

William Tierney Clark (1783-1852) CE FRS

the man and his contemporaries: a social history

by Sandor P Vaci RIBA

Anyone carrying out research into Clark's private life and professional career is greatly frustrated on discovering that this excellent engineer-architect's archive of books, letters and drawings had disappeared after his death in Hammersmith.

Although there is a great deal of professional correspondence between Clark and his Superintending Engineer in Pesth, Adam Clark, and Count Széchenyi in the Budapest archives all were sent by W T Clark (and some drafts of letters sent by his recipients) and all connected with the realisation of the Chain Bridge over the Danube (1839-49)¹. Therefore, if we wish to find out about his circle and those close to him in England, we need to look elsewhere. When I embarked on trying to form a closer idea of Clark the man I decided to concentrate on two documents that could give indications and even these required much reliance on speculation. One is the list of subscribers for his election to become a Fellow of the Royal Society and the other is his Will. Then I came across eight letters sent by Clark from his travels when visiting Vienna or Pesth. Suddenly the real Clark appeared from behind those formal letters as his attitudes, concerns, prejudices, fears (even throwaway remarks about the other sex) were revealed.

This monograph, a companion piece to my *paper William Tierney Clark and the Budapest Chain Bridge*², is social history of this civil engineer. It first examines the RS list, then the letters and thirdly the Will. It concludes with a general appreciation of Clark's achievements.

The Royal Society Subscribers³

By the time Clark was elected a Fellow of the Royal Society (RS) in May 1837 he was in the top echelon of those professional men who provided the energy and expertise for Britain's pre-eminence in the first half of the nineteenth century. Clark had to be known well to his subscribers hence examining their own backgrounds can give indications of whom he associated with and even clues to his bridge designs. This proved to be a very rewarding exercise. It is worth quoting the verbatim transcription of the original subscription form²:

William Tierney Clark Esq. residing at Hammersmith, Civil Engineer, who constructed the suspension Bridges across the Thames at Hammersmith and at Marlow and various other public works is being desirous of the honor of becoming a Fellow of the Royal Society of London; we whose names are hereunto subscribed, do of our personal knowledge, recommend him as deserving that honor (sic), and as likely to prove a useful and valuable member. Read 16th March 1837. Elected 11th Mar 1837.

Davies Gilbert

John Taylor

Joshua Field

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William Chaadwell Mylne

John Rennie

Joseph Smith

George Rennie

Thomas F. Colby

John Bostock

J C Carpue

Henry R. Palmer

G. Dollond

The Royal Society occupied a part of Somerset House at the time. An illustration shows a grand room, the walls hung with portraits of notable presidents and Fellows; the presiding president perched on a platform in front of the gold mace; Fellows and their guests sitting in pews listening to papers or discussing amongst themselves. The lists on the left wall were for subscribers to enter their names under the nominees. For Clark's first reading in the RS Proceedings nine Fellows signed and later another three, indicating that he had widespread

support - not surprisingly, as by 1837 he had built three suspension bridges, a canal, a pier, a bridge in cast iron besides transforming the West Middlesex Waterworks. The brief notes here about the twelve, many well known in their field to this day, are based on the extensive biographies in the Oxford Dictionary of National Biography. Around the time of Clark's election there were some eight hundred fellows, about half of today's number.

Davies Gilbert (previously Giddy) (1767-1839): scientific administrator and applied mathematician. Gilbert produced proofs for the efficiency of steam engines. More important for our subject, he also carried out mathematical investigations into the catenary curves of suspension bridge chains. His calculations improved the design of the Menai Bridge and his methods for such calculations remained in use for a century. In 1827 he became president of the RS. Clark would have been well aware of anything to do with the Menai Bridge so it is likely that he had knowledge of and indeed used Gilbert's method to calculate the suspension chain curves for the Hammersmith Bridge and those that followed.

John Taylor (1779-1863): mining manager and entrepreneur. Taylor had substantial involvement with the mining of metal ores both in Britain and abroad. He was elected fellow in 1825 and was also involved, as was Gilbert, with the British Association for the Advancement of Science, somewhat a rival organisation to the RS. This gives rise to another likelihood: that Clark also attended their annual meetings.

Joshua Field (1786-1863): engineer. Field was a partner in *Maudsley, Son and Field* (based in Lambeth) a pioneering and influential firm that manufactured marine engines, equipment for water works and pumping machinery. Field was one of the founders of the Institution of Civil Engineers (ICE); elected FRS in 1836. The connection here is clear both through ICE and the equipment that he could have ordered for the West Middlesex Water

Works. The manufacture of pumps invites possibility that Maudsley supplied these for the cofferdams of the Buda-Pesth chain bridge.

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William Chadwell Mylne (1781-1863): engineer and architect. Mylne was the son of Robert Mylne, the engineer of Blackfriars Bridge. He had involvement with the Metropolitan Water Board yet another person connected with water supply. Mylne was elected fellow of the Royal Institute of British Architects in 1834 (which was only founded that year) and became a member of ICE in 1842.

(Sir) **John Rennie** (1794-1874): civil engineer. Completed his father's design for London Bridge, on which Clark was later asked to report when doubts were raised about its stability⁴ Since early on in his career Clark had close association with the Rennie family, working at their Blackfriar's works. Sir John Rennie in his *Autobiography*⁵ (published after his death in 1875) rather disappointingly made no mention of Clark though he commented on other engineers. It is quite possible that Clark and the Rennies fell out when Clark and George Rennie became rivals over the commission to build the Buda-Pesth Chain Bridge. In 1837 a local financier, Wodianer, invited Rennie to visit Pesth and submit a design at the same time that Clark was there to do the same. In a letter to Count Széchenyi in late 1837⁶ Clark complained bitterly that George Rennie was paid one thousand pounds whilst his remuneration was only five hundred. It is worth noting that the Rennies signed the subscription in March of that year - several months before this rivalry took place. They must have made their peace as Clark named another Rennie as one of his executors.

Joseph Smith (1781-1857): barrister. Nothing is known about him. He was probably a gentleman with a general interest in science who over several years remained a keen attendee of the meetings.

George Rennie (1791-1866): civil and mechanical engineer. Elected FRS in 1822 and to membership of ICE in 1844. George Rennie was an early developer of screw propellers for ships and also wrote a paper on the testing of materials. Not as recognised as his younger brother, John, but perhaps a more original designer. Clark and Rennie would have often met and discussed engineering problems. George Rennie was also one of the signatories for Clark's membership of ICE.

Thomas F Colby (1784-1852): surveyor and army officer. Colby became superintendent of the Ordnance Survey and particularly distinguished himself for carrying out the first detailed survey of Ireland. Colby's insistence on accuracy and organisation raised the standard of surveying in this country. Clark may have consulted Colby when setting out the Medway Canal and approaches to his bridges.

John Bostock (1772-1846): physician and medical chemist. Elected FRS in 1829. Bostock was one of the first to report on and research the effects of hay fever. He also published a paper '*On the Purification of Thames Water*', again a subject that would have interested Clark.

J C Carpue (1764-1846): surgeon and anatomist. Carpue was closely associated with

both Hammersmith and Chiswick where Clark would have had ample opportunity to meet him. Carpue gave anatomical demonstrations and was a proponent of vaccinating against

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small pox. The Carpue connection indicated that Clark had a wide range of associates outside engineering.

George Dollond (1774-1852): optical instrument maker. George was the grandson of John Dollond the founder of the Dollond optical dynasty. Clark's association with the Dollonds started when he searched for an effective instrument to set out the Thames and Medway Canal that included the building of a tunnel under Higham Hill. Using Dollond's transit instrument (later versions evolved into the theodolite), after some false starts, Clark was able to complete the task. George Dollond himself became an FRS just about the time, 1819, when the tunnel work was under way. It is safe to assume that the transit instrument was used for Clark's other civil engineering work.

The Journal recording the proceedings of the Royal Society between 1837 and 1846⁷ does not reveal much about Clark's attendance at meetings. Only those Fellows who brought strangers were recorded and Clark's name does not appear in those lists. Neither did Clark contribute a paper to the RS therefore, apart from being a Fellow of this most prestigious of societies, his input seems to have been minimal. Perhaps the travel from Hammersmith was too taxing or he was simply just busy with his engineering practice.

Clark's letters to Knight from his travels⁸

The **eight letters**, 1834, 1837 (two), 1838, 1839, 1840, 1842, 1846 and 1849 were written to Matthias Hooper Knight who was the Clerk of the West Middlesex Waterworks where Clark was resident engineer. Although addressed semi-formally, to *My dear Knight*, it is clear that they were unusually close, chummy even, going so far as to discuss the other sex by the fireside (presumably after Mrs Knight retired to bed). There is a certain feeling of superiority of a British civil engineer travelling through Europe where the Industrial Revolution had not yet caught up with the Industrial Enlightenment (though it would soon through the adoption of British know-how). The letters reveal Clark as an astute, curious and even emotional observer.

Several concerns run through his correspondence. Clark remained, in spite of his thriving civil engineering practice, very much an employee of the Waterworks: in all of the letters he refers to engineering matters there and asks for understanding of the Board for his absences. Travelling through pre-railway Europe was an arduous experience so the state of the roads is frequently mentioned. He was also worried about his health, which was much commented upon. German bureaucracy frequently annoyed him. The letters can be taken as an engineer-architect's travelogue through Germany, Austria and Hungary (Belgium and France are hardly mentioned). Clark made his journeys during the late summer, when conditions on the roads were more conducive to travel, often in the company of his nephew, Bland William Croker (the exact relationship is not clear). The younger man presumably

spoke German (there is no evidence that Clark did but then all of his contacts spoke and wrote English). His sojourns in Vienna and Pesth have been referenced against entries in Count Széchenyi's Diary⁹ (SzD) and explanatory notes added.

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Reading the letters has been made much easier because they were transcribed in full (probably in the sixties or seventies; there is no record who the anonymous transcriber was). There are periodic gaps between the letters, perhaps more have been written but lost. The transcriptions followed Clark's writing exactly including his misspelling of foreign names, lack of punctuation marks and sometimes untidy writing that can obscure the meaning. The letters, have therefore had minor editing to correct the errors and make them easier to read. Clark's underlinings have been retained.

Clark does not mention whether he needed a passport to traverse Europe but Adam Clark in the 1850-s certainly did. The original of his, a single leaf signed by Palmerston with his own coat-of-arms, is kept in the archive of the Budapest History Museum.

*

Clark's trip in **1834** (letter, 9th September from Vienna) followed Count Széchenyi's initial visit to Hammersmith in 1832 and his report, with his friend Count Andrassy, to the Hungarian Diet about the kind bridge that should be built and who to undertake it. Clark, who was recommended, may have gone on this journey on a speculative basis to strengthen his hand for the eventual realisation. He mentions carrying engravings that may have shown Hammersmith, Marlow and Shoreham bridges to those who mattered besides the counts. Travelling through Bavaria he visited a small suspension bridge near Nuremberg¹⁰ and rather unfairly, after all this was a small footbridge that still stands, thought this was a *contemptible specimen*. Mills and other machinery were also dismissed, with more justification, as not *one to commend*. In Vienna the two engineers cheered up waiting *to see the beautiful and they say Wicked Ladies*.

In the first of his **1837** letters (28th August sent from Berlin) he reports on a dreadful sea voyage to Hamburg, a town that did not impress him. Two days later they were off again through northern Germany encountering the worst kind of sand-clogged road saying *there must be something 'rotten in the state of Denmark'* with his quote marks revealing a sense of humour. Later the roads in Mecklenburg improved and were even better than in England. Altogether it took them four days to arrive in Berlin where they find cold weather and cholera. He was very impressed by the city, which by then had started on its trajectory of becoming the impressive capital of Prussia and later of a united Germany. He mentions a large *strasse* that would have been the *Unter den Linden*. In the monumental public buildings there was *much to admire and condemn* but he was disappointed with Schinkel's works that he already heard of in England. It seems the heavy classicism of the *Alte Museum* was not to his taste¹¹. In front of the museum Clark was much taken by the gigantic granite bowl cut from a single piece of stone¹² Amongst the sculptures he mentions a bronze of old *Blücher* (Gebhard Leberecht) whose military exploits against Napoleon were then still within living memory. It is

almost possible to walk through today's Berlin and follow in Clark and Croker's footsteps as they stopped, observed and judged.

The second letter, in **1837** (18th September from Pesth), reports arriving on the 8th and how he *has been fully occupied in the examination of the mighty River Danube. We are now boring to*

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ascertain the soil of its bed and tomorrow I hope we shall get the diving bell to work. SzD noted that

on the same day (George) Rennie and (Arthur) Mee also arrived by steamer from Vienna

(Mee's presence is something of a surprise for he is not mentioned in any other

correspondence, perhaps he was seeking commissions. About Mee architect see also

Chapter on Clark's Will). SzD also mentions in subsequent entries of visiting Clark with

Andrássy; travelling up to the Gellért Hill to overlook the Danube and taking him to meet

influential people. Clark wrote that: *The attentions I have received here are quite overpowering*

and to describe them literally would appear an exaggeration in vanity on my part to attempt it.

This, no doubt, referred to the grand lunch given at the Casino by Széchenyi¹³. There is also

mention in the Diary of Clark being somewhat embarrassed by the question of what would

happen to the chain bridge if troops marched across it in step. Strangely, Clark was taken to

the recently opened Magyar (Hungarian) Theatre where he could not have understood much.

He was much impressed though by the mountains, that is, the Buda Hills, with their *beautiful*

flowering shrubs and creepers, all new to me, but I hope to get some seeds and try them in my

garden. He concludes his letter; *I have been well all the time and have partaken of dishes here that*

would have knocked me up in England. Perhaps the dish was gulyás flavoured with much

paprika.

The **1838** letter sent from Vienna on 21st September was about his visit to Pesth after

the destructive flood in that year. SzD notes that Clark arrived on 30th August by steamer and

the next day, 31st, he received a commission to build defensive banks along the Danube

(however, there is no mention of this in his letter or any other record). On 2nd September the

Bridge Committee decided to build a two-pier suspension bridge (SzD). Clark writes that he

found the Count Széchenyi and Baron Sina anxiously waiting my arrival as the commissioners were

sitting and they required some explanation from me. I attended them for 10 days and they were

perfectly satisfied approved my plan as made as well as the situation fixed by me when at Pesth last

*year for the site and with full power to make such alteration as I may think proper*¹⁴. He is busy

looking at quarries and never felt better. Then another curious remark that could only refer to

the company of ladies (or perhaps of ill repute): *I part took of some very odd things with very odd*

perfumes but it is of no use as one cannot live on Air. He was much shocked by the devastation

caused by the flood: *I cannot describe to you the appearance of their part of Pesth which suffered*

from the late inundation, unless you can imagine the effect of an Earth quake, what think you of a

steam boat ploughing its way through the Streets to take away the inhabitants and take provisions to

others. In many streets the water was 12 ft. deep and the district beyond description (in all the

subsequent drawings for building the bridge the March 1838 flood level was indicated). At the

end of his letter he loses his temper: *in a country like this it is quite impossible to calculate how long a journey may last as the Germans are a dreadful heavy race. They require a second Napoleon every 10 Years to well thrash them and that is the only way to improve them. The Hungarians say that they are always a quarter of an hour before the Germans, which is quite sufficient to astonish them.*

Quite an odd remark as Wellington defeated Napoleon with no little German help. He also refers to a cottage: *I hope that you and Mrs. Knight are comfortably ensconced at the Cottage and I*

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am quite sure Mary will do all in her power to make you happy. The cottage was No 1 Black Lion Lane, Hammersmith where his mother and sister lived until their deaths' in 1818. Mary Wells was his greatly appreciated housekeeper. The cottage still exists opposite the Black Lion Pub.

1839 (4th September) Clark was in Pesth, having passed through Vienna and Pressburg, in expansive mood. He started off by being impressed by the wealth Baron Sina (the financial backer of the Pesth bridge) but then reflects that *This enormous wealth is in an only child, a son, in very bad health with a wife equally so, but they have two little girls and should they be spared their fortune will be enormous. But after all what avails riches without health to enjoy it, give me health, and the Devil may have the wealth.* This couplet set out his life philosophy. The son though recovered and outlived Clark, there is more on this under the 1842 letter.

He progressed to Pressburg¹⁵ where the Hungarian Diet was sitting. There he could discuss the bridge with Baron Sina and Széchenyi. It also gave him a good opportunity to acquaint himself with the political currents that were arousing a national consciousness that led to the building of the bridge: *The debates have been very stormy and the lower Chamber refuses to entertain any of the Royal Propositions until their grievances are redressed, knowing full well that it would be useless to expect redress, after the Government had obtained its end. They say that Széchenyi made a very powerful and liberal speech a few days before, and is universally beloved and spoken well of by all parties.* He also met Miss Julia Pardoe, the English travel writer, who sat in on the debates in preparation for her three-volume *City of the Magyar*, this is what she wrote: *During the summer months I talked lightly of the advantages of the proposed suspension-bridge of Mr Tierney Clark, thinking a vast deal more the effect would produce on the landscape, than the imperative necessity which existed for its erection as a matter of expediency and popular convenience; but at this moment, were it destined to be of the most unsightly instead of the most graceful links that ever bound the two shores together, I should most heartily pray for its existence without wasting one thought on its symmetry¹⁶.* Apparently Miss Pardoe was not impressed by Clark's design but still in favour of building it.

He had some time in hand to visit the mines at Chemnitz, a trip of over three hundred miles, but was again unhappy with the roads: *It is quite impossible to give you any idea of the badness of the roads except you imagine the bed of a torrent in some cases we could not make more than 1 English Mile an hour. Though notwithstanding we were more than compensated by the beauty of the scenery add to which the wild appearance of the Hungarian driver with four little pony like*

horses so thin that you might discover every joint in their system. But thin as they are their power of endurance is astonishing. He found the mines impressive and had great attention from the Count Schwitza a friend of Szechenyi with whom we dined ... entered the Mine at 336 ft. below ladders, then traversed about 8 miles of ramifications. Lead is the principle Mineral found, there is also silver and Gold but the latter is very scarce. At 356 f below the Mountain and in the Mine there is a water -wheel 36 f high for raising the ore, and in place of a rope they have 12 small wires twisted slightly and by the small metal thread we were drawn up 600 ft. The whole was altogether very interesting. On the return

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journey he could not help himself remarking: *a great many droll scenes, as the female peasants are very short indeed and they are not over particular about their person but more of this when we meet. It seems he criss-crossed this part of Europe visiting the Wimpfen springs (Baden-Württemberg) and the oak forests near Vukovar (in Croatia today) all considerable distances from Pesth. Finally, his thoughts turned to the 'Old Country': I got a letter from Hack yesterday in which he has given me an account of his proceedings at Ham/th particularly respecting the Reservoir at Barnes¹⁷. It seems everything is going on very satisfactorily, but he mentions that poor Mary has been very ill which grieves me very much for a more excellent person of her Class never existed. (this referred to Mary Wells, his housekeeper, see also Will). In the postscript he had yet another dig at the Germans: You can form no idea what a slow race the Germans are and the Transactions with the Government move with the pace of a snail (no doubt Germans and Austrians were lumped together in Clark's mind).*

1840 (10th September) finds him in Pesth again reporting on his visit to *the granite quarries in Upper Austria*. This was Mauthäusen of later infamous reputation as the site of a Nazi concentration camp. The rest of the letter, parts of which are missing, deals with engineering aspects back at the Waterworks. Granite slabs from this quarry, still in place, were used as hard facings on the piers against the onslaught of ice floes.

The **1842** (25th August) letter from Pesth had special significance: the day before the Foundation Stone was laid with great pomp, praise and presentations. Clark wrote to Knight with evident pride that *the coffer dam was fitted up in a most tasteful manner for the reception of 3 Thousand persons all gaily attired in their costume produced almost/splendid and striking spectacle. In the centre at one end of the dam was an elegant pavilion for the reception of the Royal family. On either side for the magnates and the high officers of state, the dam was as dry as your drawing room although the water was 25 ft above the spectators. Altogether it was a most imposing sight save and except your humble servant who had so much to do with so many great people all dressed in costly attire that I really must have looked very queer in plain clothes, but however I played my part in the best way I could. Before the ceremony commenced I had the honor of dining at the Palace with The Arch Duke Charles (who represented the Emperor), The Arch Duke Palatine and the whole Court consisting of 76 Grandees. After the Dinner was over the Arch duke Charles in the name of the Emperor presented me with a Gold Snuff Box set with diamonds and accompanied with a very complimentary speech¹⁸. The ceremony in the cofferdam followed the example set at the*

Hammersmith Bridge where the Duke of Sussex laid foundation stone the on 7th May 1825 (with Masonic honours). Miklós Barabás (Clark's portraitist produced an aquarelle on the spot and was commissioned much later, in 1864, by Sina's son to paint a large canvas showing over ninety individuals as attending (though it is known that some found their way onto the painting 'via negotiations'). The two Clarks on the left and James Teasdale (the masonry supervisor) were the only ones, as WTC noted, in sober professional suits representing the British expertise.

After a gap of four years in **1846** (3rd September, Pesth) he wrote complaining about

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catching cholera. Clark also mentioned writing previously to Mr Hack (who succeeded him after his death at the Waterworks, see also Will), indicating that more letters were written but were lost. He also commented on the heat back home: *I hope you and Mrs. Knight have not felt the ill effects of the great heat.* From 18th June for four weeks there were record temperatures in London (during this month the Corn Laws were repealed) so perhaps being absent then was not such a bad thing.

The **1849** (6th October, Pesth) letter is the last from the surviving series. Hungary was in turmoil after her defeat in the War of Independence. Clark wrote having arrived on the 21st September *after a very tiresome journey in consequence of Komorn not having surrendered we were to escape the balls and shells obliged to make a very great detour, which occupied three days over dreadful roads knee deep in mud.* The historic stronghold at the town of Komorn on south bank of the Danube (Komárom in Hungarian) was besieged by the Imperial Army and eventually surrendered on 27th September only a few days after Clark's detour. The general of the defending army was György Klapka who having received free passage came to England and lodged with the Jerome family who added the general's name as the *K* for their son: Jerome K Jerome of *Three Men in a Boat*.¹⁹ There is an interesting comment on the railways that by then had spread from England to the Continent: *My homeward journey will be less tiresome, as I do not intend to trouble the railways but as little as possible as some of the carriages are so badly constructed as to shake the brains out of one head.* He continues: *This place is greatly altered since my last visit scarcely a house without evident marks of a severe struggle from shots and shells. You see but few private carriages, all the rich having left for Vienna, but the most melancholy sight of all is the thousands of poor houseless creatures driven out by each party setting fire to the villages many of which we saw totally destroyed and the poor inhabitants living in the open air. So much for the rebellion as Kossuth's partisans begin to reel and now heap curses upon him. The other morning an enormous pile of his bank notes were destroyed in the market place by fire and they made a great blaze. We have plenty of soldiers, Austrians, Russians and Cossacks, but more of this when we meet over our peaceful fireside* (Kossuth was the national leader of the independence movement and an opponent of the man Clark admired most, Count Széchenyi). Eventually the bridge was opened on 20th November, by the Austrian General Haynau (the 'butcher of Hungary'), but Clark did not wait for it. He was deeply upset by the executions of those he knew well:

*Everything is in sad confusion as most of the leading nobles are proscribed and also some of their Ladies. Poor Count Louis Batthanyi was to have been hung this morning but during the night he cut his throat but not effectually and the report is that he is to undergo the sentence this Night. A Captain was shot this morning. Altogether the reports are very heart rending, but all is quiet under the Military rule which is very severe... I cannot write more I am quite unnerved as I knew the Count and his family well. It was Battyányi who in happier times signed the drawing that set the line for the eventual building of the bridge over the Danube.*²⁰

Thus ends Clark's reporting from his travels. He never returned to Pesth but kept up some correspondence with Adam Clark until 1851. There is, though, another curious letter

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with the same bunch written by an anonymous, semi-literate and disgruntled employee complaining about Tierney Clark. It was dated 1813 when Clark would have been heavily involved in reorganizing and upgrading the works and perhaps this upset some. This man wrote (unedited): *But it is all very well While it answers his Ends and the Company keeps him and his horse and Blck servent it all right Besides his gardner and fish ponds.* Having black servant, not unusual in 18th and early nineteenth century England, adds a small interesting detail to the Clark canon.

Clark's Death, Will and Beneficiaries

Clark died on 22nd September 1852 in the district of St Peter but buried in the modest parish Church of St Paul, Hammersmith (this church has been replaced by a large Victorian building, recently refurbished). The cause of death, as recorded in the Entry of Death, was *Carcinoma of the colon and kidney. Disease of the heart.* Clark's last year must have been one of serious illness and pain. The Times, The Gentleman and ICE's own Memoires (as noted earlier) published obituaries. As Clark laid on his deathbed he could have surveyed his life with some satisfaction: close at hand was his first chain bridge spanning the Thames; the waterworks were a success; the Buda-Pesth Chain Bridge gaining Europe-wide recognition; considerably wealth all achieved through sheer ability and effort; his close family and friends around him. He was a true example of what could be achieved, regardless of class, in Industrial Revolution Britain.

The examination of the **Will**²¹ reveals much.

Clark died in Hammersmith in the house provided by the Water Company²² The document was registered with the Prerogative Court of Canterbury Wills and states in detail which items, objects and shares he left to whom. In 1852 the Legacy was valued at Thirty-five thousand pounds²³, Clark died a well-off man (based on a multiplier of sixty this sum would be over two million today but it sounds too low when the whole Hammersmith Bridge cost forty-four thousand). There were twenty-one beneficiaries ranging from relations to friends to professional associates to servants.

The first in the list, to whom he left the assets worth the most, was **Elizabeth Mary Croker**²⁴ one of the daughters of Captain Richard Croker and Catherine Jane Bland.

Elizabeth lived in Chiswick with her mother, Mrs Bowerbank, right up to Clark's death. It seems that she was the person closest and probably looked after him in his declining years. Her sentiments are reflected in the wording of the marble tablet she erected in Clark's memory that can still be seen in the left hand aisle of St Paul's Hammersmith:AND THAT AMIABILITY OF DISPOSITION, AND GOODNESS OF HEART, WHICH ENDEARED HIM TO ALL WHO KNEW HIM. She was left the object Clark would have been the most proud of: '*the gold box presented to me by the late Emperor of Austria*'. The late Emperor referred to was the feeble Ferdinand and the occasion was the foundation stone laying ceremony of Clark the man and his contemporaries 11 9/12/10

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the Buda-Pesth Chain Bridge on 24th August 1842 referred to in his letter. She was also left shares in the Imperial Gas Company. Elizabeth Croker's inheritance was valued at almost nine thousand pounds or a quarter of the total. The most intriguing aspect has been the whereabouts of the Gold Box. I have spent a great deal of time searching for the box in Ireland on the assumption that it found its way there via the Croker's Irish connection. Eventually the box turned up in a Christie auction catalogue dated 2002 when it was sold to a private collector. On its lid is the Ferdinand insignia and inside there is an inscription in English to Clark. I have visited the collector in Rome and as a consequence he has agreed to lend for an exhibition in Budapest.

Next came two other Croker sisters, Caroline **Harriet** and **Ricarda**. Both were left shares in the West Middlesex Water Company (WMWC).

The fourth in the list was: **Bland William Croker** (Elizabeth's brother) who was left *ten shares in the said Company and my Silver Testimonial given to me by Howard & Co and all my professional books papers and drawings* (my emphasis). Bland William Croker has a comprehensive biographical note in the Biographical Dictionary of Civil Engineers of Great Britain and Ireland (by Mike Chrimes), which notes that subsequent to the completion of the Buda-Pesth Chain Bridge in 1849, on which Clark and Croker worked closely together, he was engaged by the Habsburgs in the 1850-s, first to work on military engineering, then on developing Austria's iron industry. He died suddenly near Graz in 1871. The likelihood is that Bland William Croker left all of the books papers and drawings in Clark's Hammersmith abode for safe-keeping. The house has been identified from a contemporary map extrapolating its position from Clark's Death Certificate; the map indicates a fountain in the garden. Croker, like Clark, died childless. After 1855 the Hammersmith Water Works were closed (as new settling tanks were built near Hampton) and it was perhaps a combination of Croker's neglect and the eventual redundancy of the house that led to the loss of the archival material when it was demolished. In two years of searching I have not found a single paper or book that would have come from this legacy; nor is there any reference in thoroughly researched monographs published by Dennis Smith and Judit Brody⁽²⁸⁾. Therefore, unless, a startling discovery comes to light, we have to assume they have been lost.

Next came a brother, **Charles Croker** who was also left shares.

Then **Mrs Bowerbank**, née Catherine Jane Bland, mother of the Croker siblings, who

on becoming a widow married the Rev. Bowerbank of Chiswick. The Clarks and Crokers were closely associated with this area. She was left shares in another water company, the Grand Union.

Mr John Horn Clark was left shares in water companies. He was probably a brother as he was left *also all my clothes linen and wearing apparel*. Such personal items would have only been left to a very close relative.

Miss **Ann Walker** (3 Prospect Place Dorking in the Will) was very important to Clark having been left assets worth over two thousand pounds of value made up of the silver inkstand presented to him by a Russian Count and all his shares in the London and North

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Western Railway Company (so far the inkstand has not come up for auction). A Death Certificate has been found placing her in Dorking (Surrey), dying there in 1882 aged 67 (so born in 1815). She was not a relative and lived a long way off so what was the Walker connection? D Smith mentions in his excellently researched monograph that the Water Company appointed an engineer called Ralph Walker who resigned in June 1810. A more likely candidate was a Thomas Walker mentioned in the St George-Bloomsbury Baptismal Records as the father of an Ann Walker born in 1815. His trade was stated as *turncock*, a recognised job of someone who operated the water valves in the early years of the steam engines. He was named in the Water Company accounts of May 1811 as one of the proprietors. A *turncock* could readily be associated with Water Works and Clark could have met him this way long before Anne Walker's birth. The likelihood is that the parents asked him to be her godfather, a long-term commitment then.

Next came **Matthias Hooper Knight** and his wife. Mr Knight was the Clerk to the West Middlesex Waterworks and the person Clark reported to as mentioned in an earlier chapter about his letters. Mrs Knight was left *a pair of pictures by Watteau* valued at fifty pounds and some Bohemian glass! There were three Watteau painters so we do not know, which of them painted the pictures. The most famous was Jean-Antoine (1684-1721), the two others are known as the 'Lille Watteau-s'. All three painted highly romantic paintings - not quite the taste expected of a practical engineer. There are no references to any other pictures in the Will.

The two executors, **James Rennie** and **Arthurs Mee**, were left shares and fifty guineas each. James Rennie of the Rennie clan was a Scottish naturalist who moved to London in 1821 and must have been a member of the Rennie clan.

James Patrick Mee (1802-1868) was an architect who lived locally but apparently practised from Regent Street. Trained by Sir John Soane he was one of the earliest members of the RIBA (1835)²⁵. Mee, who travelled widely, also collaborated unsuccessfully with an architect from Hamburg for the rebuilding of the Royal Exchange in the City. Mee also built a rather fine Regency style villa in that German city. He produced some exquisite, highly realistic drawings of the Hammersmith Suspension Bridge one of which was transferred into a lithograph²⁶. It is possible that Clark and Mee worked together, the relationship must have been friendly to be appointed executor. Thus Mylne and Mee were two architects close to

Clark.

Adam Clark²⁷, is described as *superintended under me the Works at Pesth*. The two Clarks had a decade long correspondence during the building of the Chain Bridge. At the beginning their relationship was sometimes fraught but they eventually warmed to each other and after several years Tierney progressed from addressing him from *Dear sir* to *My dear sir*, but that is as far as it went. On the other hand Bland William Croker and Adam Clark exchanged friendly and informal letters that often touched on matters other than building the bridge²⁸. The two Clarks were on opposite sides when it came to the Hungarian War of Independence. Adam Clark returned, settled down and his descendants still live in Hungary. The paltry five shares

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may be a reflection of their cool relationship, but the remembrance of Adam in the Will shows Tierney's generous nature.

James Teasdale was a contractor who specialised in stonework. He and Clark originally worked together on the Shoreham Chain Bridge in Sussex for the Duke of Norfolk. Clark must have been impressed as he invited Teasdale to Pesth where he was second in command to Adam Clark. Teasdale also settled with his whole family in Pesth and Teasdales live in Hungary to this day.

Mr Hack (William Broughton)²⁹, Mr Hall, Mr Whiffin, Mr Jones were all connected with the water works and nothing is known about them. Mr Hack succeeded as engineer upon Clark's death.

Mary Wells was not only housekeeper to Clark but seems also to his sister Harriet, who left her a yearly income. She was well rewarded having been left the copyhold of No 5 Hammersmith Terrace, which is still one of the elegant houses on the Thames waterfront. Harriet Clark who died in 1818, shared a house with their mother in No 1 Black Lion Lane, so Mary Wells had been in Clark employ for four decades.

Finally Clark left ten guineas each to his servants, who are only identified as Ann and James. A later version of his Will omitted the word Servants (?).

There are no references to any pieces of furniture and it can only be assumed that the Water Company provided a fully furnished house for its chief engineer.

An Appreciation

What kind of a man was Tierney Clark and had his private life any bearing on his civil engineering works? This is a question asked about for anyone of achievement whose life is pored over. Can any connection be made between Albert Einstein being a rather neglectful father and the Theory of Relativity, or between Roosevelt's polio and the New Deal, or between Bertrand Russell early losing his parents and his Principia Mathematica, or Clark's bachelorhood and the neo-classicism of his bridges? Probably not, still they are of interest in forming a view of the complete person who excelled. There is nothing in Clark's life that would especially arouse our interest had he not built his fine suspension bridges. But how he fitted into his time, his observations, contacts, his letters (rather stiffly written) widen our

understanding of the period and the man. The period, the Industrial Revolution, had in Clark had one of its most able practitioners.

His was certainly conservative in his political outlook. In one of his letters to Adam Clark he made scathing remarks about the Chartists³⁰. The time after the passing of the Reform Act in 1832 was a turbulent period in England and there was even concern that the country could turn away from the Monarchy. Power was shifting from the aristocracy to the newly wealthy factory owners and the industrial working class was becoming restless for political influence; there were violent clashes with authorities and frequent demonstrations. Clark's views were a reflection of Tory attitudes; it can safely be assumed he voted for them.

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He was against the aims of the Hungarian War of Independence but then that was Palmerston's official policy³¹ in its support for Austria as a bulwark against Russia. In one of the letters to Knight he called Kossuth's soldiers *partisans* though they were part of the Hungarian Army fighting under a properly constituted government. His client, Barron Sina was based in Vienna, where he met the Committee and his remunerations would have been paid. Taking the Austrian side was a combination of self-interest and his conservatism. Civil engineering projects are long-term practical activities, which favour political stability; completing the Buda-Pesth Chain Bridge in the middle of a war of independence would have been anathema to Clark. This was hardly in line with one of the obituaries, which noted that *his life was not one of excitement*³².

It is difficult to know whether he had any romantic involvement. Clark died a bachelor but as revealed in his letters he was certainly not indifferent to the opposite sex. It was not uncommon in the nineteenth century for men to remain unmarried even if they could afford to support a family. William Telford also died single and explained it by saying that moving around the country frequently made it hard to settle down. A man of Clark's standing and income could manage perfectly well without a spouse: his housekeeper, footman and maid looked after his everyday needs and paying women for pleasure was a common practice in the early 19th Century - several throwaway comments to Knight indicated he was not averse to paying. Whether Clark ever drew up a *Marry or Not Marry* list, as Darwin did, is not known but he must have weighed the odds as any bachelor would have but, unlike the naturalist, he did not come to the conclusion: *Marry, Marry, Marry*.

Clark was a determined man who was not afraid to dissent. He had a protracted disagreement about the setting out of the Alford Canal; he wrote his own report on the stability of London Bridge separately from Telford and Walker; as noted he had an often fractious

relationship with Adam Clark; he even had a quarrel with Count Széchenyi when one of the chains broke over the Danube bridge in 1848. To carry through civil engineering works with all their risks and intense competition a breed of strong-willed engineers, such as Clark, were needed. Telford, Rennie, Boulton, Watt and many of Industrial Revolution England were self-made confident men and Clark fitted the mould. Clark was an example of

the enterprising British engineering diaspora³³. Besides the Danube Chain Bridge he also designed a bridge for St Petersburg (not realised, no drawings of it have come to light). He was also engaged in his last years to build the waterworks for Amsterdam, which were eventually completed by Bland William Croker.

Clark's ability and his web of contacts can be gauged from his role of engineer at the West Middlesex Waterworks. The Company Minutes indicate that in a matter of four years (from 1807) three engineers, William Nicholson, Ralph Walker and John Middleton, had to resign for coming up short of the expected standard. John Rennie was called in to adjudicate between the latter two and on examining the works recommended Clark as replacement. He was duly engaged in January 1811 to be the next engineer for the remainder of his life.

Moreover he was able to perform these duties beside his burgeoning private civil engineering

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practice. Clark's work for the Water Company was equally as important as his building of bridges having helped to provide the water not only for drinking to a large segment of London's population but also to wash away the sewage that was such a problem for public health. In 1823 he was elected to membership of the Institute of Civil Engineers presided over by Telford in competition to Rennie's Society of Civil Engineers (later amalgamated). In Industrial Revolution Britain the same firms often crop up. Boulton and Watt supplied the pumping engines for the Waterworks; Clark recommended Colebrookdale (where he learnt about iron manufacture) to supply the cast iron pipes; Hunter and English for millworks who later manufactured the chain-frames for the Buda-Pesth Bridge; George Burge of Hern Bay worked on St Catherine's Docks and later on the cofferdams at Pesth. What impresses on reading the Company Accounts of the Waterworks was how well the enterprise was governed. If there was a problem they dealt with it (e.g. forming a secret committee to report on the mismanagement of the first three engineers). The Industrial Revolution advanced on all fronts: science (called philosophy at the time), innovation, manufacture, institutions, banking, insurance, governance of companies and the protection of patents. Clark was an integral part of this modern age, enabling him successfully to transplant the expertise that spanned the Danube.

In his private life he showed genuine concern for those close to him. Towards Count Széchenyi and his family he displayed real affection in his letters. In his Will he left shares to a whole range of people who were merely professional associates which indicates a man of loyalty. The portrait painted by the Hungarian Miklós Barabás in 1849 shows a man in the rather stiff pose of such representations: a reserved, mild-mannered gentleman with a strong chin in the sober suit of the time¹⁸.

*

Clark's engineering and neo-classical architecture reflected his social conservatism: he avoided the radical but was capable of innovation to overcome specific problems. The robustness of his designs, particularly at Pesth, showed that he erred on the side of safety. The bridge stood up to the loading of an army on the march in 1848-49; even the

bombardment caused little damage. His use of chains for suspension bridges was eventually found not to be the way forward. The Fribourg suspension bridge (1834, Switzerland) was already supported on cables before the Pesth design even started; he visited it and did not like it³⁴. But, then, the Fribourg has been demolished and two of Clark's chain bridges still stand. Equally, the use of massive stone arches with their restrictive openings were overtaken by slender iron columns, which offered much less obstruction to traffic.

He lived through the critical period that heralded the modern age: the steam engine providing power anywhere; mass production with its reliable accuracy and repetition; the beginning of electric telegraphy (1851, between England and France); the first challenges to the omnipotence of the divine (Darwin), power shifting to the new middle class; the mass movement of populations to the towns; frenzied interest in science and innovation. When Clark was in Coalbrookdale, at the dawn of the 19th century, rails were parallel planks of wood

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guiding horse-pulled carts. When he died there was a railway network of 7300 miles for steam engines. He was well aware of the new age, writing to Széchenyi in 1836: *we are all railway mad here*. All the same he never had a commission for any of the myriad civil engineering works for the new mode of transport. His excellence was in combining engineering and architecture in elegant bridges - by refining and stretching the design and material advances of his time – in a way that has rarely been equalled. This quality has been recognised by later generations who have gone out their way to preserve the bridges over the Thames and Danube.

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Notes

1 The Budapest History Museum (BTM) holds the 'Adam Clark Archive', which contains the two Clarks' correspondence and much else besides. The Hungarian Academy of Sciences (MTA) has Clark's letters to Count Széchenyi from 1832 onwards and the Count's drafts to Clark. The Hungarian National Archive (MOL) is the depository of the Chain Bridge drawings and some vital documents. All such letters came from WTC as none of the replies have survived in Hammersmith.

2 Journal of Engineering History and Heritage

3 Royal Society: EC/1837/18.

4 Which he passed, his report is one of the few surviving Clark documents in this country.

5 A good copy is kept in the ICE Library.

6 MTA K/203/42 - 13/10/1837.

7 RS Journals Volume 48

8 London Metropolitan Archives: ACC 2558/WM/A/23/

9 Széchenyi István Napló, 1978 Gondolat, Budapest

10 1824 Kettenssteg, over the Pegnitz River in Bavaria.

11 Karl Fredrich Schinkel travelled to England and Scotland in 1826 and was an honorary

- member of the newly set up Royal Institute of British Architects.
- 12 It somehow escaped the WWII bombardment and can be seen in front of the Alte Museum.
- 13 The Casino was a gentlemen's club based on the London model but more politically orientated.
- 14 The transcription dates his arrival for the 21st but SzD records the 30th August, which being a day to day account must be correct.
- 15 In Slovak Bratislava, in Hungarian Pozsony.
- 16 Published by George Virtue in 1840 it included a lithograph by George Hawkins of Clark's bridge design, well before it was built, thus in advance making it known to the British public: Vol. III. p 262.
- 17 Two Reservoirs were constructed of an area of 8 acres each
- 18 A detailed report appeared in the Times dated 25th August 1842, appeared on 5th September.
- 19 The author's tombstone is in the graveyard of St Mary, Ewelme, Oxon. with his full name of: Jerome Klapka Jerome.
- 20 Kept in the Hungarian National Archives: T14-34/IV/19 signature dated 27.9.1838
- 21 In National Archives: Probate: 11/5/159 (kindly transcribed by Anne Wheeldon of Hammersmith and Fulham Archives)
- 22 As per Certified Copy of Entry of Death given at The General Register Office. Application number: B 002512/A. (The house has been identified with the help of AW as above).
- 23 National Archive/ Public Record Office: IR 26/1927 IC842.
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- 24 In the 1851 Census she was recorded as 29 years of age.
- 25 As recorded in the Royal Institute Proceedings of that year, kept at the RIBA Library.
- 26 London Metropolitan Archives: SC/GL/WAK/H2.
- 27 Török et al: The Széchenyi Chain Bridge and Adam Clark, 1999 City Hall, Budapest..
- 28 All such letters are kept at the Budapest History Museum in the Adam Clark archive.
- 29 Denis Smith (see later) records that on Clark's death Directors of the Water Middlesex Water Company appointed W B Hack as Resident Engineer and given *'the use of the house occupied by the late Mr Clark.* Hack is mentioned several times in Clark's letters to Knight. And Brody J (1988) *The Chain Bridge at Budapest* Technology and Culture Vol. 29. No 1.
- 30 Letter at Budapest History Museum: BTM 72/172 6.4.1848.
- 31 Sproxton, C: Palmerston and the Hungarian Revolution, 1920 Cambridge.
- 32 ICE Memoirs 1852, p 153.
- 33 Buchanan, R A: The Diaspora of British Engineering, Technology and Culture Vol. 27 No 3 (July 1986) pp501-524.
- 34 As in letter to Szechenyi dated 15th February 1836: Hungarian National Academy Archive K/203/38.