ROGERS & Co.

BOILERMAKERS

of
Bristol

ORDER BOOK 1830 - 1866

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Edited By
Steve Grudgings

FOLLY BOOKS

First published 2020

Folly Books Ltd
Monkton Farleigh
BA15 2QP
www.follybooks.co.uk

A catalogue record for this book is available from the British Library.

ISBN 978-1-9161789-1-5

Designed and Typeset by Vicky

Printed and bound in India by Replika Press Pvt Ltd.

Introduction

Our commitment to publish this facsimile of the Order Book of Rogers, Boiler Maker of Redfield, Bristol is based on the views of myself and my publisher that it is an important, possibly unique historical document and deserves a wider audience.

I had not long been a member of the Bristol Industrial Archaeology Society (BIAS) when Robin Stiles' account of the Order Book appeared in Journal 23 and I recall being particularly intrigued by the orders from local collieries. My interest in the order book was rekindled some years later when Robin let me use images of haystack boilers and hudges from it in *'The History and Industrial Archaeology of the Steam Engines of the Coalpit Heath Colliery Company'*. Robin and I never met, and it was only after his death in 2018 when his coal mining related materials passed into my hands, (thanks to Mike Taylor and Maggie Shapland's efforts), that the overlap in our interests became clear.

Boiler making has never attracted the same levels of study as the engines they served and whilst understandable, it means that documented accounts of boiler design and manufacture, particularly relating to stationary engines, are thin on the ground. A few papers on the topic have appeared in the Journal of the Newcomen Society over the years and some accounts in the technical press from the Victorian era help our understanding of the issues relating to the manufacture of internally fired boilers. The work of Alan McEwan in publicising the final working years of Boiler making in the 1960s and 1970s helps our understanding of the issues to be contended with. However, information relating to the development of boiler making skills, materials and equipment in its formative period of the eighteenth century is extremely sparse. Rogers' Order Book is particularly useful in this context as it covers the later Georgian and early Victorian period when boiler design and manufacture had been through its development phase and was entering an era of increasing mechanisation and competition.

The first boiler makers were the engine-wrights and blacksmiths working on the engine site, building the original circular 'haystack' or 'balloon' boilers from circa 1710 onwards. It would appear that until the end of the eighteenth century it was normal practice to set up a temporary forge on the engine site where boiler plates could be cut, shaped and riveted together until the required vessel was complete. There are also sufficient accounts of the construction and operation of these early engines to make it clear that boiler repair and replacement was a frequent requirement, and this is presumably where the boilermaking industry and the skills required originated.

When Rogers set up their business in the early 1800s, demand for boilers was such that they were one of a number of similar companies serving local needs across the UK, the diversity of both boiler types and industries is clear from the order book. The book does not tell us whether Rogers made their boiler plates 'in house' or bought them in from specialist plating mills. Whilst the book does not give any details of the boiler making process, it is not hard to understand the main elements of the process before the advent of machine tools and mechanised handling.

As part of their work in distributing Robin's Industrial Archaeology materials on behalf of BIAS, Mike and Maggie told me they had passed the Order Book into the care of Stuart Burroughs and colleagues at the Museum of Bath at Work (MOBW). Stuart responded quickly and positively on behalf of both BIAS and the Museum to my request to borrow it. Whilst my motivation for this was primarily curiosity, examination of the Order Book made me realise that the quality and range of the information it contained would be of interest to Industrial Archaeologists in general and devotees of the Stationary Steam Engine in particular. Approval was duly given by Stuart, the BIAS Committee and Robin's family to consider publishing a facsimile of the Order Book and thanks to the commitment and enthusiasm of Nick and Vicky of Folly Books, you now hold the results of this exercise in your hands.

This then is the background to the publication of this facsimile of Rogers order book together with Robins original BIAS Journal article. While there are some obvious gaps in the Order Book, these do not diminish the value of what remains. I am not aware of the existence of similar records of other boilermakers orders from this period and this has encouraged all of us to ensure it is published to a high quality standard – we hope it meets with your approval.

I have made no changes to Robin's account, other than adding further details of Rogers' customers addresses and the nature of their business where Robin had noted these against his original text – it would be a pity not to take advantage of the work he had already done. This information come from the folder of his drafts of the article, courtesy (again!) of Mike and Maggie. These additional entries are in italics and except where noted otherwise, the information comes from Matthews Bristol Directory of the period, denoted (MBD).

I would welcome comments or information from anyone who feels able to add or contribute to our understanding of the boiler making industry – steve.grudgings@btinternet.com

Rogers & Co – Bristol Boilermakers

Just prior to last Christmas my attention was drawn, by David Pollard, to a 19th Century Ledger, advertised in the Catalogue of a local specialist bookseller, purporting to be the Order Book of Henry Stothert of Bath. On inspection of the Ledger and conversation with the bookseller this proved not to be the case but rather to be the Order Book of Messrs Rogers & Co, Boilermakers of Moorfields, Bristol. The mis-cataloguing had arisen from the fact that Henry Stothert had been one of Rogers' best customers and had by chance been the first order in the book.

My particular interest was aroused by the inclusion of orders from Bristol sugar refiners and also from local collieries - including the Golden Valley Colliery. Most orders, other than repairs, included a dimensioned drawing of the article to be supplied as well as full details of the size and thickness of the plates of wrought-iron used. Even a preliminary inspection showed the very wide scope of works being undertaken by Rogers & Co, in the April 1830 to August 1866 period of the Ledger, covering far more than just simple Boilers and Vats. Accordingly I duly purchased the volume, and have since analysed the contents by putting it on computer.

The first surprise to emerge was the wide diversity of boiler design occurring throughout the period. Primitive 'Round' (or Haystack) boilers were still being ordered as late as May and September 1838 (by Dudden, Rossiter & Co. of Frys Bottom Colliery, and Messrs White of Nailsea Coal Co.) and were almost exclusively required by colliery companies. Perhaps the Haystack had special advantages, where only low pressure for atmospheric steam pumps was required, in being able to use the pit's otherwise unsaleable 'small coal'.

At the same time improved high pressure 'eggended' boilers were being ordered by other colliery companies - William Brain of Kingswood Lodge Colliery in January 1836, and Trotter Thomas & Co. of Winnels Hill in the Forest of Dean, in August of that same year - no doubt required to run steam winding engines. In January 1837, P W Smith of Bristol, who was clearly a colliery proprietor as he had previously been ordering coal hudges, but for an unidentified coalpit (probably the Great Western Colliery in St Philips Marsh), ordered a high pressure cylinder boiler but with flat ends, presumably on the grounds of economy for that notoriously unsuccessful pit.

Only a few others, (including Lucas & Co. of Nailsea Glassworks, ordering in June 1836), favoured this type of simple flat-ended cylinder boiler; those of this type - but further incorporating an inner firetube, of the 'Cornish Boiler' type renowned for its economy of coal - being limited to five ordered at various times by J. J. Fisher of Frome, one each by Stephens & Co. of Bridport and J. P. Willmott of Sherborne, and two by W. J. Rogers of Jacob Street Brewery in July 1866. There are no signs in the Order Book of any multi-firetube or 'Lancashire' type boilers that were ultimately destined to predominate.

One peculiar instance of 'Comish' type design was commissioned by William Turner, Engineer of Bath, in June 1833 when he ordered a tiny horizontal cylinder boiler of 1 foot 6 inches diameter and 2 feet long, with an internal firetube of only 10 inches diameter. Could this possibly be an early attempt at an experimental small steam locomotive similar to that built by William Ashman at Clandown in 1826? [1]

Apart from the 'egg-ended' for high pressure use, by far the most popular general purpose boiler design throughout the period of the Ledger was the 'waggon boiler', so named from the similarity of its cross section to that of a loaded hay waggon. One unexpected variant was a firetube slung beneath the boiler in a 'take up', keeping it clear of direct contact with the water. This type was particularly favoured by the textile manufactures. Whilst it would, on the face of it, be a highly inefficient way of heating the water, perhaps it had other advantages such as easy replacement of firetubes and might have reduced the risk of fire to the mill buildings. It is perhaps significant that Holden & Vinings, Sugar Refiners of Stonebridge, Quayhead, Bristol, ordered one in January 1832, but this did not stop that particular refinery from burning down in April 1859. [2]

One interesting feature of the Order Book, particularly in its earlier years, is the wide diversity of marine boilers shown; from the labyrinth complexity of those for The Royal Cambria Steam Packet placed in September 1830, to the tiny pair ordered for a river steamer to run from Bristol to Bath ordered in June 1832 by William Smith of Bristol, who was, of all professions - an organ builder!

Rather more famous a person to commission a barge engine boiler is James Green, Civil Engineer of Exeter,[3] who did so in February 1831 for a dredger, presumably to operate on the Exeter Ship Canal. Even more interesting is his design shown in an order of October 1834 for two water buckets to work an inclined plane on the Grand Western Canal. There was only one inclined plane on the Grand Western Canal - at Wellisford - which unfortunately for James Green miserably failed to operate due to the water buckets being of too small a capacity, leading to his dismissal from the Company in January 1836.[4] Returning to the orders from Collieries; these, in the main, consisted of barrel-shaped wrought iron 'hudges' for winding coal up the shaft. Each pit seemed to want slightly different dimensions, presumably dictated by diameter of the shaft and power of the winding engine.

Those for The Golden Valley Coal Company, designed to carry 25 bushels of coal, had a maximum mid-girth or 'bilge' of 4 feet, a diameter of 3 feet 6 inches top and bottom, and a height of 3 feet 6 inches to match the minimum diameter. 'Ears' were attached to either side from which to hang the hudge from the winding rope. A hoop of iron always reinforced the top, and sometimes also at the bilge. Orders for four were placed in May 1831, two more in the following November, one in May 1832, and another one in July 1835. In July 1836 they ordered an identical shaped hudge, specifically described as a 'Water Hudge' with an 11-inch diameter hole cut in the bottom - no doubt to be covered with some sort of water-retaining leather flap.

By contrast the next colliery to the west - Hole Lane Colliery - was ordering hudges of two totally distinct sizes, one of 2 feet 4 inches height and 2 feet 7 inches diameter bilge, the other of 2 feet 11 inches high and 3 feet 4 inches bilge.

Other typical orders from the coalpits were standard bushel measures, of half a bushel and of one-bushel, the Golden Valley, for example, ordering two sets in January 1831, and a pair of one-bushel measure in the following October. Incidentally, their final order was in February 1838, for an 'Iron Shute' a keyhole-shaped tray of 4 feet 4 inch diameter and total length to the end of a tapering side shute arm of 8 feet.

Whilst there are many examples of pits ordering both coal and water hudges, there is only one in the ledger for a 'Man Hudge', ordered by Leonard, Betts & Boult of Easton Colliery, Bristol in December 1833. It is very similar in design to a 4 feet diameter hudge but with a protective dome on top giving it a maximum height of 6 feet 6 inches. Four openings in the sides, only 14 inches wide, were provided for the men to squeeze inside.

As indicated in BIAS Journal No9 (1976) in the article by Dr Hugh Torrens, Henry Stothert of Bath was locally installing domestic kitchen ranges with back-boilers. Curiously the Rogers & Co.'s Order Book indicates that only a very few of these back boilers were of their manufacture, but that they were instead making them in considerable regular quantities for another Bath iromonger - Simon King. What Henry Stothert was ordering regularly from Rogers, so regularly indeed as to be their most frequent customer, were smaller size waggon boilers, typically 3-9 feet long, 2 feet to 3 feet 6 inches wide, by 2 to 4 feet high. Their ultimate destination is rarely stated, one exception being in August 1830 when four were to be 'Used at Miller & Co, Durdham Down, Bristol'.

Vats, pans, cisterns and tanks of various sizes were being ordered by many local firms, particularly when they were first starting up, such as Clark, Maze & Company's 'Great Western Cotton Works' at Barton Hill, Bristol, in January 1838, and Finken Brothers' Avonside Sugar Refinery, St Philips Marsh, in January 1864.[5] The beginnings of the great Finzel Sugar Refinery at Counterslip are echoed by orders from Davis & Finzel from October 1836 to August 1838 [6]. Of all the Bristol sugar refineries, by far the greatest number of orders were coming from Guppy Brothers of the Blackfriars Refinery, Merchant Street. As well as cisterns they were often ordering repairs and alterations to cylindrical boilers, particularly for egg-ends to be fitted.

Many of the firms mentioned in George Watkins article 'Steam Power in Bristol' (BIAS Journal No.14) occur in the Rogers Ledger, including Robert Bayley & Co's Lead Works on Lawrence Hill,- a 15 feet long Waggon Boiler with 'take-up' and oval firetube supplied in January 1835, presumably to replace the Haystack Boiler first installed with their Boulton & Watt rotary engine in 1790. Similarly, Castle & Co's Distillery in Milk Street had a 6-feet long Waggon Boiler ordered by their Engineer William Jefferies in February 1838.

From their trade card, it appears that Rogers & Co. started trading in 1800. From the evidence of their Order Book they were prospering up to the end of 1838 supplying an area covering Gloucestershire, Somerset, Dorset and parts of Devon; even on occasion as far as North Cornwall and Southern Ireland. Theirs was a lowly trade but one that provided the very heart and power of local industrial expansion. There is then a sudden unexplained gap in the Order Book entries for a period of twenty years, even though the contemporary Mathews Bristol Directories still list them annually at their normal Redfield Place, Moorfields, address. Recommencing as if nothing had happened in July 1858, another gap occurs for three months at the end of the year. There are then repeated gaps, April 1859 to January 1862, March

1862 to December 1863, March 1864 to January 1866,and the final entry on 28th August 1866 - perhaps significantly - is for a brewing boiler repair for Samuel Rogers & Co. Vinegar Makers of Lewins Mead, Bristol.

The local Directories list 'William Rogers (late Rogers & Son) steam engine boiler maker' at Redfield Place annually from 1866 to 1868, both under the list of residents and also under 'Boiler Makers' in the Trades lists. From 1870 to 1872 'W Rogers, boiler maker' is listed solely in the residents section, after which all reference ceases. It would seem therefore that the company had ceased trading by 1867.

References

1 .BIAS Journal 11 (1978) *'The First railway locomotive in the West of England'* Robin Bluhm.

2. Western Daily Press Oct. 15th 1930 - 'Old Bristol' no. 227 (see also Arrowsmith's Dictionary of Bristol.)

3. For a biography of James Green, see *The Bude Canal*, Helen Harris & Monica Ellis. pp32-33 (David & Charles. Newton Abbot. 1972)

4. *The Canals of South West England.* Charles Hadfield, ppl09-ll0. (David & Charles. Newton Abbot. 2nd Edition 1985)

5. According to Mathew's Bristol Directory, this firm had ceased trading by the 1869 edition.

6. *A Popular History of Bristol.* G.Pryce 1861 - see Appendix B.

Dedication

This book is dedicated firstly to the memory of Robin Stiles who recognised the importance of the Order Book and spent a considerable time analysing its contents and writing up his findings.

My second dedication is to Maggie Shapland and Mike Taylor who's cheerful 'can do' attitude makes immense contributions to BIAS, Clifton Rocks Railway, South Gloucestershire Mines Research Group and the other Industrial Archaeology Groups of which they are members. If I want something done rather than talked about or discussed, Maggie and Mike are invariably my first port of call – thanks to you both.