

# THE GLOUCESTER & BERKELEY CANAL MANUSCRIPTS IN THE TELFORD COLLECTION.

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## I INTRODUCTION

A great friend of Thomas Telford and secretary to two of his major enterprises was John Rickman (1) and it is indeed fortunate that he kept much of Telford's correspondence. His family hoarded it in a chest for many years, to be re-discovered only recently; in 1976 the contents were sold at Sothebys and divided between the National Library of Scotland and the Telford Collection kept by the Ironbridge Gorge Museum Trust. Equally fortunate for us is that the majority of manuscripts at Ironbridge refer to the construction and completion of the Gloucester & Berkeley Canal between 1818 and 1827.

The correspondence had been affected by damp so was in an extremely poor condition when bought and took two years to mount onto a backing. It was then indexed in chronological order by the Telford Research Fellow, with the date, writer and addressee being listed, but the contents were not studied.

The story unfolded in these letters, reports and estimates, showing Telford's involvement in the canal, is rather one-sided as the vast majority of letters were written to him, with only a few drafts and reports by Telford himself. Nevertheless, one can obtain a good insight into an important period of the canal's history which has been comparatively neglected in the past.

To help identification, listed below are the names and occupations of the principal people mentioned in the correspondence:-

William Holden, of the Exchequer Bill Loan Commission Board.  
Thomas Telford, consultant engineer to the above.  
Capt. George Nicholls, chairman, Gloucester & Berkeley Canal Co.  
Capt. Shadrach Charleton, clerk, "  
John Upton, resident engineer 1813-19 "  
John Woodhouse, resident engineer 1819-20 "  
Thomas Fletcher, resident engineer 1820-27 "  
William Clegram, harbour master and general superintendent 1826-61 (ditto).  
Hugh McIntosh, national contractor, London.

## II THE EARLY YEARS 1794 to 1818.

A short history of the first twenty-five years is included as a reminder of the events leading up to the 'Telford Period'.

Contemporaries, and later writers, agree that all the early surveys (1) of the line were inaccurate or rushed, leading to many later difficulties. In addition, the first period of construction, started in 1794 in Gloucester, was supervised by resident engineers (2) lacking in experience or expertise, together with a principal engineer (3) who was too busy to visit the site and who persisted in a route to Berkeley Pill against his own better judgement.

Mostly local small contractors were engaged who each had comparatively minor parts to play in this large engineering work, hardly the most efficient way of proceeding. The weather too was blamed for the early dismal progress. By 1797, when only 5½ miles had been opened to Hardwicke, the available money ran out and no more could be raised, due to the French wars and consequent inflation.

Twenty years of comparative inaction followed during which some distinguished engineers (4) produced their schemes and estimates for completion. It was however left to the Clerk, John Upton, who had assumed the position of Engineer in 1813, to try to raise further finance and to promote the shorter route to Sharpness. This he did by publishing an important pamphlet in 1815, the year that peace came, and the amended route was later incorporated in a new act. (5)

In 1817 the 'Poor Employment Act' set up the Exchequer Bill Loan Commission Board to authorise loans on new projects offering employment to unskilled labour; the end of the Napoleonic Wars had produced much unemployment. Telford, the subject of the correspondence which follows, had been appointed technical adviser to the Board "on all works requiring the information of a Civil Engineer." In that capacity he inspected schemes requesting loans, including one from the Gloucester & Berkelsy Canal in 1817, and had to assess the merit of the various applications received.

### III TELFORD IN CHARGE.

The correspondence starts in March 1818 with a formal letter from William Holden to Telford (1), addressed to the Salopian Coffee House a, which asked him to go to Gloucester immediately to survey the existing work and provide plans and estimates of that remaining. He was asked to report on:-

- i The practicality and utility of this work.
- ii The probable time that will be required for its completion.
- iii The State of the Works already executed and the expense necessary to complete them.
- iv The Expense of Completion of the whole work from its present termination at Stroudwater to Sharpness Point. b
- v The probable annual revenue; the expense of keeping the works in repair and the charges of management."

Telford must have acted promptly as John Upton said (2) that he sincerely hoped that "Telford did not catch cold from walking so much on our spoil banks." Another letter (3), from the Canal Company, confirms his estimate of £125,723 to complete to Sharpness.

While this estimate was being prepared, Thomas and Benj. Bayliss of Gloucester were quoting for part of the completion and Telford queried (4) the lack of bridges, culverts and aqueducts in their tender. In the same letter he considered it advisable for the Loan Commissioners to grant sufficient to ensure that the whole of the work was completed in a substantial manner. "Anything short of this would be a delusion and a disgrace." Later, T & B Bayliss confirmed (5) that the estimate did in fact include all locks, bridges, stop-gates, aqueducts etc. and making the Cam Brook navigable up to Cambridge. c

At the same time the Canal Company wrote to Telford, (6) saying that they had asked Upton to send him plans by coach for his report to the Loan Board. Telford's draft (7) for this remains and gives a breakdown of the estimate mentioned previously:-

New works .. .. .	£86,200
Land & damages .. .. .	£13,872
Contingencies & expenses .. .. .	£10,651
Repairing old canal .. .. .	£15,000
Repair & management charges .. .. .	£4,000 per annum

No more correspondence survived for the remainder of 1818, but it is known that in October progress was interrupted by a quarrel between Upton and a contractor concerning inferior workmanship. This fitted in with a letter in early 1817 (8) from the Loan Board which noted that, after reading the resident engineer's report, they suspected that work carried out was incorrect. They requested Telford to make a further inspection before an application for another advance was made and this was quickly carried out. Telford's detailed note (9) included the work remaining to be completed, divided into four sections:-

- i End old canal to Stroud Canal, including deepening from 16 ft to 18 ft, and widening top from 62 to 77 ft.
- ii Stroud Canal to Cam Feeder. It was noted that a 4 h.p. steam engine was constructed at Newnham Road for drainage.
- iii Cam Feeder to Cotterday Meadows.
- iv Cotterday to Sharpness Point.

In March several contracts were signed (10); with W. Tennant for deepening and widening the canal as in i above, and constructing the masonry; with Thomas Holland, engineer of Gloucester, and Henry Holland, engineer of Worcester, for completing the cutting between Hardwicke and a field called Southfield.

At the end of March, but not recorded in the correspondence, Upton was detected by Telford buying materials irregularly. These were said to be used to build Saul Lodge d at Frampton-on-Severn, which was to be nicknamed 'Upton's Folly' and afterwards used as the resident engineer's headquarters and engineering workshop.

Upton reverted to Clerk until he resigned after a stiff letter from the Loan Board to Telford. e Upton gave good service at a difficult time but Telford said he made himself unpopular. He was replaced by John Woodhouse who had been on the Grand Junction Canal and who soon produced an estimate for the completion of an 18 ft deep canal for £105,656. (11)

At the beginning of 1820 Telford reported (12) that he had investigated the contractor's accounts and, although they exceeded the estimate, the amount was not more than might have been expected. Meanwhile construction had been proceeding at a fast rate and in late February the canal was open to both the Stroudwater junction (13) and to Cambridge wharf. However in April the Loan Board told Telford (14) that they were withholding the final instalment of the loan until serious charges by Samuel Jones, an unsuccessful tenderer, had been disproved.

An inspection report by Telford (15) in early May said that he was very pleased with progress, noting 13 ft of water from Gloucester to the Cam Feeder and coal being sold at Cambridge wharf. Here there was also brickmaking from excavated clay. At Sharpness, work was well ahead on the sea-wall, faced with limestone from the cliffs near Bristol and backed with Forest of Dean stone.

Telford had complained to Woodhouse at his January inspection about the quality of the sea-walling and the resident engineer had promised to rectify it. However by May nothing had been done, although Woodhouse had repeatedly promised to direct his son, who supplied the stone from his own quarry, to send the correct type. Telford said - "I consider this conduct on the part of the Engineer as inexcusable and must acknowledge that my confidence in him is destroyed." He then gave instructions that the incorrect limestone should not be used in front but as backing and went on to make the important statement - "I am of the opinion that it is absolutely necessary to employ as Resident Engineer a person wholly unconnected with Contractors for Materials or Labour in any shape.

However Telford must have previously decided to get Woodhouse dismissed as four days later there was a letter (16) from David Henry of Ardrossan accepting the post. In later letters (17) Henry kept on promising to come but never did; it appears that Telford might have acted prematurely as the Company minute (18) two months later, recorded that he was asked to obtain a new Engineer at 500 guineas a year, plus expenses.

Woodhouse saw the May report and quickly wrote (19) to Telford saying that he, Telford, had been deceived regarding the agreement for the stone and that he had found fault with him without any real cause - "It is a duty I owe to myself and family to support my character with you and not to suffer it to be taken away or injured by any Calumny or false representations that may have been made to you." This referred to Samuel Jones who, he said, had been saying a great deal in London, as well as in and out of the Committee Room, when he did not get the contract.

On the same day Woodhouse wrote a long and rather pathetic letter (20) to the Canal Company which said that Telford had approved all his difficult work, except at Sharpness, and added that he had saved the canal from ruin by altering Upton's plans for the entrance. The details mentioned are interesting, for example that the agreement for supplying stone to Sharpness was made with a Mr. Forristall for 12/6d the face yard. Forristall however died and Woodhouse's son was offered the quarry as he was paying at Bristol at the time. This son supplied the contractor, Tennant, with 10,000 yards and all was satisfactory until March 1820 when there were too many stretchers supplied compared with headers. Tennant built the wall without enough bonding stones, the headers, and Woodhouse explained how he tried to correct it, but added, "Mr. Telford was so much out of Humour that he would not allow any explanation to take place." He finally criticised Telford for specifying sandstone instead of limestone for the Pier Head, outer Harbour and Docks, a criticism which would have hardly gone down well. [f]

The Canal Company naturally queried with Telford the remarks of Woodhouse concerning the walling at Sharpness. He replied (21) that he approved the Freestone binding stones or ties which would stand up to the weather, but did not agree with the "shape and size of the Black or Limestone Stones laid along with them." Woodhouse however continued in office.

In July Telford reported (22) to the Loan Board concerning the difficulties with the stone and the engineer, and said that in future Black Rock stone from the Forest of Dean would be used, adding that there would soon be a new resident engineer. Telford strongly recommended Thomas Fletcher [g] to the Clerk and later in the year the canal proprietors appointed him to the post.

Yet another estimate followed (25), this time from Fletcher for £109,303 for completion from the Cam Feeder; this was a considerable increase on the last estimate for completion from Hardwicke. At the same time the new engineer reported a serious development with the financial failure of the contractor, Tennant, and consequent stoppage of all work at Sharpness.

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#### Footnotes to Section III

- [a] At Charing Cross, where Telford stayed until he bought a house in 1821.
- [b] The canal was only open from Gloucester to Hardwicke.
- [c] the Cambridge Arm, a branch canal one mile long to a wharf supplying the Dursley district with coal, brick and roadstone.
- [d] Later largely extended by Sir Lionel Darrell and still exists SW of the bridge.
- [e] Later he left for Sebastopol, built the famous fortresses and married a Russian.
- [f] Telford in his early days was a master-mason.
- [g] Fletcher was engineer to the Chester & Ellesmere Canal with which Telford was closely associated.

London 31<sup>st</sup> May 1820

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In reflecting upon a question put to me by the Committee  
viz whether the mode, of bonding the Wall south of the great band  
at Hampton Court  
of which a specimen has been executed, is exactly what I  
recommend? — I beg it may be distinctly understood  
that as far as regards to the long freestone borders that are  
of desirable quality, I do approve, but in what regards to  
the shape and size of the Black or Limestone Stones  
laid along with them, I object as improper. —

I send this explanation lest the opinion should  
be mis understood, that I declared myself satisfied with  
the specimens of Wall, whereas I only approve of  
the freestone Bond Stones or Tiles — and of those only  
which will stand the Weather.

Remain yours with esteem

Wm. Telford

To The Chairman  
of the Gloucester & Berkeley  
Canal Committee

MR. TELFORD TO CHAIRMAN, G. & B., 31<sup>st</sup> MAY 1820

#### IV HIATUS IN CONSTRUCTION

Fletcher reported to Telford in December (1) that a thinly attended special general meeting agreed to raise £120,000 in £100 shares by a further Parliamentary Act, with the object of starting work again in Spring 1821. He said that Tennant was trying to come to terms with his creditors as he wanted to complete his contract. Fletcher ended rather desperately - "You see the situation of the Canal Company is deplorable, workmen all hanging about because means cannot be raised to discharge them - time and patience will perhaps restore better days to us." Later David Mushet a wrote to Telford (2) from Coleford on behalf of Tennant whom he found well-behaved, attentive and industrious.

The pessimism continued in Fletcher's next letter (3) when he said - "We have been in a bad state ever since I came here and we are growing worse and worse." The workmen had not been paid for twenty weeks and thought that the Government should be asked to take over, an opinion with which Fletcher agreed. He also remarked that his last letter was addressed to Telford in 'Edinburg' and wondered whether this found him, showing the difficulty of contacting well-known engineers who were constantly on the move from one project to another.

The seriousness of the situation was emphasised by the issue in early 1821 (4) of a formal printed notice by the Clerk to the Proprietors S. Charleton b, when he asked for money to complete. The last loan instalment had not been paid and the Loan Board had written (5) of their determination to take over, mortgaging the canal to recover their debt.

The months went by and the existing canal gradually deteriorated; an extremely long sectional drawing (6) from Gloucester to Hardwicke Church, surveyed by Fletcher, showed up to 7 ft accumulation of silt. In August Fletcher wrote (7) that the work was totally neglected and falling into a dilapidated state and consequently deteriorating in value. On a personal note he asked Telford how he could obtain his back pay, amounting to £400, and so Telford loaned (8) Fletcher £60 together with a further £40 at the end of the following year. (9)

At the end of 1821 (10) the Loan Commissioners could wait no longer and took over the works which meant that Fletcher, all canal staff and workmen, were out of a job. Fletcher was offered £100 per annum to be reinstated but was unhappy as he considered a more liberal offer should have been made.

1822 started off with a report (11) from Telford on works that could be postponed until after the canal had opened, including the barge lock, the northern pier head and the parapet wall, all at Sharpness. This presumably was to help solve the financial problem.

Personal financial matters return when Fletcher agreed (12) to a temporarily reduced salary of £150 a year, providing various conditions were adhered to, and the arrears due to the staff and workmen were to be paid. Continuing on personal items, there is a letter (13) from the former resident engineer Upton to Telford saying - "I was very sorry to find you had left the Bell Inn an hour before the time you appointed me to be there ... " Did Telford suddenly have second thoughts on meeting Upton again?

In the spring Fletcher told Telford (14), on the reverse side of a printed notice headed "To Capitalists and others concerned in Canal Navigation", that he considered the affairs of the Company had taken a favourable turn and he thought a re-start could be made in June. As usual with canal engineers, this turned out to be a very optimistic view as it was not until that month that Telford told (15) the Commissioners there was a dispute between Tennant and the Canal Company. He added that he had too many engagements c at present to consider it, which prompted a letter (16) back urging him to help the Canal Company get out of its troubles and said that speed was essential.

September could be regarded as the turning point in the fortunes of the Canal, as a letter (17) from Fletcher to Telford indicated. He said that Tennant, the contractor, had at last relinquished his control and that the Commissioners were sending down Mr. McIntosh d to go over the line, preparatory to submitting a quotation to complete the work. He ends - "I hope now, as the time is near at hand when things are likely to be improved, to be able to weather the storm." This might have been because he had just been asked to prepare plans and a specification.

The Canal Company requested a further loan e so the Commissioners wrote to Telford (18) asking him for advice on the plan to complete the work. Telford must have had this in mind as there is a draft report, dated the following day (19), in which he laid down the contract clauses based on those he had successfully used on the Holyhead and Highland roads. This is important as it was the beginning of a precise contract, specification and drawing system which was soon to be used for the construction of railways and is still used today, one hundred and sixty years later.

The Commissioners were still not happy concerning the number of site visits made by Telford and asked him (20) to make them as frequent as necessary. With so many other commitments this vague statement would have been agreeable to Telford.

In early November (21) Fletcher informed Telford that McIntosh was going over the measurements and promised delivery of his tender the following week. However it was not until the beginning of December (22) that five quotations, totalling £110,648-12<sup>s</sup>-6<sup>d</sup> were received and, together with details of work to be carried out, were accepted on December 13th 1822 (23). It must be remembered that this was non-competitive tendering; no doubt the Commissioners and Telford were determined to eliminate the small contractors to ensure quick completion, though the cost would be higher.

At the beginning of 1823 (24) Telford explained to McIntosh that the method of funding would be different this time as previously money had been wholly at the disposal of the Loan Board and their secretary entered into contracts. Telford stated that he was never a party to these contracts but only acted as Engineer with deputies or inspectors. In this connection (25), George Barratt and Hugh Rose accepted appointments, Mr. Barratt to superintend the mason's work from Purton while Mr. Rose would be based on Slimbridge.

In February (24) Fletcher forwarded plans f and specification to the Commissioners for them to look at before sending on to Telford g. The Commissioners were told by Telford (27) that it was probable the whole depth of 18 ft of water would not be required for a considerable time after the canal was opened. He would like 20 ft but thought that would not be practicable for many years and envisaged that 13 ft would be sufficient for any trade during the first three years.

Once again Fletcher was complaining that "unless the servants are regularly paid at the proper time and properly treated they cannot perform their duties with exertion and cheerfulness." A week later (28) he said that he had not yet been reinstated. In March he said (29) to Telford that he had marked out the line h and stated that McIntosh was likely to start soon but that he had only one section drawing and a draft specification. He therefore hoped that Telford would send the approved drawings and specification.

In mid-April Fletcher was asking (30) for £100 to pay his bills from last Christmas, saying that he was owed £650 including payment of 1/0d to the Frampton constable for executing a warrant upon a man named Smith. William Holden said (31) he would personally make sure Fletcher's salary was paid but even this promise was not kept.

At the same time Holden sent (32) Telford part of the contract, with the relevant drawings, for delivery to Charleton. However it was practically a month (33) before Fletcher thanked Telford for them at the same time saying that McIntosh had left the county greatly disappointed at not being able to proceed; he was still waiting for a decision from the Canal Company.

The Canal Proprietors met on May 19th 1823 (34) and no doubt gave McIntosh authority to start, though it is not recorded in these letters. There had been a period of six months since the tenders were accepted, which is extraordinarily long, caused at any rate partly by the protracted approval of drawings. Fletcher was happier as the Proprietors asked (35) for him to be paid all money outstanding but the Chairman sent Telford a committee resolution regarding their concern for vessels which might accidentally hit the bridges. Telford accepted this criticism as he extended (36) the wall to protect the timber work of the bridges.

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#### Footnotes to Section IV

- a Noted metallurgist and associated with Whitecliff and Darkhill furnaces.
- b Of College Green, Gloucester, with an 'Office on the Rail road, Southgate Street'.
- c On numerous canal, road and tramway projects including at that time the Gothera Canal, Menai and Conway bridges, Harecastle Tunnel and Lanarkshire roads.
- d A national construction contractor from Bloomsbury Square, London.
- e An Act - 3 G. iv c. 53 24/5/1822 - allowed the Commissioners to advance a further £60,000.
- f Contract drawings in the G.R.O. and P.R.O. (Kew) and signed by Telford, Fletcher and McIntosh.
- g At Abingdon Street which runs south from the Houses of Parliament.
- h Does this refer to levels, as the line was marked out several years before?

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#### V WORK RE-STARTS

Valuations of the work carried out by McIntosh started to be mentioned (1) and that in August for £1750 included the stone delivered but not that cut in the quarry. A letter (2) the following month regarding Valuation Certificate No. 3, mentioned that Telford had to certify the work done and then the Commissioners would prepare the necessary forms before paying the money, presumably because of their take-over. Included in the letter is yet another request for Telford to attend the next Canal Proprietors' meeting.

Attention switched to Gloucester in November when Nicholls wrote (3) to the Commissioners and informed them that the purchase of Smith's land was sufficiently advanced for them to assume early possession. The Committee had therefore passed the following -

"Resolved, that the Chairman be requested to confer with Mr. Telford as to the best method of forming a Cut, or additional Basin, to communicate with the Great Basin, for the reception of Severn Barges. Also as to the expediency of building a Wharf Wall along the East side of the Great Basin."

Later in the month, rather in desperation, Holden told Telford (4) that many people in Gloucestershire were anxious that he should visit them, especially as there was a new matter for his attention. a Four days later Nicholls asked Telford (5) for a meeting concerning the Gloucester Basin, as they now had possession



of Smith's land. He added - "A Resolution is now awaiting your arrival at the King's Head; it would have been forwarded to you had your habits been less migratory." Five more days passed when Fletcher also wrote (6) to say that he was disappointed not to have seen him. He said in addition that the weather had been very rough lately and that, together with the late pay, accounted for little work having been done, but "I suppose the men will soon begin to muster as their money is spent and the weather more favourable."

At the same time Fletcher mentioned a disaster which occurred, no doubt due to the bad weather. The River Cam flowed through the Cambridge Arm and across the Gloucester Canal by means of dams, but the dam on the Sharpness side gave way, flooding the new works as well as 30 to 40 acres of pasture. He sent quickly to Purton to inform the contractor but added that he had previously cautioned McIntosh on this matter and stated that it was high time that McIntosh had someone responsible for him to contact, as laid down in the contract. A few days later (7) Fletcher reported that the flood waters were subsiding and that work was going well, but that completion would be considerably protracted. In November there were 373 men and 83 horses on site.

Telford compiled a report (8) of necessary works at the Gloucester Basin which he said should be carried out then while the basin was empty. He stated that the barge basin should be constructed at the south-east angle of the main basin, parallel to the Cheltenham Railway and occupying the piece of land lately purchased from Mr. Smith. His estimate for this, complete with two cranes, was £3,907, and the work, later called the Barge Arm, still has the bases remaining of two cranes. Secondly, a proper wall was to be built along the east side of the basin for 134 yards, with at least two cranes, and his estimate here was £3,227. He also suggested purchasing further land to the south for dumping excavated material. In the following February, McIntosh's tender (9) of £8,728 for the basin walls, wharf and new basin, was received.

In the same report Telford said that there was only 5 ft of water in the Cambridge Feeder (or Arm), with 18 ft in the main canal, and thus the Feeder could often not take barges b. He recommended a lock and stop-gates at the beginning of this branch. To avoid the miller at Cambridge making complaints concerning water levels, Holden asked (10) Telford to have these levels checked by Fletcher. A couple of days later, Fletcher was asked (11) to prepare drawings of the lock and waste-weir; the February tender for these was £1875.

More trouble occurred in March (13) when it was found that the foundation for Hardwicke and Pegthorne bridges was constructed of rough stone, found in digging the canal, c and Fletcher suggested changing to ashlar at a cost of £509. He could not however prevail on Nicholls to bring this matter up at a committee meeting.

At the same time Fletcher told Telford that he wanted a conference with the Stroudwater Company regarding the future junction, but McIntosh's main concern that month was to complete the work at Gloucester. All the contractor's mud boats (14) were employed in removing earth from the barge basin and McIntosh was backing up the rubble stone in the basin wall with good stone from his own quarry. Also in March, George Barratt, the superintendent mason, announced that he was leaving, not surprising as his pay of £26 a quarter appeared to be approximately the same as that of a tradesman.

In mid-April correspondence (15) returned to the Stroudwater and Fletcher in his letter included a sketch which showed how he considered the junction should be constructed. The Sharpness Canal was to be barked across where the Stroudwater went through and a culvert, or trunk as noted on the drawing, was to be formed to connect both parts of the Sharpness Canal. He added that he was glad to hear McIntosh say that he must not blame the weather any longer, especially as

little work had been done at Gloucester, and nothing had been constructed at Sharpness since Tennant left. This delay was confirmed when the Commissioners told Telford (16) that Nicholls was very concerned with lack of progress and hoped that Telford (17) would go to Gloucester to reassure him.

Fletcher reported (18) that McIntosh had turned over a new leaf and was "eagerly engaged in making arrangements to proceed more expeditiously." The conference was held with the Stroudwater Company; Fletcher found them agreeable and ready to fall in with his plan to construct the cross junction at a neap tide d when there would be no charge for stoppage e.

At this period there was a letter (19) regarding the contractual relationship between Fletcher and Nicholls, because of a disagreement between the two. Previously all requests for information by Nicholls had been passed on by Fletcher to Telford and Holden, but Nicholls pointed out that Fletcher already had the authority to answer his queries and, that being settled, they parted on friendly terms.

Telford examined (20) the Gloucester Basin and wharves in May and considered that that part of the contract should be complete, with 20 ft depth of water, by October 1st 1824. Later Fletcher reported (21) that there were 29 men and 41 horses working there, including McIntosh's son who was temporarily relieving the man in charge, Mr. Henderson. Fletcher added that "Montague is busy f making castings."

Fletcher told Telford (22) that he had doubts as to whether the contract would be completed by September 29th 1825, considering that work would probably be interrupted next winter and spring. He thought that McIntosh had not a moment to lose, "though a greater spirit is manifest." Regarding progress, the Gloucester Barge Basin was finished and work would start immediately on the dams at the Stroudwater junction.

August was not a happy month and all Fletcher's letters to Telford reported troubles. Alterations had been agreed at Sharpness and estimates received, but in spite of that there was an argument over payment, Fletcher maintaining (23) that McIntosh was being paid twice for part of the work. In addition, Fletcher was complaining (24) to the contractor concerning the lock paddles, saying that the work was "mere mockery". Finally the resident engineer said (25) that McIntosh's men at Sharpness had been unruly and gone on strike for higher wages. He stated that the wages were 2/6<sup>d</sup>, 2/9<sup>d</sup> and 3/- per day, with most men being paid the latter. Also, a large number had left altogether and would be difficult to replace at that moment, as it was harvest time. g

George Barratt's place had been taken by a Mr. Lennox (26) but it is interesting to note that Barratt had gone over to the other side and was now employed by McIntosh at 50/- a week. Fletcher commented - "I don't know if he will stop and rather think not."

McIntosh was trying to get the water out of the unfinished canal and this was proving difficult as the bottom was lower than the Severn; Fletcher asked him for an estimate to do the work and at the end of the year (27) £1500 was suggested as a reasonable figure. In addition heavy rain in October (28) had flooded the works and thrown everything into confusion, so McIntosh promised to bring his engine from Tewkesbury and fix it by the lock in Gloucester. h He had been encouraged to lay out the mud upon the adjoining land for manure in the spring but Fletcher doubted if the farmers would be "so accommodating." From the estimates listed of £20,327 (29), £8,560 (30) and £12,008 (31), there is no doubt that the removal of mud was becoming extremely expensive, though exact costs are not possible to obtain as other extras are included in these figures. This must be additional mud caused by the bad weather as the contract allowed for cleaning out the old canal to Hardwicke.

At the beginning of 1825 Nicholls told Telford (32) about a newly promoted canal between Gloucester and Worcester and asked him to give it every possible help. The subscription list had been filled and the only stipulation that Nicholls made was that it should be in Telford's hands [i]. Later it was reported (33) that Mr. Wakeman [j] was surveying the line of the canal within the county boundary.

Telford was then asked to report (34) whether the expenditure of the balance in hand, together with £32,000 additional finance required, would be sufficient to complete the canal and its branch. A new Bill [k] had been prepared for this further advance of money and laid before the Commissioners but was awaiting Telford's report. Nicholls called at his house in Abingdon Street to consult him on this Bill but Telford was away on his travels.

Next month Telford was told (35) that McIntosh had not succeeded in constructing a dam at Sharpness to keep out the river and this was holding up work on the masonry. However the dam must have been completed shortly afterwards as at the beginning of March (36) it was completely swept away by a tide 33 ft high, measured from the lock sill. Another dam along the canal at Dinmore Pill [l] also gave way after flooding houses; the wife of one of the workmen, ill in bed, had to be hastily transferred to a neighbour's house. Disasters continued as in April (37) 2,000 cubic yards of the south river wall at Sharpness Basin were knocked down by a tide. Fletcher said that he had warned McIntosh several times about constructing the wall up to full height and added that "this will delay them a great deal."

In the spring Nicholls and Holden made an inspection (38) of the shortening of the breakwater and an alteration to the lower pier head at Sharpness and told Telford they were happy with his alteration. They thought that McIntosh was making "considerable exertions" and that the canal might be ready about the time specified.

Fletcher confirms this activity for in May (39) 523 men and 100 horses were employed and 'mudding' was taking place on the canal at Frampton and the Gloucester Basin. The break in the wall at Sharpness had not been repaired but the tides would be favourable until Lammas [m]; the work was in fact completed before the end of the following month (40) when it was also reported that the diggers had decided to leave the canal "to seek for better wages."

The number of employees and horses quoted above for May probably included those working in a Forest of Dean quarry, for, of similar totals of 485 and 103 in August (41), 101 men and 53 horses were in the Forest. Telford was told that the workmen were difficult to manage [n] and he wrote (42) to McIntosh saying that the contract time was bound to be exceeded.

Telford made an inspection at the end of August (43) and his report makes assumptions regarding completion. At Sharpness he said that work was proceeding with considerable speed but that it was quite clear that it could not be completed before next May or June. The canal was entirely clear of mud up to the Stroudwater junction and here the complicated works were complete and ready when necessary to be put into operation; he thought that this was of considerable importance. With the Cambridge Arm lock being excavated ready for masonry, Telford reported that the canal from there to Gloucester should be open in October and he directed the attention of the resident engineer to this. Finally the works in and around the basins at Gloucester were approaching completion.

In the conclusion to this report, Telford thought that the canal would be completed about next June, approximately six months late on the contract date. This he said was due to difficulties regarding quarries, roads, landing places etc., and to the unprecedented changes which had taken place in the prices of materials and labour, together with the far from perfect state of the old canal when it was emptied. He also said that he did not hesitate to recommend that the contract be extended. [o]

At the same time (44) the Canal Company had asked Telford for a report on their property round the basins at Gloucester. Part of his reply was as follows -

"I recommend that a couple of moderate size warehouses be provided against when the Canal shall be opened. The upper end of the Basin next to the Lock appears to be the most suitable place for these to be constructed, as there they will be less likely to interfere with any subsequent arrangements than if they were built on the east side of the Basin."

This is the first mention of the two Canal Company warehouses, later built as semi-detached units and known as the North or Telford Warehouse, though not actually designed by Telford. D

However in spite of Telford's optimism, Fletcher stated in October (45) that before water could be let in between Gloucester and the Stroudwater junction, pipes had to be laid at Holbourne Green and the stop-gates completed at Parkend Bridge; these were not expected to be ready until the following month. Once again plans were thwarted due to the Holbourne Green dam having given way, as Fletcher said to Telford, (46)

"I fear assisted by some mischievous person, as the dams below were cut away the day or night before by the workmen for no other purpose than to annoy one another in their respective pieces of work."

In addition there was further trouble at the junction when the Stroudwater Clerk, George Hawker, complained (47) that floodwater off the land was being drained into his canal. A drawing in a letter from Fletcher to Telford shows how this water was rather cunningly culverted under the Gloucester Canal and then into the Stroudwater which had a waste weir into the brook. Later the stop-gate sills gave way to add to the difficulties here.

Just before Christmas, Nicholls, Fletcher and McIntosh met at the Bell Inn (48) and decided that it was not possible to make a perfect finish to the canal during the winter months; also that trade with the Stroudwater was not possible which must have been a severe financial blow to the Gloucester company.

1826 started with Fletcher telling Telford (49) that "I have now put Mr. Clegram in possession of everything that is necessary to enable him to take charge of the works." Thus began a very long association of the Clegrams, father and son, with the canal. At the end of the year William Clegram of Shoreham was appointed Harbour Master and General Superintendent at £370 a year, together with a house. His son, William Brown Clegram, worked with him from 1829, assisting in design work, and in 1861 became Engineer and Superintendent, retiring in 1885.

On the same day Fletcher said (50) that there was 14 ft of water in the canal from Gloucester to Parkend Bridge and work at Sharpness was advancing rapidly, but that McIntosh had still a great deal to do and must exert himself. He asked Telford to write and remind the contractor of the amount of work to be carried out, but it was at this time that the contractor was suffering from an eye infection and Henderson had taken control.

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#### Footnotes to Section V

- a Telford was now 66 and coach travel in winter could not have been too pleasant.
- b The initial specification only asked for 5 ft of water.
- c Pegthorne Bridge eventually fell into disrepair and was dismantled this century.



At long last, at the beginning of August (5), the permanent connection between the Canal and the Stroudwater d had been made and trade resumed, after delays due to poor workmanship to the stop-gates. Incidentally, a considerable number of carts and men had left for Plymouth, mentioned in the last paragraph, where McIntosh had similar work in progress. (6)

Towards the end of the month (7) Fletcher optimistically considered that the Canal would be opened in November, though there was only 9 ft of water between the Cambridge Arm and Purton Hill, which was used for boating the building materials. At Sharpness, although the lock masonry was complete, the excavation of the basin would not be finished until the end of September. However as usual more delays occurred, (8) due to a large slip at Purton Hill and to the foundation of some of the bridges having been laid on quicksand.

Fletcher and Clegram had been working together and in October Clegram wrote (9) a long letter to Holden, saying that the northern part of the canal was to be emptied of water, so that McIntosh could instal the stop-gates at Shepherds Patch Bridge. He proposed to do this with two gangs working day and night. This completed, proving the works would start at the beginning of November; this would have been an inspection to ensure that all workmanship was satisfactory and that everything worked, prior to the contractor finally handing over the Canal to the Company. Clegram however was afraid that there would not be enough water and he and Fletcher were to visit the millers to try to get them to co-operate, although Clegram admitted that they seemed to dislike the Canal because no help had been given to them.

A couple of days afterwards Holden said (10) that he was glad to hear of Telford's proposed visit about November 12th which would enable the Canal Committee, under Telford's advice, to definitely fix the opening date. Telford's report (11) was dated November 11th and in it he considered that the Canal would be ready in a month's time, providing the weather was favourable. He also gave a warning that it was vital that - "every essential part should be well proved before it is attempted to lay the works open to the Tide Water as any undue haste in this matter may be productive of very injurious consequences ..." When it had been inspected he thought that the services of Fletcher and Rose could be dispensed with to avoid further expense. He wrote (12) later to Fletcher and said that his engagement should end on December 25th but in actual fact he stayed on e. Rose left in the middle of the month after Telford had found him a job at Drayton in Shropshire.

Fletcher's report (13) towards the end of the month was not favourable and this was not helped by McIntosh complaining (14) that he was not being paid for his men's labour on the land slips; he therefore refused to do any more work on them until it was included in the monthly accounts. Holden told Telford (15) that the contract had been in force long enough for McIntosh to know the clauses and that he was very rash to have ignored them.

In the last months of the contract minor squabbles were mentioned in many letters. Fletcher complained (16) that McIntosh had "come with a letter requesting pledges he could not comply with" and McIntosh in turn said that his claim (17) for extras had not been settled. Three of the minor extras were as follows:-

- |     |  |                 |                  |
|-----|--|-----------------|------------------|
| (1) | To boys driving the horses (18)  | .. .. . 4 @ 2/- | 8/-              |
| (2) | To tolls paid for the horses   | .. .. .         | 6/6 <sup>d</sup> |
| (3) | Paid Mr. Smith rent of land on which lime kiln stood at Dinmore Point (19) |                 | .. .. . £1       |

Fletcher returned to the attack when he said that he had had an extraordinary claim (20) from the contractor which he had returned. These last two letters were written in January 1827 so all promises of being ready in the previous year were worthless.

In addition to contract matters, landowners, whose land had been cut through by the Canal, were making sure that they obtained full recompense. William Jones, for example, was asking (21) for a wall to be erected from a corner of his house to the east corner of the orchard, as well as steps made, compensation paid at £3 an acre for land covered with topsoil and all his land made tidy. Also Colonel Berkeley wanted to see Telford (22) concerning wastage of land and the appointment of a bridgekeeper, as the four f at the south end of the canal were appointed subject to the Colonel's approval.

In mid-February the Gloucester Journal printed (23) -

"We have at length the satisfaction to announce that the Engineer has reported the great and important undertaking is in a state of completion and a very few days will afford a sufficient supply of water through the entire line to prove the perfection and stability of the work."

At the same time arguments regarding the contract continued. The documents were now in the hands of Tyrell & Sons of the Guildhall, London, who stated (24) that the contract must be looked at as a whole - new work and old together - and not parts taken out of context. With regard to the ironwork (25) which was not on the plans g they felt it should be paid for "as they will trust to the liberality of Mr. Telford, as he has power in the contract to authorise such payments."

Fletcher was again unhappy as, in a letter to Telford (26), he complained that though his service was terminated on Christmas Day he had been fully occupied in examining claims on the contract. He considered that in common civility he should have been given six months' notice and therefore should be paid to June 25th. However he would be satisfied if he was paid his £500 a year up to April 1st.

At the end of March (27) there was a general meeting of the Canal Proprietors and they decided that the Canal should be opened on April 25th or 26th, as only the removal of the Sharpness dam, together with some minor items, remained to be carried out. They also reported that the Droitwich Salt Company was contemplating the immediate shipping of 1100 tons of salt from Gloucester Basin and one of the first two boats due to enter the Canal, the Anne of Bristol, was to take a full cargo of salt to Newfoundland. (28)

To be ready for the canal opening, the contractor for the North Warehouse had been proceeding simultaneously and, at the beginning of April (29), the work was inspected by Clegram and a Certificate of Approval issued. However this certificate said that everything agreed with the specification and contract -

"except the Hangings to the Window Shutters which the Parties (as well as myself) are desirous should be left to the final decision of Mr. Telford." h

This provoked a long letter (30) from the contractor to Telford, objecting strongly to the matter being brought up at this late stage and ending -

"We humbly beg to leave the subject to your superior judgement which we do with the utmost confidence."

A few days later Holden asked (31) Telford to inspect the hanging of these shutters, no doubt anxious to get this comparatively minor item settled before the opening.

As the opening day drew near, Holden wrote to Telford (32) stating that a boat would be ready at Gloucester to take him to Sharpness to inspect the Canal and works, and another would be put at the disposal of Committee members, "as all is ready."

At the same time Holden sent (32) Telford part of the contract, with the relevant drawings, for delivery to Charleton. However it was practically a month (33) before Fletcher thanked Telford for them at the same time saying that McIntosh had left the county greatly disappointed at not being able to proceed; he was still waiting for a decision from the Canal Company.

The Canal Proprietors met on May 19th 1823 (34) and no doubt gave McIntosh authority to start, though it is not recorded in these letters. There had been a period of six months since the tenders were accepted, which is extraordinarily long, caused at any rate partly by the protracted approval of drawings. Fletcher was happier as the Proprietors asked (35) for him to be paid all money outstanding but the Chairman sent Telford a committee resolution regarding their concern for vessels which might accidentally hit the bridges. Telford accepted this criticism as he extended (36) the wall to protect the timber work of the bridges.

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#### Footnotes to Section IV

- a Hotel metallurgist and associated with Whitecliff and Darkhill furnaces.
- b Of College Green, Gloucester, with an 'Office on the Rail road, Southgate Street'.
- c On numerous canal, road and tramway projects including at that time the Gotha Canal, Menai and Conway bridges, Harecastle Tunnel and Lanarkshire roads.
- d A national construction contractor from Bloomsbury Square, London.
- e An Act - 3 G. iv c.53 24/5/1822 - allowed the Commissioners to advance a further £60,000.
- f Contract drawings in the G.R.O. and P.R.O. (Kew) and signed by Telford, Fletcher and McIntosh.
- g At Abingdon Street which runs south from the Houses of Parliament.
- h Does this refer to levels, as the line was marked out several years before?

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#### V WORK RE-STARTS

Valuations of the work carried out by McIntosh started to be mentioned (1) and that in August for £1750 included the stone delivered but not that cut in the quarry. A letter (2) the following month regarding Valuation Certificate No. 3, mentioned that Telford had to certify the work done and then the Commissioners would prepare the necessary forms before paying the money, presumably because of their take-over. Included in the letter is yet another request for Telford to attend the next Canal Proprietors' meeting.

Attention switched to Gloucester in November when Nicholls wrote (3) to the Commissioners and informed them that the purchase of Smith's land was sufficiently advanced for them to assume early possession. The Committee had therefore passed the following -

"Resolved, that the Chairman be requested to confer with Mr. Telford as to the best method of forming a Cut, or additional Basin, to communicate with the Great Basin, for the reception of Severn Barges. Also as to the expediency of building a Wharf Wall along the East side of the Great Basin."

Later in the month, rather in desperation, Holden told Telford (4) that many people in Gloucestershire were anxious that he should visit them, especially as there was a new matter for his attention. a Four days later Nicholls asked Telford (5) for a meeting concerning the Gloucester Basin, as they now had possession



REFERENCES

Items prefixed T/GB refer to chronologically-numbered manuscripts  
in the Telford Collection at the Ironbridge Gorge Museum.

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**I INTRODUCTION**

1 F.R.S. 1881-1840.

**II THE EARLY YEARS 1794-1818**

1	By Robert Whitworth, Josiah Clowes, Richard Hall, George Bentley, Robert Mylne.	3	Robert Mylne.
2	Dennis Edson, James Dadford.	4	Ralph Walker, Samuel Hodgkinson, William Jessop, John Rennie, Ben- jamin Bevan.
		5	58 G.III c.17 17/3/1818.

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**III TELFORD IN CHARGE**

1	T/GB/1 - 16/3/1818 Holden to Telford.	2	T/GB/3 - 31/3/18 Upton to Telford.
3	5 - 8/4/18 Phillpots to Telford.	4	6 - 10/4/18 Telford to Phillpots.
5	8 - 14/4/18 Bayliss to Phillpots.	6	7 - 14/4/18 Phillpots to Telford.
7	9 - 5/5/18 Telford to Holden.	8	11 - 5/2/19 Holden to Telford.
9	12 - 13/2/19 ditto	10	14 - 2/6/19 contract with Tennant etc.
11	49 undated Woodhouse estimate	12	24 - 30/1/20 Telford to Holden.
13	GRO 1180/9/29 Stroudwater connection.		Gloucester Journal 6/3/20.
14	T/GB/27 - 15/4/20 Holden to Telford.	15	T/GB/29 - 6/5/20 Telford to Canal Co.
16	30 - 10/5/20 Henry to Telford .. ..	40	- 17/7/20 Henry to Telford.
17	31 - 11/5/20 ditto	18	38 - 11/7/20 Canal Minutes.
19	34 - 16/5/20 Woodhouse to Telford.	20	33 - 16/5/20 Woodhouse to Canal Co.
21	GRO D2159, 31/5/20 Telford to Canal Co.	22	39 - 11/7/20 Telford to Loans Bd.
23	" D2159, 1/9/20 Telford to Charleton.	24	47 - 8/11/20 Proprietors' Report.
25	T/GB/45 - 10/10/20 Fletcher estimate.		

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**IV HIATUS IN CONSTRUCTION**

1	T/GB/48 - 6/12/20 Fletcher to Telford.	2	T/GB/53 - 23/3/21 Mushet to Telford.
3	50 - 8/1/21 ditto	4	51 - 17/1/21 Charleton to Prop <sup>trs</sup> .
5	58 - 20/9/21 Holden to Telford.	6	PRO (Kew) - 22/5/21 Fletcher survey.
7	57 - 4/8/21 Fletcher to Telford.	8	T/GB/59 - 17/10/21 Fletcher to Telford.
9	75 - 4/12/22 ditto	10	61 - 19/12/21 ditto
11	62 - 4/1/22 Telford report.	12	63 - 15/1/22 ditto
13	64 - 18/1/22 Upton to Telford.	14	65 - 2/4/22 ditto
15	66 - 4/6/22 Telford to Holden.	16	67 - 4/7/22 Holden to Telford.
17	68 - 20/9/22 Fletcher to Telford.	18	69 - 15/10/22 ditto
19	70 - 16/10/22 Telford report.	20	71 - 29/10/22 ditto
21	72 - 11/11/22 Fletcher to Telford.	22	78-87 - 9/12/22 McIntosh tenders.
23	90 - 14/12/22 ditto	24	92 - 17/1/23 Telford to McIntosh.
25	93 - 6/2/23 ditto	26	93a - 7/2/23 Fletcher to Holden.
27	94 - 19/3/23 Telford to Holden.	28	93b - 14/2/23 Fletcher to Charleton.
29	93c - 5/4/23 Fletcher to Telford.	30	95 - 5/4/23 Fletcher to Telford.
31	96 - 18/4/23 Holden to Telford.	32	97 - 18/4/23 Holden to Telford.
33	98 - 14/5/23 Fletcher to Telford.	34	99 - 19/5/23 Charleton to Telford.
35	101 - 26/6/23 Fletcher to Telford.	36	100 - 5/6/23 Fletcher to Telford.

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V WORK RE-STARTS

1	T/GB/105 - 6/8/23 Fletcher to Telford.	2	T/GB/106 - 3/9/23 Holden to Telford.
3	110 - 19/11/23 Nicholls to Holden.	4	111 - 26/11/23 ditto
5	113 - 30/11/23 Nicholls to Telford.	6	114 - 4/12/23 Fletcher to Telford.
7	76 - 8/12/23 Fletcher to Telford.	8	118 - 11/12/23 Telford report.
9	112 - 16/2/24 McIntosh tender.	10	120 - 13/1/24 Holden to Telford.
11	119 - 10/1/24 Pearman to Holden.	12	122 - 16/2/24 McIntosh tender.
13	124 - 4/3/24 Fletoner to Telford.	14	125 - 13/3/24 Fletcher to Telford.
15	123 - 17/4/24 ditto	15	129 - 23/4/24 Holden to Telford.
17	130 - 25/4/24 Nicholls to Telford.	16	132 - 6/5/24 Fletcher to Telford.
19	135 - 11/5/24 Fletcher to Telford.	20	136 - 17/5/24 Telford report.
21	140 - 3/7/24 ditto	22	141 - 14/7/24 Fletcher to Telford.
23	145 - 24/8/24 ditto	24	145 - 5/8/24 Fletoner to McIntosh.
25	144 - 16/8/24 ditto	26	148 - 8/9/24 Fletcher to Telford.
27	157 - 8/12/24 ditto	28	153 - 9/10/24 ditto
29	152 - 23/9/24 Telford report.	30	159 - 24/12/24 Fletcher estimate.
31	160 - 30/12/24 Fletcher estimate.	32	162 - 2/1/25 Nicholls to Telford.
33	169 - 22/3/25 Fletcher to Telford.	34	163 - 14/1/25 Holden to Telford.
35	164 - 5/2/25 ditto	36	167 - 7/3/25 Fletcher to Telford.
37	170 - 4/4/25 ditto	38	171 - 30/4/25 Nicholls to Telford.
39	172 - 9/5/25 ditto	40	173 - 25/6/25 Fletcher to Telford.
41	171 - 6/8/25 ditto	42	175 - 31/8/25 Telford to McIntosh.
43	182 - 2/9/25 Telford report.	44	179 - 2/9/25 Telford to Charleton.
45	183 - 7/10/25 Fletcher to Telford.	46	184 - 13/10/25 Fletcher to Telford.
47	185 - 23/10/25 ditto	48	189 - 15/12/25 ditto
49	191 - 8/1/26 ditto	50	192 - 8/1/26 ditto

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VI COMPLETION AND OPENING

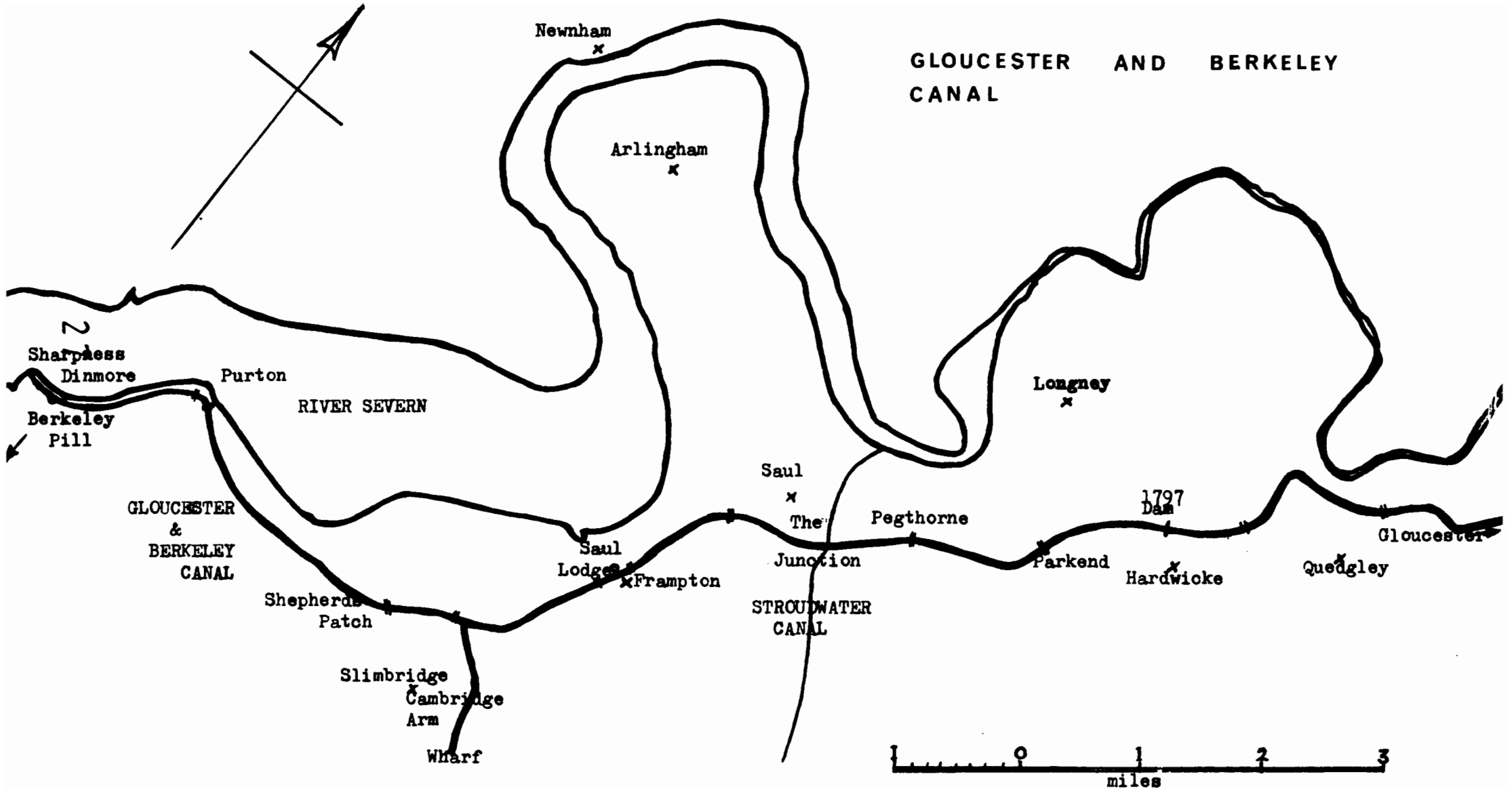
1	T/GB/198 - 5/4/26 Fletcher to Telford.	2	T/GB/200 - 23/4/26 Fletcher to Telford.
3	203 - 13/5/26 Telford to McIntosh.	4	204 - 13/6/26 Fletcher to Holden.
5	208 - 7/8/26 Fletcher to Telford.	6	Gloucester Journal 19/8/26.
7	209 - 29/8/26 ditto	8	T/GB/211 - 4/10/26 Fletcher to Telford.
9	215 - 29/10/26 Clegram to Holden.	10	216 - 31/10/26 Holden to Telford.
11	218 - 11/11/26 Telford report.	12	222 - 9/12/26 Telford to Fletcher.
13	219 - 22/11/26 Holden to Telford.	14	220 - 6/12/26 McIntosh to Fletcher.
15	226 - 14/12/26 ditto	16	227 - 17/12/26 Fletcher to Telford.
17	229 - Jan./27 McIntosh to Telford.	18	240 - 31/1/27 a/c additional work.
19	McIntosh daywork sheets.	20	235 - 18/1/27 Fletcher to Telford.
21	238 - 19/1/27 Bloxsome/Jones.	22	261 - 23/4/27 Smith to Clegram.
23	Gloucester Journal 17/2/27	24	246 - 7/2/27 Tyrell to Telford.
25	T/GB/247 - 8/2/27 Tyrell to Telford.	26	248 - 15/2/27 Fletcher to Telford.
27	Gloucester Journal 31/3/27	28	Gloucester Journal 21/4/27
29	T/GB/244 - 3/4/27 Clegram certificate.	30	T/GB/255 - 6/4/27 Rees to Telford.
31	257 - 11/4/27 Holden to Telford.	32	260 - April, Holden to Telford.
33	Gloucester Journal 28/4/27		

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Splatt Bridge.



GLOUCESTER AND BERKELEY CANAL

Newnham x

Arlingham x

Longney x

Saul x

The x

1797 Dam

GLOUCESTER & BERKELEY CANAL

STROUDWATER CANAL

Slimbridge Cambridge Arm

Wharf



2

Sharpness Dinmore

Berkeley Pill

Purton

RIVER SEVERN

Saul Lodges x Frampton

Pegthorne

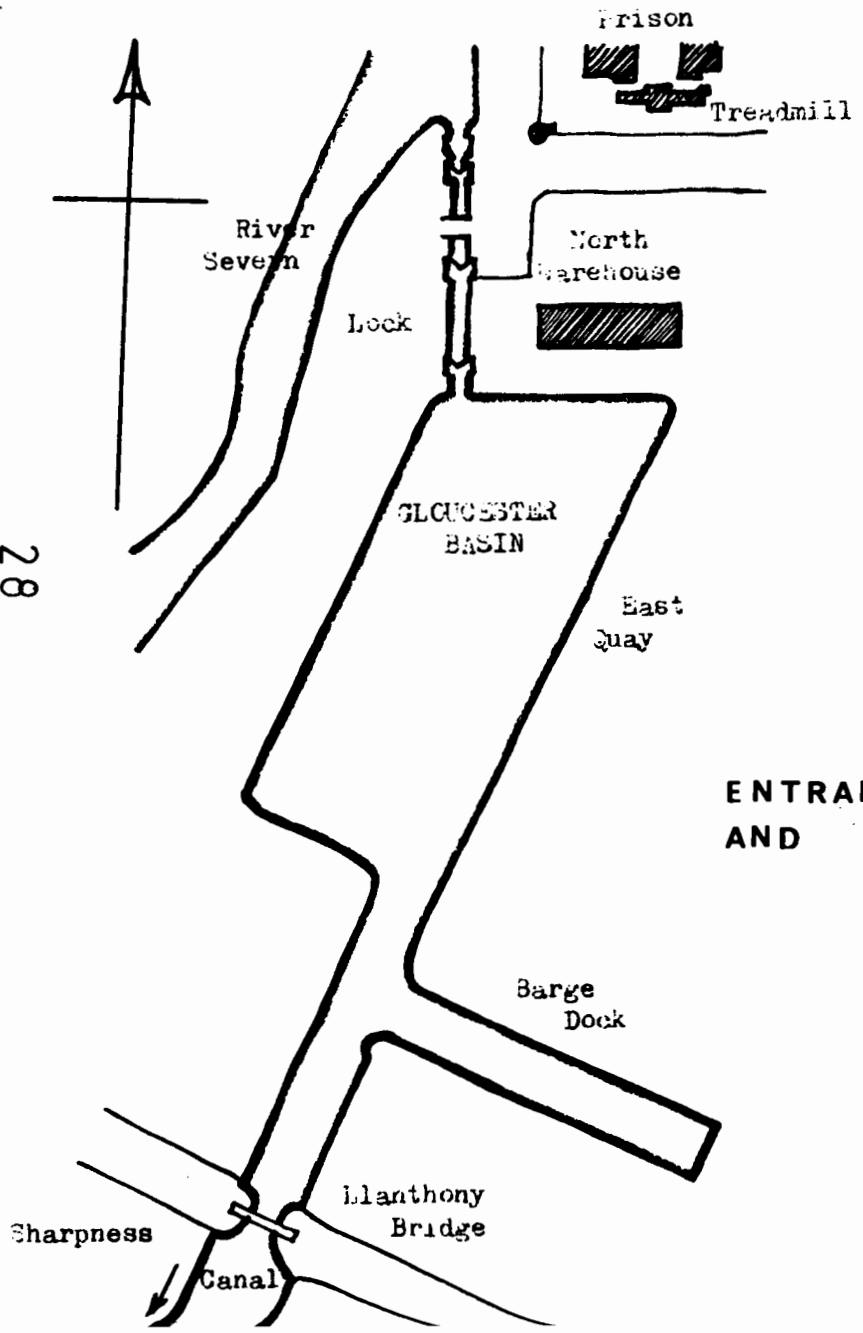
Parkend

Hardwicke

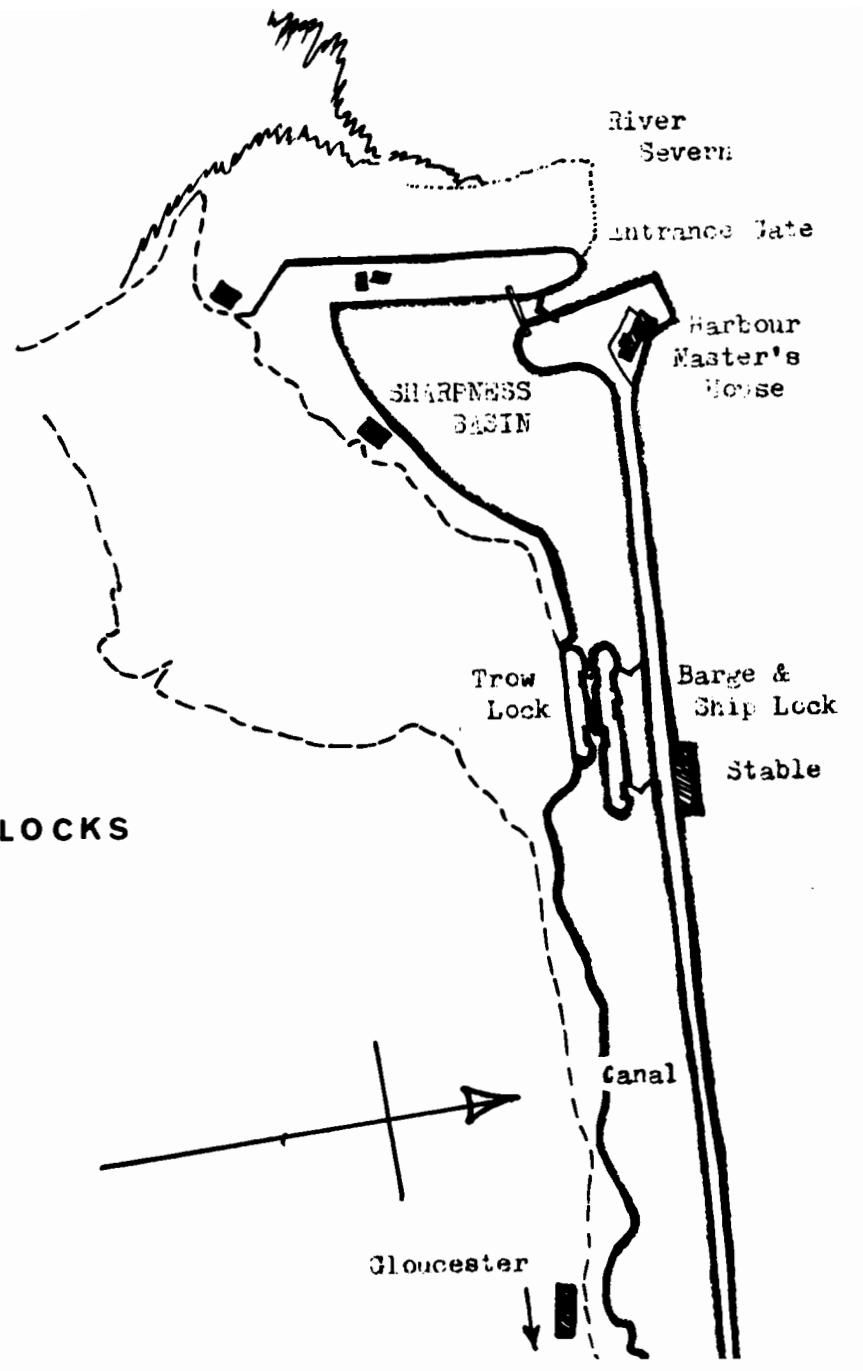
Quedgley

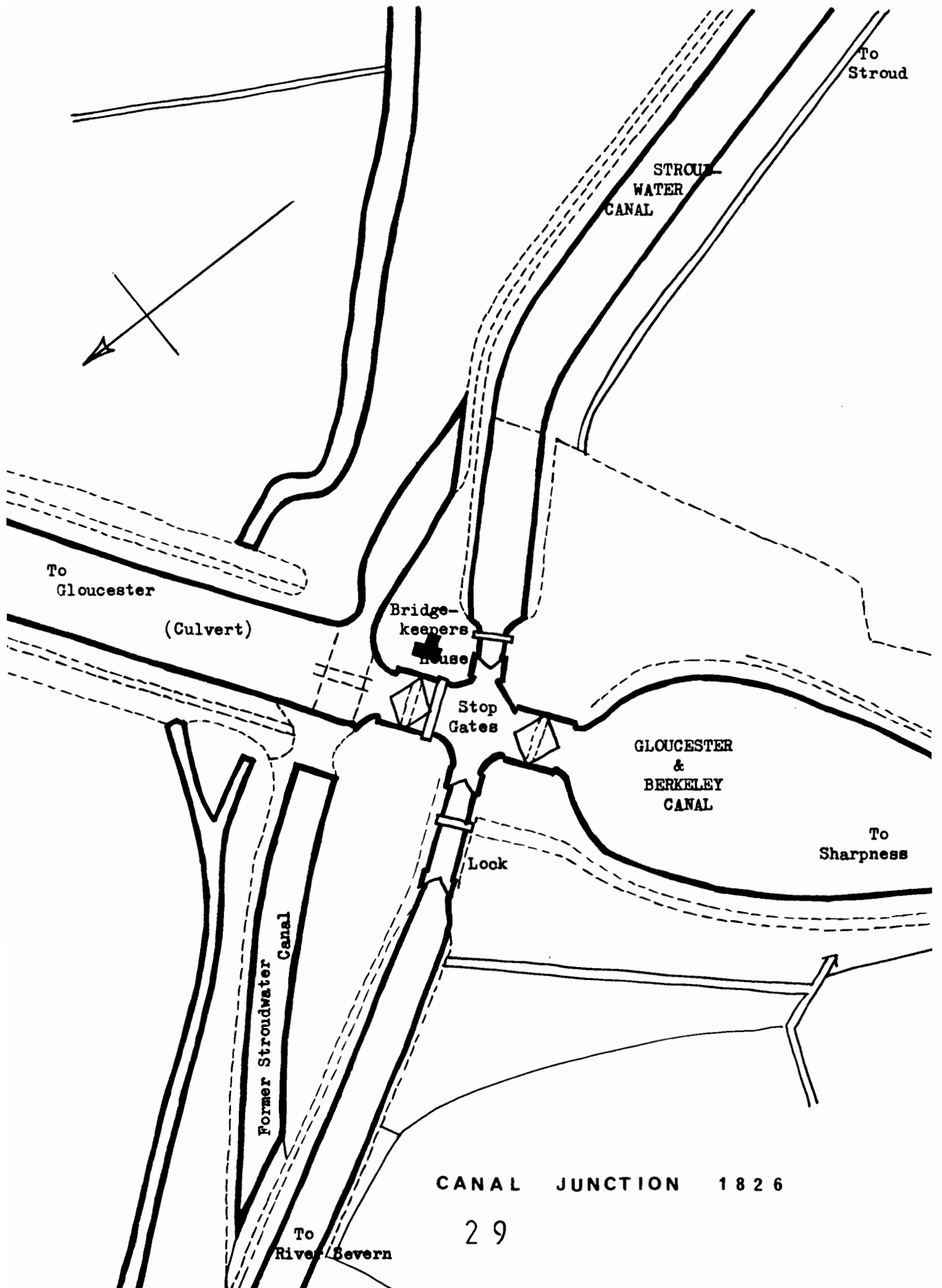
Gloucester

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ENTRANCE LOCKS AND BASINS





CANAL JUNCTION 1826