works for sale in 1810, descriptions in two different adverts included different wording, in one, *buildings for the manufacture of tin plates*, and in the other *capable of making the very best of iron for tin plates*.(44) The draft of a lease proposed for Thomas Waters in 1813 included reference to *a mill for rolling tin bars*, and a *Mill for rolling iron attached to the Lower Forge*.(45) In this context it is worth noting that Gillam's letter continued, *Tin Plates were never made at the Middle Forge..... at the Middle Forge there were a lot of fires and a tin bar rolling mill*. It seems most likely that iron bars were taken to the rolling mill at Pill or Lower Forge in 1813 which was used for rolling iron sheets ready for tinning, ie. producing *black plate*. None of these descriptions mentions the provision for coating the sheet with tin or any of the associated finishing processes. It may have been after John James' lease in 1814 that finished tin plate sheet was first produced at Lydney.

By October 1813 John Pidcock and Charles Bathurst (the landowner) were negotiating the sale of the remaining years of the lease to Thomas Waters, merchant, of Carmarthen. A draft agreement for the sale had been drawn up and circulated. John Pidcock's comments survive on one draft returned to the solicitor for Charles Bathurst. Other letters show Thomas Waters's objections to aspects of the valuation of stock on the premises, the price of cordwood off the estate and to aspects of the use of the wharf. Mr Tovey, of solicitors in Newnham, also acted for other local industrialists and offered observations on current local practice.(46) John Pidcock appears to have provided the solution. Noting on 3 October 1813 that Mr Waters saw "*your anxiety to get tenants*" and sought to exploit it to his advantage, Mr Pidcock continued, "*I recommend Mr James of Redbrook to apply to you for the old iron which I told him I thought you would let him have at the valuation and also give him permission to work them up at Lydney. This is a nice man of business whose lease of Redbrook will shortly expire and I think was he to taste the situation and convenience of the Lydney works he would be a very likely person to take them..... with the Redbrook.*" On the following 23 October Mr Tovey wrote to Mr Bathurst that "*Mr James has offered to work up the stock.*"(47) On 29 November, John H. Pidcock, George Pidcock and John Pidcock, with Charles Bathurst father and son, assigned the lands in trust to Thomas Grimstone Bucknall Estcourt as trustee for the younger Charles Bathurst and his assigns.(48) On 1 October 1814 John James was granted the lease of the Lydney forges for 30 years, until 25 December 1844.(49) The ironworks comprised three sites in the Newerne Valley, Upper, Middle and Lower Forges, and Lydney Furnace with Whitecross Orchard, the New Storehouse, workmen's' houses, 3 messuages, land and pools.(50) He built a new forge called New Mills between the Upper and Middle Forges, c.1824 . The redrawn 1839 Tithe Map by Geoff Gwatkin shows their location and in detailed enlargements the layout at the Upper and Middle Forges. The Lower Forge was in use as a tin plating works by the time of 1841 census.

In the lease of 1814 John James had covenanted to maintain and repair the properties, fixtures and utensils. An inventory of the premises signed by Jacob Sturge and dated 18 Nov. 1844, at the expiry of that lease, gave details. The New Mills *newly built within the late twenty years*, contained a Puddling House with 3 fires, a rolling machine driven by a water wheel and with a supplementary 60 horse (power) engine, all belonging to the lessee. The Middle Forge had a foundry and a rolling machine with two water wheels *all to draw bar iron*, most of which

the lessee had replaced with *new and more effective machinery*. The *Tin Works called in the Lease the Lower Forge and Rolling Mills* had three water wheels driving rolling machines, a blowing machine and cold rolls, a hammer wheel, a wash house, scouring rooms and annealing rooms. It was noted that all objects listed in the original inventory remained at the Lower Forge, *and much more which has been added by the Lessees*.(51) This uses specific terminology of tin plate processing not previously used in earlier descriptions of the Lydney sites. It may have been John James who first introduced the complete process of making tin plated sheet iron to the Lydney works. It is possible that Brooke was correct in saying that a tinsplate works was first established in Lydney in 1818 but gave credit to Thomas Allaway rather than to John James.(52)

On 17 January 1844 the remaining 12 years of the original lease were granted to John and Henry James, and a separate lease of the same date from Charles Bathurst granted Old Furnace Yard and Middle Forge Yard from 25 December 1844, the expiry date of the previous lease. These leases were surrendered on the 24 March 1847 and granted to members of the Allaway family of Ross and Walford.(53) Thomas Allaway, living at Highbury, Bream Road, Lydney, in 1851 described himself as employing 148 men and 35 women on the census of that year. By 1864 they were employing 400 workers, mostly from Lydney parish, where the works remained the principal source of employment until the mid 20th century.(54)

Some support for the view that John James came to an iron works at Lydney rather than to an already established tin works, can be found in Lydney Parish Records. From 1813 the incumbent began to record the father's occupation at baptisms. From then until August 1821 eleven *forgemen* had children christened, but men of no other iron or tin occupation. Only in September 1821 was the word *tin* introduced, and from then becomes common, eg tin man in 1821, tin shearer and tin roller from 1823, tin sorter and tin pickler in 1824, tin moulder 1825, sealer 1826, tin washer 1827, tin doubler 1832. The specialisms show that the full range of tin plating processes was then in use. It may be thought that before 1821 the incumbent simply called them all *forgemen* as they worked at Upper, Middle or Lower Forges. There must be some truth in this as men described by specialist skills at Redbrook were later referred to as *forgemen* at Lydney, and perhaps they did work at less specialist trades at Lydney before the tin works were fully established. The incumbent's lack of acquaintance with specialist terms may equally reflect their recent introduction at Lydney or slow development of production, but the occupations recorded were most likely those given by the fathers themselves. However, the use of the specialist terms does show that the full range of tin plating processes was in use at Lydney in the 1820s.

When the details of the iron and tin workers at Lydney were extracted from the 1841 census, listed in age order and matched with the details of the same men when they were still at work at Lydney in 1851, it was striking how many had been born elsewhere. With no previous resident tin workers at Lydney, John James would have had to bring skilled men with him from Redbrook or attract them from elsewhere. Comparison of evidence from Redbrook in the Newland Parish Records shows that named individuals moved from there to Lydney 1815-21.

1. John Cam, born at Elmore, was a *tinman* in Redbrook where 3 children were baptised 1811-1815 before he moved to Lydney, where two more were christened, in 1821 when he was a *forgeman* and in 1824 to him as *tin pickler*.

2. Richard Turner, born at Dixton, nr. Monmouth, was at Redbrook as a *scaler* in November 1819 when his daughter Susan was christened, and in Lydney as a *forgeman* in December 1822 when another daughter, Elizabeth, was christened.
3. Richard Ward, born c.1798 was *millman* at Redbrook 1818-19 and the same at Lydney in 1821.

Others born at Redbrook moved to Lydney in the same period.

4. John Pugh had been born at Redbrook and was a *forgeman* in Lydney in 1821.
5. The two Hathaway brothers, Henry and Charles, one born at Redbrook, the other in Cam, and grandsons of Henry Hathaway, tin plate manufacture of Framilode and Redbrook, came as clerks. A monumental inscription within St. Mary's church, Lydney, commemorates *...members of the Hathaway family who have worshipped in this church since 1820.*
6. William Whittington, christened at Redbrook, was the son of William and Mary Whittington. His father had been millman at Redbrook. The son was a forgerman/millman in Lydney from 1821.

Some from Redbrook are shown later at Lydney, but with no evidence of when they moved.

7. Richard Protheroe, son of Richard Protheroe, roller, and Eleanor of Redbrook, married Mary Beard of Redbrook at Lydney in 1827 and worked there as forgerman between 1828 and 1841.
8. John Collins, born at Redbrook, tin roller, had a son christened in 1835 at Lydney.

Of the above examples, certainly John Cam and probably others of the Cam family had moved from Framilode to Redbrook with Hathaway and Coley. Other families from the Framilode area later worked in Lydney but may have come there direct at a later date, as the works expanded. Both William Beards, father and son, were born at Framilode and the son was at Lydney by 1823 as a tin roller. Robert Collins from Framilode was at Lydney by 1832 as a 'tin man.' James Lewis, tin roller, and his wife from Saul were in Lydney by 1830.

Enough of these examples are sufficiently closely dated to suggest that skilled tin workmen moved to Lydney in some numbers 1818-21 following a period when there appear to have been none, and that John James established the full tin plating process at Lydney. The evidence also suggests a direct sequence of development of the tin plating industry in the area from Framilode via Redbrook to Lydney. The increasing number of houses in Lydney and Newerne after 1818 supports a period of rapid growth in the industry after that date.

Critical to this interpretation is distinguishing the processes and machinery for rolling iron sheets for tin plating from the processes of, and facilities for, coating the sheet with tin, the pickling and finishing processes. Henry Hathaway is seen to have employed the latter at Framilode, used the same methods at Redbrook, where John James took over the scaling houses and tin pots and used similar skills at Lydney by 1821 in the equipment and facilities listed in 1844.

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