

CHARLES RICHARDSON, CIVIL ENGINEER, IN GLOUCESTERSHIRE 1835 – 45

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Although he was born in Cheshire Charles Richardson (1814 – 1896) came to regard Gloucestershire as his adopted county and passed most of the last forty years of his life in Almondsbury and Bristol. His father, a Chester silversmith with a country estate at Capenhurst, died in 1822 when Richardson was eight years old and by 1835 his mother had settled in Clifton, Bristol at No. 1, Windsor Terrace, (1) perched above the River Avon. Richardson had been sent to school in France and afterwards attended Edinburgh University, but clearly regarded Clifton as his home even when his peripatetic civil engineering life precluded frequent visits. It was therefore understandable that he should be content to settle near and eventually in Bristol after 1858 when more fully established in his career, especially since the Severn Tunnel project occupied much of his attention for two decades after the mid 1860s.

Pupillage, Excursions and Early Field Experience 1835-36

We have a significant amount of information about Richardson's life and the early stages of his career between February 1835 and July 1838 because his manuscript journal covering this period came to light in 1998 and was generously made available for study by its present owner (2). The main purpose of this article is to indicate the value of this journal in giving illustrative details of the projects in which its author was engaged and in providing an outline of the early stages of a civil engineering career. In 1835 Richardson was a pupil of Isambard Kingdom Brunel, having apparently left Edinburgh University the previous year without taking a degree in order to embark upon his new career. At twenty years of age he was making a comparatively late start in pupillage. When the journal entries began in February 1835 Richardson was based in Brunel's Parliament Street offices in London, (3) but before being assigned to practical experience on his master's projects he made a number of excursions, often in the company of Brunel and other pupils.



Portrait of Charles Richardson

The first record of one of these trips occurs in April 1835 when Brunel took Richardson and another pupil called Bird to Northleach for what may have been their first experience of levelling as a surveying technique. Beginners' mistakes and inaccuracies were cheerfully admitted:

"...lost my way many times & got through a mile and a quarter in about 6 hours...

Levelled a mile up the road, as also did Bird – found a difference of five feet

between us – levelled the same way back again but found myself altogether wrong."

There is no indication of any tuition or supervision from Brunel on this occasion. He may well have left his pupils and taken the opportunity to assess the suitability of the terrain for railway routes through the Cotswolds between Cheltenham and London. A southern route through the Stroud valleys was probably already favoured as Stroud was their next destination. On the way from Stroud to Cirencester

Richardson and Bird again practised their surveying along the line of the Thames and Severn Canal and its Sapperton Tunnel, but with little improvement in proficiency.

Brunel again took Richardson with him to Stroud early in July 1835 but Richardson's description was all about the rigours of travel and with no explanation of their business.

"Went along Canal to Stroud – sent Carriage round – it stuck in a quag & broke two traces – one horse completely [k]nocked up – we had to hold back the carriage behind when going down hill. Hurt my foot in running after a pig..."

The carriage in question was Brunel's famous 'britchka' or modified travelling chaise, nicknamed 'the flying hearse' (4). During their overnight return from Stroud to London Brunel and Richardson conversed in French, his facility in that language being one reason for Brunel's high regard for him.

It is likely that Brunel considered Richardson's Bristol connections in assigning him to the team at work on the western end of the Great Western Railway (GWR) in October 1835. During the spring of that year Richardson had attended more than thirty sessions of the Parliamentary Committees as the GWR Bill passed through both Houses so he would already have felt closely involved with the project. Until June 1836 Richardson helped to erect staffs and follow up the preliminary survey with a more thorough exercise while ground proving and pegging the route. The surveying party was based at the White Hart in Brislington until January 1836 but some time before then had ranged ahead further into the Somerset and Wiltshire part of the route. Richardson was eventually posted to Corsham and from there did preparatory work on the line of the Box Tunnel until William Glennie took over. George Edward Frere, who had members of his family living in Bitton, was resident engineer in charge of the party and Richardson worked on this with a number of long-term Brunellian colleagues such as George Thomas Clark, Berkeley Claxton, Herschel Babbage and Thomas Marsh. Brunel himself made occasional visits at unpredictable hours, once at 4 a.m. Richardson availed himself of the opportunity to visit Clifton on Sundays and in fact spent much of November 1835 there recuperating after an injury sustained in the field.

- July 1 Sunday - Went to Oaksey Church - found there was no service - Walked, with Williams, to Bradon Pond & had a bath - Returned to Flintham Cowley came - gave him instructions - Sent half-widow to Town - B, Flintham - L, Williams, Do - D, Do - S, Do. (Fine - W, SSE.)
- 2 Cooper & Cowley came - gave them instructions, Cooper to begin marking out the line at Swindon - Williams made tracing of plan at Minety - Sent it, with letter to, to F Clarke - Had M. Witham the remaining ballance - Had some leaping & in evening - B, Flintham - ^{L, W, Do -} D, Williams, Do - S, Do. (Very fine & warm - W, SW.)
- 3

The last entries in the journal, July 1838

On his return to Bristol in June 1836 Richardson was sent to work until September on the early stages of the Bristol & Exeter Railway, helping William Gravatt with the detailed survey through Bedminster and Long Ashton as far as Weston-super-Mare. This stint included a short secondment in late August to the Clifton Bridge at a critical time when the temporary bar was being hauled across and the ceremony of foundation stone laying for the Leigh abutment took place (5). A second attempt was needed to secure the bar on the 7th September. After Richardson had worked all day at the Bridge Brunel informed him that he was to proceed to Gloucester as soon as possible to begin a long association with the Cheltenham & Great Western Union Railway (C&GWUR).

Richardson's work on the C&GWUR fell into three separate engagements, each time of increasing length. His first lasted for most of September and October 1836. On his return in January 1837 he stayed until August of that year and then, after spending the autumn mostly in South Wales, he rejoined the project in January 1838 and remained until the completion of the line in 1845. Until the end of 1837 Richardson was an unpaid pupil of Brunel. It was not unusual for a pupil nearing the end of his term to do the same tasks as a salaried assistant engineer but in Richardson's case his work on the C&GWUR during this period was virtually that of a resident engineer. He directed a team of workers, paid the men, liaised with landowners and prospective contractors and ordered supplies. George Hennem, a freelance engineer and surveyor often favoured by Brunel, was sometimes on hand to help and give advice but there were times when the directors of the C&GWUR were unsure who was in charge and whom to ask about the progress of the work. According to their minutes for 25th October 1836:

“Several inconveniences having arisen from a want of immediate information as to the actual residence of the superintendent of the general survey...”

they requested that Brunel should put them in touch with Hennem and induce him to attend the next meeting. Brunel had earlier been candid with the directors of the GWR about employing pupils as assistants but he may not have been anxious to explain this ambivalent situation to the C&GWUR directors because it would make clear his low priority for their line. In his private diary Brunel confessed that he did not “feel much interested” in the C&GWUR project and that he “wanted tools” for it. Both of these factors may account for the extraordinary level of responsibility his pupil Richardson was given. During his second stint on the line in the spring of 1837 Richardson actually met and had dealings with several directors and seems to have inspired enough confidence for his status not to be an issue.

In the course of his first spell at Gloucester Richardson supervised the erection of a line of staffs from the Lansdown area of Cheltenham as far as Stroud.

21 October 1836. “Got up Stroud depot Staff & hoisted colours to a large body of admirers.”

The first staff was put in near the Lansdown Inn and the second a little way from the Pheasant at Staverton. Journal entries were vague about the precise location of others but there were evidently staffs near Barnwood and at Robinswood, Colethrop, Standish, Stonehouse and Cainscross. The greatest height quoted by Richardson was 85 feet, though this would include the 6 ft. of butt below the surface as well as the 5 ft. of butt above ground into which the main staff was spliced. Crosstrees and guy ropes on the staffs were also frequently mentioned. Between Stonehouse and Stroud he resorted to fixing smaller staffs into trees.

Return to the C&GWUR January 1837

At the end of October 1836 Richardson had been abruptly transferred to Rotherhithe to work for Marc Isambard Brunel on the Thames Tunnel. He did not particularly enjoy this experience but no doubt the knowledge of sub-fluvial tunnelling which he gained influenced his direction

of the Severn Tunnel project much later in his career. However, on being given a choice in January 1837 between staying at Rotherhithe on a salary and with the prospect of promotion or returning to the C&GWUR still as a pupil he chose the latter option without hesitation. A short time after his return to Gloucester Richardson moved into an engineer's residence at Barnwood leased by the directors, (6) so it seems that they now understood that he was in charge and would have appreciated not having to pay him a salary since the project was always short of funds at that time. When Robert Pearson Brereton was sent to Gloucester in February Richardson, as the senior pupil, was expected to act as his mentor.

An important part of Richardson's work was the procuring of materials. He bought poles, spars and blocks from timber yards in Gloucester Docks. His first contact there was with 'Mr. Francillian', probably Thomas Francillon the Dock Master or his brother John, a ship broker and wharfinger (7). Soon he was also transacting business with William Hunt, boat and ship builder, ship owner and timber merchant, and John Forster, another timber merchant and ship owner. In March 1837 he ordered spars for sheer legs from a third timber merchant, James Shipton. By this time Richardson was looking to acquire a wider range of materials, especially bricks and stone. At the C&GWUR directors' meeting on 1st February he had met William Henry Hyett, (8) the chairman of the company at that time, who gave him a note of introduction to the foreman at Painswick Quarries. Before following this up he went to Cheltenham to consult Henry Lucy about brick prices and Parker, the Leckhampton Quarries agent, about the prices of stone. Richardson also made enquiries about brick prices from a different Mr. Hunt and from Thomas Werrett of Cheltenham. In March he was still ascertaining the prices of bricks in Stroud and of stone from Birdlip Quarries. The journal also records dealings at Gloucester Docks with Messrs. Bird and March, ship chandlers and ship agents, ordering a burgee flag from them featuring the initials CR for 'Cheltenham Railway,' to put on top of a staff. This firm may well have supplied him with rope. The 'rock powder' Richardson bought from Mr. Bishop of Stroud on three occasions in the spring of 1837 would have been used at Sapperton, where work started in February, as was the windlass he ordered on 23rd March.

After his return to Gloucester Richardson's main task in that area was to superintend the excavation of a series of eight pits for ground proving. The first six were marked out within a week working southwards from Lansdown at Cheltenham and two others were planned at Haresfield and Colethrop before the end of February, the Haresfield pit in consultation with Daniel Niblett the local landowner. Measuring the brooks and waterways along the route was another concern. Until August he liaised with G.T. Clark at the London office to whom his weekly reports were sent (9). When Clark visited Gloucester on 10th and 11th February they looked at the ground for the proposed Cheltenham Terminus (10) and also went to Sapperton where operations were soon to begin. By 3rd March the pits between Cheltenham and Colethrop were finished and the gangs who had worked on them were sent to Sapperton. Specimens from the pits were being gathered and sorted a month later. The next concern was to prepare specifications for the construction contracts to be let in consultation with Clark who paid another visit to Gloucester for the purpose. For two months between late April and late June a number of references appear in Richardson's journal to trial borings for gravel in the Cheltenham and Gloucester sections. Benjamin Chard, Richardson's favourite ganger or 'factotum,' was put in charge of this operation but no indication of its results appeared in the journal. The staffs erected during his first spell at Gloucester were now only occasionally mentioned in passing except for a more detailed description of a new one, 85 ft. high, at the recently acquired engineer's residence cum office at Barnwood. This was more likely to have been to publicise the company than as an aid to surveying.

Management Problems at Gloucester

There are some illuminating insights into the nature of Richardson's management tasks at Gloucester during these months. An unspecified problem arose with 'Baker's gang' at Tuffley which led to all except two of the men being turned off. Some prospective contractors were just as unsatisfactory:

"Three men called about the Contracts, in a state of intoxication – they fell asleep while Manning read the specification to them."

"Met Mr. Kemp on the Road (11) – he offered me £100 or more if I would favour him in getting the contract – and offered to put a bill to that amount in my hands at once" (12).

Landowners and farmers were another potential problem. A Mr. Werrett (perhaps the brick-maker of Gloucester Road in Cheltenham) refused in mid-March to allow the men to proceed with their triggings and could not at first be induced to relent by a letter from Richardson. A week later a similar episode occurred:

"Five Farmers wrote a note warning us off their lands ... Walked to Churchdown common field before breakfast – found no men at work & the triggings left there – on returning I met Chard who told me Mr. Lawrence & another farmer had taken the men off the ground (13). Met Mr. Lawrence & seven or eight more farmers and had a talk with them & settled the whole business amicably & they ended by inviting me to a glass of cider &c. Mr. Lawrence was in a tremendous rage with Chard before my arrival."

There were times when farmers had reasonable grounds for complaint and Richardson's diplomatic skills needed further exercise. In May one of Chard's gravel boring shafts collapsed;

"Walked to Mr. Jones's at Tuffley (14). He & his Father jawed at me for some time & ended by asking me in to lunch – walked with him to see the shaft that had fallen in.

Gave Chard directions to draw the planks out of it."

On this occasion Richardson did not entirely succeed in defusing the situation since the matter was brought to the attention of the C&GWUR directors.

Throughout this period between February and August 1837 shortage of money overshadowed the progress of the project. The February directors' meeting apparently allowed Richardson £200 worth of credit in each of two banks, the County of Gloucester Bank in the county town and Cripps's Bank in Cirencester. Two of the sons of Joseph Cripps M.P. were connected with the company; Raymond was a director and Henry a joint treasurer. Richardson usually made withdrawals of between £20 and £50 at quite regular intervals but on the 8th March began to refer to shortage of money in the journal. The next few withdrawals were noted as being on credit and at one point he accepted a loan of £50 from George Hennessey to tide him over. A temporary improvement in the situation coincided with a visit from Clark, though Richardson does not make clear what, if anything, his colleague did. Just after this he was able to withdraw £75 on the old terms and give the employees their overdue pay, and then £130 which was evidently used to settle bills including that of Mr. Forster the timber merchant. The company was a slow payer of bills as was shown when William James Bebell needed to remind Richardson about the payment of a bill owing to his uncle, William Hunt the timber merchant. Bebell was probably used as an intermediary because he was on friendly terms with Richardson and sometimes went swimming with him. At this stage Richardson preferred to do his banking at Gloucester although the Cripps family encouraged him to call on them if he was in difficulty. The half-yearly meeting of the C&GWUR in May allowed him another £500 and for a while the complaints of shortage of money ceased. On 1st August, however, Richardson drew up the accounts and "brought C&GWUR Co. & myself to have, each, about £18 in the Bank." This was more serious for the company than for his personal situation since he possessed considerable invested wealth. By the middle of that month he was instructed to cease operations in Gloucestershire because of the financial situation.

Sapperton and South Wales, Spring 1837 to January 1838

Richardson had been working more closely with the directors and officers of the C&GWUR than during his earlier deployment. The Cirencester Quaker and wine merchant, Thomas Crowther Brown involved himself in the project more than other directors and was thus a useful contact. He also had more extensive dealings with officers such as Arnold Merrick, the Secretary and Charles Lawrence, one of the solicitors acting for the company. Both were from Cirencester where support for the C&GWUR was perhaps the strongest at this stage after the fading of enthusiasm in Cheltenham. Richardson paid one recorded visit to Joseph Watts, the Stroud brewer and politician who was a nominal joint treasurer, with a letter of introduction from Captain Christopher Claxton, (15) but otherwise had little to do with the Stroud directors. His colleague Knight appears to have been based in Stroud, probably surveying in the local valleys since on 6th May Richardson consulted him about heights above datum. Brunel largely left C&GWUR matters to G.T. Clark and Richardson did not see or communicate with him between the directors' meeting on 1st February and the half-yearly meeting on 3rd May. It was only then that Richardson learned that Mr. Kemp, the unsuccessful briber, had complained about him and he was able to give the chief his side of the story. It was at this point that Brunel told him that the completion of the Sapperton pits would be let out to contract. From 27th June until the 4th July Richardson was in London. There was limited consultation with Brunel and he was required to record progress at Sapperton on the plans at Duke Street but much of this time seems to have been spent in pleasant reunions with colleagues and expeditions to the National Baths off Westminster Bridge Road. George Hennet, the other possible source of help and guidance, was seen no more frequently than Brunel, though while in London Richardson obtained "the height of Tunnel [presumably Sapperton] from him on the Section" (16).

As the spring of 1837 progressed Richardson had spent an increasing amount of time at Sapperton working on the proposed line of the tunnel (17). This was the originally planned route closer to the village, not the one finally chosen which adopted a straighter course. As in the Cheltenham and Gloucester sections he was overseeing the erection of staffs and the excavation of pits accompanied by pegging and the taking of levels. He was fortunate in encountering a relatively well-disposed landowner in the 4th Earl Bathurst, whose attitude was more positive than that of Robert Gordon of Kemble. Richardson occasionally encountered the earl, negotiating with him over the location of pits and answering his questions. To preserve good relations he agreed to use C&GWUR resources to survey a road deviation the earl desired at Kill Devil Hill near Cirencester. Most of his dealings regarding the Bathurst estate were, however, conducted with Robert Anderson, the earl's agent.

Operations were gradually transferred from Gloucester and Cheltenham to Sapperton and Richardson needed to travel frequently from Barnwood to Sapperton to oversee developments there. He usually took the *Alert* coach from Gloucester to Stroud, (18) often spending the night at the George before completing the journey by mail coach. Sometimes, however, he rode on horseback and occasionally he walked the whole way. Supplies and equipment had to be transferred from Gloucester. We have information about two such journeys, one by waggon and the other a load of planks sent from Gloucester Docks to Sapperton by canal, ordered on the 17th April and arriving on the 20th. On a visit to Sapperton in February Richardson examined 'openings' there but the pit sites were not marked out until early in March. There were eventually six of these, apparently three either side of a large staff which was raised on April 27th. This event was described in some detail.

"Got hauling pegs &c driven – got large Sheer legs up & had some difficulty to get the hauling parts in the right place. The Staff had a violent shake when first lifted off the props. Raised it easily, steadily & without the slightest accident – large crowd of spectators many of whom lent a hand. Tried several ways of getting up the Staff but

was forced to climb up by the main hauling rope. Tightened crosstree-gyes and plumbed the head of the Staff thereby. Cast hauling Tackle adrift & was lowered down. Tightened the gyes but was forced to put a sheepshank, about a yard long, in each.”

A smaller staff was mentioned as having been located at the end of the Broad Ride. Richardson was very aware of the nearby canal tunnel and wanted to learn as much as possible about it. Mr. Crowther Brown supplied him with sections of the canal tunnel shafts and shortly afterwards Richardson was lowered down the deepest one, getting very wet for his pains. When he was taken through the tunnel by one of the friendly Kimber family the small vessel suffered a minor collision with a working boat. By 17th June the contracts for completing the excavation of pits had been let and the focus during the remaining time before work was suspended was on pegging out the projected line and taking levels, though rising water in some of the pits was an unwanted distraction.

Richardson was mostly in South Wales from August 1837 until January 1838, though he also paid some visits to Dudley. In both cases the task was the same; he had joined a team of engineers and surveyors who were inspecting the quality of rails being produced for Brunel by the firms of Harford, Davies & Co. in Ebbw Vale, Josiah John Guest at Dowlais, Bailey's at Nant-y-glo and, at Rowley Regis, the Corngreaves Works of the British Iron Company. Before his return to the C&GWUR his term of pupillage had expired and Brunel intimated to him that he would be promoted to resident engineer and put in charge of the section of line from Cirencester to the junction with the main GWR line at Swindon. It is noticeable that despite his new status and salary of £300 per annum many aspects of the pattern of his activity in the previous eighteen months did not change. Late in January 1838 he was in London consulting the Duke Street assistant, Frederick Clarke, (19) about the plans for his section, purchasing a theodolite and ordering 'curving instruments' from Troughton & Simms, (20) recruiting surveyors to work for him and poaching Andrew Crawford, an old friend from his Thames Tunnel sojourn, to be his assistant engineer.

Resident Engineer, Cirencester to Swindon January to July 1838

The C&GWUR was now anxious to complete a section of line which would provide a rail link between Cirencester and London in order to generate revenue to help with the costs of construction of the rest of the route. Brunel was now much more interested in proceedings and Richardson communicated with him regularly rather than with a designated assistant, though Frederick Clarke seems also to have had a role. In addition, Richardson had visited London three times before the end of the journal on 2 July 1838 and had consultations with the chief on two of these. (The third was an "all hands to the pump" exercise to assist at the opening of the first Paddington Station at the beginning of June). George Hennet was also still available for an occasional consultation both in London and in the field. Furthermore, being based in or near Cirencester enabled Richardson to work more closely with the officers and some of the directors of the C&GWUR; in particular Charles Lawrence, Arnold Merrick and Raymond Cripps were frequently mentioned during this period (21). He and Crawford also received social invitations from the Lawrence and Cripps families. Operations in Gloucester seem to have been left in abeyance for the time being; the engineer's residence at Barnwood was let to 'an old soldier' and Richardson wound up the Gloucester bank account, using Cripps's Bank at Cirencester thereafter. His withdrawals were of £30 or £40 at a time and less frequent than those of the previous year and yet he somehow managed to pay employees and meet other expenses. The ability to sometimes pay cheques to the professional engineers and surveyors working for him is only part of the explanation; he may have had other funds.

In the journal the names of ten engineers and surveyors appear for all or part of the period between February and July (22). One of these, Milnes was definitely dismissed, another, Madigan, may have been, and a further member of the team, Sydney Clark, appears to have died. Richardson travelled around part of north Wiltshire to Minety, Purton and Cricklade to direct and to pay them but his own activity centred mostly around the Cirencester Branch, Kemble and Oaksey. Two surveyors were sent to Swindon but by July 1838 their resident engineer had still not visited them. Richard Hall, a Cirencester surveyor with his own firm, appears to have had a share in the surveying of the branch line. The gangers, Chard and Baker, reappeared, and Richardson's office and household establishment consisted of two servants and at least one clerk.

At first the party stayed at the King's Head in Cirencester but gradually the surveyors departed to lodgings near their designated area in the field. Richardson and Crawford were the last to leave at the beginning of March. They already had an office at Oaksey, probably rented from a Mr. Holtham, and they stayed with him for a fortnight before occupying Flintham House, also in Oaksey, which was to be Richardson's home until the completion of this section of the line in 1841. He paid calls on neighbouring landowners like Joseph Pitt of Estcourt and William Maskelyne of Oaksey Park who had interests in the company or were affected by the railway, but seems to have avoided direct contact with the hostile Robert Gordon of Kemble or his agent, John Macneil (23). He may have been under instructions to leave this to Charles Lawrence. On 15th February Richardson had to reprove his surveyor Cooper who had cut down some trees on Gordon's property although they were not in the line and when, in May, he needed to sink some shafts on Gordon's land it seems to have been left to Lawrence to make the approach. In all other cases Richardson undertook to obtain permission for pits or shafts from landowners like the Bathurst family for Siddington, market gardeners like William Gregory of Cirencester, or farmers who were not tenants of Robert Gordon.

Most of his activity in this phase was in Wiltshire, which included Kemble at this time. The branch line passed into Gloucestershire as it approached Devereux Bowly's estate at Chesterton (24). The furthest northerly point of the survey seems to have been at Tumbledown on the Sapperton side of Hailey Wood and a staff was erected on the other side of the wood at Trewsbury from which Richardson expected to be able to see the ones at Kemble and Oaksey. Early in March Crawford was sent to see what was happening on the Birmingham & Gloucester line. Shortly afterwards he was once more sent northwards to do some surveying at Stonehouse, the sections of which were despatched to Duke Street later in the month.

Richardson's operations based on Cirencester and Oaksey followed the familiar pattern of putting up staffs (with some again fixed in trees), determining base lines, ranging, levelling, taking angles and ground proving, reporting results and sending plans to Brunel's London office, leading eventually to drawing up contracts for construction. His record of activity on 10th and the 28th April illustrates some aspects of this:

"Walked with Crawford to Kemble Mill. Ranged Base line, along the Cirencester Branch, back to intersection with Kemble base and drove a large peg there. Erected temporary staff in line of Branch-base. Walked back to Flintham."

"Walked with Crawford to Siddington – gave him directions to level Parliamentary & trial line. Walked to Cirencester. Drew £30 – had some talk with Raymd. Cripps about line. Went to Mr. Anderson's – not at home. Ordered some nails at Alexander's & Indianrubber girths at Swetenam's. Went to Quarries near Gas Works & enquired the price of stone &c - -/3 p. foot" (25).

Until late in April Richardson concentrated on surveying but after this the range of activity broadened to include ground proving and the preparation of contracts. During the next month he obtained numerous permissions to sink shafts. He did not make clear whether 'pits,' 'shafts'

and ‘borings’ had different purposes; all these terms were used in the journal. His borings near Gloucester in the spring of the previous year had been to look for gravel but this was not mentioned in 1838.

The journal did not at first reflect the impatience building up among the directors of the C&GWUR in the second quarter of 1838. They continued to complain about their lack of control over Hennet, in particular over the level of his fees, and eventually went so far as to ask Brunel “whether he feels himself really in a situation to carry on the duties of Engineer of the Company” (26). Brunel had been distracted by his accident on the Great Western on the 31st March and then by preparations for the opening of Paddington but he convinced the chairman of the company that he should continue. There had been definite lapses of timing in the preparation of contracts which had been due to be let on 13th June but for which plans and specifications were still not available on 21st May. Richardson recorded that Brunel drew up advertisements for three contracts between Cirencester and Swindon on 26th April during his visit to London. Richardson gave the Secretary, Arnold Merrick, “a form of tender” for the contracts on 20th May but his only other reference to the subject came exactly a month later when he wrote that a section of contract 2CR had been sent from London. He was descending upon surveyors in their lodgings to make sure that plans were “hurried forward” at the end of June, no doubt under pressure from Brunel in London.

After the Journal July 1838 to 1845

At the beginning of July 1838 the flow of detail about Richardson’s involvement with the C&GWUR abruptly ceases, though he occasionally featured in Brunel’s correspondence and the company records. He continued to keep a journal but the next volume, to at least 1841, is now missing. The other sources in his own words date from his anecdotage nearly fifty years later in two booklets, *On Landslips* and *Presence of Mind*, which arose from lectures he had delivered in Bristol. The first described his solution to a landslip problem near Swindon in 1841 when a Brunellian suggestion failed while his own remedy succeeded. *Presence of Mind* included accounts of the fatal ‘fascination’ of approaching trains to people crossing a railway line; one example cited by Richardson had taken place at Brimscombe shortly after the full opening of the line. According to the career summary which accompanied his certificate of admission to membership of the Institution of Civil Engineers in 1875, he “completed this line [Swindon to Kemble] and the shafts and heading for the Sapperton tunnel by 1842.” This implies that he returned to work on the tunnel for a while after the link to Cirencester opened in 1841. However, his former fellow-pupil Brereton, who lived at Coates in the early 1840s, seems to have supervised the completion of the construction of the tunnel. Richardson had been transferred to take charge of the Stroud Valleys section with a residence next to the line at Chalford. This afforded him another opportunity to experience the effects of landslip:

“The first intimation I had of this was during the night when I was sound asleep in bed. There was a sudden report, much like a pistol shot, in my room. This I afterwards found was caused by the breaking of a nail in the floor, as the slip drew one corner of the house faster than the other parts” (27).

Before the railway cutting had been made beside the house the slip had reached an equilibrium and was inactive but Richardson feared that it would now advance again so he proposed a heading drain in the upper part of the slip. Brunel, however, balked at the £750 cost of this scheme with the result that shortly after the opening of the line in 1845, after a period of heavy rain, Richardson’s prediction came to pass.

“It came down suddenly and with great pressure against the small portion of it which had been left under the railway. This small remainder could not shove forward the heavy lower mass on which the house had been built, so it squeezed up the part under the railway, as I had anticipated, and raised up the rails three feet in one night.”

By this time Richardson had moved to his next assignment on the Hereford, Ross and Gloucester line so did not have to superintend the repairs from this mishap. He had left a satisfying testimony to his expertise at Chalford in the shape of an unusual accommodation bridge known variously in the locality as Jackdaw, Westley or Skew Bridge (SO 91310281). The purpose of this structure was to enable the owners of the woods nearby to slide felled trees to the canal at the foot of the 1 in 3 slope in unbroken descent. Richardson's bridge had a span of 50 feet and one abutment 12 feet higher than the other. Brunel was, nevertheless, said to be greatly pleased with the beauty of its proportions (28).

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Notes and References

- (1) Mrs Richardson moved a short distance in June 1836 to No. 11, The Paragon, Clifton.
- (2) Mr. Howard Beard, of Stroud.
- (3) Brunel moved his London Office to 18, Duke Street, Westminster by 1836. Vaughan p. 57.
- (4) Rolt p. 105.
- (5) This stone was laid on 27 August 1836.
- (6) This house was beside the line of the proposed railway on the city side to the south of the main road at Barnwood. The freehold was held by the Dean & Chapter of Gloucester Cathedral. James Woodbridge Walters of Barnwood House and the County of Gloucester Bank sold the lease to the Company. Devereux Bowly appears to have been the occupier. GA C&GWUR Minute Book Vol. 1, mtg. 28 March 1837.
- (7) Richardson was a frequent, and interested, visitor to Gloucester Docks between September 1836 and April 1837. On 22 March 1837 he wrote: "Saw the large pump at work for supplying the Canal." This steam pump had been installed beside the graving dock in 1834. Conway Jones p. 35.
- (8) W. H. Hyett (1795 – 1877) of Painswick House had been M.P. for Stroud 1832 – 1835.
- (9) George Thomas Clark (1810 – 1898) became a divisional resident engineer at the London end of the GWR. Under the will of Sir J. J. Guest in 1852 he was made a trustee of the Dowlais estate and began a long career as an ironmaster in South Wales.

- (10) See also the Journal entry for 30 May 1837. "Captain Moorsom called about the junction of the B & G line with ours at Lansdown." Presumably William Scarth Moorsom, engineer for the Birmingham & Gloucester Railway.
- (11) First extract 20 March 1837, second extract 27 March 1837. John Kemp of the South Wales Railway Office corresponded with I. K. Brunel between May 1836 and January 1837. Brunel Colln. PLB Vol 2. A John Kemp wrote on behalf of the Birmingham & Gloucester Railway to the C&GWUR on 5 May 1837. GA C&GWUR Minute Book Vol. 1, mtg. 20 June 1837. A railway company official was unlikely to be a contractor so Richardson's encounter may have been with another Mr. Kemp, unless John Kemp was between jobs on 27 March.
- (12) Richardson evidently rejected this attempt at bribery. He was, however, prepared to accept boxes of cigars from two timber suppliers, John Forster and William Hunt.
- (13) Probably John Lawrence of Great House Farm in Churchdown. The railway cut through, or was contiguous to, at least five of his fields and in 1838 the C&GWUR paid him £22 as compensation for disturbance. GA Churchdown Tithe Apportionment, 1841; GA, C&GWUR Minute Book Vol. 1, mtg. 11 September 1838.
- (14) William Jones of Sheephouse Farm, Tuffley.
- (15) Claxton, a friend of I. K. Brunel, was Quay Warden at Bristol Docks and managing director of the Great Western Steamship Company. Buchanan p. 58. He and Watts were linked by the closeness of their association with the Berkeley family.
- (16) Possibly the canal tunnel rather than the planned railway tunnel. See Journal 25 April 1838: "Sent Crawford to find line of Hennet's Base at Canal Tunnel mouth."
- (17) From 25 April 1837 Richardson lodged at the White Horse when at Sapperton. This inn was situated nearer Beacon Farm than its later replacement. He looked for a house in the vicinity but the company could not afford those available.
- (18) A coach service from Gloucester through Stroud and Tetbury to Southampton. Robson, Gloucestershire Directory, 1839.
- (19) In 1840 Frederick Clarke became GWR Traffic Superintendent at Bristol. His brother Seymour Clarke was also an important GWR official. MacDermot p. 57.
- (20) Troughton & Simms of 136, Fleet St. London, a leading firm of instrument makers.
- (21) Raymond Cripps (1810 – 1852) was a manager of the family bank in Cirencester. Journal 25 January 1838: "Went with him [Raymond Cripps] to the part of the line nearest town & shewed the impracticability of making it straight."
- (22) Bell, Bull, Sydney Clark, Cooper, Cowley, Knight, Madigan, Mills, Milnes, Williams. Some may have been engineers temporarily assigned to the survey.
- (23) See Bray, p. 7.
- (24) Devereux Bowly (c. 1765 – 1848) of Chesterton House was a banker and director of the C&GWUR. He had also occupied the house at Barnwood which became the company office and residence.
- (25) Henry Alexander was a Quaker hardware manufacturer at Cirencester with shop premises in the Market Place. John Sweetnam was a saddler and harness maker, also of Cirencester Market Place. Robson, Gloucestershire Directory, 1839. The Cirencester Gas Works were situated next to the Thames & Severn Canal at Watermoor, near the present Love Lane Industrial Estate.
- (26) Maggs p.8.
- (27) From C. Richardson On Landslips.
- (28) From Anon (C. H. Richardson?) Memoir.