

HIDDEN HISTORIES

BOULTON & WATT'S SKILLED ENGINEERS

Christopher Olive

The steam engine, no doubt, was a force for change during the Industrial Revolution. Although he did not invent steam power, James Watt improved the efficiency of Newcomen's atmospheric pumping engine and extended the technology of steam power to power machinery. In the age of great inventors, Watt was one great man in the great company of others. Two other such men were Matthew Boulton, whose entrepreneurial skills and personal support for Watt played a crucial role in their business success, and William Murdoch who is the best known of the skilled

engineers who worked for Boulton & Watt. However, the manufacturing firm did not survive and succeed through the efforts of these three men alone. The highly skilled, loyal engineers breathed life into Watt's creation, and without them the business could never have prospered. The activities of three of these workers provide useful case studies to illustrate Boulton & Watt's creative management. They were two engineers, James Law and Logan Henderson, and Watt's first assistant and later statistician, William Playfair.



Statue of Boulton, Watt and Murdoch, by William Bloye and Raymond Forbes-Kings, Birmingham, 1956.

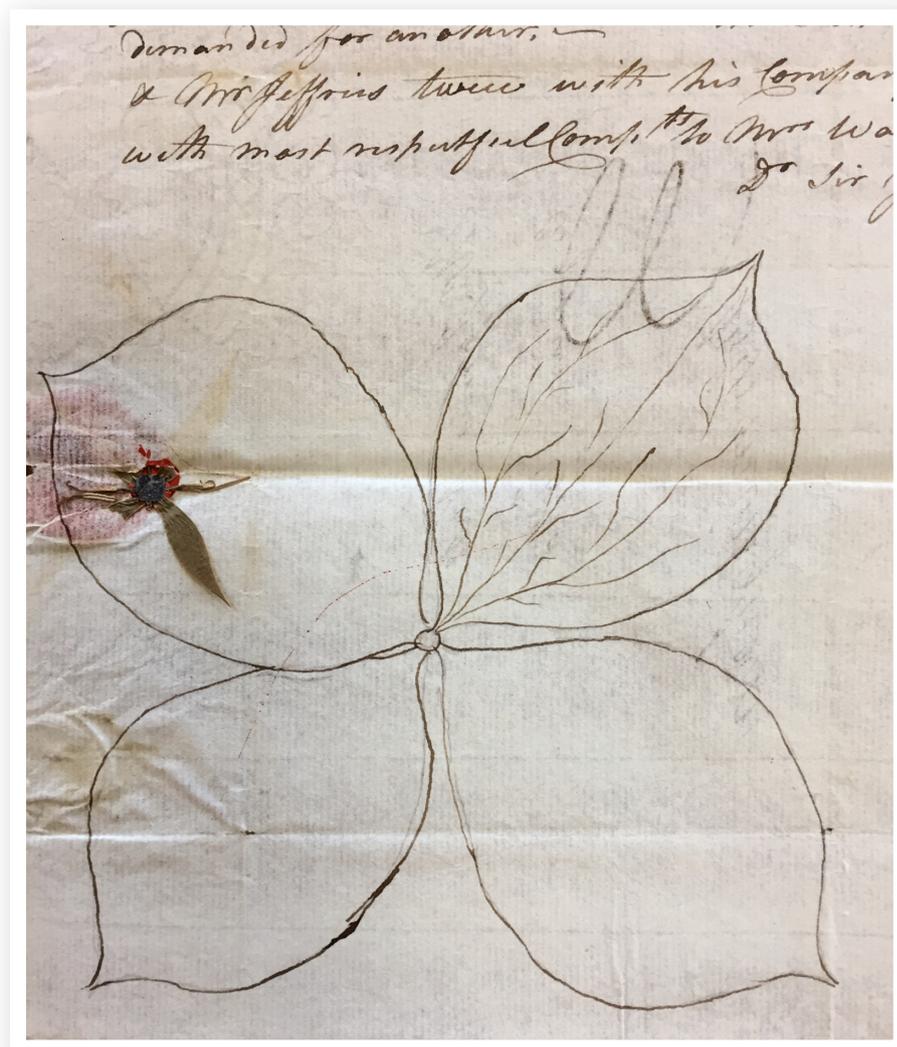
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Origins of the Employees

Recruiting and retaining employees proved to be difficult – professional mechanical engineers did not exist – and this led to the wide variety of backgrounds from which their engineers originated. Henderson wrote on 10 June 1778 of two young men, one with ‘a most wonderful character for his Mechanical and Mathematical Knowledge’, and another ‘very ingenious young man’ who ‘is by trade a shoemaker’, as a demonstration of the breadth of people the firm was willing to employ, should they be capable.¹

Henderson’s own background is intriguing: his correspondence with Boulton reveals he was previously a Lieutenant in the Thirty-First Company of Marines;² a sugar planter in Dominica with a proposal for a sugar-mill;³ a land-surveyor;⁴ and someone who had declined ‘a strong recommendation to the Court of Russia’ (whatever that might have meant).⁵ His extensive knowledge of botany is also evident, as he frequently mentioned plant-life in his reports back to Watt, including in one letter a pressed flower from the Bog Mines of Shrewsbury.⁶

Playfair tells a similar story of varying origins, and crucially, of the company’s inability to recruit equally loyal and competent men. He was first introduced to Boulton in 1778 by the chemist James Keir who received an impressive recommendation for Playfair from Robert Small, a Scottish minister and mathematician. Small was an



A pressed flower sent by Henderson from the Shrewsbury Bog Mines under the seal of his letter to Watt.

individual who contributed to the Scottish Enlightenment, but also introduced Boulton to James Watt.⁷ Despite this, Playfair seems to have been dismissed by June of that same year, but was retained until December of 1781 when he was finally able to settle in London. He was clearly dissatisfied with the job, ‘his mind seeming absent’, and attempted to leave throughout the year. Correspondence reveals the misfortunes Boulton and Watt faced in their attempts to find a replacement for Playfair.⁸

John Hall, another engineer who seemed set to replace Playfair, was discovered to have been guilty of not only stealing materials, but also stealing time as several smiths who were employed for engine work constructed for him ‘a room full of models of different machines besides very nice taps for every screw [Watt] had’.⁹ Playfair was recalled and made ‘a better writer and accountant’.¹⁰ More curiously, Hall – by then a known smuggler – was continued in their service as an engineer, despite the fact that Watt was adamant ‘against his being any longer, retained in our service in any station whatsoever’.¹¹

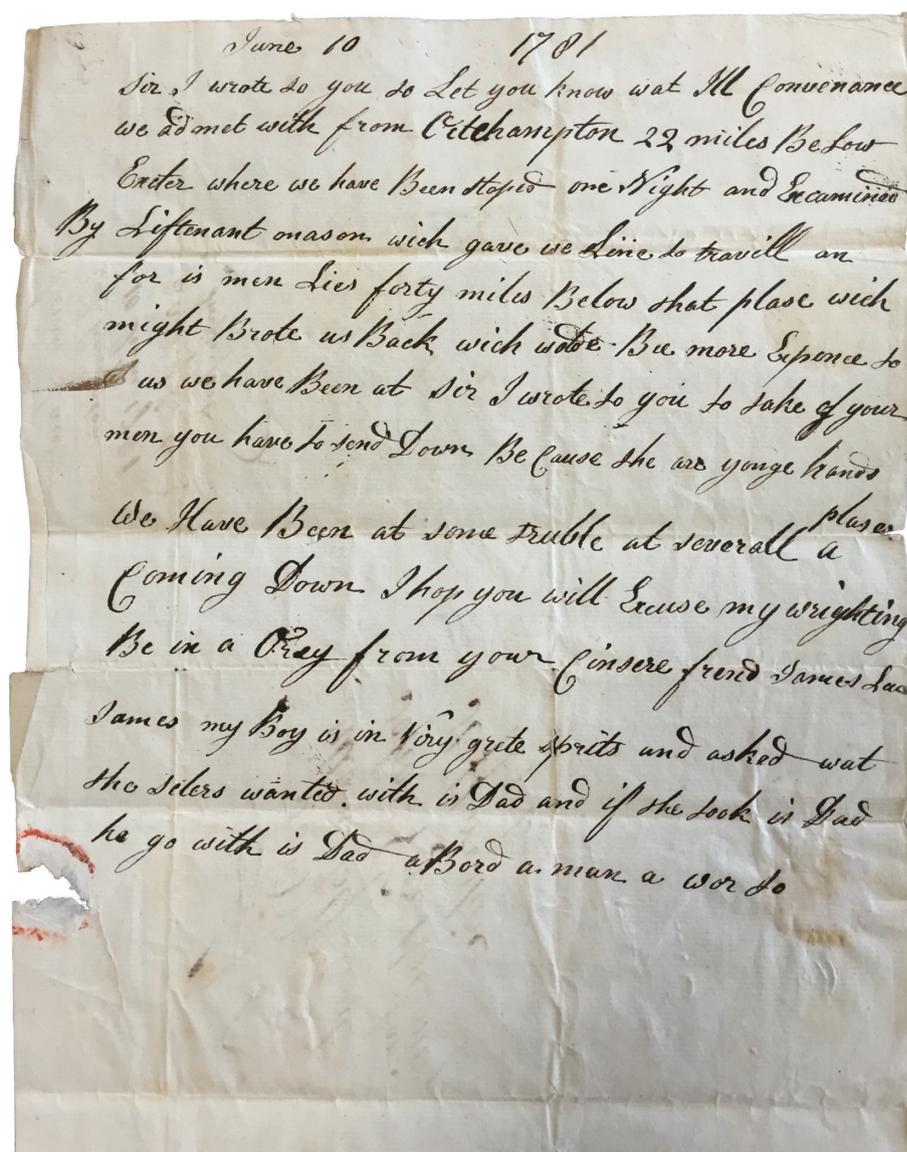
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By October of 1781, Boulton wrote in anticipation of Playfair's departure that they 'must take a boy at 14 or 15 for 7 years or we must take a man that has no ambitious views'.¹² The variety of characters recommended for Playfair's role ranged from John Southern, a man of 33 years who was single and idle but 'cozen to the late William Wyatt who is an excellent & neat draughtsman in the Surveying way'; a 12-year-old son to a poor watch-maker; a 15-year-old named Ewart recommended by a Lady Hopton; and an ex-clergyman recommended by Playfair's brother, described as not 'very bright' and 'ambitious of nothing else besides having a decent living'.¹³

Lack of ambition is repeatedly cited as a desirable quality. Malleable young men or unskilled men from lower-class backgrounds were not likely to become as disinterested as Playfair and leave. Retention of employees was evidently a major issue.

Fears for their Employees' Safety

In a competitive market, with an obvious shortage of men, Boulton and Watt were compelled to construct a comfortable working environment. Often this meant providing for employees in times of financial need, but it was also demonstrated by the concerns the two shared for their valued employees' safety. This included fears of the press gang; illness or accident; and their apprehension after Law went missing in 1781 'that he is dead or taken by the French'.¹⁴



June 10 1781
Sir I wrote to you so let you know w^{at} M^{ost} Convenience
we ad met with from Citchampton 22 miles Below
Exeter where we have been stopid one Night and Examined
By Siftenant onason wick gave us Line to travill on
for is men Lies forty miles Below that place wick
might Brote us Back wick w^{at} Be more Spence to
us we have been at Sir I wrote to you to take of your
men you have to send Down Be Cause the are yonge hands
we Have Been at some trouble at severall ^{places}
Coming Down I hop you will Excuse my wrighting
Be in a Orey from your Cinsere friend James Law
James my Boy is in very grete spirits and asked w^{at}
the silers wanted with is Dad and if the look is Dad
he go with is Dad afford a man a war so

Law's letter regarding his distress at being assaulted by the press gang on a journey to Cornwall.

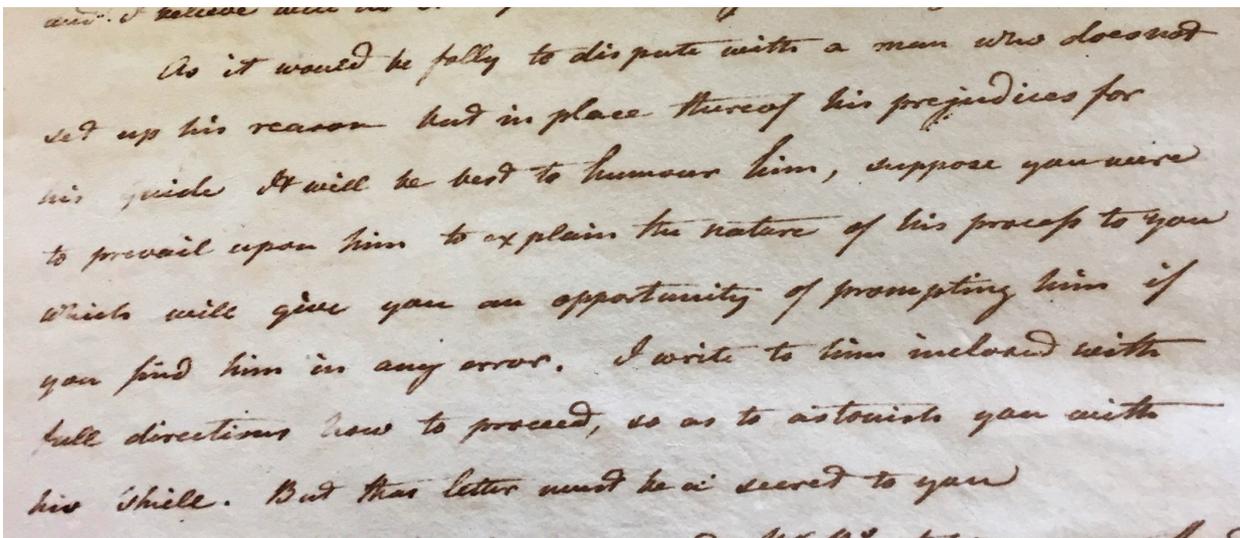
These anxieties were well-founded. Not only did Law suffer a severe leg injury in a coach accident in April of 1781 while on a journey to a job near Spondon in Derbyshire, he also fell foul of the press gang in June of that year.¹⁵ Writing a hurried and distressed letter to Playfair, Law's fear is highlighted by a description of his son's reaction: 'James my boy is in very grete spirits and asked w^{at} the silers wanted with [h]is Dad and if the[y] took [h]is Dad he go with [h]is Dad a bord a man a war to[o]'.¹⁶

Management of Employees

James Law's experience is particularly illuminating about the practices of Watt as an employer. Law was often troublesome and was called 'a rascal' for the constant disputes and accusations he engaged in with other workers.¹⁷

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As it would be folly to dispute with a man who does not set up his reason but in place thereof his prejudices for his guide It will be best to humour him, suppose you were to prevail upon him to explain the nature of his process to you which will give you an opportunity of prompting him if you find him in any error. I write to him inclosed with full directions how to proceed, so as to astonish you with his skill. But that letter must be a secret to you

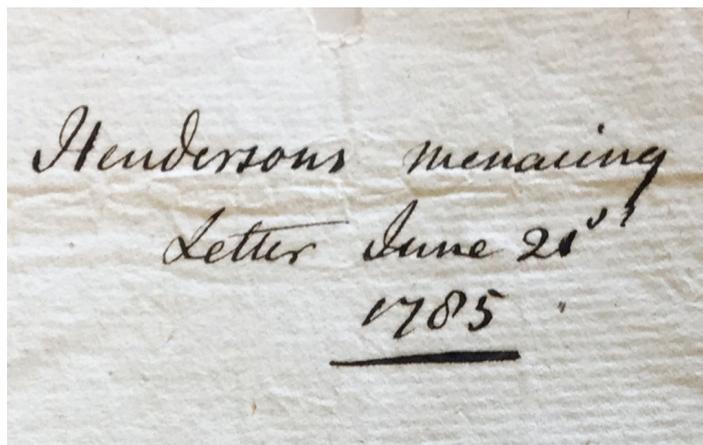
Watt's letter to Robert Mylne, utilising Law's vanity to maintain his confidence.

Watt shows a surprisingly compassionate attitude towards managing Law, and described him as 'an honest fellow but somewhat vain', which 'is therefore continually leading him into scrapes'.¹⁸

In contrast to Henderson, who gained such a bad reputation that Boulton writes of many refusing to take him on, Law's vanity was not unwarranted.¹⁹ He received extreme praise for his diligence on several jobs, and Law himself claimed that he would 'go a thousand miles to serve Mr. B and you'.²⁰ In a dispute between Law and John Rennie while working on Mr. Mylne's engine, in which Rennie refused to let Law erect the parallel motion, Watt wrote to Law reassuring him he will have the 'opportunity to prove [him]self the cleverer fellow', and that Mylne had been informed not to trouble him with Rennie's complaints.²¹ He then concludes with detailed instructions of how to proceed.

What is most illuminating, however, is Watt's letter to Mylne written that very day [see top of page], asking him to 'humour' Law and 'prevail upon him to explain the nature of his process to you': 'I write to him inclosed with... directions how to proceed, so as to astonish you with his skill. But that letter must be a secret to you.'²² His willingness to patronise Law's anxieties shows a man who understood his workers as individuals, and subverts the prickly image of the engineer of September 1770 who was afraid of going into business due to being 'in a constant fear that my want of experience may betray me into some scrape, or that I shall be imposed upon by the workmen'.

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Hendersons menacing
Letter June 20th
1785

Incoming correspondence from Henderson docketed by Boulton: 'Henderson's menacing letter'.

Disloyalty

Besides fears of safety, disloyalty was a more prevalent anxiety for the business. Plagiarism, conspiracy, and deceit by the men of Soho were all too common. Even for those who retained positive relations with their employers, like Law and Playfair, it was not uncommon after their employment for the engineers to turn rival and 'seduce' other workers – with Playfair poaching 'our only diesinker, draughtsman & modeller (viz. Wilson)' before shortly establishing a Playfair, Wilson & Co. with the very man.²⁴

For Henderson, however, relations soured far more. His controversial moment came in February 1783, following his petition to the Irish Parliament for payment for erecting an engine due to a lack of patent laws

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(motivated partially by his employers' lack of compensation for lost goods in a shipwreck some years earlier). The letter is too extensive to detail in full here, but the crucial point is Boulton's reaction.

He described Henderson as 'most diabolical & shows his heart is fraught with every hatred & malice; with ingratitude, with dishonour, & every thing that is base.'²⁵ He docketed some future incoming correspondence as 'Henderson's menacing letter'²⁶ [see previous page], frequently complained of Henderson's actions, and code-named him 'Wasp' in his letters to Watt.²⁷ On 24 September 1784, he wrote with anxiety of treachery and gossip spreading among his workforce, urging Watt to 'guard the mouths of those you consult for I should be sorry that the Wasp, Wolf, Playfoul, Blair & Co. or any of their connections should know any thing of your business'.²⁸ This warning to Watt against conspirators is ominous.

Conspiracy

Even more so was an anonymous letter from a 'J.T.' docketed 'anonymous concerning Wasp', which warned Boulton and Watt of Henderson's engine work in London [see above right].²⁹ This alludes to the darker nature of the competitive engineering environment, where employees turned rival and Boulton feared he could not consult with his own workers without word escaping to his enemies, to the point where code names became necessary.

Gentlemen,

I send you these few lines to acquaint you that Mr. H of Paddington has invented a new Fire Engine which he supposes will be much better than any thing of the sort ever was made, he affirms it to be very cheap, burn very little Coal and wants no repairs. he has lately become very intimate with a Mr. Prashleigh & a Mr. Gullett who says will give him every Assistance in obtaining a Patent &c. — One Rowantree who worked with him at Kingston upon Hull some Years ago is to do the Smith's work of his first Engine. Mr. H is under some sort of an Engagement to go abroad this Summer but as he has not found any person to buy his Business and the time being almost elapsed he is about to resign his new Employment Abroad in favour of one Mr. Boulton who will take off his hand every thing he had provided for his new Settlement, I leave you to Judge for yourselves whether or not

J.T.

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Anonymous letter from a 'J.T.' warning Boulton and Watt of the business plans of 'Wasp' (Henderson).

Curiously Watt did not engage in such conspiratorial language. In fact, his letters to Henderson were friendly and mild. On 29 December 1788, Henderson even wrote to thank him 'for your polite offer of granting me a licence for erecting & working a small steam engine of your particular construction'.³⁰ Moreover, Boulton actively continued business with said 'Playfoul', a man he expressed disdain for – similar to the retention of Hall's employment despite his smuggling activities.

Altogether, these letters show that the company was desperate to retain business, which ultimately overcame personal concerns. The value of their employees shaped Boulton and Watt's attitudes and approaches towards them. Perhaps if Boulton had maintained a better financial relationship with Henderson, in the same way as Watt had supported Law and others, a valuable employee might have been retained. ●

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Christopher Olive is a BA History and Political Science Graduate at the University of Birmingham and produced this article whilst working as a funded History West Midlands Research Scholar, to conduct research on James Watt.

Notes

- ¹ Wolfson Centre for Archival Research, Library of Birmingham (WCAR), Boulton & Watt Collection (B&WC): MS 3147/3/255/13, Logan Henderson (London) to James Watt (Redruth), 10 Jun. 1778.
- ² WCAR, B&WC, MS 3147/3/257/62, Power of Attorney, 11 Dec. 1780. Signed and sealed by Matthew Boulton and witnessed by John Davis and James Law.
- ³ WCAR, Matthew Boulton and Family Papers (MBFP), MS 3782/12/65/79, Logan Henderson (Liverpool) to Matthew Boulton (Soho), 10 Feb. 1776.
- ⁴ WCAR, MBFP, MS 3782/12/65/81, Logan Henderson (Deptford) to Matthew Boulton (Soho), 20 May 1776.
- ⁵ WCAR, MBFP, MS 3782/12/65/80, Logan Henderson (Deptford) to Matthew Boulton (Soho), 4 Mar. 1776.
- ⁶ WCAR, B&WC, MS 3147/3/256/7, Logan Henderson (Pontesbury) to James Watt (Soho), 26 Apr. 1776.
- ⁷ WCAR, MBFP, MS 3782/12/65/32, James Keir (Soho) to Matthew Boulton (Soho), c. 1778.
- ⁸ WCAR, B&WC, MS 3147/3/258/21, Logan Henderson (Cusgarne) to James Watt (Soho), 1 Mar. 1781; WCAR, B&WC, MS 3147/3/5/49, Matthew Boulton (London) to James Watt (Cusgarne), 9 Oct. 1781; MS 3147/3/258/50: Logan Henderson (Soho) to James Watt (Cusgarne), 27 Dec. 1781.
- ⁹ WCAR, B&WC, MS 3147/3/255/15, Logan Henderson (Richmond) to James Watt (Redruth), 23 Jun. 1778.
- ¹⁰ WCAR, B&WC, MS 3147/3/2/4, Matthew Boulton (London) to James Watt (Redruth), 3 Jul. 1778.
- ¹¹ WCAR, MBFP, MS 3782/12/76/37, James Watt (Redruth) to Matthew Boulton (Birmingham), 27 Jun. 1778.
- ¹² WCAR, B&WC, MS 3147/3/5/49, Matthew Boulton (London) to James Watt (Cusgarne), 9 Oct. 1781.
- ¹³ WCAR, B&WC, MS 3147/3/5/53, Matthew Boulton (London) to James Watt (Cusgarne), 23 Oct. 1781.; MS 3147/3/246/6, John Buchanan (Soho) to James Watt (Cusgarne), 6 Nov. 1781.
- ¹⁴ WCAR, B&WC, MS 3147/3/239/3, Boulton & Watt (Soho) to Thomas Wilson (-), 15 Aug. 1782.
- ¹⁵ WCAR, B&WC, MS 3147/3/391/59, Richard Gregory, Surgeon (Spondon) to James Watt (Soho), 30 Apr. 1791.
- ¹⁶ WCAR, B&WC, MS 3147/3/268/1, James Law (Oakhampton) to William Playfair (Soho), 10 Jun. 1781.
- ¹⁷ WCAR, B&WC, MS 3147/3/341/20, Thomas Wilson (Chacewater) to Matthew Boulton (Soho), 29 Dec.
- ¹⁸ WCAR, B&WC, MS 3147/3/86, James Watt (Birmingham) to Robert Mylne (-), Letter Book 22 Mar. 1786 – 6 Nov. 1786; 2 Feb 1787 – 13 Feb. 1788, 15 Apr. 1786., p. 14. ; MS 3147/3/86, Letter Book 22 Mar. 1786 – 6 Nov. 1786; 2 Feb 1787 – 13 Feb. 1788, James Watt (Birmingham) to Robert Mylne (-), 23 Apr. 1786. p. 21.
- ¹⁹ WCAR, B&WC, MS 3147/3/2/12, Matthew Boulton (Soho) to James Watt (Redruth), 27 Aug. 1778.
- ²⁰ WCAR, B&WC, MS 3147/3/268/5, James Law (London) to James Watt (Soho), 20 Apr. 1786.
- ²¹ WCAR, B&WC, MS 3147/3/86, Letter Book 22 Mar. 1786 – 6 Nov. 1786; 2 Feb 1787 – 13 Feb. 1788, James Watt (Birmingham) to James Law (London), 23 Apr. 1786., p. 20.
- ²² WCAR, B&WC, MS 3147/3/86, Letter Book 22 Mar. 1786 – 6 Nov. 1786; 2 Feb 1787 – 13 Feb. 1788, James Watt (Birmingham) to Robert Mylne (-) 23 Apr. 1786. p. 21.
- ²³ James Watt to Dr. Small. 9 Sep. 1770, in J. P. Muirhead (ed), *The Life of James Watt: With Selections from His Correspondence* (London: Facsimile Publisher, originally published 1859), p. 199.
- ²⁴ WCAR, B&WC, MS 3147/3/40/7, M. R. Boulton (Soho) to James Watt Jr. (Leeds), 11 Jun. 1802. ; MS 3147/3/6/17, Matthew Boulton (Soho) to James Watt (Cusgarne), 12 Mar. 1782.
- ²⁵ WCAR, B&WC, MS 3147/3/7/5, Matthew Boulton (London) to James Watt (Birmingham) 25 Feb. 1783.
- ²⁶ WCAR, B&WC, MS 3147/3/259/24a, Logan Henderson (London) to Zaccheus Walker (Newhall). 21 Jun. 1785.
- ²⁷ WCAR, B&WC, MS 3147/3/259/24b, Logan Henderson (London) to Matthew Boulton (-), 21 Jun. 1785.
- ²⁸ WCAR, B&WC, MS 3147/3/8/30, Matthew Boulton (Cusgarne) to James Watt (-), 25 Sep. 1784.
- ²⁹ WCAR, B&WC, MS 3147/3/259/23, Anonymous 'J. T.' (London) to Boulton & Watt (Soho),. 30 Apr. 1785.
- ³⁰ WCAR, B&WC, MS 3147/3/259/26, Logan Henderson (Paddington) to James Watt (Birmingham), 29 Dec. 1788.

This article was based on research undertaken in the Archives of Soho, supported by the University of Birmingham and History West Midlands Ltd. and conducted under the supervision of Dr Malcolm Dick.



REVOLUTIONARY
PLAYERS



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