

## THOMAS PAINE AND THE WALKERS: AN EARLY EPISODE IN ANGLO-AMERICAN CO-OPERATION

BY W. H. G. ARMYTAGE

IN THE year 1780, Thomas Paine was awarded the honorary degree of Master of Arts by the University of Pennsylvania for his powerful literary cannonades against the British government. Two years earlier, Samuel Walker,<sup>1</sup> a Yorkshire ironmaster, had prospered so well from the sale of guns that he obtained armorial bearings,<sup>2</sup> and in the year in which Paine was awarded a degree he completed an unprecedented casting of no less than 872 tons of cannon, a figure which he raised by fifty per cent the following year. That a principal armaments manufacturer for the British and an even more prominent pamphleteer against them, should be working on common ground within the decade seemed incredible. Yet it was so, and the link between them was itself symbolic: an iron bridge.<sup>3</sup>

Paine's invention for an iron bridge was as American as anything else about him. For, on his own avowal to Sir George Staunton,<sup>4</sup> the idea was conceived as he witnessed the ice packs and melting snows which would bear so hardly on any bridge built on piers across the Schuylkill at Philadelphia. Scarcely was the war

<sup>1</sup> 1715-1782, an orphan at 14, then a self taught village schoolmaster who joined forces with his brother Aaron (1718-1777) to manufacture shoe buckles and laundresses' irons. Joining with John and William Booth (who had discovered the Huntsman secret of making steel), they built a foundry at Masborough in 1749, and developed the mineral resources of the district with great rapidity. H. G. Baker, *Samuel Walker and His Partners* (Sheffield, 1945).

<sup>2</sup> Arms:—Arg. on a chevron gu. between two anvils in chief and an anchor in base sa., a bee between two crescents or. *Crest*:—on a mount, a serpent encircling a dove proper.

<sup>3</sup> D. C. Seitz, whose article on this subject in the *Virginia Quarterly Review* (1927), 571-84, is quoted by the *Dictionary of American Biography* as authoritative, makes no mention of the Walkers, but categorically says "he [i.e., Paine] fitted up a workshop at Rotherham in Yorkshire, and here he rivetted together his device for crossing streams," p. 573.

<sup>4</sup> M. D. Conway, *The Writings of Thomas Paine* (New York, 1896), IV., App. D., 440-4.

over, than he was immersed in his project to the exclusion of everything else: indeed, he virtually retired from the political scene to press his scheme, enlisting the services of John Hall, a middle-aged mechanic from Leicestershire who had settled in Philadelphia in 1785.<sup>5</sup> After twelve months of strenuous effort (Benjamin Franklin realised what "an arduous undertaking"<sup>6</sup> it was), a model was made at Bordentown and carried to Philadelphia on a sled three days before the Christmas of 1786.

But though Paine could inflame the Pennsylvanians by his political ideas, he was not so successful in persuading them to embark on the construction of his bridge. The Philadelphians came to see it, both in the garden of Franklin's house in Market Street, and then (after New Year's Day) in the large committee room of the Assembly: some of them even walked over the model. Yet no-one seemed inclined to adopt it for bridging the four-hundred-foot wide Schuylkill, perhaps because no-one could foresee where the 520 tons of metal which Paine estimated would be needed, could be cast.<sup>7</sup> As the year dragged by, with the Assembly procrastinating, Paine made up his mind to exhibit his model to a wider public. So, after securing the necessary letters of introduction from Franklin, he packed his model on a French ship and sailed to Havre on April 26, 1787.

In France too, he found little practical assistance. The American minister, Thomas Jefferson, smoothed the paths which Franklin's letter had opened to him, and a committee of three was appointed by the French Academy to report on the possibilities of a four hundred foot arch. On August 29 of that year, the report was made, cautiously endorsing the idea as an exercise in ingenuity, and concluding that "it may furnish a new example of the application of a metal which has not hitherto been used in any works on an extensive scale."<sup>8</sup>

So there was nothing for it but to come to England. Personal reasons were pulling him back anyway. His mother was nearly

<sup>5</sup> Hall's papers shed much light on Paine's mechanical pre-occupations; he made both a wood and iron model for presentation to the Pennsylvania Assembly: M. D. Conway, *Life of Thomas Paine* (New York, 1892), II, App. B. Paine chivvied him so much that he confessed (p. 465), "I feel myself ill-used in this affair."

<sup>6</sup> Conway, *op. cit.*, I, 213.

<sup>7</sup> *Ibid.*, 226.

<sup>8</sup> *Ibid.*, 228.

ninety,<sup>9</sup> and on the day after the French committee made their report he set off to see her, forwarding his model to Sir Joseph Banks,<sup>10</sup> and applying for an English patent for it. By December 1787 he was back in France, where the French government seemed likely to prove customers for the idea, since they were considering bridging the Seine. But the same drawbacks prevailed here as in Philadelphia: no one felt inclined to risk an untried novelty, and estimates of its cost were so empiric that little reliance could be placed on them. So by August 1788 he had reached a *cul de sac* in Paris and he once more retraced his way to London, where, in the meanwhile, his bridge had been examined by the numerous and influential fellows of the Royal Society, and others of consequence. In the following month, September, the patent was granted. What is more, a firm undertook to construct it, and, as Paine wrote to Jefferson on September 9:

The Iron Works in Yorkshire belonging to the Walkers near to Sheffield are the most eminent in England in point of establishment and property. The proprietors are reputed to be worth two hundred thousand pounds and consequently capable of giving energy to any great undertaking. A friend of theirs who has seen the model wrote to them on the subject, and two of them came to London last Fryday to see it and talk with me on the business. Their opinion is very decided that it can be executed either in wrought or cast Iron, and I am to go down to their works next week to erect an experiment arch. This is the point I am now got to, and until now I had nothing to inform you of. If I succeed in erecting the arch all reasoning and opinion will be at an end, and, as this will soon be known, I shall not return to France till that time; and until then I wish every thing to remain respecting my Bridge over the Seine, in the state I left matters in when I came from France.<sup>11</sup>

<sup>9</sup> His father died in November 1786, before he set sail.

<sup>10</sup> 1743-1820. As President of the Royal Society from 1778 until his death, he was of prime importance in the world of science.

<sup>11</sup> The early lives are confused on the identity of the Walkers, and Paine's activities there. James Cheetham, writing in 1817, refers to "my friend Mr. Walker of Manchester" as financing Paine, who was actually quite a different person. Francis Oldys, writing in 1793 (7th edition) refers to "Pain's French familiarity" which "is said not to have much pleased the English ladies of Rotherham." (p. 18)

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At this time, the firm was managed by the four brothers, Samuel, Joshua, Joseph and Thomas, their father Samuel, founder of the firm, having died on May 12, 1782. Thomas Walker, the junior partner of the firm, conducted the correspondence with Thomas Paine, and, thanks to the revelation of five letters written by Paine to him,<sup>12</sup> it is possible to fit together the jigsaw of Paine's movements in connection with his bridge, movements entirely ignored by D. C. Seitz.<sup>13</sup>

A month after Paine had written to Jefferson that the Walkers had made him an offer, he went up to Rotherham, arriving "at the latter end of October." He originally intended to build an arch of 250 feet—little over half the size of his original Schuylkill project. But the weather was too bad, and even in the Walkers' foundry it was impossible to construct an arch of such a size indoors. At this stage, he heard that a local squire, a Mr. Foljambe,<sup>14</sup> who lived three miles from the Rotherham works, intended to bridge the River Don which flowed past his house. So Paine compromised on an arch of 90 feet, which could be worked indoors half at a time. As he told Jefferson: "a great part of our time was taken up in preparations, but after we began to work, we went on rapidly, and without any mistake, or anything to alter or amend." Paine stayed in Rotherham until the first half of the arch—45 feet—was "compleated and framed horizontally together"<sup>15</sup> and

<sup>12</sup> M.D. 1940-5, Special Collection, Central Reference Library, Sheffield (typed transcripts). My thanks are due to the archivist, Miss Meredith, who first called my attention to them.

<sup>13</sup> He had intended to consult John Wilkinson (1728-1808), who established the first English blast-furnace at Bilston, Staffs., in the year preceding the establishment of the Walkers' foundry at Rotherham. He also manufactured wrought iron at Brosely, and executed large orders for guns. But Wilkinson's departure for Sweden before he had patented the Bridge prevented him from so doing, Conway, *Life*, I, 254. The four Walker brothers, Samuel (1742-1792), Joshua (1750-1815), Joseph (?-1801), and Thomas (1756-1828) were so bound together that they adopted a common dietary plan for meals, for which see John Guest, *Historic Notices of Rotherham* (Work-sop, 1879), 502.

<sup>14</sup> Nephew of Sir George Savile (1726-1784), who, as Vice-President of the Society of Arts was interested in such projects. Savile had been a staunch supporter of the Americans in 1775, and a petitioner for reform in 1779. Foljambe followed in his uncle's footsteps, obtaining a patent for "The Rotherham Plough" (Guest, 540).

<sup>15</sup> During which time Burke, accompanied by Lord Fitzwilliam (heir of the Marquis of Rockingham) came over to look at the works, and invited Paine over to Wentworth Woodhouse, the largest private house in England.

then came up to London for the meeting of Parliament, which began on December 4. In his absence, he left a foreman in charge,<sup>16</sup> whom he appointed "President of the Board of Works," a semi-humorous title which the foreman justified by reporting to Paine that he got the second half together with much less trouble than the first.

From London he wrote to Thomas Walker on 16 January 1789:

Dear Sir,

I received your friendly letter, for which I thank you. Nothing very material has occurred since, or I should have wrote you. The severity of the weather has put a stop to everything, even to the tides.

Politics have been at a stand, and bridge building has partook of the general stagnation.

I intended writing to the president of the Board of Works—my friend Yates,—but I have written you so long a letter that there is not time.

Your affectionate friend,  
And obedient humble servant,  
Thomas Paine.<sup>17</sup>

Ten days earlier, in a letter to Kitty Nicholson, he had written that he would return to Rotherham "in two or three weeks," an intention which he did not fulfill for he was still in London on 24 February, when he wrote again to Thomas Walker:

Dear Sir,

Your favour of the 23 is just come to hand, for which I thank you. I wrote to the president of the Board of Works last Monday, wishing him to begin making preparation for erecting the arch. I am so confident of his judgment, that I can safely rely upon his going on as far as pleases without me, and at any rate I shall not be long before I visit Rotherham. I had a letter yesterday from Mr. Foljambe, apologizing for being obliged unex-

<sup>16</sup> This was William Yates, six foot three high, "a giant in proportions and strength," whose first supervisory post this was. He was a nephew of the second Samuel Walker and later entered into partnership with the third Samuel Walker (1779-1851), M.P. for Aldborough.

<sup>17</sup> For this and the following letter, see Guest, *op. cit.* 493, note a.

pectedly to leave Town without calling on me, but that he should be in London again in a few days—he concludes his letter by saying—"I saw the Rib of your Bridge. In point of elegance and beauty it far exceeds my expectations, and is certainly beyond anything I ever saw." You will please inform the president what Mr. Foljambe says, as I think him entitled to participate in the applause. Mr. Fox, of Derby, called again on me last evening respecting the Bridge, but I was not at home. There is a project of erecting a Bridge at Dublin, which will be a large undertaking, and as the Duke of Leinster and the other Deputies from Ireland are arrived, I intend making an opportunity of speaking to them on that business.

I am, Sir, your sincere friend and humble servant,

Thomas Paine.<sup>18</sup>

But he was not idle in London. On the contrary, apart from his vigorous political interests, he was busy looking for a suitable site on which he could erect the now completed model of his bridge. From the White Bear Hotel in Piccadilly he wrote again to Thomas Walker:

April 1789

Sir,

I went yesterday over St. George's Fields where, I think, there are several situations that will answer exceedingly well for erecting the Bridge. Our agreement respecting the Bridge is—that the company were to execute it at the works, put it on board a vessel and send it up to London—that I was to be at the expense of erecting it—that the profits, whatever they might be arising from the exhibition and sale were to be equally divided—with respect to future undertakings, nothing can be said till we see the (issue) of this. I have already told you that the Patents are my own, no person directly or indirectly have any share or concern in them.<sup>19</sup>

My intention is to return to America as soon as I have seen the issue of this Bridge. That if it answers I shall dispose of the Patents and that I shall offer them to

<sup>18</sup> See also Conway, *Life*, 259, for further appreciation of Yates, "The foreman of the works is a relation of the proprietors, an excellent mechanic and who fell into all my ideas with ease and penetration."

<sup>19</sup> For further evidence of authentication, see Paine to Jefferson, July 13, 1789, in Conway, *Life*, 265.

nobody till you have refused them. The point now is to get up the Bridge. I should have been glad if Billy Yates could have come up with it—but here is an American, Mr. Bull, a most excellent mechanic, who has offered me his assistance in erecting it, but that he may the better (know) what is to be done it is necessary that he go down to see the manner in which the work is put together and the order it is to be put on board. He will be ready on Monday. I am engaged to dinner today in the City and will call on you in the evening or in the morning.

Your ot. humble servant and friend,  
Thomas Paine.<sup>20</sup>

He was as good as his word. In that same month he returned to Rotherham, and he wrote from thence to Sir George Staunton, describing the trial erection of the Bridge, which took place between a steel furnace and a workshop. The arch, constructed of three tons of iron, bore a dead weight of six tons placed upon it, was at last proved satisfactory,<sup>21</sup> and Paine was able to measure the effect of temperature upon the expansion of the bridge as a whole. Its success led him to contemplate a bridge over the Thames, especially since the Royal Society had expressed "great satisfaction" with a communication which he had sent them. He felt confident enough to travel round other industrial parts of England, examining techniques with a view to their adoption in the United States of America.<sup>22</sup> He found time to run over to Paris, and on his return wrote with some complacency: "though I have a slender opinion of myself for executive business, I think, upon the whole, that I have managed this matter tolerably well. With no money to spare for such an undertaking I am the sole patentee here, and connected with one of the first and best established houses in the Nation."<sup>23</sup>

<sup>20</sup> M.D. 1940-5, Sheffield Collection, City Reference Library.

<sup>21</sup> Sir George Staunton (1737-1801) a friend of Burke, was not only a Fellow of the Royal Society (elected 1787), but also influential in the Society for the Encouragement of Arts and Manufactures, to whom he sent this letter of Paine's. But when Paine published the first part of his *Rights of Man*, the society resolved not to publish this; see W. T. Sherwin, *Memoirs of the Life of Thomas Paine* (London, 1819), 96, 234.

<sup>22</sup> "I have been to see Cotton Mills—the Potteries—the Steel furnaces—Tin Plate manufacture—White lead manufacture. All these things might be easily carried on in America." To Jefferson, June 17, 1789 (Conway, *Life*, I, 264).

<sup>23</sup> To the same, September 15, 1789 (*op. cit.*, I, 266).

On 19 September, four days after, he again wrote to Thomas Walker:

White Bear Inn, Piccadilly,  
London, Sept. 19th, 1789

Thomas Walker, Esq.,  
No. 2 Rotherham,  
Yorkshire.  
Dear Sir,

Nothing has occurred since my arrival in London sufficiently interesting to give you the trouble of reading a letter. Sir Joseph Banks whom I intended to consult with respect to the place of erecting the Bridge, is gone to his seat in Lincolnshire. I shall write to him from hence, and as he is at no great distance from you, it is probable he may make you a visit. Mr. Vaughn was setting off on a visit to the Marquis of Lansdown at Bowood when I saw him, we had some general conversation respecting a Bridge over the Thames which he supposes the city will be very willing to listen to.<sup>24</sup>

The affairs of France are now the general topic of conversation. I had a letter from Mr. Jefferson dated Paris the 13th—it confirms the matter mentioned in the papers of today—that the National Assemblies, or rather the Legislatures to be elected by virtue of the New Constitution when completed, are to be elected every five years and not to be subject to be dissolved within that period by the King—That the King shall have a suspending negative on the Laws future enacted to continue till the next election, which shall decide ultimately—They have still to establish the judiciary system and the provincial and municipal organisations.—Mr. Jefferson concludes the letter by saying “a tranquillity is well established in Paris and tolerably well throughout the Kingdom, and I think there is now no possibility of anything hindering their final establishment of a good constitution which will in its principles and merits be about a middle term between that of England and America.”

The Marquis de la Fayette, who takes General Washington for his model, has refused the pay offered to him as Commander in Chief of the Paris militia. Goddard, after his very vulgar challenge, has cut a very contemptible figure—the Frenchmen here offer to lay any

<sup>24</sup> Benjamin Vaughn (1751-1835), educated at Warrington Academy under Dr. Priestley, a friend of Franklin, fled to France six years later, and finally to America 1798.



sum—that St. George picks ten Englishmen every day for ten days running, and give leave to pick the whole nation.

I wrote this far in the Morning, and the weather being fine, I took a walk to see Dr. Price<sup>25</sup> at Hackney who was all gay and happiness at the Progress of Freedom in France.

A young gentleman, Mr. Rutledge,<sup>26</sup> a son of Governor Rutledge of South Carolina, is travelling to the Northward and will probably call to see the Bridge. With compts to Mrs. Walker and all the Families, I am Dr. Sir,

Your sincere friend and humble servant,  
Thomas Paine.

After a second winter in France (1789-90) he returned in March 1790 and wrote to Thomas Walker, this time from 31 King Street:

April 14th 1790.

Dear Sir,

I wrote to you before I sett off for France last October, and likewise to the Company to which I received an answer from Mr. Joseph, you being then absent. I wrote once to the Company when I was in France and once since my arrival in London, both which letters Mr. Joshua tells me have been received Mr. Joshua tells me that he shall turn home in a few days, but I hope some of you will be in town while our works are going on, for, of all things, I hate to be accountable for money matters alone. As Mr. Joshua had informed the Comp. that I should send down a person who would undertake to erect the Bridge it was unnecessary for me to write by him, especially as you, who used to be a most excellent correspondent, are now as bad as myself.

<sup>25</sup> Richard Price (1723-1791) also a friend of Franklin, who was responsible for Price being invited by Congress in 1778 to transfer himself to America. Subjected to a blistering philippic from Burke for his opinions on the French Revolution. His students at Hackney later held a republican supper with Tom Paine as guest of honour, and thronged the galleries of the House of Commons. For their other enthusiasms see H. McLachlen, *English Education under the Test Acts* (Manchester, 1931), 252-4.

<sup>26</sup> Entrusted by Paine to bear the Key of the Bastille as a present for Washington. On May 31, 1790, in a letter to Washington, Paine wrote: "In the partition in the Box which contains the Key of the Bastille, I have put up half a dozen Razors, manufactured from Cast-steel made at the Works where the Bridge was constructed, which I request you to accept as a little token from a very grateful heart." Conway, *Life*, I, 275.

I wish Billy Yates could have been spared to erect the Bridge, but as that could not be I am fortunate in meeting with Mr. Bull, of whom I have a high opinion. If we have good luck in getting it round by water I hope to have it up by the latter end of May or beginning of June—which will be before the new Parliament can meet.

But though you cannot spare Billy Yates, it is I think advisable that you spare one of the workmen, who assisted in erecting it at the works, to accompany it all the way by water, and this is all the more necessary as it is to be restripped at Hull, but as your own interest, as well as mine is concerned, you will judge for yourself.

I am so out of humour with Mr. Burke with respect to the French Revolution (and) the Test Act<sup>27</sup> that I have not called on him upon my arrival. I have seen Lord Stanhope<sup>28</sup> and Mr. Fox,<sup>29</sup> the former appeared to me to have rather too much enthusiasm, and the latter has little. It is somewhat remarkable that at the time, the National Assembly, to give an instance of the equal rights of citizens, elected M. de St Etienne, who is Minister of the Presbyterian Congregation of Nimes in Languedoc, President of the National Assembly, the British Parliament rejected the Bill for repealing the Test Act.

My idea of supporting liberty of Conscience and the rights of Citizens, is that of supporting those rights in *other people*, for if a man supports only his *own* rights for his *own sake*, he does no moral duty. I have no news to tell you worth communicating except that affairs in America are becoming most exceedingly prosperous. A year and a half ago the exchange with England was 6

<sup>27</sup> Paine's friends were busy with motions for the repeal of the Test Acts, which required Nonconformists to subscribe to the Thirty Nine Articles before they could enter either Oxford or Cambridge. For the long struggle which went on before they were repealed see my article in *The Universities Review*, Vol. 22, pp. 139-153.

<sup>28</sup> Charles Stanhope (1753-1816) who in 1788 became chairman of the "Revolution Society," and had earlier advocated cessation of the American War and Parliamentary reform, published an answer to Burke in this year 1790. He was a notable inventor, constructing two calculating machines c. 1777, patenting steam vessels 1790 and 1807, popularising a stereotyping process 1805, and inventing a microscopic lens. Paine's shrewd remark has point when one remembers that Stanhope later disinherited all his children. He was the father of the famous Lady Hester Stanhope, and brother-in-law of William Pitt, then Prime Minister.

<sup>29</sup> Charles James Fox (1749-1806), who moved the repeal of the Corporation and Test Acts on the night of March 2 this year, arrived to speak on the motion in the House of Commons still wearing the boots and spurs he had used at Newmarket, the horseracing centre of England.

and 7 per cent against America, it is now 6 per cent in favour of America.

Present me with much respect to all the families,

Your affectionate friend and obt. humble servant,  
Thomas Paine.

You will find Mr. Bull an agreeable well informed man for a country American, and I shall be obliged to you for any activities you may be kind enough to show him

On May Day, the Bridge was on the way to London. "I see nothing yet to disappoint my hopes of it being advantageous to me. It is this only which keeps me (in) Europe, and happy I shall be when I have it in my power to return to America," he wrote to Washington, while at the end of the month, 31 May, he reported: "my Bridge is arrived, and I have engaged a place to erect it in. A little time will determine its fate, but I yet see no cause to doubt of its success, though it is very probable that a war, should it break out, will as in all new things, prevent its progress so far as regards profits."

On Sunday, August 8, 1790, he wrote a long letter to Thomas Walker:

Dear Friend,

Having finished the Centre and Butments and fenced the whole thing in, we then carted the Iron from the wharf, and began raising it last Tuesday. I began with all the Ribs at once and we have raised to nearly half the height of the Bridge (Saturday Night). Everything joints well and (fits) well, and what is somewhat extraordinary it has everybody's good word. I have three Carpenters and two Labourers but I have unfortunately lost the aid of Mr. Bull.

The first morning we began erecting (Tuesday) it being raining and slippery, he fell from the scaffold, and his legs taking one of the brass parts of the centre tore the flesh of it up seven or eight inches like the flap of a saddle—luckily no bones were broken or fractured. A Surgeon was very near at hand who sewed the wound up or rather sewed the flesh back again to the place. He is now doing very well having now neither pain nor fever. He can move his leg in bed very freely but he has not yet been out of it. This of consequence, has confined me

to the work from morning till night. I come home sometimes pretty well tired.—I have had a visit from Sir Joseph Banks and some members of the Royal Society who appear as much pleased as if they had an interest in it—the first person who found his way in (why we keep it enclosed and the gates shut) was old Lord Bessborough.<sup>30</sup> I was not there as it was before any of the iron was put up, but he and Mr. Bull had a good deal of talk about Rotherham—the old man went away highly pleased, gave the workmen half a crown, and desired leave to come again. Similar cases are happening every day, and the only way to render admission convenient will be by tickets and then people will not be consulting with themselves what they are to give. Next Sunday I will write you again, in the meantime I shall be glad to hear from you, and I hope that some of you will be in town in a little time as there will be sure objects worth consulting upon.

As to Politics, I think Mr. Pitt is just where he began at except that by his petulance and imprudence he has made that difficult which at first was easy. Bullying perhaps may be in character between Humphries and Mendoza and such like blackguards, but when the Colonel of a Nation descends from the manners and language of a gentleman (such as Mr. Pitt's message to Spain) it gets itself into trouble and denegesates after demanding restitution previous to discussion. . . .

Direct me at the Yorkshire Stingo Bowling Green

Comp. to all the families,  
Yours sincerely,  
Thomas Paine.

On the same day, and also on August 15, he saw Gouverneur Morris. The Bridge was erected in Leasing Green (near Paddington), Paine being helped financially by Peter Whiteside, a Philadelphia merchant in London, to the tune of £620. Just at this time, Whiteside failed in business, and his creditors demanded repayment from Paine of the sum he had borrowed. This, with the help of Clegget and Murdoch, Paine was able to do. But Paine was not

<sup>30</sup> William, 2nd Earl Bessborough (1704-1793), married the eldest daughter of William, 3rd Duke of Devonshire, a great Derbyshire landowner, whose estates ran up to the borders of Rotherham.

perturbed, and went on putting a floor in the bridge.<sup>31</sup> On September 25 he wrote his last extant letter to Thomas Walker:

My dear Friend,

I received your favour dated last Saturday which I suppose was written on Sunday as it did not come to hand till Tuesday—so much for that. This has been a very unfavourable week for outdoor work on account of rain—we have begun flooring the Bridge. I am just going into the City to enquire after letters from America as I am just informed the Packet from New York is arrived.

Sunday

Monday—Called at Mr. Maltby's on Saturday but he was gone to Brighthelmstone, and not expected to return till Thursday. One of my Carpenters having got a jobb to do for himself, went away on Saturday night. I am endeavoring to find adichenal so as to have six carpenters this week as they can work on the floor to greater advantage in proportion to a smaller number, but at present I have not met with any. I think the floor will be capital. It is one of my lucky thoughts. It is grooved an inch up on the underside so as to let each sit an inch into the floor and it is crop floored with four inch timber.

[here a design was apparently enclosed]

The numbers 1, 2, 3, 4, 5, represent the five grooves, and the floor projects four inches over the order like a Cornice. As it promises so much I intend it shall want for nothing, as the rain sometimes beat the men from the top of the Bridge, I have put up a Bridge under it, and want them to saw up the waste boards etc. . . . I am always discovering some new faculty in myself either good or bad—and I find I can look after workmen much better than I thought I could. Mr. Bull is now getting about again and I'll have a little respite.

As to Politics, what has the "abandoned old B . . . h" done for you that you are so out of humour with her. She did not begin the war either with the Turks or the Swedes, but was made war upon by both—as for your madman the Swede, if he and all such mercenaries were hanged the world would be the better for the want of

<sup>31</sup> This seems to disprove the assertion of W. E. Woodward, *Tom Paine: America's Godfather* (London, 1946), 168, that "the bridge was eventually set up . . . and opened to the public in June 1790."

them—he had not even ( ) to plead his own apology—he is a hired cut-throat—and I hope the old B . . . h will box his ears and kick his a—in the bargain. . . .

Present my compliments to Mrs. Walker and all the families, your friend and humble servant,

Thomas Paine<sup>32</sup>

(iii)

Iron bridges were a novelty in Europe. It is true that Faustus Verantius had in the previous century designed a metal bridge, but he relied on chains to support it. And though two Frenchmen, Calippe and Goiffon, submitted a plan for a metal bridge to the city fathers of Lyons and the Academy in 1779, they too did not bring their project to full fruition. Indeed, the only iron bridge recorded was that constructed by that very same John Wilkinson whom Paine had been so anxious to consult before the Walkers: Wilkinson's bridge, in which he collaborated with Abraham Darby, spanned the Severn at Coalbrookdale.<sup>33</sup>

Paine's bridge sired many others, and the descent can be traced through the activities of William Yates, the foreman whom he had trained so well at Rotherham. The Paddington model was dismantled, and parts were incorporated in a bridge built over the Wear at Sunderland. This, some 236 feet long, was over twice the size of the Paddington Bridge and half the size of Paine's projected bridge over the Schuylkill. One of the projectors of the Wear bridge acknowledged to a friend of Paine's that the idea stemmed from the Paddington model.<sup>34</sup> In fact, so ably did William Yates and his son, because of their experience with Paine, superintend the work, that when John Rennie was building Southwark Bridge, he asked them to do the same for him.<sup>35</sup>

The caution of the Pennsylvania Assembly in not committing themselves to Paine's original project in 1786-7 seemed to be justi-

<sup>32</sup> The end of this letter, like the end of the preceding one, has not been printed in entirety, since the references to foreign affairs add nothing to what we already know of Paine's opinions.

<sup>33</sup> S. Smiles, *Lives of the Engineers*, II, 256; P. Mantoux, *The Industrial Revolution in the Eighteenth Century* (trans. M. Vernon, London, 1927), 314-5.

<sup>34</sup> Conway, *Life*, II, 290, quoting letter to Jefferson, October 1, 1800. The friend was Sir Robert Smyth.

<sup>35</sup> John Rennie (1761-1821) built the old Waterloo Bridge in 1810-17, and London Bridge, as well as numerous canals.

fied twenty years later when Southwark Bridge was being built. Both were projects that almost defied the resources of the time: Southwark so strained the resources of the Walkers' foundry that all the furnaces had to be charged and tapped simultaneously for one single plate casting weighing some nineteen tons, which was to be placed on the Southwark side of the river. The strain was so great that the fortunes of the firm never recovered from it, and it was soon disposed of when the contract was finished. Even more disastrous was the cost to the promoters, who budgeted for an expense account totalling £287,000, and at the end found that it cost £666,486: a hundred and thirty-three per cent more.<sup>36</sup>

But though Paine avowed that "the French Revolution, and Mr. Burke's attack upon it, drew me off from any pontifical works," his bridge still remained his magnificent obsession. He carried two models over to France with him, and there in the Rue du Theatre Francais, he lived in a state of litter and chaos. "Books are written to please, houses built for great men, churches for priests, but no bridges for the people," he told Henry Redhead Yorke<sup>37</sup> in the words of his friend Franklin. So enthusiastic did he remain that he even hammered at it far into the night, comforting himself that it would withstand all shocks. Dangerous as it is to apply psychological criteria to those of whom we know so little, it seems fairly safe to observe that Paine, the great iconoclast, had an ikon of his own which he worshipped with the intensity of a creator. "Nothing in the world," he said once, "is as fine as my bridge, except a woman."<sup>38</sup> And it was thanks to the Walkers and William Yates that his work was not entirely in vain.<sup>39</sup>

<sup>36</sup> J. Guest, *Historic Notices of Rotherham*, 495.

<sup>37</sup> 1772-1813, who was most active in the revolutionary movements that were afoot at nearby Sheffield from 1790-4, for which he was indicted for high treason and fled to France. For Paine's reputation there see *Notes and Queries*, Vol. 195 (1950), p. 321.

<sup>38</sup> Conway, *Life*, II, 445.

<sup>39</sup> William Yates and his son of the same name became partners with Samuel Walker the third, and bought the Gospel Oak Works in Staffordshire in 1822, where they made the first iron rails ever cast.