

THE CONSTRUCTION OF THE STROUDWATER CANAL

An Act authorising the construction of a navigation to connect the wool manufacturing district around Stroud with the river Severn was passed as early as 1730. A pamphlet of 1775 called The Case of the Stroudwater Navigation is quoted by J. Phillips in his book A General History of Inland Navigation (1784). The pamphlet, says Phillips, claimed no more than that the proposed navigation offered excellent investment prospects.

Such was the progress of the scheme in 45 years! Yet Stroud and its surrounding district was said to contain some 50,000 people (1); and communications were so bad that corn prices, according to the pamphlet already referred to, were "higher in Stroud than anywhere in the Kingdom". That may or may not have been the case, bearing in mind the purpose of the pamphlet it was probably a piece of salesmanship. But in comparison with river transportation, overland haulage was expensive; it accounted for large divergencies in local prices. The pamphlet presses home its point with comparative statistics:

25 times more manpower was needed to move 70 tons of coal by road from the River Severn to Stroud than by water.

The case for the building of a canal or a navigation clearly stems from the co-existence of good potential markets and poor communications. Having been rather carried away in his description of the glowing prospects of the venture, the author of the pamphlet is then faced with the obvious difficulty of explaining why the venture had not so far found enough local backing to get started. Rather unconvincingly he states: "This Act, though supported with great spirit, whether from want of money or through some misunderstanding among the undertakers, was neglected until 1755".

He might well have mentioned the opposition of the mill owners whose premises occupied sites between Stroud and the Severn. They feared that a navigation with locks would rob them of the water power on which the mills depended. That this opposition was significant is apparent in a private scheme put forward by a local 4-man syndicate in 1755 for a navigation that employed no locks. It is this scheme to which Phillips was referring in the passage just quoted.

All goods were to be carried in containers. Changes in water level - one at each mill - were managed by transferring the containers from a barge on the higher level into one waiting in the lower level by way of a crane built on the top of the dam which spanned a specially constructed channel skirting each mill pond.

The scheme foundered, and its promoters were brought to near-ruin. Phillips may have overstated the case for the canal but his remark about "great spirit" is borne out by the evidence; for it was on land belonging to Mr. Kemmett a member of the syndicate, that, twenty years later, the excavation of the Stroudwater Canal began. It is

reasonable to suppose that he was a canal enthusiast - the type that made possible the canal boom of the 1770s.

As an achievement, the Stroudwater Canal does not rank high in the annals of canal building. It includes no great single feat of engineering; no soaring aqueduct, no great tunnel, no spectacular hill climb; nor is it especially long - a mere "feeder" to the Severn, in fact. It has the dubious distinction of having taken 50 years to get started. Then, after about a century of moderate success, it gradually declined in importance. In the early 1950s an effort was made to preserve it for holiday cruising, but the estimated cost was prohibitive and nothing was done. Apart from the initial £140,000 required to make the canal navigable again, the upkeep would have demanded a further £1, 00 per annum (2). After 1954, Gloucestershire County Council replaced several of the original bridges, together with their steep approaches, by concrete structures that just clear the surface of the water. These effectively put an end to any hope of a revival of the canal as a waterway. More recently, motorway construction works have obliterated parts of the canal completely and the lock and basin at Framilode, originally part of the ever-optimistic Mr. Kemmett's orchard, have been filled in and grassed over.

In 1775, a Framilode miller, supported and financed, by business interests along the proposed line of the canal, brought an action against the canal commissioners (as they were then called) at the Gloucestershire Assizes for allegedly going beyond the powers invested in them by the Act of 1730. He claimed that the Act did not authorise the cutting of new channels to straighten the line of the navigation - only the widening and deepening of the river. Such a cutting would by-pass existing mills and deprive them of vital water supplies. The fact that an influential section of opinion in the City of Gloucester was on the side of the miller may have made a difference, for records show that Gloucester Corporation owned mills on the stretch of river concerned. (3).

The miller won his case. By this time (1775) then, the Commissioners had at last begun the long expected canal. With the completion of the case came the news that no further work could be done. (4) Unless a more acceptable scheme could be submitted by the Commissioners, there would be no canal under the 1730 Act. But already the venture had cost £4,000: too much to write off. The commissioners responded to the decision in the only way they could: they promoted a new Bill in Parliament which would authorise the construction of the sort of canal they had in mind. Canal traffic demanded a fairly straight waterway. The river with its sharp bends was of no use to them, however much widening and deepening was done. Landowners whose property lay along the line of the proposed canal were to be obliged to sell to the canal company at a fair price, the land it needed.

Once its form was thrashed out the Bill was promoted with desperate energy. Opinion was canvassed in all quarters in an effort to disprove the opposition's claim that the rate of flow in the river was inadequate to supply both the canal and the mills. Mr. Thomas Yeomans, one of the commissioners, managed to measure the rate of flow in the river as 37,990 tons per day and even to convert the figure into lockfuls of

water. He further showed that with the proposed reservoir completed, less than a Sunday's flow of water would keep the canal supplied for the ensuing week. (5) A succession of elderly employees from the local mills, all experienced in maintaining water supplies for the use of the mill, were invited to affirm that it was common practice for the "Sunday water" to go to waste.

Representatives of the commissioners were sent to arrange a favourable reception for the Bill in Parliament. Yet others were sent to seek the support of the landed gentry. The strong feeling in favour of canals that was very much in the air at the time lent extra power to the promoters' hand. The Bill was passed in the early part of 1776.

Share capital of £20,000 was authorised with an option on a further £10,000. In the event, a total of more than £41,000 was needed to complete the canal and its installations. A third instalment of capital - the difference between the authorised amount and the final cost, was raised finally by passing round the minute book so that the shareholders present at the Special General Meeting on April 1st, 1779 (6), could record voluntary subscriptions in units of £100. It was only this eleventh-hour support which enabled the last stretch of canal to be completed. It is interesting to note that an early estimate for the whole work was £14,000, a figure which shows that the £20,000 share capital that the commissioners were authorised to raise, was probably a genuine estimate of the upper limit of cost.

Under the new Act, the old commissioners of the canal re-styled themselves the "Committee of Directors". The proceedings of the regular meetings of the Committee survive from these early days. They fill up a large leather bound volume, recorded in the fine hand of the clerk Benjamin Grazebrook (7). The record of proceedings, (subsequently referred to as "the minutes") provides the basic source material for the analysis that follows; for they provide a more than interesting account of the operations of a committee of entrepreneurs working 200 years ago. They contain enough evidence to enable the reader to speculate on the question that must have been uppermost in the minds of the committee throughout the entire period of the construction.

Why were the actual costs so much higher than the estimates? The reasons as they emerge from a consideration of the minutes are fascinating because although they mirror a social structure that has changed greatly in the intervening 200 years, they nevertheless leave the reader with the impression that the economic man of Adam Smith's time differed little from his counterpart of today. Further, the unfortunate experiences of the directors of this comparatively minor engineering project have a significance beyond themselves. They epitomise a situation in which non-specialists are at odds with an interlinked system of problems, which, after a period of evolution, called forth the highly expert specialist companies that dominate civil engineering today.

After the passing of the Act, no time was wasted in removing the dust sheets, so to speak, from the work already in hand. The work at Framilode, mostly completed before the injunction of 1775, had been

covered up against the winter frosts before the labour force had been laid off. But from the recommencement of the work in the spring of 1776, the minutes recount a succession of difficulties and delays where the directors are nearly always seen at a disadvantage.

Indeed, had it not been for the fact that half a Stroudwater Canal would clearly have been a greater loss than a complete canal at an inflated price, the scheme would have foundered for lack of funds. The prospect of the greater loss guaranteed the acceptance of the lesser. This was the instrument of blackmail that lurked behind the glowing prospectus of every canal undertaking.

It is appropriate at this point to give some account of the Committee members, 13 in number, since it is with their decisions that this study is mostly concerned. Local directories show that they were mostly involved in the manufacture of woollen goods and its finance. Significantly, those who owned mills had premises upstream from the terminal of the canal. These included Joseph Wathen, Thomas White and William Knight. At least 4 were bankers: Grazebrook and Wathen were partners in a firm whose premises in Rowcroft, Stroud, later became the headquarters of the canal company. Hollings and Dallaway were also Stroud bankers. None of these men could have had much practical experience in canal building. Furthermore their time was partly occupied in the day to day administration of their respective businesses.

The task that these 13 men undertook involved them in a succession of decisions, each serving the same central purpose: namely, to maintain a balance in the two main areas of fund deployment, bearing in mind that the flow of funds was limited. The two main areas referred to were those of land purchase and construction. Subscriptions from shareholders were collected at intervals: 10% of each shareholder's total commitment at any one time. And, like the financial resources, the time available for decision making was scarce.

The committee of directors met formally once a fortnight at the George Inn in Stroud (now demolished to make way for a modern chain store). There they would review the progress of the work, issue new orders and deal with the problems arising. Business must have been conducted briskly: from time to time, the minutes include unfinished sentences, indicating perhaps the clerk's concern to catch the next item on the agenda as soon as it was broached, rather than wait until the last sentence of the previous one was completed.

Everyone was aware that shareholders expected a return on their money with the minimum delay. There was a pressing need therefore to keep the work on the move. So capital locked up in premature land purchase was not available for meeting current construction costs. It represented a less than optimum deployment of funds in the two areas already mentioned. Conversely, if land was not available when needed, construction would be held up and the specialised labour force might begin to drift away. An entry of July 1776 in the minute book refers to the canal surveyor's mission to Warwickshire and Leicestershire. His orders were to recruit (or, possible, poach?) extra labourers. Recruitment of the right sort of labour must have

been difficult when so much canal building was going on in the Midlands. Such a situation offered obvious opportunities for hard bargaining to the landowners with whom the committee had to deal. Figures suggest that the further the canal proceeded, the stronger the sellers' position became: more capital sunk in the work, an urgency to produce some return on it. There was a premium on the quick deal, so prices were forced up, notwithstanding a clause in the Act which demanded a fair price of the sellers. The committee couldn't afford to wait for arbitration in disputes over prices. Between 1775 and 1778 land bought outright rose from £20 per acre to as much as £59. Land bought on 35-year purchase agreements was as low as 20/- per acre per annum in 1775 and rose to 40/- per acre in 1778. It is not possible to show exactly how much money was spent in obtaining land because the proportion of outright sales to 35-year purchase agreements cannot be ascertained, but it is safe to say that the cost was much higher than the original estimates allowed for.

The land purchase position is well illustrated from two entries in the minutes book dated May 9th and 16th 1776. A Mr. Purnell of Dursley refused to bargain with the committee over his selling price of £40 per acre, preferring to let the dispute go to arbitration. Since no jury was immediately available, the committee decided to pay Mr. Purnell his full price.

The same urgency led to other inflated costs in other areas. On March 5th, 1778 - a whole year after the final line of the canal at that point had been fixed, negotiations opened with the vicar of Stonehouse for the acquisition of part of the churchyard. The piece in question lay at the southern edge. An inspection indicates that all the graves in that area are of recent date, so it is likely that the purchase agreement was not complicated by the presence of old graves. A piece of land to the east of the church had been bought by the directors, in the hope that an exchange or part-exchange could be arranged. In June, the vicar was holding out for a price of £35 for the piece of churchyard, plus the immediate payment of all tithes due on parish land already owned by the directors. The company was very short of funds: it was in the following February that the appeal for voluntary subscriptions was made. An application was made to the Bishop of Gloucester, and in this case a favourable decision was obtained. The land was exchanged on payment of £18. 7s., and on August 13th, the navvies moved in. A delay of over 5 months at that time, meant that when work began, it had to move along with all speed: quality of workmanship suffered and its inevitable sequel was a larger maintenance bill later on.

The Stonehouse churchyard incident well illustrates the "position of disadvantage" earlier referred to. As incidents like this occur, the committee is seen firmly fixed on the horns of dilemma. Its plight seems inevitable: yet perhaps this was because the directors with their inexperience could not cope with more than one strategic move at a time.

There is a row of mean cottages skirting the canal at Framilode. Looking at their walls, the observer will notice how many bricks are mis-shapen, cracked, semi-vitrified like clinker, and discoloured. From early references in the minutes, it appears that the clay used in the

manufacture of bricks for the lock at Framilode was obtained on the site of the lock itself. Clearly, with a heavy commodity like bricks, there was a strong incentive to reduce transport costs. There was clay of a sort at hand, so the committee ordered bricks to be made of the local clay. The results were disappointing. Many of the bricks were unusable in the construction of the lock, which probably explains their presence in the walls of the cottages.

The committee of directors brought its decisions to bear on the construction of the canal through the office of the Surveyor. The surveyor was the sole full-time paid executive of the company. He was expected to give an informed opinion on all aspects of canal engineering. This was reasonable: but beyond this he appears to have been expected to attend to many problems that arose during the work, even though they might have nothing to do with canal building as such. Even the supply of hay for the company's horse(s) was attended to by the surveyor. In a series of entries in the minute book dated December 1776, the story is told of the purchase of a hayrick and its unfortunate sequel. Anyone buying hay in December would find himself in a seller's market, so the surveyor - at this period it was Mr. Lingard - was sent out to obtain "the best terms he can". The phrase crops up often in the minutes. Often, as here, it probably did not reflect the true situation. Mr. Lingard was after hay at any price: the survival of the horse as a company servant depended on it; if he failed, the horse would have to go. His progress is reported: a hayrick was bought on the undertaking that it could stay where it was while the horse consumed the hay. Then it was found that the hay was bad because the thatch of the rick was damaged. The fate of the horse is not recorded. It would be interesting to know whether Lingard was censured and whether his failure in the role of chief forager contributed to his dismissal later on, but the hayrick incident suggests that the committee expected too much from its surveyor. Incidentally, Lingard was the third surveyor to work for the company. His two predecessors were dismissed apparently without a reason and Lingard himself was replaced in November 1777 by Thomas Frewen. At a salary of £3 a week Frewen survived only until May 1778, after which the post was taken over by Benjamin Grazebrook now a member of the committee. As an event in the history of the construction of the canal, Grazebrook's assumption of the responsibilities of surveyor is significant because it adds support to the view that the committee was constantly at odds with its construction problems. Is it not reasonable to suppose that, in the belief that the "real" reason that so much money was being spent was the negligence of the surveyor, the committee, in desperation, appointed someone who identified himself entirely with the company's fortunes, and who could be trusted to have the interest of the company at heart?

The £200 that Grazebrook received on taking up the appointment then appears as the value the company set on his allegiance. In contrast, the other surveyors had been paid well in arrears. Frewen received no salary at all until his dismissal. Perhaps better treatment would have secured their loyalty from the beginning.

The fate of the surveyors leads on to the question of labour relations in general. Lingard was dismissed ostensibly for not inspecting the constructions twice a week. This inspection would appear to include a tour of the completed sections as well as the work in progress, because in the minutes prior to the date of Lingard's dismissal, there are

references to the committee's concern over the state of the lock gates at Bristol Road. John Pashley, the employee in charge of the lock at Bristol Road, then in use, allowed the lock gates to leak badly. Lingard failed to see that Pashley repaired the gates. The fact that Pashley was getting away with overcharging on tonnage dues also angered the committee. Lingard was held responsible, and both he and Pashley lost their jobs.

The few references to the general labour force that occur in the minutes are confined to those occasions when it gave trouble, either through misbehaving itself or by doing its work badly. Here it should be said that the men were not directly employed by the company but through a sort of labour contractor who agreed on a piece-rate figure for the various jobs that his men had to do: for example 3d. per cubic yard of earth moved. The contractor presented a weekly account of the gang's work and paid the men out of the proceeds. Presumably the committee followed an established procedure in following an arrangement which placed a premium on speed rather than on quality of workmanship. But the wisdom of the decision is questionable because in canal building careful work is vital. The puddling stage of the work, for example, requires great care. If it is done carelessly, the water leaks away and any loss of water on the Stroudwater canal needed to be avoided, in view of the limited water supply. Yet leaks were repeatedly reported.

The company needed, above all, reliable workmen; so it needed a good relationship with its labour force. The following incident shows the treatment that the committee handed out. In March 1778, trouble arose in Mr. Beswick's gang. The men refused to move turfs a certain distance from the canal. They also refused to use a piece of equipment called "the porcupine". In response, the committee ordered that Mr. Beswick should employ other men to move the turfs and find pay for them out of the money he received when the whole job was completed. No negotiating: just the ultimatum. So it is hardly surprising that acts of pilfering are reported. Dishonesty and bad workmanship, the twin consequences of exploitation of labour, must have added their share to the final high cost of the canal.

Amid great relief rather than great rejoicing, the canal was opened on July 21st, 1779. The committee exchanged the responsibility of construction for that of administration. There was still great optimism though; after all, the canal represented a revolution in transportation, and it could offer much better terms than its business rivals. Some small but valuable experience had already been gained in the collection of tonnage dues as successive sections of the work had been opened to traffic. The committee would keep a more careful eye on men like John Pashley, following the exposure of his fraudulent practices.

Careful watch would be kept, too, on barge owners who tried to avoid tonnage dues by off-loading cargo at points between the official wharfs. Penalties would be established for the careless use of the canal: for the sinking of overloaded barges, for the ramming of lock gates. Running a canal had its problems, but at least it brought a return on the large capital sum invested in it. So the committee was relieved when the construction stage was completed.

It is not the object of this study to pursue the fortunes of the

committee beyond the summer day when the last section of the canal up to the basin at Wallbridge was opened. The minutes that cover that period of the construction have provided the material on which certain conclusions have been based. They give information, firstly, on the way canal construction was organised, they tell of the regular committee meetings in Stroud, of the orders issued, of the chain of command by which the orders were carried out. Secondly, through the interchange of information between the committee room and the site, they give an account of the relationships that existed between those in charge and those hired to carry out the work. They build up a picture of a system of relationships which belongs to a different era, but one in which the men portrayed bear an unmistakable likeness to their modern descendants.

The committee does not emerge as a highly efficient decision-making body. Its members appear to suffer from the lack of foresight due to inexperience. They seem to indulge in a culpable and expensive high-handedness in their dealings with their servants. Yet there was justification: confidence, even over-confidence in canal building was the vogue. The high-handedness was typical. The directors did, after all, successfully extract from local sources the money they needed, so presumably their approach commanded the confidence of local men of substance.

Nor must one judge the committee's enterprise in the light of the subsequent fortunes of canals. These Stroud manufacturers and bankers brought a commendable forward-looking attitude into their business activity. In their age they were wise, callous perhaps, but wise.

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