

## Prosser The Engineer: A Forgotten Birmingham Genius



Richard Prosser 1804 -1854  
The Discovery of his Life of Invention and Contention

### The Third Story

Tubes: A Wealth of Trouble  
Part 2  
The Weldless Tube & Second “Marriage”

Susan Darby

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The purpose of the free publication of this work is to gain some belated, but much deserved, recognition for its subject Richard Prosser, an inventor who was also one of the main proponents of the first major legislative reform of the patent law system in 1852. He was fiercely protective of intellectual property rights. Any concerns as to possible copyright infringement in this narrative or any images within it should be addressed to the author in the first instance please at [contact@prossertheengineer.co.uk](mailto:contact@prossertheengineer.co.uk) and they will be given due and proper consideration; if any infringement is established the offending material will be removed, if required by the owner, with an apology - as Prosser himself would have demanded .

The narrative of The Third Story is largely confined to the relevant events in Richard's life that occurred during the period 1840 to 1850. His silhouette on the title page probably dates to about 1843 (Darby collection); the adjacent portrait, which was painted shortly after his death from a death mask, dates to 1854 (© Science Museum).

The typeface used on the "cover" of this narrative and chapter headings is "Baskerville" in deference to Richard's admiration for another Birmingham  
genius:

John Baskerville (1706-1775).

## The Richard Prosser Stories

### The First Story

Introduction & Chapters 1 to 5

Rescuing Richard: The Brothers' Feud & The "Chunk" Conundrum

### The Second Story

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Finally: Gunnery, Death, Aftermath

The stories will remain works in progress and will be subject to revision as, hopefully, further information and corrections come to light.

## Acknowledgements

Throughout my narratives I try to acknowledge all my contributors and sources as they appear and, where appropriate, provide a link to any relevant website. In the case of "Tubes: A Wealth of Trouble" especial thanks are due to the following:

The archivists at: The Library of Birmingham Archives for their friendly and efficient help in my discovery of many of the contemporary documents relating to the events narrated in this Third Story; The National Records of Scotland who (inter alia) unearthed the transcript of Richard's testimony in his Scottish suit against his erstwhile partners in the Caledonian Tube Co. venture; The National Archives at Kew - a wonderful national treasure; the British Library the custodian of much original "Prosser" source material.

The British Newspaper Archive, my main source of contemporary accounts, without which the Richard Prosser Stories would not have been discovered;

The local industrial historian and author Ray Shill for his very helpful input.

Above all, Richard Prosser's great great grandson, Richard John Darby, my husband, for his support and toleration of my obsessive pursuit of his ancestor. Known as "John" since birth, my husband was named Richard after his maternal Prosser grandfathers: the mining engineer Richard Ellis Prosser, the historian of invention Richard Bissell Prosser and Richard himself.

All errors, omissions and misconceived speculations in my narratives are entirely my responsibility. It is my hope that publication will lead to feedback, which will enable corrections to be made and will resolve some, at least, of the many questions that remain unanswered about Richard's life and inventions.

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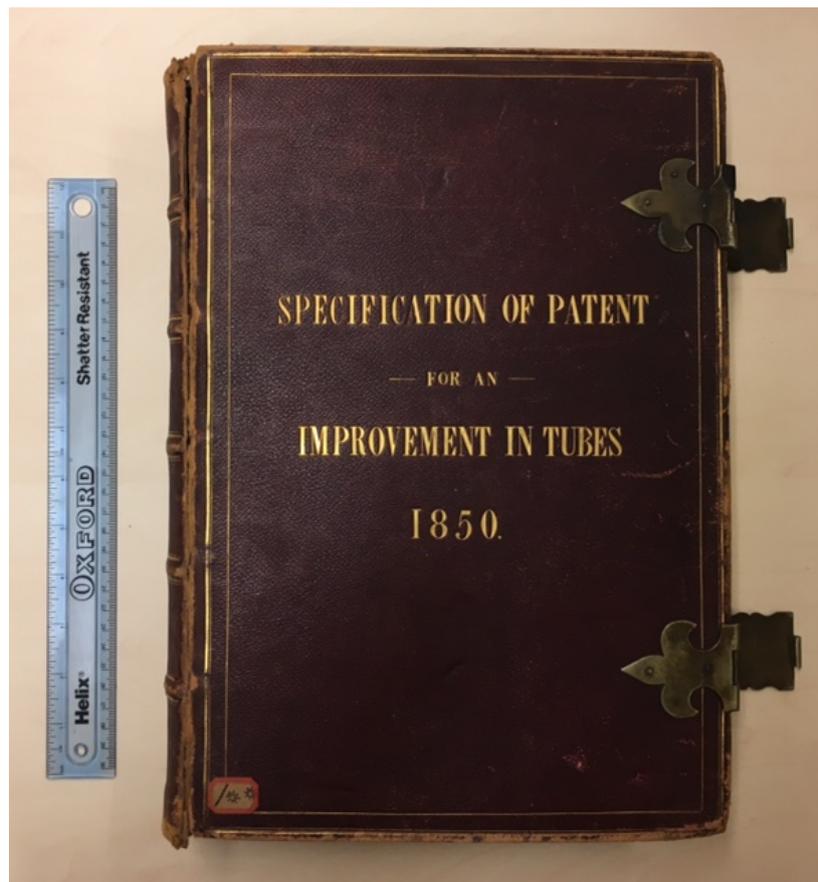
## Tubes: A Wealth of Trouble

### Part Two: The Weldless Tube & Second “Marriage” (1850 - mostly)

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## Chapter 17

### **1850 - The “Anti-Weld” Tube: Great Expectations Unrealised**



*The original manuscript of the enrolled “anti-weld” specification.  
Image courtesy of the British Library.*

On our second visit to the British Library in March 2012 (see “Rescuing Richard” pp.97/98) amongst the many documents that had been assembled for us to view was one, in particular, that stood out due to its size and weight alone.

I can only presume that it was Richard Bissell Prosser who donated this handsome leather bound volume with its brass clasps to the Patent Office Library (now a part of the British Library’s vast archive). I was at the outset of my research back in early 2012 and I had little appreciation of the significance

of the parchment manuscript and technical drawings within the volume when we briefly examined it. In fact, it is the original sealed specification of Richard's "anti-weld" tube patent.

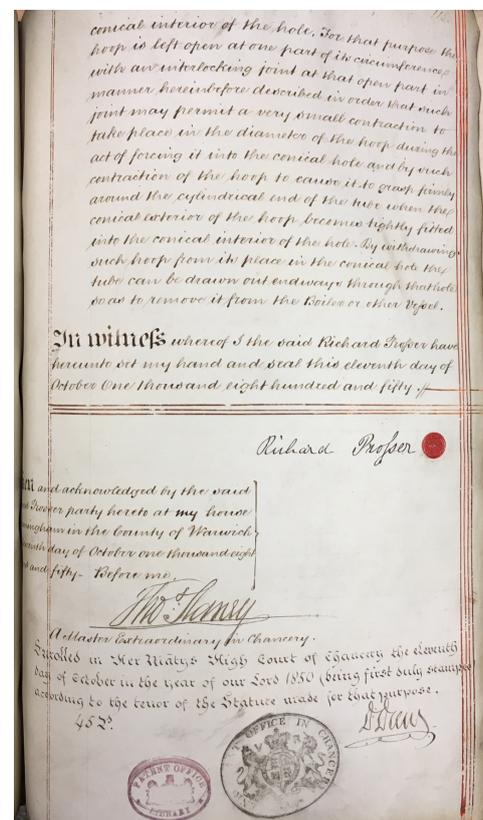
On its initial grant Richard had summarised his claimed invention as: "Improvements in Machinery and Apparatus for Manufacturing Metal Tubes, which Improvements in Machinery are in part applicable for other Purposes where Pressure is required; also Improvements in the Mode of Applying Metal Tubes in Steam Boilers or other Vessels requiring Metal Tubes to be Applied within them."

The patent (No.13035) had been granted on 11 April 1850 for a period of fourteen years but on the usual condition that a full specification had to be filed within six months. Richard, as was the practice commonly adopted by inventors, left it to the very last day to make public the substance of his invention.

On 11th October 1850 Richard presented the weighty volume (now held by the British Library) to the officials of the Patent Office (then a division of the High Court of Chancery) for enrolment. Richard appears to have attended in person - perhaps he had anticipated that there might be a problem.

When we opened the volume we found that Richard Bissell Prosser had inserted a handwritten note signed and dated 18th September 1901 before the commencement of the specification itself. Having identified the document as his father's specification for the patent Richard Bissell continued: "When presented for enrolment the officials were at first inclined to refuse it on the ground that it was not in the usual form, but my father refused to take it back, and in the end it was enrolled as appears from the Certificate at the end." *Image right courtesy of the British Library.*

The reason that the specification had caused such consternation to the officials of the Patent Office is explained in the following quote from the report in the *Mechanics' Magazine* dated 19th October 1850: "In consequence of the great length of this specification we are able to



give little more than a mere abstract of the claims which are themselves unusually verbose and elaborate.” (The issue of the *Magazine* dated 2nd November 1850 revealed that Richard had also been granted the patent (again conditionally) in Scotland on 1st October 1850.)

Richard Bissell concluded his 1901 note with the observation that: “The specification may be more conveniently studied in the printed copy”.

Amongst the many modernisations to the British patent system introduced by the 1852 Patent Law Amendment Act was a requirement that a patent’s specification, which still had to be filed and enrolled in manuscript form, should be published by the newly reformed Patent Office in a printed format “as soon as conveniently may be” and copies made readily available. The Office was, also, required to put in hand the indexing of all the English patents granted prior to the enactment of the Act and was authorised to print and publish, not only, the indices but all the old patent specifications too.

In 1856 the printed version of the “anti-weld” tube specification was published and it runs to 77 pages and 12 sheets of drawings. However, one drawing is missing, the last (the thirteenth) - the length of the specification appears to have even defeated the diligent and meticulous printers at the firm that had been charged by the new Patent Office with the mammoth task of producing print versions of all the pre-1852 patents (a contract which Richard may have hoped to secure for the typographers’ workshop that he had set up in Birmingham within the tube works in Cambridge Street).

In filing such a detailed specification Richard was surely seeking to practise what he had been advocating, namely: the fulfilment of a requirement, that was to be stipulated in the 1852 Act, that the patented invention’s final (“complete”) specification must “particularly describe and ascertain the nature of the said invention, and in what manner the same is to be performed”.

In a letter to the Editor of *Aris’s Birmingham Gazette* published in its issue dated 17th February 1851 Richard was to expound on the deficiency of many of the specifications of existing British patents: “Specifications are now drawn in most indecent haste, they are loosely worded, and in defiance of Lindley Murray\*. The drawings attached to the specifications are generally not drawn to scale; they are made showy by means of colours and shading...”. Richard wanted each specification to be “the most complete one the inventor knows how to draw up...Drawings should be made to scale, and ought not to be coloured” (to save expense when printing copies). \*Lindley Murray (1745-1826) - writer and grammarian ([Wikipedia link](#)).

Certainly, its length alone suggests that Richard's 1850 "anti-weld" patent was as complete as he was able to make it. A PDF of the print version of the patent's specification and drawings can be downloaded from the [prossertheengineer](http://prossertheengineer) website together with an image of that in the original manuscript of the omitted thirteenth drawing (kindly supplied by the British Library). A short précis of the patent is contained in a volume of tube patent abridgements published by the Patent Office in 1874 now available online on this [link](#), but it will be of little enlightenment to the general reader.

In the note he inserted in the original specification in 1901 Richard Bissell Prosser was to provide a more helpful description of the invention:

*The patent is for the manufacture of anti-welded tubes, as they were called, that is, tubes with a longitudinal unwelded and unbrazed joint; tightness being maintained by simple contact. These tubes were of course, only suitable for use where the pressure was external, such for instance as boiler tubes....*

*The machinery described in this patent displays great ingenuity. On sheets I.J.K. may be seen drawings of the steam-hydraulic press of which my father was I believe, the first & true inventor though he has never had the credit of it. On sheet K. a steam hydraulic-rivetting machine is shown.*

In 1880 in one of his articles for the *Birmingham Post* (all of which he had privately published in one volume in the following year (his *BI&I*)) Richard's son had described the invention in slightly greater detail:

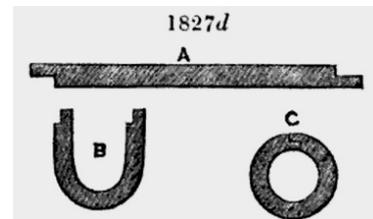
*As its name imports there was no weld, the edges of the skelp, which had been previously accurately "rabbeted" in a planing machine, were simply turned up so as to meet in close contact. The invention really grew out of Prosser's former patent\*, and the anti-welded tubes may be regarded as tubes made according to that patent, but not welded. They were obviously only suitable where the pressure was external, as any force from the inside would tend to open the seams and cause the tube to leak.... The machinery employed in the manufacture was of a very elaborate and ingenious character. The skelps were planed at one pass through the machine by means of a compound cutting-tool having several distinct cutting edges acting in succession. The skelps were turned up in the same manner as that described in the patent of 1845, except that a "steam hydraulic" press was used. Since that time the principle has received numerous applications, but the name of the inventor has been forgotten. The ordinary force pump is dispensed with, water under pressure being supplied to the hydraulic press by the action of a plunger set in motion by a piston working in a large steam cylinder. When the machinery at Mr. Prosser's works in Cambridge Street was*

*sold in 1854, the press – the first of its kind – was bought by a Mr. Smith, a manufacturer of railway wheels at Smethwick. The specification also contained a description of an hydraulic riveter, and of an elastic ferrule for fixing tubes in boilers, which differed from those previously in use by being driven between the tube and the hole in the tube sheet, instead of inside the tube.*

*\*(His 1845 patent)*

Otherwise, apart from the “mere abstract” contained in the *Mechanics’ Magazine’s* report in October 1850 referred to above ([link](#)), the only other review of the patent that has come to light online is that contained in *Ure’s Dictionary of Arts, Manufacture and Mines* published in 1867 in the article on tube manufacture by *Aitken* (see Part 1 p.10):

*A somewhat ingenious process for making tubes to be applied for locomotive and marine engine boiler purposes, was carried into execution by the late Mr. Richard Prosser in the years 1852-3. In this process the welding of the tubes was attempted to be got rid of altogether by a process dependent entirely on the accuracy of the preparation of the skelp, and the closing of its edges; the skelp being placed on the bed of a planing machine, had its two outer edges planed down to half the thickness on the opposite sides of the sheet, thus; see A, fig. 1827d, a stationary cast-iron grooved bed die, the entire length of the intended tube, with corresponding convex tool, which descended and converted the flat metal into the form represented at B, 1827e (sic). In this condition, a concave die, descending in a similar manner, turned over the edges of the metal, which was eventually forced down, and assumed the cylindrical form as represented at C, as the tightness of the tube was dependent on the accuracy of the planing of the edges of the skelp and the closeness with which these edges were brought together, the only means of retaining these firmly being the cohesion of the joints arising from the pressure of the water in the interior of the boiler. Perfect as these joints were made, the vibration of the engine speedily opened them, and the tube, it is almost unnecessary to add, was not a success.*



In his 1880 article Richard Bissell was to elaborate on *Aitken’s* final, somewhat dismissive, statement:

*Great things were expected from the “anti-welded tube” which was introduced into the market in 1850, but it failed to satisfy the requirements of the public, and disappointed the hopes of the inventor,*

*the late Richard Prosser, who spent upwards of £20,000 in bringing it out.... They were tried in a locomotive engine on the London and North-Western Railway, but they were unsuccessful. Not only did the tubes require careful handling so as to avoid accidental injury, but the seams were liable to be opened during the operation of removing obstructions. Eventually the whole of the stock was sent to be welded in the ordinary manner....*

In his 1901 note inserted in the original patent Richard Bissell recollected that: "I once heard my father say that he spent £14,000 in bringing out this patent, which was a commercial failure."

Whether the amount expended was £20,000 or £14,000 (or somewhere in between), in 1850 this was a vast sum to have invested in the development and patenting of the invention. The website [measuringworth.com](http://measuringworth.com) gives varying relative values for equivalent expenditure on a project in 2017; based on £20,000 the:

*historic opportunity cost of that project is £2,337,000.00*

*labour cost of that project is £15,460,000.00*

*economic cost of that project is £74,370,000.00*

At the beginning of his 1867 article *Aitken* appeared to infer that the testing of the new machinery took place over several years, so it may be that Richard remained hopeful of "Great things" from his "anti-weld" invention throughout 1850.

The comments quoted above of Richard Bissell Prosser and *Aitken* and the cited *Mechanics' Magazine* report represent nearly the entirety of the substantive results of my researches into Richard's "anti-weld" patent. More information/background may lie buried in the copious records of the London and North-Western Railway held at *TNA*, but its extensive index of this archive does not reveal any potential leads that would warrant the time and effort required to pursue them; my enquiries of the *LNWR Society* (as to both Richard's lap-welded and "anti-weld" tubes) met with no response. I was very grateful for the long and considered response I received to my similar enquiries to the *National Railway Museum* in York; its helpful research assistant was very doubtful that its archive would prove fruitful but suggested various possible avenues for further research, which I endeavoured to follow up but met with no success.

Most frustratingly by May 2018 my continued attempts to secure any technical support on my "tubes" project had been to no avail. As with the early

development of the industrialisation of nail manufacture and the early application of the dust-pressed process to mass production, there appeared to have been little recent published research, or indeed interest, in the early industrialisation of metal tube manufacture. In the case of the former two topics, which formed the background to my First and Second Stories in Richard's life, I was fortunate to have had the advice and encouragement of fellow "nail" researcher Guy Sjogren and the generously bestowed expertise of the tile historian and author Hans van Lemmen.

The lack of any input on the technical aspects of Richard's tube machinery inventions may seem of little importance in the case of an invention which was quickly declared a failure - except for remarks as to one of its components made by his eldest son in the quotes above from his *BI&I* and his 1901 note inserted in the manuscript of the original of the "anti-weld" patent:

"... a "steam hydraulic" press was used. Since that time the principle has received numerous applications, but the name of the inventor has been forgotten."; "... the steam-hydraulic press of which my father was I believe, the first & true inventor though he has never had the credit of it...."

Unfortunately, Richard Bissell Prosser did not elaborate on these contentions.

Nevertheless, despite its shortcomings, a version of the anti-weld patent was, also, granted in 1852 in the U.S. to Richard's brother Thomas as an assignee:

*THOMAS PROSSER, OF NEW YORK, N. Y., ASSIGNEE OF RICHARD  
PROSSER, OF ENGLAND.*

*APPLICATION OF A FREE-JOINT TUBE IN CIRCUMSTANCES WHERE IT IS  
EXPOSED TO EXTERNAL PRESSURE.*

*Specification forming part of Letters Patent No. 9,278, (dated September 21, 1852;  
antedated May 31, 1852)*

In order to comply with the strictures against "unnecessary prolixity" imposed by the 1836 U.S. Patent Act, the specification had to be radically abridged as can be seen on this [link](#). The fact that the grant of the patent was "antedated" suggests that it took some time for Thomas to reach agreement with the examiner in the Patent Office in Washington over the wording of the specification (a difficulty that Thomas had encountered in the grant of his U.S. dust-pressed button patent in 1840/41 as evidenced by the correspondence in the U.S. Patent Office's file - see "The Dust-Pressed Process" pp. 31-42 (I

have not troubled the U.S. National Archives for a copy of the Patent Office records of the 1852 U.S. patent)). Richard had been sworn to the abridged specification before the U.S. Vice-Consul to Birmingham. In addition, two witnesses subscribed their signatures (presumably a requirement of the U.S. Act): “Emanuel Wharton” was a fellow Birmingham mechanical engineer and patentee; “T. H. S. Hodges” remains unidentified, but his surname and the extravagant number of his Christian names suggests the intriguing possibility that he might be a brother of William Algernon Sydney Hodges, the son of William Robert Hodges, who was clearly involved in his father’s dealings with Selby and Bower in the lap-welded tube business (see Part 1 pp. 79 and 102) - if “T. H. S.” was a member of the same wealthy Hodges family were they, also, investors in the anti-weld patent?

The failure of the “anti-weld” tube did not, however, preclude samples of the tubes from being deemed worthy exhibits in one of the founding collections of The Science Museum. In 1857 the recently reformed Patent Office opened its own Museum of Patents in an annexe to what was to become the Victoria and Albert Museum. The tubes were still in the Mechanical Engineering Collection in the Science Division of the V & A in 1908 as evidenced by an entry in its Catalogue published that year:

*68. ANTI-WELDED IRON TUBES. Richard Prosser. Letters Patent A.D. 1845, May 1, No. 10,649; and A.D. 1850, April 11, No. 13,035. [Contributed for exhibition by Mr. B. Woodcroft.] These tubes are termed by the inventor “anti-welded tubes,” because they are manufactured without welding. They are produced by pressing flat iron plates or skelps into the hollows of suitable moulds, so as by successive pressings to bend the plates or skelps by degrees and turn them up to the required form of tubes;—the edges of the plates or skelps having been previously planed truly straight and with a shoulder thereon, so that when the two edges meet they will form a close lap joint.*

However, on my enquiring, the Collections Administrator at The Science Museum (which became a separate entity to the V&A in 1909) was unable to locate the tubes or any more recent record of them.

The “anti-weld” patent was not the only one to be granted to Richard in 1850. On 22nd August a patent (No.13,238) for “Certain Improvements in Supplying Steam Boilers with Water, and in Clearing Out the Tubes of Steam Boilers” was granted; as usual, it was conditional on enrolment of a specification within six months, which was effected on 21st February 1851 (three other patents with similar titles were granted to other inventors in 1850). Apart from short abstracts, I have found no review or comments as to the success or

otherwise of Richard's patent ([link](#) to abstract in the *Mechanics' Magazine* 1851 vol. 54 p.196).

These scraps of information are all that has to date (July 2018) come to light about the patent into which Richard must have invested much of his self made fortune. Earlier in 1850 he had felt confident enough to have made a generous donation of £50 (c£5,000 2017) towards the restoration of St Martin in the Bullring, where all but one of his children were baptised - he was one of the larger donors listed in *Aris's Birmingham Gazette* on 24th June. However, on 30th October the *Morning Chronicle* mentioned that his donation to Birmingham's Queen's Hospital was just five guineas (£5 5 shillings) when it reported that: "Messrs. Minton and Co. of the Potteries, had most generously presented a beautiful pavement of encaustic tiles for the Hospital Chapel" and a "munificent donation" of £50 had been received from Mr Alston of Elmdon Hall.

## Chapter 18

### **The 1852 Tube Patent - A Weldless Precursor?**

On 25th October 1934 at a meeting in London of the Institution of Locomotive Engineers one of its Associate Members G. H. H. Collins read his paper entitled "The Manufacture and Repair of Locomotive Boiler Tubes". The paper was subsequently published in the Institution's Journal and a PDF can be downloaded on this [link](#) to the *Sage Journals* website.

Collins commenced his address with the following statement:

*The presentation of a Paper on so inanimate a subject as boiler tubes to such mechanically minded people as locomotive engineers would appear to need some explanation. It must, however, be remembered that, although boiler tubes cannot have any rotary motion, they do perform an immense amount of work. For, on the average, a locomotive boiler has to have its tubes replaced at each general repair; while often a further set of tubes may be required between these shoppings, owing to the amount of scale deposited on their surfaces. It will therefore be apparent that the cost of re-tubing alone is no small item in locomotive maintenance, and a discussion on both manufacturing and repair methods may suggest further means of improving and prolonging the life of boiler tubes.*

The fact, that (even a century after the first attempts to industrialise the process) tube manufacturers had not overcome the problems that curtailed the working life of locomotive boiler tubes, gives some indication of the difficulties that the earlier inventors in the field must have had to contend with. It also explains why there was such great demand for the tubes.

Collins continued his lecture with a very brief outline of early tube manufacture, he mentioned: Whitehouse's 1825 patent for butt-welded tubes; the early preference for brass or copper tubes in the boilers of the "earliest locomotives"; and the subsequent adoption of iron and, later, steel lap-welded tubes by many steam engine manufacturers due to "The unfortunate liability of brass tubes to burst unexpectedly, as well as their cost".

However, the lap-welded tube was not to be the final answer: “No doubt the failure of lap-welded tubes by leakage through the seams, and the increasing boiler pressures, caused the railway companies to try the weldless steel tube.”

Collins skips over the early attempts at weldless/seamless tube manufacture during the period from the later 1860s to the early 1880s before embarking on a lengthy description of the method of manufacture that was brought out in “about” 1886 which “laid the foundation of the seamless tube industry” - the “Mannesmann” process.

Readers who download Collins’s paper will be treated to a twenty five page description of the German Mannesmann brothers’ invention, its later development and a final summary of the repair issues still being encountered in 1934 - plus a further twelve pages of comments arising from the subsequent discussion that took place between the audience and Collins.

A briefer explanation (extract below) of the Mannesmann process is contained on the [website](#) of the German steel technology company Salzgitter AG, whose own Archive is now the custodian of the long established Mannesmann Archive. This merger of these archives followed on from Salzgitter’s acquisition of the Mannesmann group’s pipe production business and brand name after the break up of the group in 2000 - the much diversified and enormous concern, which had been founded on the Mannesmann brothers’ 1886 seamless tube patent, was taken over by Vodafone that year.

*The process known as the Mannesmann process is based on cross-roll piercing which, for decades, was used in combination with pilger rolling. Both rolling techniques were invented by the brothers Reinhard and Max Mannesmann towards the end of the 19th century.*

*The pierce-rolling process, which was patented in 1886, made it possible for the first time to roll a thick-walled seamless hollow body from a solid steel billet.*

*To do this, the billet is heated to between 1200 and 1300°C and then positioned between two rollers arranged at an angle to each other and operating in the same direction, thus locking the billet into a kind of gear mechanism. As the billet progresses lengthwise through the rollers in a helical motion, it is pierced by a plug which is supported at the run-out end of the piercing mill by a freely rotating bar. The alternating tension and compression generated by the helical rotating motion loosen the material's microstructure in the core, and this facilitates the internal "drilling" by the plug.*

What was the long dead Richard's connection to the Mannesmann brothers' invention?

In "Rescuing Richard" (p.14) I referred to a reference to Richard that I had come across in a book by a local historian and author *Ray Shill*: "His work with tube manufacture helped to lay the foundation of the weldless tube industry" (*Workshop of the World: Birmingham's Industrial Legacy - Sutton Publishing 2006*). In fact, I actually misquoted Ray by stipulating that he had attributed Richard's contribution to this industry to his "anti-weld" tube.

(This attribution was in fact contained in another publication -*The Homes of our Metal Manufactures. Messrs R. W. Winfield and Co's Cambridge Street Works & Rolling Mills, Birmingham: Archaeological Excavations at The Library of Birmingham, Cambridge Street 2013 Hewitson*: "Prosser experimented with new forms of tube making including a patented idea of anti-weld tubes that had certain concepts that formed part of the development of the local weldless tube industry.")

It was not until May 2018, when I was able to make contact with Ray, that he disabused me of the misapprehension that had caused me some puzzlement whilst researching the development of metal tube manufacture. Even with my limited understanding, I could see that the "anti-weld" method of manufacture was very different to that of the Mannesmann process.

Richard's anti-weld tube made under his 1850 patent was, indeed, weldless, but it was not seamless. As with Whitehouse's butt-welded and Richard's lap-welded tubes, the anti-weld tube was formed from a flat metal skelp, which was "turned" into a tube but the lateral joint was not welded. It relied on the precise preparation (described by Richard Bissell Prosser as "rabbeted") of the skelp edges and external pressure to keep the joint closed; its use was therefore limited to applications such as steam engine boilers where the pressure of the water surrounding the tubes exceeded that of the hot air and gases within them.

The Mannesmann weldless and seamless tube was produced from a red-hot solid cylinder of metal, a "billet", which was lengthened by the rolling process described in the extract from the website of Salzgitter AG. The extract refers to the billet being pierced by a "plug" during the rolling, in 1934 Collins was to use a more familiar term to describe this component - a "mandrel".

Ray Shill emailed me at the end of May 2018 and it was his following comment that revealed the flaw in my previous thinking i.e. my presumption

that the 1850 anti-weld patent was thought to have been a forerunner of the Mannesmann process:

*...Anti-weld like welded tubes relied on forming sheets or plates into tube form. However before his death, he [Richard] had a provisional protection patent, November 11th 1852 no 707. It was this concept that I believe was an inspiration to others. Here the cast metal ingot was drawn out, having a hole made through it from end to end. Thus the tube was drawn and shaped by machinery to make the tube. It was basically a weldless tube! ...Firms adopted methods similar to Prossers 1852 patent, sadly it seems he never received that credit...*

A copy of Richard's last tube patent, no. 1852/707, obtained at the beginning of my tube research from the Intellectual Property Office along with copies of the earlier tube patents, had been filed away after a brief perusal and still awaited more detailed attention. In fact, I had assumed this very short patent, the specification of which was less than two pages in length and was accompanied by no drawings, was of little significance. The précis below is a transcript copied from the abridgements of patent specifications relating to metallic tubes and pipes published by the Patent Office in 1874 - this abridgement is about two thirds the length of the original specification itself:

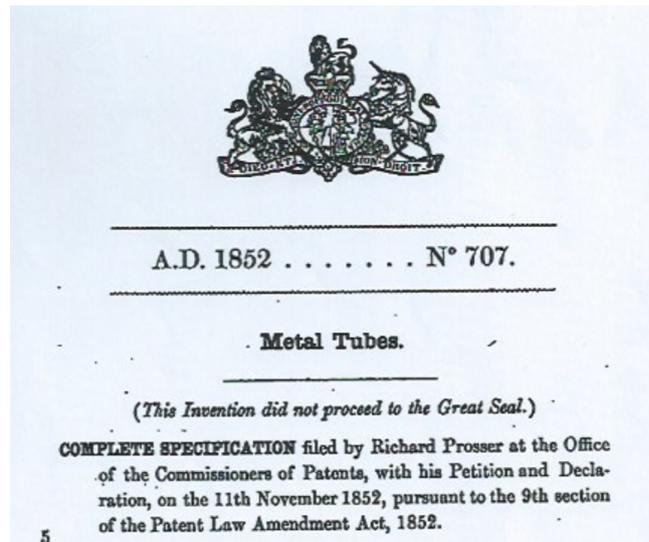
*A.D. 1852, November 11.—N° 707.*

*PROSSER, Richard. — (Provisional protection only.) — This invention has for its object the manufacture of tubes by drawing out or elongating cast metal ingots which are square in transverse section and have severally a hole of similar form through them from end to end, the angles both inside and outside being rounded off. A tubular ingot so formed is placed upon a suitable mandril and passed between rolls, having the same configuration as the rolls which are employed for rolling iron into square bars during the process of manufacture; by this means the ingot is gradually elongated, and finally is reduced transversely and lengthened out to the dimensions required, the metal being operated upon either in a heated or cold state, as its nature may require. The ingot by this means is brought into the form of a tube still retaining its square form with rounded corners, and this form is subsequently altered by passing it between rollers which have circular grooves.*

*[Printed, id. No Drawings.]*

The abridgement's reference to the patent being granted "provisional protection" only requires clarification and, in my view, is misleading. The image on the next page is of the heading of the official printed transcript of the manuscript specification, which had been signed and sealed by Richard

on 10th November 1852 in Birmingham. The Patent Law Amendment Act 1852 had only come into force on 1st October, but already over 700 specifications had been filed at the Patent Office. Of these the vast majority were “provisional” specifications merely describing the nature of the claimed invention i.e. similar to the previous practice (similarly the Act also required that a “complete” specification had to be filed within six months). However, Richard had chosen to file a “complete” specification from the outset and, by the end of 1852, only 33 of these had been lodged compared with 1,178 “provisional” applications (*The Practical Mechanics Journal 1865 (issue 1st April) Vol. 1 p.6*, which contained a full transcript of the 1865 Law Commission Report to Parliament on the working of the patent laws since the 1852 reforms). By the end of 1863, a decade later, a total of only 569 “complete” specification applications had been filed compared with 34,593 “provisional” specification applications.



So, in filing a “complete” specification on 11th November 1852, Richard was taking an unusual approach to securing a patent - what is more he had filed another on the same day for “Rolling Metals”, which I will describe shortly. However, neither of these two applications proceeded to the “Great Seal” (see the image of the heading of the 1852 tube patent above); this sealing had to take place within the requisite period (normally six months). Of the thirty three “complete” specifications filed that year twenty six had the “Great Seal” affixed and became entitled to the full fourteen year protection - the remaining seven, including both of Richard’s, lapsed after six months.

A “complete” specification was one “particularly describing and ascertaining the nature of the said invention, and in what manner the same is to be performed” (section 9 of the 1852 Act - and the Act specified that if it was found not to have done so the protection granted would be voided). Once the “complete” specification was filed the claimed invention was automatically entitled to the full status of a patent granted under the Act except that no right to sue for infringement arose and the grant was for a limited period only, namely six months from filing. Notice of the application had to be advertised in *The London Gazette*; both of Richard’s were notified in the issue dated 19th November 1852. To secure the full fourteen year protection the applicant

then had to notify the Patent Commissioners of his intention to proceed for a full grant; this notice had to be given at least eight weeks before the expiry of the six month period of protection and also had to be advertised in *The London Gazette*; if no objections were received within the period specified, the Commissioners could issue a warrant for sealing the patent with the "Great Seal". The usual ground for objection was that the claimed invention was not new.

No notice advertising Richard's intention to proceed for a full grant of either of his applications appeared in *The London Gazette*. Why remains an unanswered question.

It is important to emphasise that the grant of a patent under the old law and, also, under the 1852 Act did not guarantee the novelty of the claimed invention. The Act specified the required form of the warrant recommending the affixing of the Great Seal and it recorded that the Commissioners were minded to issue it "as it is entirely at the hazard of the said petitioner whether the said invention is new or will have the desired success".

A "complete" specification was not required to be subject to any scrutiny by the Patent Commissioners and that which they were required to carry out in the case of a "provisional" specification was limited to being satisfied that it described "the nature of the application".

Under the new law any objection to the grant of an advertised patent application had to be made to the Patent Commissioners by notice in writing given within twenty one days after the insertion of the notice in the *Gazette* of the applicant's intention to proceed i.e. the second notice. No provision was made for objections to be considered and heard before the appointed "Law Officers" after the insertion of the initial notice; the reason for this omission is unclear, however, its effect is significant.

By filing a "complete" specification the applicant immediately gained a patent for his claimed invention albeit for only six months protection and with no right to enforce it against infringement (the latter point was one made by the barrister *John Coryton* in his *Coryton on Patents* published in 1855 to which I have referred previously). However, if the applicant did not give notice to the Commissioners that he intended to proceed to apply for a full grant for fourteen years protection, the Act provided no statutory mechanism for opposing the six month grant whether on the ground that the claimed invention lacked novelty or for some other reason. Prior to the 1852 Act the grant of a patent could be impeded by a, much abused, legal procedure

called a “caveat”; entering a caveat was a relatively inexpensive and simple process (*SD 2022 correction*), which the advertisement procedure specified in the 1852 Act was intended to replace. In the absence of being able to enter a caveat any person wishing to object to the six month patent would presumably have had to bring a civil case in the courts, but it is not clear what legal remedy was readily available (a writ of scire facias to repeal the patent would, presumably, not have been possible prior to the full grant of the fourteen year term by the Crown as the writ had to be issued by the Attorney General on behalf of the Crown - see Part 1 p.96 for my background note on this remedy).

So, in failing to notify the Patent Commissioners of his intention to proceed for a full fourteen year grant, Richard appears to have made it very difficult for anyone to challenge the validity of his claimed invention. His failure to do so cannot have been an oversight (he would have had an intimate knowledge of the new statutory procedures); it must have been a deliberate omission and his motive remains obscure. He may have become aware that others were proposing to lodge credible objections if he had tried to secure a fourteen year patent term - this is, perhaps, the most obvious explanation, but I believe there may be another. I believe Richard was, perhaps, making a stance on a point of principle that he was to voice at a dinner in Birmingham in December 1852 at which he criticised the legislators for not reducing the cost of patent applications in the 1852 Act. Richard’s six month patent had only cost him the £5 initial fee; the total fees for a 14 year patent amounted to £175.

However, whether or not it was intended, the fact, that Richard’s temporary patent went unchallenged, had a significant consequence - its existence effectively prevented anybody else seeking a fourteen year patent in the U.K. for the process described in his “complete” specification.

But why would Richard apply to patent an important new process if he did not intend to proceed with the application - and, when in doing so, the process would become freely available for use by others after the six months protection had elapsed?

Whilst Richard had declared the specification lodged on 11th November 1852 to be “complete” it is remarkably short. The printed text runs to just twenty one short lines and there are no accompanying drawings. The Patent Office abridgement quoted earlier is only slightly shorter. Unlike in all his previous tube patents, Richard was not seeking to patent any complicated tube making machinery. In essence, his process, on the face of it, appears to be little more than an idea - a method of weldless tube manufacture from square solid

metal ingots that he claimed was innovatory, but which clearly still required much development before it could claim to be a fully industrialised and, therefore, commercial manufacture. As such the disclosure of the idea in November 1852 was at little risk from infringers.

Might Richard's 1852 patent be the originating precursor of the Mannesmann process? Ray Shill had made the following comment in one of his emails to me in May 2018:

“How much of Prosser's 1852 idea was a stimulus for others needs to be determined, but I suspect his lateral thinking after... the poor success of anti-weld tubes for the purpose they were intended, boiler tubes, provided at least a kernel for experiment further.”

Was Richard actively seeking to develop machinery to industrialise the process at the time of his death, just eighteen months later, in May 1854?

I have mentioned previously that Richard had lodged one other “complete” specification on 11th November 1852; this was duly advertised in *The London Gazette* on 19th November appearing immediately below that for his weldless tube. No second advert was inserted in the *Gazette* of any notification of his intention to proceed to a full grant; the patent, for “Rolling Metals”, therefore also lapsed after six months. The actual text of the patent was only a little longer than that of the identically dated tube patent and was “for rolling of metals of a wedge form by the methods described” and included the sketch shown here. The Patent Office explanatory abridgement (inspected at the British Library) does not shed any light on this puzzling specification. The patent itself can be downloaded [here](#) from the website [prossertheengineer.com](http://prossertheengineer.com). On reading it my first reaction was that the specification was so rudimentary and the claimed invention was seemingly of so little merit that it was difficult to credit Richard with its authorship. Might the patent actually be a ruse by Richard? A trick intended to demonstrate that the continued lack of any scrutiny of specifications under the new patent system meant that “loosely worded” specifications containing inadequate drawings would still be granted a patent (see p.8 for Richard's letter on the subject in February 1851). An expert's view on the technical merit of the claimed invention would be helpful.



One aspect of Richard's 1852 weldless tube specification might suggest that it, too, was not “genuine”: the surprising shape of the solid metal ingot or billet from which the hollow tube was to be formed - a square with rounded corners. However, Collins in his 1934 paper was to describe a number of later developments/adaptations of the Mannesmann process including one using

“An octagonal or square billet with rounded corners” in which an enormous hydraulic press was used to pierce the billet. The lead item in the dispersal sale of the contents of Richard’s workshops at the Tube Works in Cambridge Street after his death was the steam hydraulic press capable of exerting pressure of 900 tons; “the only one then in existence” of which Richard had been the “forgotten” inventor according to his son in his *B&I*. The press had, in fact, formed part of the 1850 “anti-weld” patent - might it also have played a part in experiments by Richard in seamless/weldless tube manufacture?

This inconclusive discussion concludes the part that the weldless tube played in Richard’s life - hopefully more informed comment may be forthcoming in the future.

## Chapter 19

### 1850 - The Second “Marriage”



*“He shall prick that annual blister, marriage with deceased wife's sister”.*

*Gilbert and Sullivan - Iolanthe 1882*

*(Image: Wikipedia - Piano transcriptions 1887 George H. Walker & Co.)*

There can be little doubt that the wedding ceremony, that allegedly took place between Richard and Hannah Somerton Potter in 1850, was not entered into as lightly as might be suggested by the above quoted lyric from Gilbert and Sullivan’s popular political satire.

The following announcement was included in the marriage notices inserted in *Aris’s Birmingham Gazette* on 7th October 1850 and, five days later, on 12th October in the *Birmingham Journal*:

*“At Edinburgh, Mr. R. Prosser, C.E., of King's Norton, to Hannah Somerton, daughter of Mr. Robert Potter, late of this town.”*

A similar announcement was included in the *Worcestershire Chronicle* on 9th October 1850 - High House in Kings Norton, the couples’ residence, then fell within the circulation area of this county newspaper.

The actual date of the “marriage” was not revealed in the announcement and I have been unable to trace any record of it in searches covering the years 1848 to 1851 either on *Ancestry* or in the available online church records on the *ScotlandsPeople* website (statutory registration of marriages did not come into force until 1855 in Scotland).

Hannah had been named simply “Hannah Potter” at her baptism on 9th June 1817 at St. Martin’s in the Bullring in Birmingham. Her birth date was recorded as 26th December 1816; she was two and a half year’s younger than her deceased sister Sarah, Richard’s first wife. She was one of the witnesses at Richard and Sarah’s wedding in 1836 when she signed her name as “Hannah Potter” (the other witness was Thomas Morton Jones); in the 1841 census the enumerator mistakenly recorded her as “Hannah Prosser” when living with Richard and Sarah and their three young children at 9 Camp Hill in Bordesley (she was described as “Ind” i.e. of independent means). In all later census returns, up to and including that in 1901 (she died in 1904), she added an initial “S” after her baptismal Christian name, except in 1871 when the full “Sommerton” (sic) was included.

More about Sarah and Hannah’s Potter birth family can be found in *The First Story “Rescuing Richard”*, Chapter 5, pp.148 to 153.

The 1850 marriage announcements are the earliest evidence of Hannah adopting a second Christian name: why, and where the name came from, remains unclear. No familial connection to the name “Somerton” has come to light. (However, a “Hannah Somerton” was recorded as trading as a “victualler” in Bordesley in *Wrightson’s Directory* published in 1815 at about the same time as Sarah and Hannah’s father Robert Potter may already have been trading as a victualler and engineer from the Boars Head in Bradford Street; she was probably the same Hannah Somerton of The Rainbow Inn, on the corner of High Street and Adderley Street, who died on 25th December 1816 - *Library of Birmingham Archives*).

The adoption of the additional name was clearly not an attempt to conceal Hannah’s parentage as this was disclosed in the marriage announcement. She was in any event, presumably, well known within the family’s circle of friends and acquaintances to be the sister of Richard’s recently deceased wife. Hannah may, after all, have assumed the additional name some years previously - perhaps a mere affectation that had nothing to do with any controversy that might surround her marriage to her brother-in-law.

Early on in my genealogical research into the Prosser family I had been frustrated that I had been unable to find any record of Richard's second marriage to the "Hannah S." recorded as his new wife in the 1851 census; it had crossed my mind that her Christian name, stated age and place of birth was consistent with Richard having married one of his sisters-in-law. When we made our second visit to the *British Library* in March 2012 (see "Rescuing Richard" pp. 97/98) amongst the many items produced for us to view by Beryl Leigh were copies of the obituaries for Richard that appeared in the *Birmingham Journal* and in *The Spectator* (see *ibid.* pp. 22-25). Beryl, who had worked at the *British Library* for over thirty years, pointed out a hand written note on the back of one of the obituaries to the effect that on the death of his first wife Richard Prosser had married her sister. As Beryl herself suggested, the writing was very similar to that of Richard Bissell Prosser's.

Following this visit I resumed my search for a record of the marriage, which I had expected to have taken place in England, probably in Birmingham or Kings Norton. As my online searches had been unsuccessful I submitted a search to the Registrar of Births, Deaths and Marriages, which too returned no result. Mystified, I rang up the local Register Office and in the course of the conversation with its genealogist I mentioned that the bride was the sister of the deceased first wife. This disclosure solved the mystery as I was told that during most of the nineteenth century such marriages were prohibited in England and Wales, but that determined couples would travel to Scotland or, if wealthy enough, to other countries in Europe where there was no such prohibition.

I subsequently came across the announcement that a marriage had taken place in Edinburgh in my earliest searches in December 2012 for any references to Richard in the (for me) newly discovered *British Newspaper Archive* (which had only been launched in November 2011).

In the twenty first century it is difficult to comprehend the strength of feeling amongst a large sector of England's population over the "marriage to a deceased wife's sister" controversy that, in practice, had subsisted throughout the nineteenth century and was at its height in the middle of that century when Richard and Hannah announced their marriage.

I have read a number of papers on the subject and one of the most informative and often cited was written by an American academic: *Anderson, Nancy F. "The 'Marriage with a Deceased Wife's Sister Bill' Controversy: Incest Anxiety and the Defense of Family Purity in Victorian England." Journal of British Studies 21 (1982): 67-86.*

Access to *Anderson's* relatively short paper, 20 pages, can be purchased from *Cambridge University Press* at this [link](#) and will be free to many students/researchers. The following examination of the context in which Richard and Hannah announced their marriage in October 1850 is borrowed extensively from *Anderson's* paper.

The title of *Anderson's* paper goes some way to explaining some Victorians' attitude to the issue that was to be debated in Parliament on an almost annual basis after the passing of an Act in 1835 which had prohibited such marriages after 30th August in that year but had legitimised those contracted on or before that date (these had otherwise been voidable on the application of any concerned individual to one of the ecclesiastical courts). The background to this seemingly contradictory Act is explained in the extract of *Anderson's* paper which is viewable on the above link and also in an open access publication on this [link](#) to an article by another American, a Professor of English, *Anne D. Wallace*.

As soon as it was enacted the 1835 Act was met by a wave of protest seeking its repeal from widowers and their supporters in numbers which may seem surprising nowadays: Victorian families were large; mortality of wives in child birth or otherwise was high; a large proportion of the female population was unmarried (40% of 21 to 44 year olds in the 1851 census); and an unmarried sister commonly lived within a married sister's family to help and support the unit as well as for sisterly companionship (and a home for herself). On the death of a wife, after a suitable period of mourning, the husband naturally wanted to find a replacement to manage his household and in many instances an unmarried resident sister-in-law familiar to him and, hopefully, loved by his children fitted his bill. Such a marriage was, also, often welcomed by the deceased wife's family: it preserved the existing family unit; overcame the problem of the propriety of a spinster daughter continuing to live with her widowed brother-in-law; and provided her with a permanent home. Some of the protesting widowers publicly lamented that they were unable to comply with the last wishes of their late wife, who had begged them on her death bed to marry her sister.

It has to be said that the 1835 Act was of less relevance and interest to the poorer classes, where cohabitation without marriage was not uncommon and their own circumstances demanded a more tolerant attitude to the living arrangements of their neighbours and peers (poorer extended families were often confined to living in just one room - with unsurprising consequences). The very wealthy were also less affected having the means to employ nursemaids and governesses as well as household staff.

The opposition to the repeal of the prohibition was led by the Anglican church; it was a majority of its representatives in Parliament which successfully frustrated its repeal for over seventy years. Not all churchmen, by any means, opposed the repeal. The laity were also split; many were in two minds.

The justifications for the prohibition arose from an interpretation of an Old Testament text, which was challenged from the outset by its opponents and eventually discredited. The passage was (mis)interpreted to specifically bar marriage by a spouse to his or her deceased spouse's sibling (amongst other specified barred relationships). The bar therefore also applied to a wife's marriage to a deceased husband's brother (this was a less common occurrence and did not generate a parallel "deceased husband's brother" reform campaign). However, the opposition to such marriages did not just rest on this text in the book of Leviticus.

*Anderson* argues that the greater justification relied on by the opponents of reform was to be found in a literal interpretation of Genesis Chapter 2 v. 24: "Therefore shall a man leave his father and his mother and shall cleave unto his wife: and they shall be one flesh." - and that therefore such second marriages were truly consanguineously incestuous. If husband and wife were "one flesh", the wife's sister was too.

Whilst, as *Anderson* discusses, the "Genesis" argument lost traction later in the nineteenth century the supporters of reform still had to contend with other grounds raised by their opponents, including "biological" assertions that sexual intercourse itself led to "an actual physiological change in the marriage partners that makes them blood relations". (Yet, marriages between first cousins were neither unlawful (at law or scripturally) nor condemned; an irreconcilable illogicality.)

However, in the mid-nineteenth century the Old Testament theological incestuous relationship arguments were predominant and held sway amongst a majority of the clergy; the majority of the laity, although less influenced by the theological arguments, held an uninformed view or feeling that such marriages were contrary to God's word.

These beliefs and/or feelings were supplemented by arguments that the removal of the prohibition barring marriage between sibling in-laws would undermine the close but chaste relationship that these members of the extended Victorian family were able to enjoy free of any libidinous thoughts for each other - a wife's sister might actually feel unable to provide much needed live-in support for fear of inciting inappropriate feelings in her brother-

in-law. *Anderson* dwells at some length on this perceived threat to Victorian family values and argues that sensitivity to this issue was heightened by the strong bonds engendered between brothers and sisters due to strict Victorian moral standards and, also, repressive attitudes to social intercourse with the opposite sex outside the family unit. (*Anderson* also gives a number of examples where well documented sibling feelings were so passionate as to appear unbalanced e.g. the historian Thomas Macaulay's for his sisters and Dorothy Wordsworth's for her brother.)

In the light of the continuing attempts to have the 1835 Act repealed a Royal Commission had been appointed in June 1847 to "Inquire Into the State and Operation of the Law of Marriage as Related to Prohibited Degrees of Affinity, and to Marriages Solemnized Abroad or in the British Colonies". The Commission published its "First Report" in July 1848 and its contents were widely reported in the press nationally; it is available online in Googlebooks on this [link](#) and the contents of the twelve pages of the Report itself are surprisingly readable and were, together with the witness statements contained in its Appendix, clearly the source of much of the background material in *Anderson's* paper which I have already cited above.

The Report concentrated on the overwhelmingly prevalent form of "marriages" that were taking place in England within the "Prohibited Degrees" - namely those to a deceased wife's sister. It found that the 1835 Act had been largely ineffective in discouraging such "marriages"; the numbers contracted since 30th August 1835 were estimated to run into several thousands and, on the whole, these were considered to be acceptable and beneficial within the families affected. The Commissioners were concerned that the 1835 Act had rendered such "marriages" void with disastrous consequences e.g. any children were deemed illegitimate. However, in the light of church and public opinion being, in the main, against such unions, the Commissioners felt unable to make any recommendations themselves and left the matter to Parliament.

Parliament was soon required to consider the issue once again. On 22nd February 1849 James Stuart-Wortley, M.P. sought leave to bring in a Bill before Parliament which was to become known as the Marriage Affinity Bill; in doing so he was continuing the campaign in Parliament, first commenced by his father Lord Wharnccliffe in 1841, to repeal the marriage to a deceased wife's sister prohibition. In addressing Parliament Stuart-Wortley maintained that between thirty and fifty thousand such "marriages" had taken place since the passing of the 1835 Act. The Bill was the subject of lengthy debates; on the vote after the second reading in the House of Commons the "fors" were in

the majority, but the Bill's opponents successfully adopted delaying tactics which meant that it had no hope of being passed before the prorogation of the 1849 Parliamentary session. (*Annual Register etc. 1849: Edmund Burke* - [link](#))

As he had pledged to do on abandoning his 1849 attempt, Stuart-Wortley re-introduced his Bill, slightly amended, early in the 1850 session. As previously the debates in the Commons were heated and prolonged, but the Bill passed its second reading and eventually reached the House of Lords - but was not debated there as, yet again, time had run out and the Bill was withdrawn on 25th July 1850 but for the "present Session" only. (*Annual Register etc. 1850: Edmund Burke* - [link](#))

In reluctantly withdrawing the 1850 Bill the Earl of St. Germans had referred to "a strong current of opinion" in favour of the reform but he, also, admitted that a "vast majority of the Scottish clergy and laity were opposed to it"; the Earl suggested that it might be worth considering amending the Bill when reintroduced so as to exclude Scotland.

The strength of the opposition in Scotland was evidenced by the abundance of letters to and articles in the Scottish press throughout this period. In fact, the 1835 Act had applied to England, Wales and Ireland but not to Scotland. In their 1848 Report the Commissioners had explained that in Scotland in 1835 all marriages within the prohibited degrees of consanguinity and affinity were already void ab initio (i.e. not just voidable) and that the whole of the authority of the Scottish Church viewed marriages to a deceased wife's sister as within the prohibited degrees. However, the Commissioners reported that whilst the Scottish legal profession "generally" supported the Church's view, there had been doubts to the contrary expressed on strong grounds by some eminent Scottish lawyers.

So, in October 1850 when Richard and Hannah announced their Edinburgh marriage in the Birmingham and Worcester press, there can be little doubt that they did so in the full knowledge that the legality of the marriage was, at the least, very questionable. Even those sympathetic to the reform of the 1835 Act would not have considered the marriage to be lawful; many others would have considered it sacrilegious - of whom some, at least, would have believed their cohabitation as man and wife to be incestuous and abhorrent.

It would be wrong to suggest that such marriages automatically resulted in the couple concerned being treated as social pariahs; however, middle class early Victorian society was certainly less tolerant than its working class when it came to cohabitation. It was therefore usual for such couples to keep a low

profile. Richard was no doubt aware that the great Birmingham engineer Matthew Boulton had married his deceased wife's sister in 1760 and may have known of Boulton's subsequent recommendation of "silence, secrecy and Scotland" to a friend who was considering the same union.

However, Richard and Hannah did not remain silent; they publicised their marriage and whilst they otherwise followed Boulton's advice as to Scotland, they must have done so knowing that there was uncertainty as to whether it was actually lawful in that country too. This raises the question as to why the couple did not travel to one of the many European countries where such marriages were permitted; this appears to have been the more usual practice amongst the rarer cases of wealthy in-law marriages discussed in the 1848 Report, even though it was not clear whether the marriages would be recognised as lawful in England (in 1861 the House of Lords held that they were not - *Brook v. Brook*). In 1850 Richard would certainly have been wealthy enough to have afforded to cross over the Channel for the wedding.

Indeed, Richard's wealth was such that it suggests that the marriage was not just a convenient or necessary propriety. In the 1851 census Richard and Hannah were not living alone with his children; the household at High House included a clerk and a governess as well as two servants.

In fact, Richard's regard for and trust in Hannah was documented shortly after the announcement of their marriage. On 19th October 1850 Richard executed a new will in which he named Hannah and (when he attained the age of twenty one) Richard Bissell Prosser as his joint executors. Richard Bissell was then only twelve years old - so, effectively Richard had appointed Hannah his sole executor in the event of his early demise. He gave her a life interest in the majority of his estate (first mentioning his patents) and appointed her the guardian of all his children. Significantly, Richard made Hannah's life interest subject to her "maintaining bringing up and educating all and every of my children including those by my former wife". Hannah was still only thirty three; Richard, aged forty six, clearly contemplated that they would have children together.

The witnesses to Richard's signature were the family's governess recorded in the 1851 census and the solicitor Thomas Slaney. The will had presumably been executed at High House. It was most probably prepared by Slaney, suggesting that he was on good terms with Richard and that their relationship during the litigation with Cutler might not have been as hostile as might otherwise be supposed.

Richard had acted responsibly in quickly addressing the problems that would have ensued if he had died intestate (without a valid will): Hannah would not have been recognised as his wife and would have had no standing; none of his children, his intestate heirs, were of age; in 1850 the next-of-kin eligible to administer the intestate estate would have been his eighty-six year old mother. Richard had also taken care to identify Hannah beyond doubt - as his “dear wife Hannah Somerton (heretofore Hannah Somerton Potter)”.

Nor did Richard stand by whilst the campaign to repeal the “deceased wife’s sister” prohibition was continued in Parliament by its supporters. In the 1850 session the passage of the Bill was again thwarted by its opponents and this led to the formation in London of the Marriage Law Reform Association in January 1851.

The Association advertised nationally, under the banner “Marriage With A Deceased Wife’s Sister”, for supporters of reform to contact its London office and was addressed in particular to “Gentlemen personally or otherwise interested” in the issue.

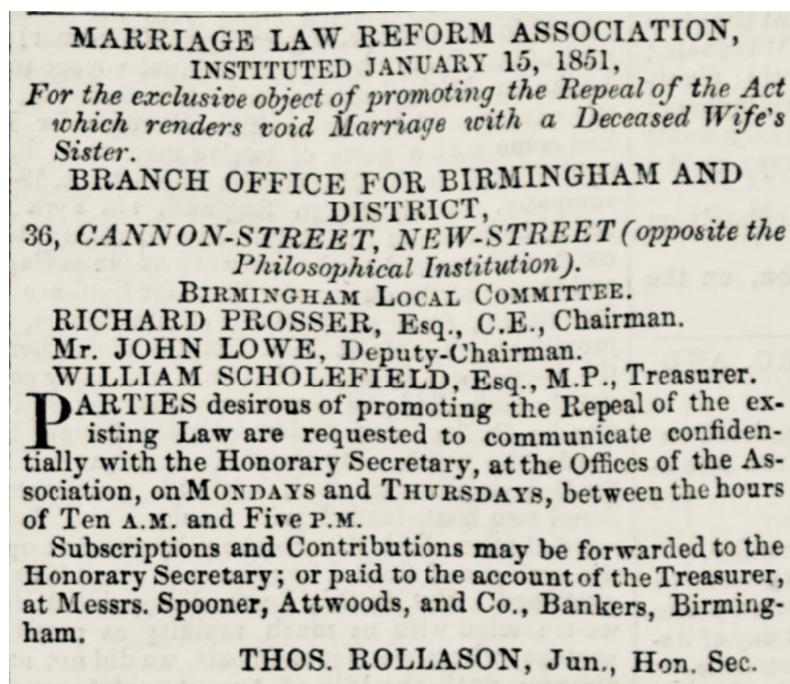
In Birmingham on 14th January 1851 a “Public Meeting” was held in the evening in the Town Hall chaired by the Mayor to discuss a motion that Parliament should be petitioned to “repeal the cruel and oppressive law”. Amongst those who had made their views known in favour of reform were three local MPs: Richard Spooner and (in absentia) George Frederick Muntz and William Scholefield. The latter name will be familiar to readers of “Rescuing Richard” (p.133) as the son of Joshua Scholefield, who was present at the fateful meeting with Thomas Morton Jones on 31st October 1838 when Jones surrendered ownership of the Britannia Nail Manufactory to Scholefield senior. Muntz has already been mentioned in both “Rescuing Richard” (p.162) and in Part 1 of this The Third Story (p.141). Spooner was a banker and a partner of Thomas Attwood, who also appears in “Rescuing Richard” (Attwood was a great friend of Scholefield senior - they were elected as Birmingham’s first MPs in 1832 - *ibid.* pp.101/102).

The press reports estimate that more than two thousand, both men and women, attended the meeting. Two clergymen spoke at length in favour of the petition; both were equalled in verbosity by two clergymen opposing the motion. Spooner then spoke in favour. The reaction of the audience to the speeches was clearly on the side of the reformers and on a show of hands the motion was passed overwhelmingly. (*Birmingham Journal 18th January 1851; Aris’s Birmingham Gazette 20th January 1851*)

On 25th February 1851 the Earl of St. Germans reintroduced the Marriage Affinity Bill in the House of Lords and moved its second reading; amongst the speakers the Archbishop of Canterbury and other clergy were against the reform. Their Lordships voted 50 to 16 against the Bill. (*Aris's Birmingham Gazette 3rd March 1851*)

On 10th May 1851 Scholefield presented local petitions containing 6,079 signatures to the House of Commons calling for the repeal of the prohibition. It would be surprising if Richard and Hannah did not attend the January meeting and were not signatories to one of these petitions.

On 25th July 1851 a preliminary meeting was held in the evening at Dee's Hotel in Birmingham at which resolutions were passed with a view to the formation of a local branch of the Marriage Law Reform Association (*Aris's Birmingham Gazette 4th August 1851*). The *Gazette* regularly repeated insertions of this announcement until on 13th October 1851 they were replaced by the following notice which was inserted on a fortnightly basis until 15th March 1852 naming Richard as the Chairman of the "Birmingham Local Committee".



*Image © The British Library Board all rights reserved*

I have located no surviving records of the Birmingham and District branch of the MLRA nor any reports of its meetings or activities; the identities of Messrs. Lowe and Rollason remain unknown (there were too many of the

former in Birmingham at this time and two possible contenders for the latter, one a glass merchant the other a land and mine surveyor - *Ancestry* ).

Branches of the MLRA were quickly formed throughout the country and many more petitions were presented to Parliament from both sides of the argument during Richard's lifetime. However, further attempts to introduce another reform Bill were without success in the annual parliamentary ballot for private member's Bills held in the following three years. Richard was not to live to see the next reform Bill presented to Parliament in 1855, which narrowly passed its second reading in the House of Commons, but did not get to be debated in the House of Lords before Parliament was prorogued.

The 1855 Bill in any event did not apply to Scotland; nor was it to be retrospective if enacted. The lawfulness of marriages to a deceased wife's sister in Scotland was to remain undecided until the eventual enactment in 1907 of the Deceased Wife's Sister's Marriage Act which applied to the whole of the U.K. and was retrospective in effect. The Act did just what its title infers and no more; widows had to wait until 1921 to have marriage to a deceased husband's brother legitimised (the Deceased Brother's Widow's Marriage Act 1921).

However, whatever the status of Richard and Hannah's Scottish marriage in Scotland itself, the House of Lords' decision in *Brook v. Brook* in 1861 effectively declared their marriage void in England.

Hannah died on 12th December 1904, shortly before her eighty-eighth birthday; for over fifty years she had lived with the knowledge that her status as Richard's lawful wife and widow was unrecognised. The much publicised, but unsuccessful, campaign throughout the remainder of her life for the reform of the law would have resulted in her hopes being raised and dashed on numerous occasions. How much censure and discrimination she had to contend with is unknown, but inferences can, perhaps, be drawn from the following three known facts.

There was no mention of Hannah in the long obituaries for Richard that were published in *The Spectator* and the *Birmingham Journal* following his death in May 1854. The former ended with a statement that he had died "leaving a family of six intelligent children, who will miss in him not only the loving father, but the friend also who was awakening in them and cultivating the highest powers of their natures." The obituarist in the *Journal* concluded his with a perhaps more sensitive reference to the family's loss: "of the bereavement to that inner circle to whom he was endeared by more tender ties, none can tell

the intensity of the loss.” I have found no account of Richard’s funeral at a time when the local press, at least, would often report on the attendees at the burial of an eminent inhabitant.

In 1871, on the day of that year’s census, Hannah was a visitor at her Bromfield cousins’ house in Barlows Road in the village of Harborne, now a suburb of Birmingham, where her younger “imbecile” sister Emma Jane Potter was then living. The Bromfield cousins were unmarried and in later census years the three sisters ran a small school at the house and described themselves as school mistresses. In the 1871 census Hannah was described as a widowed annuitant, but the census enumerator had been told to record her name as “Hannah Sommerton (sic) Potter”.

On 14th December 1904 Hannah was buried in the churchyard of St Nicolas’ at King’s Norton. She had been living with the family of her step daughter (and niece) Marianne Ellis née Prosser since at least 1881 and probably for most of the previous two decades. In 1861 Marianne, aged 19, had married Alexander Adcocke Ellis, a young widower, who owned the Wychall Rolling Mills in King’s Norton. Ellis was a successful business man and left an estate valued at over £20,000 at his death in April 1903; he too was buried at St Nicolas’ church and a handsome Celtic cross marks his grave close to the church itself. However, when Hannah was buried twenty months later, she was interred in the neighbouring grave of Ellis’s first wife who had died in 1856, in which an aunt of his had also previously been buried in 1876. Their memorials on the stone recorded the names of their husband’s, but Hannah’s when added in 1904 simply read: “also Hannah Summerton (sic) Prosser who died December 12th 1904 aged 85 (sic) years”.



*The image on the next page shows the gravestone located to the rear and between Alexander’s on the right and Marianne’s (d.1918) on the left. There was sufficient space left below the above inscription for a longer memorial to Hannah.*



Now, there may, of course, be other explanations for Hannah not being afforded a memorial of her own - as would have been more fitting a senior member of a well to do local family. However, is it possible that, even as late as 1904, her marriage to Richard was still a source of embarrassment and/or contention. Marianne and Alexander's eldest son, the Rev. Richard Prosser Ellis (an Anglican priest living in London), conducted the burial service. Might Hannah's burial in the existing grave of long deceased relatives of her late son-in-law have been a convenient way of avoiding any mention of her controversial status as Richard's widow?

Following Richard's death Hannah had assumed the responsibility that Richard had entrusted her with in his Will. Notwithstanding the financial problems she must have faced (Richard's estate was initially thought to be insolvent), the family remained in occupation of High House until Hannah vacated it in early 1861 on the expiry of the (presumed) fourteen year lease that had been granted to Richard in 1847. Richard's three younger sons all appear to have been well educated. In 1854 Richard Bissell, aged sixteen, may have had to cease his schooling; on 20th October 1856 he commenced on his long career with the Patent Office in London. Early in her widowhood Hannah emulated her Bromfield cousins and with a "Miss Prosser" opened a private school at High House - an "Establishment for Young Ladies" (evidenced by adverts in the Birmingham press between 1855 and 1857); the

“Miss Prosser” was presumably Eleanor Jane, Richard and Sarah’s eldest child, aged eighteen in 1855.

By the night of 7th April 1861 when that year’s census was recorded, the Prosser family had all left High House. Hannah a “Governess” was living with Marianne at Griffins Brook in Northfield, less than two miles to the north-west of High House, with one servant and two young “Scholars”, a brother and sister, boarding with them; Marianne, correctly, gave her age as nineteen, but Hannah “lost” six years - she was forty four, not thirty eight as declared to the enumerator. Richard Bissell, twenty, had been working and living in London for five years; two of his younger brothers William Henry, seventeen, (an “Engineers Pupil”) and Robert Walter, fifteen, (a “Scholar”) were lodging three miles south of Kings Norton in West Heath. In 1857 Eleanor Jane, Richard’s eldest child, had made a successful marriage to Joseph Sharp Stock, a wealthy glass and lead merchant; in April 1861 she was living at Grovelly Hall in Cofton Hackett, two miles south of West Heath, with Joseph, their three infant children, three nurses and three servants.

In April 1861 the family would still have been in mourning for young George Rippon Prosser (Richard and Sarah’s third child), who, aged just twenty, had died on 23rd October 1860 in Italy, at Capua north of Naples, of wounds received in an engagement on 19th October between forces supporting Giuseppe Garibaldi, the great Italian nationalist, against Neapolitan forces supporting the Bourbon ruler. Earlier in the year George had joined a Birmingham contingent of English “Garibaldi Volunteers”.

More will be told of the fortune, and otherwise, of Richard’s descendants at the end of the Fifth and final story of Richard’s life.

No photograph or portrait has survived that can be identified as of Hannah. She has only left glimpses as to her personality; these suggest that she was a resourceful woman.

She clearly regarded herself as the matriarch of the family as her signatures to the marriage registers of three of her step children attest. In 1857 she had acted as a witness (“Hannah S. Prosser”) at the marriage at St. Nicolas’ in King’s Norton of Eleanor Jane to Joseph Sharp Stock. In 1865 and 1867 she signed the registers “Hannah Somerton Prosser” in a bold hand when witnessing the marriages of Richard Bissell and William Henry in London.

However, the St. Nicolas’ register of Marianne’s wedding on 23rd September 1861 suggests that there may have been some discussion as to who should

be the bride's witness. The clerk completing the register appears to have been caused some confusion as he had initially inserted "Hannah Somerton" as the name of the bride, which was crossed out and corrected; it was Richard Bissell who actually signed as the bride's witness. The service was conducted by the groom's older brother, the Rev. Arthur Ayres Ellis, the vicar of Stotsfold in Bedfordshire, a respected academic theologian - perhaps he held strong views on the "deceased wife's sister" issue.

Page 151.

1865. Marriage solemnized at <u>All Saints Church in the Parish of St. Marylebone</u> in the County of <u>Middlesex</u>								
No.	When Married.	Name and Surname.	Age.	Condition.	Rank or Profession.	Residence at the Time of Marriage.	Father's Name and Surname.	Rank or Profession of Father.
301	September 20 <sup>th</sup> 1865	Richard Bissell Prosser	24 <sup>th</sup> age	Bachelor	Government Clerk	18 <sup>th</sup> High Street Westlich Town	Richard Prosser	Civil Engineer
		Ann Costell	24 <sup>th</sup> age	Spinster		52 Lucas Road	William Costell	Printer

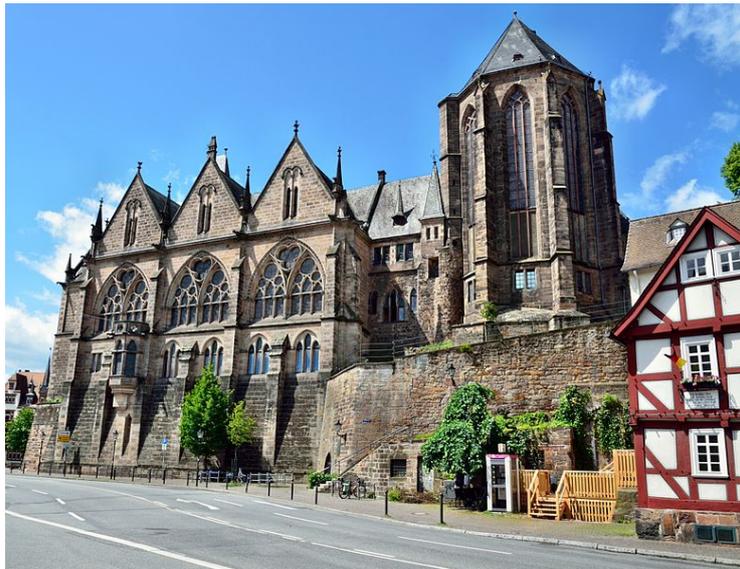
Married in the Parish Church of All Saints according to the Rites and Ceremonies of the Established Church, after signing by me, Henry W. Maddock, M.A. Incumbent

This Marriage was solemnized between us, Richard Bissell Prosser in the Presence of us, Arthur Ayres Ellis William Henry Costell

Marriage Register All Saints Church St John's Wood Marylebone of marriage of Richard Bissell Prosser in 1865. Hannah was an (unnecessary) second witness for the groom.

## Chapter 20

### 1850 - Germany



*The old University of Marburg  
Image: Wikipedia*

Little else has come to light of Richard's personal life in 1850, but it is almost certain that during the course of this year he spent some time in, what is now, central Germany. The evidence for this is, perhaps, not conclusive and stems from a brief comment in a letter held in the British Library dated 18th June 1913 from Richard Bissell Prosser to the distinguished Mancunian engineer and businessman Sir William H. Bayley (1838-1913) in which Richard's son mentions, inter alia: "I never saw Joule, but I was always taught to hold him in the highest possible esteem. I owed this to Tyndall, whose acquaintance I made when we resided at Marburg". (Links: [Bayley](#); [Joule](#))

The Irish born scientist [John Tyndall](#) (1820-1893) had lived in Marburg from October 1848 to "Easter" (April) 1851 (except for a period of about three months following a return visit to England in June 1850). His entry in the *ODNB* relates how in 1847 Tyndall decided to abandon his promising career as a railway engineer in the north of England to become a mathematics

teacher at a school in Hampshire and, subsequently, in 1848 to further his scientific education by becoming a student at the well regarded University of Marburg in Hesse arriving there in late October of that year; he gained his doctorate in less than two years (the norm was three years). Tyndall remained in Marburg for six months after returning there from his short visit to England in 1850; in April 1851 he went to Berlin for two months before resuming his teaching career in England. *Image John Tyndall c.1850: Wikipedia.*



Tyndall's known periods of residence in Marburg therefore set a time frame for the period when according to Richard Bissell Prosser "we resided at Marburg" - sometime between October 1848 and April 1851.

Who were the "we" referred to by Richard's son in 1913? In October 1848 Richard Bissell would have been just 10 years of age. The most natural interpretation must be that Richard Bissell Prosser was referring to his family - his father and his brothers and sisters (possibly accompanied by their late mother's sister, their aunt Hannah). Any other construction would be odd/contrived. The 1913 letter separately made mention of Richard Bissell's north of England "Tour" with other pupils under the leadership of their "enlightened" headmaster, Nesbit, which took place in August/September 1849; in the very unlikely event that the visit to Marburg was also a school trip Richard Bissell would surely have said so.

I have previously speculated that Richard had spent time in France in the 1830s (see Part 1 of this "Story" pp. 50/51 and "Rescuing Richard" pp. 182-184). That he may have travelled elsewhere on the Continent to observe industrial processes and developments there would not be surprising.

It seemed unlikely that Richard would have taken his family to Marburg before 1850. Throughout 1848 and 1849 he was still closely or directly involved with all the litigation over his 1840 patent and the dispute with Cutler and his other former partners in the Scottish tube venture. The latter was, probably, not settled until January 1850.

We know that in August and September 1849 he and Richard Bissell were in England and in November 1849 Richard was present when Prince Albert visited the Birmingham Exposition. In the following month, December, Richard

was reported as present at Nesbit's school in Kennington to hear his eldest son speak on the subject of sulphur at the school's examination day. After the conclusion of the examinations Richard Bissell also acquitted himself well in a demonstration of his acting prowess according to a number of the several press reports of the Nesbit Academy's form of open day:

*Interspersed with these two examinations were recitations of judicious selections of a grave or humorous character; the best of which was undoubtedly the biting dialogue between Jaques and Orlando, in which the misanthrope was well represented by Master Prosser, and Orlando by Master Iliff. This performance having elicited an encore, it was repeated. (Aris's Birmingham Gazette 7th January 1850)*

Iliff, who took the part of Orlando in this excerpt from Shakespeare's *As You Like It*, had been on the school's "Tour" with Richard Bissell in the previous August/September.

What is more the development of his anti-weld tube machinery must have continued to demand much of Richard's time throughout 1848 and 1849.

The patent for this invention was not granted until 11th April 1850 and it is difficult to conceive that Richard would have left the lengthy and tedious grant formalities entirely in the hands of a patent agent whilst he journeyed abroad. The patent's "unusually verbose and elaborate" specification, the volume now held in the *British Library*, was not enrolled until 11th October and we know that Richard was present in London for that, although the drafting of the specification might have been finalised before the initial grant in April.

October 1850 was also the month that Richard and Hannah announced that they had married in Edinburgh at some unidentified earlier date and on 19th October Richard executed a new will. In fact, Richard appears to have been in Birmingham when he wrote a long letter addressed from the town and dated 2nd September 1850 to the *Mechanics' Magazine* contributing to the continuing debate in that publication on the rivalry between Robert Stephenson and William Fairbairn as to which of them was the true inventor of the tubular bridge (see "Rescuing Richard" p.42).

During November and December 1850 Richard was reported to be a regular attender of the Patent Law Reform Committee of the Society of Arts to which he had been appointed after its inception earlier that year. A month later, from the end of January and continuing into March 1851, Richard was conducting a spirited and colourful correspondence with patent agents on the proposed reforms in the columns of *Aris's Birmingham Gazette*, commencing with a

long letter addressed from Broad Street, Birmingham dated 30th January 1851.

I have, therefore, come to the tentative conclusion that the most likely time of the Prosser family's sojourn in Marburg must have been after April 11th and before early September 1850. If Richard and Hannah's controversial marriage had, in fact, taken place some time before the October announcement, might the timing of the trip have been arranged to take the newly wedded Richard and Hannah and his children away from Kings Norton for a while?

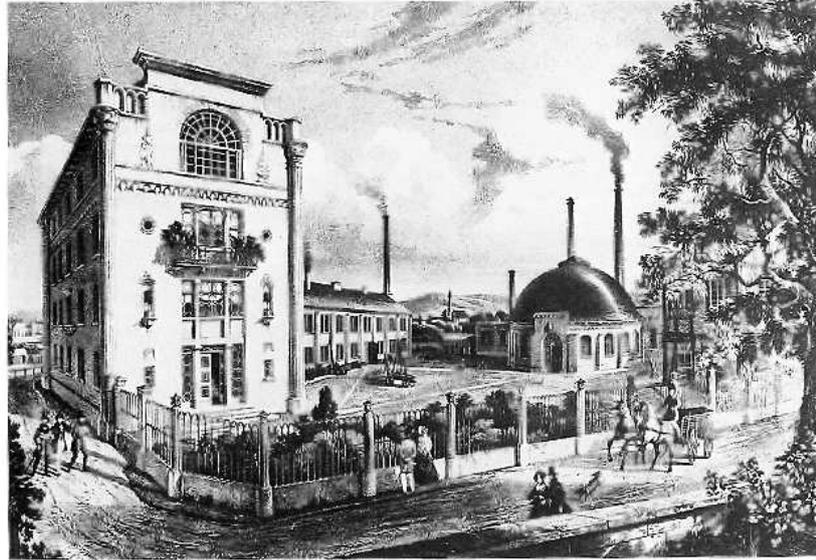
However, Tyndall left Marburg for his visit to England in June of that year returning in about September. If my conclusion is correct young Richard Bissell's "acquaintance" with Tyndall must, necessarily, have been brief.

One other unattributed reference to the Marburg visit is contained in a letter dated 16th March 1979 held with other "Prosser" papers in the British Library. The letter was written by a "J. S. Buckland" to a "James Harrison" and was one of the many items that we looked at on our visit to the Library in March 2012. Beryl Leigh, the librarian who had been closely involved with the old Patent Office Library collection for over thirty years, told us that Buckland had been a frequent visitor to the Library for his, unknown, research purposes (James Harrison reappears in the Fourth Story). The letter concerned Richard Bissell Prosser and concluded with the statement: "His stay in Marburg, then, as a schoolboy, except for his own occasional allusions to it, remains totally vague. I know he went to Kassel and saw the cast iron cylinder . . .".

It took me a while to track down the author of the 1979 letter. John Stephen Percy Buckland (1935-2006) was a molinologist: "an expert in or student of mills and milling" (*OED*). His fascination with mills began at an early age according to his biography on the website of the [Mills Archive](#): a charitable trust established to "preserve and protect records of milling heritage". Buckland bequeathed his enormous collection of research material and notes to the *Archive*.

Quite why Buckland should have taken an interest in Richard Bissell Prosser is a mystery, but his biographer does describe how: "Every branch of knowledge was of potential interest to him and he would go off at a tangent to a reference book about an artist or writer; potted biographies, bibliographies, family trees resulted, for he recorded what he discovered." Probably Buckland's obsessive curiosity had been aroused by some writing of Richard Bissell's on mill-related inventions, a curiosity, perhaps, added to by the coincidence that they were both old boys of University College School,

London - Richard's son was recorded as a pupil there in 1851-1853 in the School's Register for 1831-1891 (a fact that Buckland had, also, mentioned in his 1979 letter).



Neue Fabrik am Möncheberg mit dem Kuppelbau der Gießerei und dem Wohnhaus. 1837

*Image - Henschel foundry c.1837 : Kassel City Museum*

Kassel, a city about 56 miles to the north east of Marburg, was the home of a firm that was to become the largest railway locomotive manufacturer in Germany. Henschel & Son, founded in 1810, had commenced making locomotives in 1848 according to its [entry](#) on *Wikipedia* - sufficient reason for Richard to wish to visit Kassel. My supposition, that the Henschel foundry was, indeed, the probable purpose of the visit, is supported by Buckland's reference to the "cast iron cylinder" seen by young Richard Bissell. It was this reference that was to result in my finding evidence to confirm my belief that the Prosser family's visit to Germany occurred in 1850.

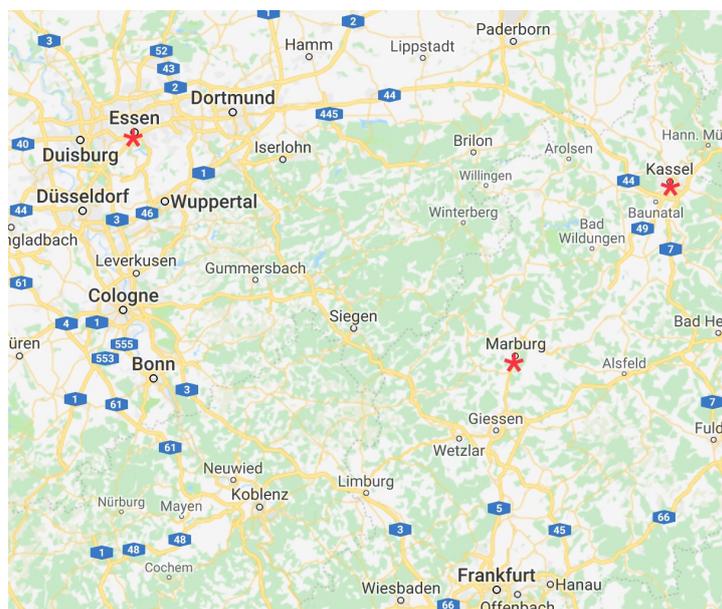
Further internet searches led to an article published in 1876 in the magazine *The Engineer* vol.41 p.371 (available [online](#) in GoogleBooks) on "The History of the Steam Engine" with particular reference to a loan collection being exhibited that year in South Kensington at what was then known as the Patent Office Museum. The unidentified writer dwells on one object that was on loan to the Museum from the "Royal Museum at Cassel, to whom it was presented in 1866 by Messrs. Henschell (sic)", which was thought by its home Museum to be "Papin's steam cylinder" cast in 1699 for an engine invented by [Denis Papin](#) (1647-1713): an early engineer (inter alia) of the steam engine. This attribution was doubted by the author of the article who,

also, mentioned his own personal recollection of viewing the iron cylinder at Henschel's works: "For many years it remained half buried in the ground at Messrs. Henschell's machine shop, where the present writer saw it in the year 1850." In 1876 Richard Bissell Prosser was still employed by the Patent Office. Thank you Mr. Buckland.



*Image - "The oldest steam cylinder of the world Denis Papin worked with in Cassel, 1706" (FROM THE STEAM-'DRAGON' TO THE HIGH-SPEED-ICE: THE MODERNIZATION OF RAILWAYS FROM THE 19th CENTURY UP TO THE 1990s. "HENSCHEL", KASSEL, EUROPEAN REGION OF HESSE, ONCE THE BIGGEST LOCOMOTIVE COMPANY OF EUROPE: BORIS BÖTTCHER.)*

Where else might Richard have wished to visit whilst staying in or on the journeys to or departure home from Marburg? There are no doubt numerous possibilities, but one destination in particular comes to mind. The city of Essen lies approximately 105 miles to the north west of Marburg and was where the Krupp iron and steel works were based. Alfred Krupp (1812-1887), whose late father's small foundry was to be transformed into a vast enterprise under his management, had first visited England in 1839 and subsequently had spent much time there in the mid to late 1840s, including visits to Birmingham. Krupp's visits had a dual purpose: fact finding, as to new processes and developments in the metal trades in England; and in the furtherance of the interests of his family's growing iron and steel business, of which he became the sole owner in 1848. It would not be surprising to discover that Richard and Krupp had become acquainted at some point during this period.



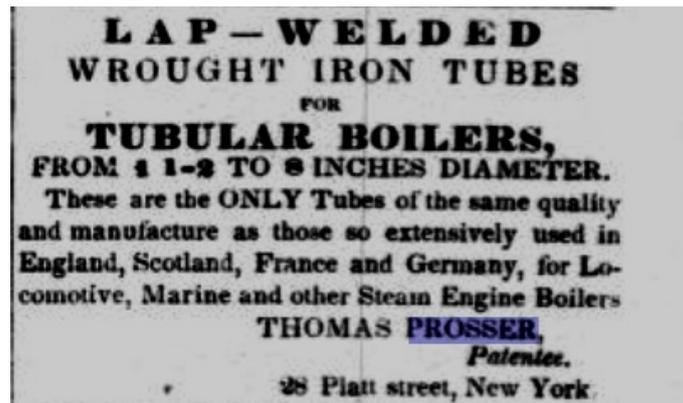
I have previously hinted at a speculation that I have harboured since I first learnt of the financial success of Richard's older brother, Thomas, in the U.S. following his introduction to Krupp at the Great Exhibition in London in 1851 ("The Dust-Pressed Process" p.232). If Richard was already known to Krupp, had he effected this introduction? It would have been in Richard's interests to do so - his brother was probably already importing lap-welded tubes into the U.S. supplied by Richard through his Birmingham firm Richard Prosser & Co. for use in locomotive boilers. "As early as 1851, the firm of Prosser & Son represented Krupp in New York. Rolls, tool steel and railway axles were the first articles sold in the United States" (*Krupp. A century's history of the Krupp works, 1812-1912 p.160 - Krupp's Works, Essen*). This speculation remains just that at the time of writing (2018).

To date (September 2018) no further details of the Prosser family's German trip have come to light.



## Chapter 21

### A Transatlantic Tube Collaboration?



*American Railroad Journal - 5th January 1850*

In the U.S., by 1850 Thomas had been importing lap-welded iron tubes for steam engine boilers for about five years (see Part 1 pp. 109-112). Unlike his rival importer, Irving Van Wart the U.S. agent of The Caledonian Tube Company, Thomas's supplier was not identified in his firm's adverts in the *American Railroad Journal* which had first appeared in June 1846. However, as I have previously speculated, this lack of any attribution suggests that Richard was Thomas's supplier rather than The Birmingham Patent Iron Tube Company. By the end of 1852 this was definitely the case as evidenced by the invoices between the brothers' firms that have survived and occasionally appear on eBay (see Part 1 p.112).

By the end of 1850 Thomas may already have been entrusted by Richard with the difficult task of taking out the anti-weld tube patent in the U.S. This was eventually granted to Thomas as Richard's assignee on 21st September 1852; it would not be surprising to find that it had been a protracted exercise.

The anti-weld patent was not the first U.S. tube related patent to be granted to Thomas. On 17th April 1849 he was granted a patent (U.S. No. 6360) for a tube expander. Richard's 1845 Scottish tube patent had included, as an additional invention in its long and complicated specification, an expander which Richard Bissell Prosser had briefly described in his *BI&I* and had

claimed it to have been very successful for his father (see Part 1 p.82). My (admittedly uninformed) conclusion (after comparison of the two specifications and supported by his nephew's description) is that in 1849 Thomas had taken out Richard's 1845 expander invention in his own name and in contravention of U.S. patent law. If I am correct, had the brothers colluded in this fraud against the U.S. Patent Office? Such collusion might also explain why Richard did not separately patent his expander in England i.e. if he was concerned not to bring the pre-existence of the invention to the attention of the U.S. Patent Office's examiner. Another factor may have been the ongoing litigation in Scotland following Richard's resignation in 1846 from The Caledonian Tube partnership; ownership of the Scottish patent may have been part of this dispute.

In 1934 at the meeting in London of the Institution of Locomotive Engineers (see pp.15/16) one of the points that came up in the discussion period on Collins' paper was the "prossering" of tubes to repair leaks; the comments made suggest that this method had fallen out of favour in Britain, but that the eponymously named expander was still in common use in the U.S. - whether it was Richard's 1845 version or, if different, Thomas's own 1849 patented invention remains to be determined.

This [link](#) to a short article in *The Mining Magazine and Journal of Geology etc. 1856 Vol. 6 p. 80* provides further evidence that Thomas had been collaborating with Richard over tube imports into the U.S. since 1845; the self congratulatory tone of the article suggests it was penned by Thomas or on his behalf - but it did refer to "Mr. Richard Prosser, the English patentee and inventor of the only machinery capable of making a perfect lap-welded tube,..".

It would appear that 1845 was the year that a rapprochement took place between Richard and Thomas following their bitter feud in the 1830s, which had led to a bankrupted Thomas emigrating to the U.S. in 1838 (the full story is told in "Rescuing Richard"). It was also the year that both brothers had been involved in litigation, Richard in England and Thomas in the U.S., over the importation of the "Prosser's Patent Agate" buttons into the U.S.; the compromise reached in the American law suit seems to have resulted in Thomas becoming the U.S. import agent for the buttons. The enormous potential of the U.S. market for both cheap durable buttons and the lap-welded tubes may have persuaded the brothers to put to one side any lingering sense of grievance they may have held against each other.

In 1849 Thomas (the former “architect” in England and Paterson N.J. and subsequent hardware store owner and importer of china buttons and tubes in Platt Street, New York) described himself as a civil engineer when he wrote an article which was published in two parts in *The Journal of the Franklin Institute* that year. The article, “An Essay on the Physics of Steam”, is possibly the earliest evidence that Thomas had been studying the science and technology of steam power.

Subsequently he appears to have remained silent on the subject during Richard’s lifetime. However, during a period from late in 1854 to 1859 his name featured in the *Journal* on several occasions as the author of articles on various issues concerning the application of steam power in particular in relation to marine engines. Copies of two of these later articles are held in the British Library as part of the collection of “Prosser” papers inherited from the Patent Office Library (perhaps originally deposited by Thomas’s nephew Richard Bissell Prosser). It was the references in the old POL index that led me to search the digital versions of the Franklin Institute’s *Journal* now available online on the [babel.hathitrust.org](http://babel.hathitrust.org) website (which has been an invaluable resource of historic academic material).

The later articles in 1858 and 1859 concerned the merits of a version of a tubular steam boiler that Thomas had made and installed in the cellar of his premises in Platt Street, which he claimed incorporated innovations that he had invented. The “Prosser Boiler” was the subject of a lengthy review in a report published in 1859 under the title: “*Engineering precedents for steam machinery: embracing the performances of steamships, experiments with propelling instruments, condensers, boilers, etc: accompanied by analyses of the same ...*”. The author of this review was Benjamin Franklin Isherwood a Chief Engineer of the U.S. Navy; it is available online in GoogleBooks on this [link](#) to Volume 2 of the report at pp.85 to 126.

My reasons for venturing this far ahead in the chronology are two fold.

Firstly, to re-emphasise a point that I made in “Rescuing Richard” when describing Thomas’s early architectural career in the city of Worcester in England - Thomas was clearly very clever. An attribute that may have been forgotten in the light of his subsequent, questionable, contributions to the histories of Richard’s nail manufactory venture in Birmingham and of his “Agate” buttons in the U.S.

Secondly, Isherwood's review of Thomas's "Prosser Boiler" contained an interesting reference to an earlier boiler that led me to entertain yet another speculation.

Thomas was clearly hoping for Isherwood's endorsement of his boiler for use in marine engines, which on my reading of the review was not forthcoming due to certain issues of a practical nature, notwithstanding that the boiler appeared to operate satisfactorily in situ on the five days that Isherwood and two other Chief Engineers of the U.S. Navy attended at the Platt Street premises in April and May 1859. Isherwood did not dispute Thomas's claims as to the innovatory aspects of his boiler, but pointed out that otherwise this particular type of tubular boiler, where the tubes were arranged vertically rather than the more usual horizontal arrangement, had been in use for some time. He referred to a description and engraving of a "simplest" form of vertical tubular boiler to be found on pp. 68 and 69 of a "*Treatise on the Steam Engine*" first published in London by the Artisan Club in 1846 and available online at this [link](#). The boiler in question was powering the engine of a Thames steamer, the "Queen" constructed by "Messrs Rennie". Isherwood later in his report compared the merits of vertical and horizontal tubular boilers and came to the conclusion that the economies and performance of the former was so far superior that the latter would fall out of use. In 1846 the author of the Artisan Club's "Treatise" had expressed a similar view.

In his first tube related patent granted on 19th February 1839, that which had also patented the "Chunk" stove, Richard had adopted a vertical tube arrangement in his "apparatus for generating steam"; as previously described in Part 1 of this Story (p. 17), Richard claimed his "apparatus" prevented the destruction of the tubes that occurred in earlier patented tubular boilers.

How influential Richard's 1839 patent was on the development of the vertical tubular boiler and the extent to which this type of boiler came into use is beyond my evaluation - although contrary to Isherwood and the 1846 commentator's expectations it appears not to have overtaken the horizontal tubular boiler in the longer term.

One intriguing coincidence came to light in researching Thomas's "Prosser Boiler" - the engineering works of "Messrs. Rennie" had been located at 6, Holland Street in Blackfriars, London since 1791. This address will be familiar to readers of "The Tile Revolution" (Part 2 of "The Dust-Pressed Process"). The warehouse of Messrs. Wyatt Parker & Co., Roman cement manufacturers and the London retailers of Minton's tiles in the early 1840s, was situated at the foot of Blackfriars Bridge at Albion Wharf on Holland

Street. John Marriott Blashfield, Minton and Richard's early collaborator in the promotion of Minton's tessellated patents, was a partner and subsequently, in 1844, the sole proprietor of this firm. In March 1843 the account of the dust-pressed process presented to Prince Albert by Richard was written as from an address in Holland Street.

Messrs J and G Rennie had constructed the steamer the "Queen" in 1842 according to an article published in 1948 in the *Shipbuilding and Shipping Record* vol. 71 of which only a limited view is available in GoogleBooks and on the *Hathi Trust* website; the article described the steamer as an: "...iron Admiralty yacht Queen, a paddler of 217 tons, built in 1842 to take the Board on visits of inspection and social trips on the Thames...".



"Gravesend" engraved by H. Adlard after a picture by W.H. Bartlett, published in *Finden's Ports and Harbours...*, 1842.

Whether Richard had anything to do with the boiler installed in the "Queen" is entirely a matter of conjecture. However, there can be little doubt that he would have been interested to make the acquaintance of the Rennie brothers as evidenced by the contents of their [page](#) on the *Grace's Guide* website. Another of Rennie's vertical tube boilers was also described in the Artisan Club's "Treatise" - one "intended to supply steam to a boiler on land". An analysis of the descriptions of these boilers in the "Treatise" and by Isherwood might resolve my speculation.

Back in 1849 Thomas had gained another string to his bow, which had added to his credentials. In about the middle of that year he had been appointed the New York agent of the London patent solicitors and agents Robertson & Co., whose principal partner was also the publisher and editor of the *Mechanics' Magazine*. Adverts in this weekly *Magazine* for Robertson's firm referred to the New York agency throughout the latter half of 1849 and continued to do so until August 1851. Richard, as we know, had had many mentions in and contributed a number of letters to the *Magazine* over the preceding decade and had, also, been Robertson's Birmingham agent for at least a short time in about 1839/40; Robertson may have been Richard's patent agent. However, in 1851 Robertson and Richard were to hold very opposing views on the impending reform of the patent law as will be seen in the Fourth Story ("The Emancipation of Inventors"), which will also cover Richard's personal and inventive life up to February 1854.

Those readers looking for an index will not find one - for which I make no apology. This electronic format should be searchable on most devices; an essential aid in my own researches.