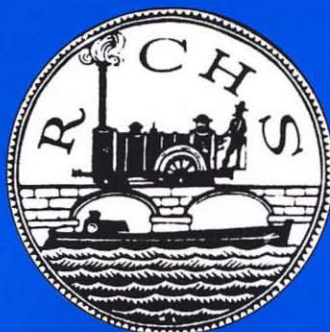




Journal

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Success at last: The Oxford Railway Act, 1843

BY ROBERT S. SEPTON

This article is the last of three describing attempts to empower a railway to Oxford.¹

Following the second unsuccessful attempt to empower a railway to Oxford in 1838, the idea seems to have lain dormant for three years or so. MacDermot mentions an attempt being made in 1840,² but there is no evidence in the House of Lords Record Office that a bill was promoted in that year, although there is a plan deposited for public inspection with the Clerk of the Peace for Oxfordshire, John M. Davenport, bearing that date.³ It shows the terminus altered from St Clements (where it had been proposed in 1837 and 1838) to Folly Bridge. However, there is a difference from what was finally chosen as the route in that, after passing through Kennington, it goes to the east instead of the west of the Abingdon Turnpike, i.e. between the road and the river, with the terminus also on that side of the turnpike, a few yards short of the bridge. None of the accounts referring to an attempt being made in 1840 gives any details or says why it failed.

During August 1842, notices appeared in the local press promoting no less than three lines linking Oxford to London. One of these, which was soon abandoned for some unstated reason,⁴ was for a branch from St Clements, east of Magdalen Bridge (where the GWR had previously proposed to have their terminus), to Aylesbury which had been linked to the London and Birmingham Railway at Cheddington in 1839 by a seven mile long branch - one of the first to be opened in the country. Soon after opening it was purchased by the L&BR. Unusually, the advertisement for this branch did not give the name of the solicitor or any other person or body promoting it.

The second line was the idea of George Stephenson.⁵ His plan involved linking up with the GWR by a different route from the one Brunel envisaged. It still used St Clements for a terminus, but then continued through the parishes of Iffley, Garsington, Dorchester, Wallingford and Benson to join the GWR in Crowmarsh Field near South Stoke on the east side of Moulsoford Bridge. This route did not require any bridges over the Thames. Moreover such a route, it was claimed, would recover for Oxford trade being lost through coaches running to Maidenhead for the GWR and to Tring for the L&BR. A meeting in support of the line, attended by Stephenson and influential people from the city, was held at the Mitre Hotel on 7 August.⁶

In September it was reported that plans for the line were going ahead⁷ and, on 27 October, what was called a 'private meeting' - presumably to exclude possible objectors to the line - was held at the Star Hotel.⁸ Stephenson reported that he had surveyed the line and gave the total cost, including rolling stock, as £120,000. He and 'his friends' were willing to advance a half of the total and guarantee a 5% dividend. A deputation, consisting of J.W. Henley (one of the County MP s) and the Mayor was appointed to seek the Vice-Chancellor's views - although he had already expressed support - and 'afford facilities to ensure that the discipline of the University was preserved'.

The third line to be advertised was the resurrected branch sponsored by the GWR to join their line at Didcot, but with a changed location for the terminus in Oxford; and it was thus not surprising that, after brief consideration, the directors of the GWR decided to oppose Stephenson's plan. They too held their 'private meeting', but in the Angel Hotel, on 1 November, with between 30 and 40 people present. One local paper claimed that the

purpose of the meeting was to 'set aside' the Moulsoford line. But what annoyed it most was that both plans were to be considered only by the Heads of Colleges (the Hebdomadal Board) 'to whom a kind of veto is accorded in the matter. The worthy public are altogether out of question in the affair, and must take the good or the evil that stranger directors may choose to provide . . .'⁹

However it was not merely due to prejudice or self-interest on the part of the GWR that they rejected Stephenson's plan. Brunel gave the matter serious thought and had good reasons for rejecting the route, as he explained in a letter to Stephenson after discussing the matter with G.P. Bidder, the agent for the line.¹⁰ A branch to Moulsoford from Oxford would be at least five miles longer than one to Didcot. It would thus require more capital to build and would cost £2,000 to £3,000 more per year to maintain. There would be no saving in the distance from Oxford to London; and that from Oxford to Bristol and the west would be eleven miles greater. It would be cheaper to make the most use of the GWR main line, which was already in existence, rather than build the longer branch. Even if, as seemed likely, the coal owners used it, it would not make coal any cheaper and would not bring any essential compensating revenue from passengers.

On November 7 1842, the university's governing body discussed the proposals that had been made in letters received from Bidder and from the Chairman of the GWR. It resolved:

First, that the Board will not oppose the introduction or progress of a Bill for the making of a Railway from Oxford provided the maintenance of the discipline of the University be protected by clauses satisfactory to the University, and that the Station of the Railway in Oxford be so situated as not to interfere with the ornamental property of any of the Colleges. Secondly, that the proposed Line to the Great Western beginning near Folly Bridge on the West side of the Abingdon Turnpike Road appears to be the least objectionable.¹¹

In fact, the university had been concerned with the effect of the railway on student behaviour soon after it reached Steventon. On 1 June 1840 the Hebdomadal board had arranged for Cooke, an invalided policeman (a member of the university's own force), to be stationed for a fortnight at Steventon to report on 'the use made of the Railway and its present approach to Oxford by the young men'.¹² A fortnight later it decided that 'with a view to obviate the inconvenience which may be apprehended from the recent establishment of so rapid a communication as that by the Railway with the neighbourhood of Ascot Heath, it would issue a notice drawing the attention of junior members of the university to one of its statutes and cautioning them that the provisions thereof will be strictly enforced against such as shall be found to have acted in violation of the Statute'.¹³ The one in question (XV, Sect. 15, Paragraph 6) laid down that:

no member of the University shall engage as a principal or partner in a horse race, either by riding himself, or subscribing to a sweep-stake for that purpose, or in any other manner whatever, nor attend cock-fights (barbarous as they are and quite unworthy of a man of education and a gentleman) under pain of rustication from the University.¹⁴

The Board set up a Committee to frame clauses to preserve university discipline with the proviso that if either of the companies did not agree to them, the university would oppose their bill.

The City Council was disappointed at the choice of the university and would have

preferred Stephenson's route. Their Railway Committee reported to the council in November that they had had several meetings with the Vice-chancellor and the solicitors for the GWR and had also been informed of the decision of Heads of Colleges.

Their resolution revealed that the Didcot route now envisaged a different site for the terminus from the one chosen for the 1837 bills. Although not far from Christ Church and its meadow, it was to be on the other side of the river.¹⁵ The council had good reasons for preferring the other branch, considering it much the better and, as their Railway Committee reported:

greatly regret that it should have been abandoned. It would not oppose any obstacle to the floods which they fear the proposed embankment from Folly Bridge will do, and as it only crosses the Thames once, more than twenty miles down River below Oxford, and going through for the most part a poor tract of country, it is not likely to meet any serious opposition or to be so expensive as to raise the fares beyond what might be expected. It would also in the opinion of the Committee, afford the readiest means of eventually uniting the Great Northern and Western Lines, whereas the obstacles in getting to the North of Folly Bridge, are in the opinion of the Committee, insurmountable. The Committee believe that they were justified in thinking that a great majority of the inhabitants of the City and neighbouring country agree with them.

'Great Northern' appears to have been an umbrella term referring to all the railways to the north of Oxford.

In connection with Stephenson's route, the Railway Committee referred to a bridge being needed; but this was on the main GWR line at Moulsoford. Stephenson's branch would have joined it after the crossing; so the cost of even one bridge would not have to be met. No resolution was passed at the meeting; but the council, as well as being disappointed by the decision of the university to support the GWR line with a preference for the Folly Bridge terminus, also considered that they had been treated badly by the GWR in not being offered the same opportunity for consultation as the university. It must be said that over previous schemes none of the railway companies appeared to attach much importance to what the city might think. Alderman Butler, who had been a supporter and share holder in the first GWR scheme in 1837, now went so far as to say that he did not think that the GWR had any intention of building their line, but merely wished to obstruct Stephenson's plan. Even more surprisingly, since he had given evidence to a parliamentary committee in support of the 1837 and 1838 bills, he now thought that the town would be better off without a railway.¹⁶

Another alderman who had changed his mind, but in the opposite direction, was Lawrence Wyatt, a barge master, in spite of the likelihood of his business being damaged by the railway. He did not think it would worsen the flooding along its new route parallel to the Abingdon Turnpike; and Stephenson's terminus at St Clements would spoil the entrance to the city from the east. This *volte face* seems even more surprising in recalling that, both in council and before the parliamentary committees in 1837 and 1838, he had asserted the opposite, although the route proposed on those occasions went over ground less susceptible to flooding than that around the Abingdon turnpike, which was notorious for it. There was a simple explanation in that he owned land called Welchman's Meadow along the new route which he hoped to sell - and apparently was to sell - to the GWR when the line was built.¹⁷

Wyatt went on to inform the council that Walsh, the solicitor for the Didcot line, had gone

to Steventon (the nearest station on the GWR line, 12 miles away) to fetch Brunel. But, after waiting an hour, a message came back that he was not there but would be available any Thursday. He and Saunders, the GWR Secretary, eventually met the Railway Committee on 24 November and managed to persuade it to support their line.¹⁸

But the council itself was divided; and this became clear at its meeting on 6 January, 1843, adjourned from 2 January in order to give the Railway Committee the opportunity to make a proposal for a course of action. It was to recommend assent to the Didcot line and was moved by Sadler but opposed by Alderman Charles Tawney, the Chairman of the Oxford Canal Co., with the result that the recommendation was defeated by 19 votes to 13.¹⁹

The following month Abingdon town council also decided to oppose it because 'the line of the railway has given great dissatisfaction to the inhabitants in general'.²⁰ It will be noted that it was the route and not the railway to which they objected. Their dissatisfaction with it arose through Abingdon being served only by a spur from the branch, whereas in 1837, when the line was first being promoted, they understood and hoped that it would actually pass through Abingdon.²¹

On 1 March 1843, after a debate lasting four hours, Oxford council approved a petition to oppose the line, probably drawn up by the clerk to the council, presenting their case more cogently than had been done in the debate. It stated that:

Our attention has been drawn to 'A Bill for the making of a Railway from the Great Western Railway to the City of Oxford', and we object to it for the following reasons:

It has been twice before proved by evidence that such a railway is unnecessary. It is the project of Strangers unconnected with the City of Oxford and we are unacquainted with even the persons or residences of Frederick Pratt Barlow, Robert Frederick Gower, Thomas Richard Guppy, William Singer Jacques, George Jones, James Lean, Peter Maze, Frederick Ricketts, Henry Simmonds and William Tothill who are named in the said Bill as subscribers, nor have we heard that there is a single subscriber in this City.

There are already coaches travelling between Oxford and the Station at Steventon eight times a day, and we are informed that it is proposed to lay down only a single line of rails and to have trains for passengers twice or at the utmost three times a day and that there will be no other means of getting on the Great Western Station at Didcot from Oxford.

The trade of this City and the value of all property is at this time much depressed. We believe that this is caused by the facility of communication with London and will be increased by the proposed Railway.

It is proposed to make an Embankment over the low meadows to the South of Oxford which are subject to frequent inundations, and notwithstanding this evil we have good reason to believe that the present line and terminus have been advisedly selected by the Great Western Railway Company because the difficulties they present to making a continuation to the North if not altogether impracticable or not likely ever to be surmounted.

We know that a better and cheaper line free from these objections had been surveyed and abandoned in consequence of the determined hostility of these powerful Monopolies.

We believe that if this line is made the proposed embankment will prove highly injurious to the health of the poorer inhabitants who reside in the low part of the City below its level and which is already frequently inundated. ”

The ‘Strangers unconnected with the City’ were all directors of the GWR, residing mainly in London and Bristol.

It is surprising that the council should think that the GWR would deliberately site the terminus where it would be impossible to extend the line to the north and west. It is possible however that, at this time, at any rate, Brunel would see the branch as nothing more than a spur to his great plan of getting from London to Bristol and New York and consider Oxford as being the limits of his territory.

It is noticeable that the loss to tolls on Folly Bridge and the Hincksey/Abingdon turnpike is not mentioned when, in 1837 and 1838, along with the possible worsening of flooding, they were the principal grounds for the council’s objections, although it was still depending on the tolls to clear the debt over the rebuilding of the bridge. Ironically, the amount being collected in tolls had increased as a result of more traffic of all kinds - heavy wagons as well as coaches and flies - going that way to Steventon to catch the trains. One of the trustees replied to complaints about the state of the turnpike by attributing it to ‘heavy narrow-wheeled’ (his italics) wagons with loads of up to five and six tons taking goods to Steventon. ²³ The council would have realised that, in the event of the line being built, by moving the toll house closer to Oxford, they could catch the traffic coming to and from the station. The proposal to move it at a cost of £250 was approved towards the end of the year when it was anticipated that the debt on the bridge would be cleared and the bridge made free of tolls in 12 years’ time: in fact it happened only seven years later. ²⁴

The prayer to be heard by counsel before a parliamentary committee was removed from the petition; but this was probably because the council could not afford to incur the expense that would be involved. The most forceful speaker against the line was Tawney, who, presumably because of his known interest in the Oxford Canal, had to claim no other motive than the welfare of the city, adding that he did not believe, as some claimed, that the railway would bring coal to Oxford more cheaply than the canal. Sadler, while wanting the railway, would have preferred the terminus in St Clement’s which, he said, had been changed to suit Christ Church. ²⁵

John Towle was characteristically more forthright, claiming that opposition to the railway was due to the ‘machinations of a powerful band of monopolists - the Canal Company who charged such an immense amount of tonnage that it doubled the cost’ of coal. Soon after, he wrote an astonishing letter to the *Oxford Chronicle* in praise of railways generally. The second paragraph read:

I contend that they [the railroads] must be considered as one of the extraordinary interpositions of an all bountiful Providence for the well-being of his creatures, and that manna in the wilderness and the loaves in the desert (being events temporary in their effects) were small when compared with the invention of the railroads. Just at the time when the cry of over-population was raised from Lands End to John O’ Groats, and the most horrid measure proposed and openly advocated as a remedy which has ever come to our knowledge - then it was that a man was called out of the common ranks of society to bring to nought the wisdom of the wise . . . and a provision is made for the invention of railroads for double the amount of the population by superseding the use of millions of horses. ²⁶

(As we now know, the railways were actually to make extensive use of horses.) The letter went on the claim that coal would become 'as cheap as if it were found on the estate of Lord Abingdon', just outside the city; and he hoped that the townspeople would support the line.

Evidence taken before a Committee of the House of Commons²⁷

The second reading of the bill was moved without debate in the Commons on 7 March. The hearing before the committee commenced on 9 March. Messrs. Austin and Talbot, with Messrs Burke and Venables as Agents, appeared for the promoters. William Shee²⁸ appeared for the opposing petitioners - as he had done in 1837 and, along with Sir Charles Wetherell, in 1838 - with G.P. Hester, a future Town Clerk of the city, as agent. It is not clear who had instructed Shee and was meeting the expenses of opposing the line, since the council's petition did not include being represented before the committee. It is likely that it was those Oxford residents opposed to the line and petitioning against it because a public subscription was opened for this purpose.²⁹

The first witness in support of the line was Sadler, the alderman and former mayor of Oxford, trading as a confectioner, who had also appeared as a witness in 1838.³⁰ He described how Oxford was already benefiting from the GWR station at Steventon to where there were regular coaches running from Oxford. He showed, however, that it took as long for him to travel the 12 miles to Steventon as the 50 or so miles from there to Paddington. To get to the hearing for 10.30 a.m. he had left his house at 6.30 a.m. in order to get to Steventon at 7.50 a.m. for the 8.12 a.m. train to Paddington. Going in the direction of Bristol was worse because the coaches were not timed to meet the trains; and even those connecting with Oxford from London were sometimes full. Goods coming by wagon cost £3.0.0 to £3.10.0 per ton from London, but Paddington to Steventon cost only 16/- to 18/- per ton, so there would be financial benefit if goods could come all the way by rail to Oxford. Furthermore, there were delays resulting from having to load onto road wagons at Steventon. He was one of the directors of the local Gas Company which consumed as much as 50 tons of coal per week in winter for which they had to pay 25/- per ton for the coal from Hawkesbury Colliery, near Coventry, coming by canal. They would prefer Welsh coal which, presumably, they would get by rail.

He was shown the petition objecting to the railway and asked to indicate on it the Chairman of the Oxford Canal Company - he was not named, but it would have been either Tawney or Benjamin Parsons Symons (the Warden of Wadham College) who apparently took the chair in rotation - and two bankers, Parsons and Thompson, connected with it.

Sadler was aware that similar bills had been discussed and defeated twice before;³¹ but he still believed that most Oxford people wanted the railway which, incidentally, would also benefit Banbury, Woodstock and Witney, although the journeys to Oxford would have to be made by road or canal.

Cross-examined by Shee, he agreed that, although the railway at Steventon had been an advantage to trades people in terms of convenience of travel, it had not increased trade in Oxford. He was asked about the effect of the railway on local inn keepers and replied that, as a former manager of 'one of the largest commercial inns in Oxford', he did not think it had harmed even the posting inns where the horses were kept. If this were true it seems surprising: but they may have made up for some of the loss of long distance traffic to London, Cheltenham and Birmingham by running coaches to Steventon for the

GWR and to Tring for the L&BR. But Sadler appeared to contradict himself in saying that it was mainly the turnpike trustees, farriers and saddlers who had suffered. Shee claimed that some shops were closing because customers were going to London and rents had come down. Sadler replied that house prices in the centre of Oxford - Queen Street and Cornmarket Street - had actually increased and - somewhat inconsistently - that some rents had fallen because they had previously been too high. Surprisingly, he agreed that coaches were cheaper for passengers than the railway - quoting 12/6d as the fare from Paddington to Steventon - and that there had been an increase in the use of light carriages, presumably in an attempt to compete with the railways for speed.

Re-examined by Talbot, he was able to give more details of the fares and these seem to contradict what he had said previously. The fares to London were £1.10.0 inside the coach and 15/- outside. But it had been stated that the railway fare was only 12/6d for the 56.25 miles from Steventon. Perhaps he meant that, with a 3/- coach fare being added for the journey from Oxford to Steventon, it would be more expensive than going all the way by train. It emerged that a difficulty was created by the GWR allowing only one coach proprietor, Waddle, to go onto the station premises at Steventon. But Sadler said that there were places only 20 yards away where other coaches could wait. Steventon had prospered with an increase in trade and hotel accommodation because of the railway. He repeated that the hotels in Oxford he had previously managed had not suffered any loss of trade because of this. But he thought it necessary to add that Oxford had too many large inns and, with university men in the city for only six months in the year, it would not matter if some of them closed. He also agreed - surprisingly for one in favour of the railway - that some traders, such as mercers and haberdashers, who used to buy from each other, now went to London to purchase. Some of the evidence he gave, even under examination by a favourable counsel, could have been used to provide arguments *against* having the railway.

Thomas Sheard, a grocer and another member of the city council, argued that the railway would make it possible to get goods more quickly from Bristol and London. At the time it took two or three weeks for them to come from Bristol. Shops would need to carry less stock if it could be obtained quickly to order. He repeated Sadler's comments about the delay caused by having to transfer goods to road at Steventon. He admitted that hotels, particularly the Angel, had suffered as a result of the railway coming to Steventon. In cross-examination he claimed that if, as had been suggested, the petition in favour of the railway had been 'hawked around for names' to produce 1,500 signatures, so had the one opposing the line in order to get its 300 names. People would come to Oxford, he said, to 'see a renowned place'; but he could not be certain that they would stay overnight. He declined to speculate on the likely costs of transporting by rail as compared to road and water.

Brunel was called at this stage to go through the formalities of confirming that there was now no competing line contemplated and to give some technical details. The steepest gradient would be 1:320, or 16 feet in one mile, and the smallest radius of turn about one mile, except for one of 25 chains where the branch joined the main line. It did not pass any turnpike on the level and there was no tunnel. He is minuted as saying that the first crossing of the river was half a mile below Oxford with a bridge of 200 feet span. This may have been a mishearing by the shorthand writer, because the first crossing (which also fits the description) was at Nuneham about five miles south of Oxford. There were other crossings below this. The Abingdon and Dorchester turnpikes would also be crossed. The cost of construction would be £120,000 with annual running costs of £3,000.

Under cross-examination by Shee, he denied that the railway would worsen flooding along the Abingdon road and in the heavily populated parish of St Thomas which, as Brunel pointed out, was north of the terminus and the river. No extra drainage would be needed apart from that normally provided for embankments. Neither would there be any risk to the town's water supply. He thought that termini at Folly Bridge and St Clement's were equally suitable.

Michael Underhill was another grocer, importing cheese, butter and bacon from Bristol at £1.15.0 per ton from Bristol by water, where they were subject to pilfering. The railway would give quicker access to Reading Fair. More people would come to Oxford and - contrary to what another supporter of the line had said earlier - property values had increased.

The hearing was resumed the following day when Seymour Clark, Superintendant of the London Terminus of the GWR, gave figures showing that 77,567 passengers travelled to Oxford via Steventon in 1842. There were five coaches per day from Oxford to London which, he estimated, were carrying 48,672 passengers during the year; and he thought that all of them would use a railway to Oxford. In addition, coming from the other direction, there were coaches running from Faringdon and Worcester to Oxford and he appeared to assume that their passengers would also use the railway by joining the GWR at Swindon to get to Didcot.

In the face of competition from the railway, he said, coach fares between London and Oxford had recently been reduced from £1.4.0 inside and 12/- outside to £1.1.0 and 14/- respectively plus, in each case, a 'coachman's fee' of 1/6d which would not be incurred for travel by rail. The rail fare from London to Steventon was 12/6d first class and 8/6d second class. A third class 'by the luggage train' was mentioned but no fare was given. At present, travelling from Oxford to London involved a coach fare of 3/- inside and 2/- outside, thus making the total fare to London 15/6 first class and 10/6 second class, plus the coachman's fee. The rail fares to Bristol were 17/- and 14/6 from Steventon. There were no longer any coaches running between Oxford and Bristol; but when they did, the fare was £1.5.0 plus 3/- for the coachman.

The projected first class rail fare from London to Oxford was 15/6 although the fares for other classes were not given. But the main advantage would be in saving time. As it was the journey took three hours and 40 minutes of which rail occupied two hours. The journey between Didcot and London took 1 hour and 50 minutes. He estimated that changing at Didcot, followed by the journey from there to Oxford, would give a total time of two hours and 10 minutes from London to Oxford. (He appeared to assume a good connection at Didcot.) There would thus be a saving of one and a half hours if the branch were available.

The journey to Bristol would be reduced from the four hours and 10 minutes it took when coaches were available; or the three hours and 40 minutes it took at present, using a coach to Steventon, to an estimated two hours and 10 minutes going all the way by train via Didcot.

During the previous year 8,980 tons of goods had been conveyed from Paddington to Steventon and, so he had been informed, 3,640 tons by road from Oxford to Steventon. Rather questionably adding those figures together, he arrived at a potential load of 12,620 tons between Paddington and Oxford.

Charges by rail for goods traffic, based for an average on the third of the five classes of goods, were 14/- per ton from Paddington, plus 5/- for the wagon contractor in the City of

London for conveying the goods to Paddington. Arriving at Steventon, there was presently a charge of 10/- for a van proprietor to get the goods to Oxford, making a total of £1.5.0 [?£1.9.0] of which the railway got 14/-. If the branch line were built, the cost would be 19/6d all the way. (He did not mention that the road carriage in London would still have to be paid and that the goods would have to be transported by road from the terminus in Oxford to their destination.) Charges for transport all the way by road were between £1.15.0 and £2.5.0 per ton. But he thought that the transport of goods by road would cease after the railway was opened. There were complaints about the delay and damage to goods at Steventon when they were being unloaded. The journey would take about four hours instead of the 19 hours and 20 minutes by road.

Goods were conveyed from Steventon to Bristol in five hours and to get them to Oxford presently involved a road journey to Oxford, making a total of nine hours and 20 minutes. He estimated that a journey by rail all the way would take only five hours and 55 minutes.

He considered that all types of goods coming to Oxford by canal could be transported instead by rail, including the estimated 10,000 tons of coal each year. Not much coal came to Oxford via Steventon because of the need to transfer it to road wagons. (It was often considered that heavy loads, such as coal, would continue to go by water because the railways could not cope with them). Cattle could also be transported. The potential income from transporting goods of all kinds by the line would be £20,048. It was usually reckoned to allow 30% of total income for maintaining a line; but in this case he had allowed 50%, i.e. £10,024. He handed in a table giving all the figures; but these were not included in the minutes.

The point about the ability of the railways to move heavy loads was raised in his cross-examination. Counsel mentioned that perishable goods and those of high value would usefully go by rail, but continued:

'But as to heavy grocery and all other heavy goods the persons who wish to take them to Oxford still prefer water carriage, do they not?'

'Yes, many of them: they prefer it on account of the expense, as I have said before, of the conveyance from Steventon to Oxford and also the shifting of goods.'

'Do you think that after your railway is completed the expense will still be considerably less of conveying those heavy goods by canal - by water - than by railroad?'

'Experience says not and the result of information says not.'

The last witness to appear, William Heming, a government clerk, confirmed the cost of the line as £120,000, empowering the promoters to borrow £40,000 from the subscribers. £100,000 had been subscribed with £10,000 of this paid in deposits. He handed in a list of members of the Provisional Committee who had subscribed £10,000. None of the directors, or even subscribers, resided in Oxford and were mainly from London, Bristol and Reading.

Along the length of the line, nine miles seven and a half chains were covered by land owners consenting to the line, with owners of only 35 chains objecting. The owners of seven chains had not replied or were neutral. But among those actually occupying, i.e. working the land, the dissenters covered five miles 56½ chains and the assenters only one mile 68 chains.

This concluded the hearing before the Commons Committee. Oxford council and others petitioning against the line provided no witnesses and the hearing was completed in two days. Not surprisingly, after a brief adjournment, the Committee declared the Preamble to the bill proved. Some of the clauses were considered, but no details were given in the minutes as to what they were concerned with. The bill was given a third reading in the Commons on 23 March, passed without debate, and presented in the Lords on 28 March.

Evidence taken before a Committee of the House of Lords³²

The hearing before the Committee of the House of Lords commenced on 5 April with Lord Strafford in the chair. Other members of the committee were the Lords Dalhousie, Colchester, Colborne and Kildare. As before, Talbot and Austin represented the railway company. Those opposed to the line had brought in Serjeant Wrangham³³ to lead while still retaining Shee. Petitions against the bill were read out at the commencement of the hearing from, firstly, the Commissioners of Thames and Isis Navigation and Mortgagees of the City Tolls and, secondly, from the Mayor and City Council; but neither asked to be heard before the Committee, presumably because they could not meet the expense of instructing counsel.

However, there was a third petition against the bill which requested being heard and this was from 'Inhabitants of Oxford and Neighbourhood'. They must have had some financial backing and instructed Wrangham or Shee. The only petition in favour of the bill, but not asking to be heard by counsel, was from 'Inhabitants of the University and City of Oxford and Neighbourhood'. Some members of the University were not merely refraining from objecting to the railway, but were actually supporting it.

Alderman Sadler appeared as the first witness and repeated the evidence he had given to the Commons Committee. He was also concerned that Waddell, the coach proprietor contracted to meet the trains at Steventon, was not required to provide seating inside for all who needed it and this inconvenienced many ladies who would have to wait for the next coach or travel outside.³⁴ Sadler often hired flies for speed; but this cost 14/- plus 3/4d for the turnpike toll, in addition to the coachman's fee, and a total cost always 'spoils a sovereign'. He was also a Commissioner for the Thames Navigation and agreed that he had attended a meeting where it was decided to oppose the railway; but he claimed that it was specified that no expense had to be incurred in doing so.

Wrangham later claimed that the heaviest item Sadler would receive in his business would be a 200 pound crate of oranges costing £1.10.0 per ton for transport by road. Sadler was unwilling to suggest what the cost of transport by rail might be. Wrangham suggested it would be the same as by road, so there would be no saving. In response to another question, Sadler gave the price of coal arriving by canal as £1.50 to £1.60 per ton of which 1d per ton per mile was the charge for the transport. But he then gave the cost of transporting coal by rail as 2d per ton per mile and that, on this basis, the cost of coal coming from Bristol would be £1.2.0 - presumably there would be shorter distance to cover by rail. His counsel, Talbot, intervened to ask about the price of coal in Steventon which Sadler gave as £1.0.0 per ton, but bringing it by road to Oxford would add about 12 shillings per ton.

Wrangham and Sadler became involved in a discussion on the merits of the different kinds of coal which might come to Oxford, with Wrangham suggesting that the types in demand could not be brought any cheaper by rail. He was also subjected to a lengthy

questioning as to whether the GWR at Steventon had affected trade and property values in Oxford. Sadler claimed that this was not the case, with the exception of some businesses at the bottom of the High Street; but even here, of the 143 properties, only two were shut and only one of these had been a business. He admitted that the properties there and in Holywell had lost in value but thought that this was because better houses were being built in Beaumont Street and St John Street.

John Underhill, who had been a cheese factor and grocer with three shops in the city for 25 years, spent between £400 and £500 a year on transport. Before the railway came to Steventon he paid £1.10.0 per ton for carriage by canal from Bath; but there had been delays of up to three weeks. He now paid £1.5.0 for transport by rail from Bath; but the road carriage from Steventon accounted for 10 shillings of this. He sometimes had goods come all the way by wagon to avoid 'shifting' (transferring from rail to road) at Reading and Steventon because goods could be damaged in the process. He now had pigs by rail from Steventon because they lost so much weight in being driven; but even then they suffered on the road to Oxford. He sometimes travelled to Bristol by coach at a cost of £1.1.0 inside or 11/- outside. It was only 11/- on the train from Steventon to Bath but he had to pay 3/6 - 4/- to get to Steventon.

In cross-examination, Shee sought to embarrass Underhill by asking if the price of cheese in Oxford had fallen as a result of the GWR reaching Steventon. Underhill evasively replied that many other factors influenced the price apart from the cost of transport; but eventually he claimed that it was 1d or 2d per pound cheaper. Shee attempted to show how the railway could damage Oxford by asserting that property values had been lowered; inns such as the Angel had been 'destroyed'; the Star had lost business and their proprietors 'gone away' because of the proximity of the railway. Underhill replied that the Angel was still standing and that its proprietor 'always comes backwards and forwards' because he had many other hotels.³⁵

John Plowman³⁶ was an architect and builder who also carried on businesses in Bedfordshire, London, Worcestershire and South Wales to where he had to travel to inspect work. Through the Port of London he received Yorkshire stone, cement, glass timber, deal, lead and oil; and, from Bath, Bath stone, timber from the Forest of Dean, stone and cement, totalling 1,500 - 1,600 tons per year. He used the canals and rivers, except for cement which would be damaged by water. Because of the risk of delays he had to carry large quantities of stock in order to complete contracts on time. He instanced work on the front of Exeter College which had occupied two rather than one vacation due to delays in receiving materials. He did not use the railway more because of the expense of trans-shipping and cartage from Steventon. He had seen scales of charges and reckoned that his goods would be two and a half pence per ton per mile cheaper by rail.

His counsel gave him the opportunity to refute the prevalent idea that the railways could not cope with heavy loads because of the wear on the rails. But, in cross examination, Shee still maintained that it was not usual to send goods of the kind he needed by rail.

At this point, Brunel was called to repeat the evidence he had given to the Commons Committee. Asked if the present terminus 'was agreeable to the authorities and the University', he replied that this was so; neither were there any objections from Lord Abingdon who owned most of the land approaching Oxford. Referring to the fears of the Oxford town council, he said that precautions would be taken to ensure that the embankments approaching Folly Bridge would not cause more flooding. Clauses would

be inserted in the bill to preserve university discipline in accordance with a resolution passed by Heads of Colleges.

However, he was cross-examined persistently and in detail by Shee regarding the possibility of flooding. He was asked if he was aware of the present extent and frequency of flooding on the Abingdon turnpike which ran parallel to, and about 100 yards from, the proposed railway. If the road were subject to flooding, the railway would also be, since Brunel had stated that the embankments would not be very high. Brunel described the structure of the embankments to show that they would have channels along the sides and 'bridges' or gaps at intervals to allow the water to drain away. He received some support from a member of the committee who knew that Oxford was well supplied with ditches for draining. Brunel also stressed that all railway acts had clauses making the railway company liable for the consequences of inadequate drainage. But Shee thought this would apply only to land adjoining the railway, whereas land some distance away could also be affected.

Needless to say, Brunel must have been concerned that the question of drainage might have put the bill at risk. The previous day he had written to William Cubitt,³⁷ the engineer for the South Eastern and Great Northern lines, who had previously been concerned with canals and docks, asking if he would go to Oxford the following day to 'give me your opinion as to the means I propose of preventing injury by floods and if your opinion agrees with mine give evidence in the House of Lords to that effect on Thursday', adding that he made the application on behalf of the GWR. Even if Cubitt had been willing to do this, it would have been too late as the hearing was to finish the following day.

On the cost of the branch, Shee suggested that the estimate of £120,000 was too low, leading Brunel to give an analysis of the costs. These included 'four bridges besides crossings and private ones', but with no crossing of roads on the level. There were additional bridges on the approach roads to Didcot station and Abingdon Road station (now Culham). The Thames was crossed twice: five and eight miles from Oxford at Nuneham and Appleford respectively. He would need to divert three roads in the last two miles.

He was asked about the cost of the permanent way which he gave as £22,500, based on £2,300 per mile, including the rails, timber and bolts. Asked if he had included the cost of the chairs, he explained that 'the rails will be laid the same as they are on the Great Western Railway'. He was not required to give details of the method, but it involved the use of longitudinal sleepers, the effectiveness of which had been the subject of considerable questioning before the Lords Committee for the 1838 bill.

When Brunel said that all the landowners were consenting, Shee remarked, with justification, that they had very much changed their minds since the previous bill and implied that they must have been well recompensed to do so. Brunel simply gave the cost of the land as £24,000 without going into detail either to affirm or deny this. Shee's implication seemed to be true, and he followed it up by asking if this included the 'settlement with the Boyar [i.e. Bowyer] Estate'. Brunel again evasively replied that the figure for the land 'includes every settlement'. Shee persisted, recalling some of the objections made in 1837 by another dissenter, Jonathan Peel (now deceased), then the tenant of Zouch Farm, who had been attempting to transform it into a 'gentleman's residence', and complained that the railway would spoil the view from the house.

'Have you not paid something besides for accommodation and injury to lands and intersections?'

'This includes it all.'

'Does it include obstructions to the views of gentlemen's windows?'

'We have not paid sixpence for damage to any gentleman's view.'

'Does it include all that is to be paid for not opposing?'

'I believe it includes everything we shall have to pay for right of way.'

Ninety acres had been bought; but Brunel would not be drawn on the price for some of the more expensive land near Oxford belonging to Lord Abingdon.

In a letter dated 2 December 1842, apparently in response to an enquiry from George Grenville Harcourt, one of the Oxfordshire MPs, who had chaired the Commons Committee on the 1837 Bill, Brunel stressed that, apart from the approach to Oxford, the route was exactly the same as in 1837 and 1838.³⁸

He was further questioned about the width, length and incline of the embankments. He had taken enough land for a double track, but the embankments at 15 feet wide would take only a single track. However, there would be little difficulty in doubling the track as the bridges over the river were of wood and the others wide enough for the additional track. He gave the running costs at £3,000 per year.

A member of the committee asked if a second line were likely to be needed; but Brunel gave no clear answer. The nine and a half mile journey along the branch would take 20 minutes. It was planned to run six trains per day each way: this would still leave times for goods trains. The track, contrary to what had been suggested, could take heavy loads and, on the main line, stone was being carried from Bath to London.

Seymour Clark appeared and gave the same evidence he gave to the Commons Committee, presenting a table of the anticipated use of the railway. He was cross-examined as to the basis of his estimates. How did he know, for example, that all the passengers at present leaving the trains at Steventon would go on to Oxford? Clark replied that there was little reason for passengers to stay in such a small place as Steventon. Shee suggested that they might be going on the Newbury or Abingdon. Clark replied that, in those cases, they would have left the train at Reading. He was asked if passengers would still continue to use the railway after the novelty of travelling to London in this way had worn off: he used one of the figures supplied by Clark to show that it was a poor reflection on the railway if 48,000 people per year were still travelling by coach all the way from London when there were trains to Steventon. Clark said that this was because of the lack of services between Steventon and Oxford. But he had to admit that some of his figures had been supplied by an unnamed person in Oxford who was now employed by the GWR.

He was questioned about the cost of transporting coal (i.e. sea coal) on from London from Steventon to Oxford when it would add 2d per ton per mile, i.e. 1/8d for the distance, making a total cost of 11/8d per ton. Clark thought this worth while, adding that they carried Cardiff coal from Bristol to Steventon, where it had to be trans-shipped for Oxford, making the cost 12/8d. Shee doubted whether the 3,640 tons coming to Oxford each year by wagon would go by rail instead.

William Hemming re-appeared to confirm the financial details of the railway and the attitudes of those affected by the line. He was the last witness to be called by the railway company and his examination concluded the first day's proceedings.

Charles Tawney, a local brewer for over 14 years, was an alderman and twice mayor of

Oxford, and, although he did not introduce himself as such, he was also a director of the Oxford Canal. He was the first witness to be called by the opposition and claimed that local traders and other 'inhabitants of respectability' were opposed to the railway. In spite of the official support of the university, he knew of six or seven heads of colleges who were opposed. His main objection was to the 'damming up of the water' the injury done to the Town, the lower parts of the neighbourhoods of the City' i.e. the crowded and low lying parish of St Thomas by Folly Bridge. He lived in the lower part of the city himself and his house was under water for five weeks the previous year. He was also concerned about the effect on the tolls - a point which featured prominently in the council's objections in 1837 and 1838. His firm owned many houses in Oxford and their value had been depressed with the coming of the railway to Steventon. Oxford tradesmen were purchasing goods in London rather than from each other. Because of a reduction in trade, there had been several applications for reductions in rents.

He had no difficulty in getting 'hops and black malt', i.e. porter malt, from London in four days by water. Later, in reply to a question from a member of the committee, he said that malt would never be transported by rail because the shaking reduces it to short measure. He got in a gratuitous blow at road transport by relating how a load intended for his brewery fell from a wagon into the river and he was refused compensation; since then he always used water. He paid £1.10.0 per ton to Pickfords (who then used the canals) and he had been told it would soon be cheaper. He foresaw no advantage in having a railway to Oxford. He often travelled himself from Steventon and found this satisfactory, experiencing delay only once in waiting for a coach, and that was when coming from Bristol. He blamed the GWR for such delays because they allowed only one firm to take their coaches on to the station premises. At this point, Burke, the company's agent, intervened to ask: "Do you know that?" and got the reply: 'I believe there was a battle with a man who went in two years ago and was knocked about because he had no right to go there'. Shee took up the questioning on this topic to show that the GWR was controlling the transshipping on goods:

'In point of fact, do other carriages go in except Waddell's public conveyances?

'They go in, I presume, but they have not the power of taking in goods: they [the railways] bring them up by contractors.'

'You mean the description of Goods which the Railway have the power of sending on themselves they send on by their own contractors.'

'So I understand.'

Tawney's brewery received a lot of coal by canal from Wednesbury (Staffs), Moira (Leics) and Wykehill [?], experiencing no delay in getting it, except in times of severe frost. Warwick coal, at between 19/ and 19/6 per ton at the wharf, was the kind most used by the 'great body of the humbler citizens'. He argued that it would not pay if it were brought all the way by rail from Bristol and Cardiff. If such coal were wanted, it could be brought by the Kennet Canal (i.e., presumably, by the River Severn, Kennet & Avon, the Wilts & Berks and the River Thames). Water transport was adequate for timber and stone. There used to be delays on the Thames but 'he did not know any other river so much improved': delays had been reduced due to 'improvements of putting shutting tackle to carry them over the flats'. He was a member of the Thames Commission and his counsel invited him to say why the commissioners as a body were not opposing the railway. The reason he gave was that, in fact, there was a petition against it, but no counsel had been instructed

because 'like all the rest of us they are worn out with the expenses'. Trade had fallen off recently and the railway would worsen the situation.

Under cross-examination by Burke, he was asked why only eleven of the estimated 2,000 commissioners had signed the petition against the line. Tawney said that there were only 'upwards of 700' commissioners, explaining even this large number by the fact that every MP along the river was a commissioner and, in addition, there were groups of commissioners for each locality. The reason why so few had signed was that the petition had been drawn up at a meeting in Reading where the recent AGM had been held (on a statutory rotation). The decision to draw up the petition was taken at an earlier meeting in Oxford. Burke thought that a special meeting should have been called if they wished to oppose the railway; and he attempted, without much success, to discover the names of directors of the Oxford Canal who were opposing and had given money for this purpose. However, Guy Thompson and John Parsons (a banker) were mentioned as shareholders and a Mr Walsh (presumably the solicitor) as 'the man behind it'.

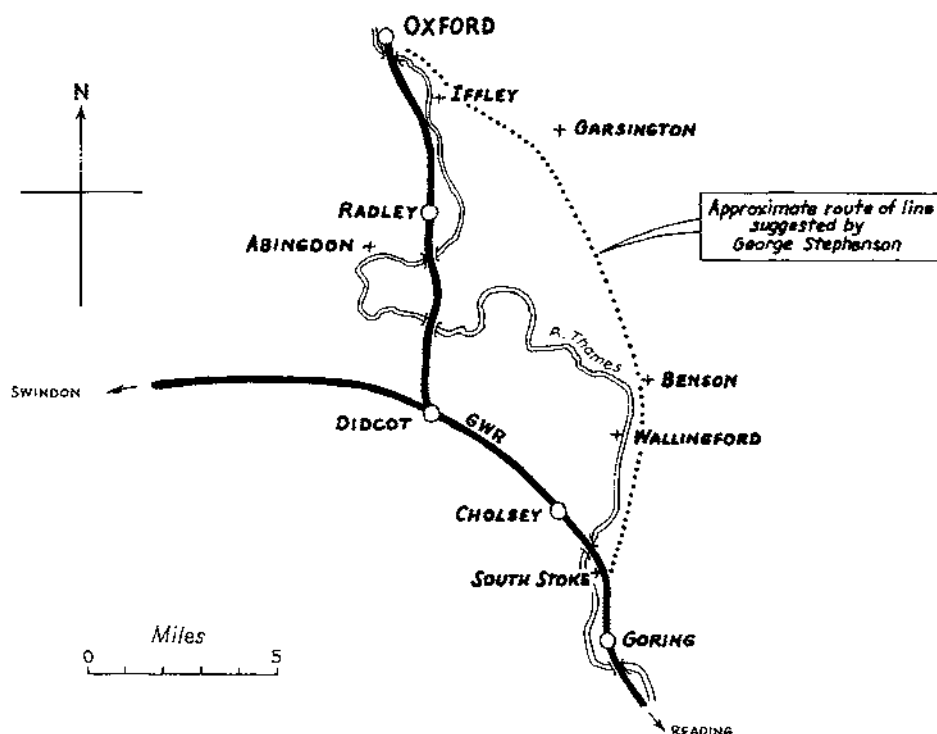
Burke asked the value of the canal shares, paying 5% on £100 shares, which Burke referred to as amounting to £30 per year and 'pretty comfortable'. This calculation must have been based on the shares being worth £600 and Tawney replied that all the shareholders who had bought the shares for what was presumably their initial value of £100 were long since dead. He repeated that his trade as a brewer, like other trades in Oxford, had fallen since the railway reached Steventon; but he could not quantify the loss because what he had lost in Oxford he had gained in Cheltenham to where he sent a lot of beer. He agreed that the price of coal reached five shillings per cwt in frosty weather - presumably when the canals were frozen over and coal in demand. He hoped to be able to get it cheaper in future but gave no reason for his optimism.

He confirmed that the city council had voted 19 to 13 against the bill for the railway. £50 was authorised to be spent in opposing it; but this was only to obtain the insertion of some protective clauses in the event of the bill being passed. (There does not appear to have been any reference in the debates to the way this sum should be spent, or what specific purpose the clauses would serve). Burke claimed that the council had only voted on whether to assent or not to any land they owned - mostly towpaths and waterways - being used for the railway.

William Ward, a coal merchant, explained that his coal came mainly by the Oxford Canal from Wednesbury, Leicester and Warwickshire. The first of these sold for between 18/6d and £1.3.0 per ton wholesale at the wharf. When sold by a dealer it would be for between £1.1.0 and £1.5.0 to which would be added 1/- to 1/3d for delivery. There was a cheaper coal available but it was suitable only for engines. Coal also came by the Wilts & Berks Canal from near Radstock in Somerset.

If coal were to come by rail it would incur a toll at Folly Bridge. (He seems to have been aware of a plan to move the toll house for the combined Abingdon turnpike and Folly Bridge tolls from its position along the road to a new one on the bridge, in the event of the railway being built).

Any coal coming via London would be sold in Oxford at the higher London price of £1.11.0 per ton, as it was in Reading. It could be bought at 7/- per ton in Cardiff; but 3/6d would be added in getting it to the canal wharf in Bristol and a further 1/- getting it to the railway there. After that, the cost of transport by railway would add 2d per mile per ton for the 75 miles to Oxford, i.e. 12/6d. When the local dealer's profit and delivery charges



had been added, the cost to the consumer would be between £1.6.0 and £1.8.0 per ton. At present coal arriving at Steventon by rail cost £1.2.6d. It would cost 2/- to transport it, still by rail, to Oxford and the retail price, after the addition of the dealer's profit and cartage, would be £1.6.0 per ton.

In the cross-examination by Burke, he was asked about the consequences of delays caused by the Oxford Canal being frozen over. He admitted that two years previously, when it had been frozen for several weeks, the price had reached 2/- per cwt, which Burke had to point out, for comparison with other figures given, was £2.0.0. per ton. It was unlikely that the railway would be frozen up: coal would be no more than £1.10.0 in winter coming by rail. Ward agreed that shares in the canal were now unsaleable.

The last witness was Alderman Samuel Browning, an ironmonger and a Property Tax Commissioner, who had supported George Stephenson's line to join the GWR at Moulsoford. He said that most people in Oxford were against having the Didcot line. He received goods from Bristol cheaply by water at 16/8d per ton for iron. Since the railway had come to Steventon property values in Oxford had deteriorated, especially around the Angel Hotel in the High Street. There was a loss of through traffic from Birmingham and Gloucester. (This would be due to the accessibility of L&BR at Tring rather than the GWR). Tradesmen were no longer trading with each other but purchasing in London, as were many 'gentlemen'. The embankments would worsen the flooding. Recently a subscription had to be opened for the relief of flooding which had affected the whole of the parish of St Thomas'. The many streams draining into the Thames near Folly Bridge would overflow.

He was subjected to a lengthy cross-examination by Burke, during the course of which he was reminded that in 1837, in giving evidence against an earlier bill for the line, he had thought there should be as many as eight trains a day from Oxford to London, albeit by the rival line then being promoted running from Cheltenham via Oxford to Tring to join the L&BR.³⁹ He had also said that it would be better to have the Didcot line rather than none at all - something which he now denied although it was minuted in the evidence. He agreed that when mayor in 1842, he had proposed a meeting of persons 'favourable to the construction of a railway' at the Angel Hotel; but could not remember attending a meeting at the Star Inn to support Stephenson's line.

The taking of evidence was concluded. After the summing up for the opposition by Shee and a reply by Burke, the committee retired. Some amendments were agreed - no details were minuted, but they possibly related to the use of the railway by university students - after which the preamble to the bill was declared proved and the chairman instructed to take it back to the House of Lords, where it was passed without debate on 11 April 1843 as an *Act for making a Railway from the Great Western Railway to the City of Oxford* (*Victoria 6, Cap X*)

As a footnote to the proceedings it should be added that at a meeting on 12 April - after the taking of evidence before committees of both Houses had been completed and the bill passed - the General Committee of Proprietors of the Oxford Canal Navigation belatedly considered a request from 'certain inhabitants of Oxford opposing the Didcot Railway bill now in Parliament for a contribution to a fund being raised to be heard in Counsel'. It decided that in view of 'fallacious statements made by parties advocating ... in the Committee the benefit to be derived to the town of Oxford from coal being brought cheaper by the proposed railroad ... be refuted when the merits of the Bill be considered in the House of Lords'. An amount up to £300 was authorised for this purpose. However, as we have seen the bill was passed without debate. In view of their understandable hostility to the railway, it is surprising that the Canal Company did not instruct their own counsel at the outset. Perhaps they felt that Tawney could present their case as well as any lawyer. In 1838 he had offered in a city council meeting to personally meet the cost of opposing an earlier line then; but his offer had been rejected on the grounds, supported by those members of the council who wanted the railway, that it would be out of order for the council to accept charity in this way.⁴⁰ It is possible that Tawney and other directors of the canal incurred personal expense in the matter. Although the university officially accepted the railway, some important members were probably opposed to it because of its long association with the canal which had come into existence in 1790 only with the help of financial backing from its members.⁴¹

In August, at a meeting in Bristol, the directors of the GWR approved the transfer of the Oxford and Didcot Railway to the GWR.⁴² At the same meeting Brunel announced that the track was to be doubled after all, and gave the reasons for deciding to do this. They were ones which must - or should - have been clear at the outset: perhaps they were to Brunel since he had taken the precaution of buying sufficient land for this purpose: perhaps he had reasons - not clear today - for concealing his intention until the line had been empowered. He explained that, although doubling the track would add £120 per mile, or £1,200 per year, to the cost of maintaining the railway, it would be worth while. The purpose of the line had been to facilitate communication between Oxford and London and he 'now realised' the delays that could result from attempting to meet with trains on the main line. His statement also revealed that he was aware that coaches could still compete with the railway, at least on this particular route:

Unless the train can start from Oxford at such time as to join the main line without delay, and, in the same way, unless passengers from London can go without delay to Oxford, there will be but little gained by passengers: great competition will still exist between coaches and the line, and we shall not get that great multiplication of traffic which is only to be obtained by an increased accommodation. Now, if you consider that our trains have to be arranged, both starting and arriving, with reference to the Cheltenham trains [travelling via Swindon], the times of leaving Bristol and the Post Office Arrangements, you will see that it will be impossible to arrive at a point of junction (say Steventon) so as to start from Oxford without causing delay on the main line, owing to the non-arrival of the train from Oxford, which would be three-quarters of an hour before it returned to the point of junction.

He finished by referring to the Kemble line to illustrate the problems of single line working. Additional engines had to be kept and 'the number of trains run empty between Kemble and Cirencester are so numerous that it has become evident to the directors that the expense of running a single line ten miles in length, with large traffic, perhaps would certainly be more than £1,200. The instant it is equal to it, all the other advantages of course are nothing.'

Work on the railway was under way in October with many people coming to watch⁴³ and was completed sooner than expected, with the service commencing on 14 June. The first class fare to London was 15/-, compared to £1.5.0 inside a coach quoted in the evidence. The other classes of fares were 10/- and 6/-, compared to 15/- for outside the coach.

Conclusions

The success of the bill was assured when the university, which had decisively opposed the previous bill, agreed to consent, provided that certain conditions were satisfied. Although the location of the terminus had been changed, it did not account for the change of mind, since the university had merely expressed a preference for south of Folly Bridge without saying that it would object to the other site in St Clements'. It would only oppose the line - or any other line - which refused to incorporate clauses of its own devising to preserve discipline among undergraduates relating to their use of the railway.

These clauses are numbered 304 - 308 in a lengthy Act. Clause 307 is concerned, not with the students, but the navvies engaged on the construction of the line. It ordered the GWR to appoint and pay sufficient special constables to keep order within 3 miles of the city while the work was in progress. They would be under the jurisdiction of the university and more would have to be appointed if the university considered that they were needed.

Clauses 304 - 305 gave officials of the university the power to enter the station at all times and be supplied with information, including names, relating to all undergraduates using or planning to use the railway. They could prevent individual students from making a journey and, if they had purchased tickets, the railway company had to refund the money. Clause 306 stated that no students should be picked up or let down except at a station. The penalty imposed on the company for a breach of any of these conditions was £5 for each offence. The remaining clause, 308, was a precautionary one to state that nothing in the act would deprive the university of any rights and privileges it possessed.

However, the fact that these clauses were inserted does not account for the change of attitude on the part of the university, since they had drawn up similar ones in preparation for the 1837 and 1838 bills in the event of their being passed, and the companies had

expressed no reluctance over accepting them.

It would appear that the university had realised that the railway must come to Oxford sooner later. Even more persuasive would be the fact that the railway had already arrived at Steventon only 12 miles away, where the students were making good use of it to get to Ascot and London. With a station in Oxford, it would be easier to control the use they made of it. The closure of Steventon station was perhaps foreseen, along with the improbability of coaches running to Didcot as ways in which the students might circumvent supervision at Oxford.

Opposition continued to come, almost indirectly, from the Canal Company. They did not present any witnesses officially speaking for them, but there were two or three apparently independent witnesses who argued that the railway would not bring the anticipated benefits in the way of quicker and cheaper transport, particularly for coal. It is surprising that they did not mount a more forthright opposition: perhaps they had little confidence in the arguments they were using to oppose the line. Those directors of the canal who were also members of the university must have been placed in a difficult position when the university itself had not only withdrawn its earlier antagonism but was actually supporting the railway.

The lack of local subscribers to the line can be partly explained by the fact that those who were willing to invest in a railway would have seen their deposits swallowed up in the expenses incurred in the unsuccessful promotion of the earlier bills. Even those still with money for speculation, would still have harboured doubts that the bill would be passed.

Oxford corporation was the only body which, officially at any rate, opposed all three bills. But, in the case of the present bill, its main grounds for doing so were no longer the loss of tolls. In fact, there is evidence to show that these had increased as a result of traffic going to Steventon and, along with it, the likelihood of the debt on Folly Bridge soon being cleared. In opposing the bill, the Council continued to use the risk of exacerbated flooding as grounds for objecting and this figured largely in Brunel's cross-examination. It probably exaggerated, not the effects of flooding in a densely populated part of the city (which were real enough), but the extent to which the railway embankments would make them worse. Brunel seems to have assured the Committee of Evidence on this point. Whether they were made worse by the railway is debatable, but the line was to be flooded frequently and, in 1852, horses had to be used to pull the trains through the water for the last two miles into the station.⁴⁴

An objection, not applicable to the earlier bills, was the depressive effect on trade in the town due to the proximity of rail travel even 12 miles away, particularly on the coaching business and its associated hostelries. But trade seems to have been depressed nationally and the damage to coach proprietors was something to be found wherever railways appeared. It would be difficult to make allowance for the fact that Oxford had much more to lose than many other towns, being an important coaching centre, with about 100 coaches a day entering or leaving the city. As one witness claimed of the Angel: 'I don't think you could witness in any other town in the kingdom the same number of coaches standing before a hotel, and 9 out of 10 to start at the same time'. There was also several of Pickford's six-wheeled wagons passing through each day.⁴⁵

But, as on previous occasions, the council was divided. Some members were actually wanting the line and had been shareholders in earlier attempts to empower an almost

identical line. Again, as in 1837, some who were not opposed to railways as such, preferred an alternative route. In 1837 this had been a line to Tring which some still hoped would be built. In 1842 there was also George Stephenson's line to Mouldsford which had some support.

Although there were various prohibitive factors involved in the three attempts made over a period of seven years in getting a railway to Oxford, the decisive ones were different at each attempt. In 1837 it was the landowners at Culham and Radley who were responsible rather than the university, which raised no objection at the time. The opposition from Abingdon was due to the proposed railway missing the town in a vain attempt to win over the landowners: the people of Abingdon were protesting because they were not getting the railway. In 1838 the landowners were no longer objecting, probably having been bought off; but the university offered determined and expensive resistance, resulting in the defeat of the bill. The 1843 bill was probably promoted because it was known that the university would no longer be objecting.

Oxford Corporation opposed all three bills with a number of objections; but it does not appear that its concerns carried much weight in influencing the outcome of any of them. Although the opposition to them was official, the members were divided - some being in favour of the bill being promoted, while others opposed it because they preferred a different line. In addition the council lacked the funds to be adequately represented before the committees. Their objections were not the result of an unreasonable resistance to the railway as such. They appear as justifiable to the modern readers they were then. One can also sympathise with the landowners in 1837, in the early days of the railway, over their concern with the damage to their property. On the other hand, the objections raised by the university in 1838, and the clauses they insisted in having inserted into the successful bill, have not stood the test of time as well, and offer occasion for mild amusement to the reader a century and a half later. But perhaps such amusement is occasioned by the fact that the university existed in a different social and moral climate from that of today.

Credit is frequently paid to the work of the engineers who built the railways without much being said about what had to be done before a spade could be dug into the ground. The case of the Didcot - Oxford railway is probably exceptional, but it is arguable that more money and effort went into promoting this 9½ miles of line than in building it.

References and notes

OC is the Oxford Chronicle and Reading Gazette.

1. For the other articles see issue nos. 170 (Vol.32 Pt.8, July 1998), pp.566-586; and 173 (Vol.33 Pt. 2, July 1999), pp. 92-115 of this *Journal*.
2. *History of the Great Western Railway* Ian Allan, 1964, Revised by C.R. Clinker, 1982. Vol.1 p. 86. Other accounts, including the *Victoria history of the county of Oxfordshire*. University of London Institute of Historical Research 1979. Vol. IV p. 294, repeat the claim, giving MacDermot as their source.
3. Oxfordshire County Record Office, Ref. PD 14.
4. Minutes of Oxford city council railway committee, 16 November 1842.
5. The appearance on the scene of George rather than Robert (who was the engineer

for the L&BR) may seem surprising. He lived at Alton Grange near Ashby-de-la-Zouch before moving to Tapton House near Chesterfield where he died. At the time, he was assisting some coal owners and the line he proposed had their support. (Letter from Brunel to him 17 October 1842. *Brunel collection of private letters*, Vol. 2C p. 70 I the Brunel Collection, the Library of the University of Bristol). He had also formed a company, soon to open the Clay Cross Wharf in Thames Street, Oxford, which, it was claimed by the Agent, T. Wyatt, junior, would supply coal 'as good as Newcastle coal' at £1.3.4 per ton, excluding carriage. *Jackson's Oxford Journal*, 4 February 1843.

6. *Jackson's Oxford Journal*, 13 August 1842.
7. OC 3 September 1842.
8. OC 29 October 1842.
9. OC 5 & 12 November 1842.
10. Letter in Brunel Collection *op. cit.* George Parker Bidder (1806-78) worked for several companies, often in an advisory capacity with Robert Stephenson. He later constructed the Victoria Docks and the first Norwegian railway. *The Oxford companion to British railway history*; edited by Jack Simmons and Gordon Biddle. OUP, 1997.
11. Bodleian University Archives W.P. y 24(6).
12. *Ibid.* W.P. y 24(5).
13. *Ibid.* W.P. y 24(218-9).
14. The notice gave the statute in the original Latin: The quotation is given in the translation by G.R.M. Watson (1845).
15. Minutes of Oxford city council railway committee, 16 and 17 November 1842.
16. *Ibid.* 9 March; and minutes of city council, 16 March 1842.
17. Wyatt provides an example of how self-interest could influence attitudes to the railway - as perhaps does that of Towle (see later). Wyatt supported the railway at the inaugural meeting in 1836 because he thought it would pass through a meadow he owned. But he opposed it in the city council and before a parliamentary committee when he found that it was to take the route through Iffley, missing his land. But when, in 1843, the route was changed to the one he had originally anticipated, he supported it. He also owned a wharf immediately on the other side of the river from the terminus: a goods line was run past the station to the river bank, and using the river for transport may have enabled him to avoid the bridge toll. The Tithe map of 1847 still gives him as owning the meadow and with the railway passing through it. But a separate sketch map of Folly Bridge (Oxfordshire County Record Office, OC 27318), tentatively assigned dates of 1841 or 1845, marks the land as sold to the railway company. It is more than likely that the company would have bought the land.
18. Minutes of the railway committee, 24 November 1842.
19. OC 7 January 1843.
20. OC 18 February 1843.

21. See Brian Hepple: Abingdon and the GWR: or why the railway missed the town in *Journal of transport history*, February 1974 pp.157-164; and my own article on The defeat of the Oxford and Great Western Railway Bill, 1837 in *Journal of the R&CHS*, July, 1998, vol. 32 part 8, p.570. A spur to Abingdon was built from the Oxford branch and opened in 1856, working under an arrangement with the GWR. It closed to passengers in 1963 and to goods in 1984.
22. Oxford city council minutes, 1 March 1843; OC 4 March 1843.
23. OC 23 December 1843; and Oxford University, City and County Herald, 15 and 22 December 1843.
24. OC 9 November 1843.
25. OC 4 March 1843.
26. OC 11 March 1843. He may have seen 'the horrid measures', to which he refers implied in Thomas R. Malthus' *Essay on principles of population* (1798), which argued that, as the population growth outstrips resources, crime, war and disease would be necessary checks. He was a member of the council and the paper mill he leased was about two miles south of the city on a tributary of the Thames, Hincksey Stream. When the line was being built, he obstructed the building of a bridge carrying the Abingdon turnpike over the railway by erecting what Brunel described as a 'paper house' close to it. It may indeed have been only paper if Towle knew it would have to be demolished; or it may have been made of mill board and the first of several experiments he was to make in the process of constructing what was to be a sizeable residence using paper. (See a report by Oxford Archaeological Unit, *Paisley House, 436 Abingdon road, Oxford: an investigation of a Victorian paper house*, 1998). The house was inhabited into the 1930s and has only recently been demolished. He was one of the first to make portmanteaux from paper and board. He presumably got the compensation he was after and, perhaps in gratitude, named the house he later built by the line for permanent habitation after Sir Charles Pasley, the Chief Government Inspector of Railways who, following a complaint from one of the turnpike trustees, had inspected and reluctantly passed the extemporised bridge Brunel had been obliged to construct in time for the opening of the line. (The name of house was originally spelt Pasley). Towle became a fervid supporter of railways for a time as the letter from which I have quote later witnesses. He was soon disillusioned over the GWR's failure to make coal cheaper in Oxford. MacDermot mentions the incident of the house, *op. cit.* P. 87, as does Pasley briefly in his diaries 10-24 June 1844 in the British Library (Add. MSS 41990).
27. The main source for this section is the official committee minutes of the House of Commons Committee in the House of Lords Record Office.
28. Sir William Shee (1804-1868) became MP for Kilkenny and help to further Irish land reform. He was counsel in several famous trials. *Dictionary of national biography*.
29. Minutes of the Oxford Canal Navigation PRO RAIL 855/6.
30. The notes Sadler made for his own use in giving evidence are in the PRO (RAIL 557/341). They have been assigned a date of 1836, presumably based on his evidence for the 1837 bill. However they refer to trains calling at Steventon station which was not in use until 1840 and must have been made for the 1843 bill.

31. Note that he refers to similar bills having been discussed *twice*, not three times, previously as would be the case if, as MacDermot implies (*op. cit.* P. 86), a bill was promoted in 1840 as well as in 1837 and 1838.
32. The main source for this section is the official minutes of the House of Lords Committee in the House of Lords Record Office.
33. Digby Caley Wrangham (1805-1863) was a son of the better known Revd Francis Wrangham (1796-1842), scholar and theologian who has an entry in the *Dictionary of national biography*. The son was a student of Brasenose College and called to the Bar in 1831, becoming a Queen's Serjeant-at-Law in 1847 and surviving to become the 'Father' of the Parliamentary Bar. He was MP for Sudbury 1831-2. Obits in *The Times* 13 and 16 March 1863.
34. For more information on this coach service see John Norris: The early days of railways to Oxford in *Journal of the R&CHS*, no. 149, November 1991, pp. 259-260.
35. He was named as [Samuel Young] Griffith who, in 1837, supported the bills for both the Didcot line and its rival to Tring, although he was a shareholder in the former. Later he offered to contract with the GWR to run a coach service from Oxford to Stevenage, arguing that it would be cheaper for the GWR to do this than build and maintain the Didcot branch. As well as owning the Angel and Star hotels in Oxford, he owned or leased the Queen's Hotel in Cheltenham. For a time he rented the refreshment room at Swindon and received a rebuff from Brunel in December 1842, when he solicited a testimonial for the coffee served there: Brunel had not recognised it as that drink. MacDermot quotes Brunel's letter. (*Op. cit.* P. 75). See also my article, in *Journal of the R&CHS*, *op cit.*
36. This would be John Plowman, junior (1807-41). His father, John (c. 1773-1843), designed and built the replacement for St Martin's Church, Carfax (1820), demolished in turn (apart from the tower), in 1896. They, and other members of the family, were responsible for other church buildings and furnishings in the locality, another son, Thomas (1805-28) re-fitting St Mary's. For a list of their works see Howard Colvin *Biographical dictionary of British architects, 1600-1840* 1954, new edition John Murray, 1978.
37. Brunel Collection. Letterbook 2C p. 157. Sir William Cubitt was employed by the Oxford Corporation in 1851 to investigate the unsanitary state of the town's water supply.
38. Brunel Collection. *op. cit.* P.89.
39. The idea for this line was abandoned in 1837 while the bill was in the committee stage. See my article *op. cit.* Pp. 566-575. Unsuccessful attempts were made to revive it in 1846.
40. Oxford city council minutes, 2 July 1838.
41. *History of the University of Oxford* Vol. VI: *Nineteenth century. Part 1* p. 458 OUP, 1998; and Hugh J. Compton *The Oxford Canal* David & Charles, 1976.
42. OC 26 August 1843.
43. *Jackson's Oxford Journal* 21 October 1843.
44. Report of Board of Trade 4 November 1852. However the flooding may not have

been due to a miscalculation on the part of Brunel. It was revealed later that, in order to compensate for the Thames bed having been raised through the accumulation of deposits of silt, sewage and rubbish, the owner of Sandford Mill, five miles downstream from Oxford, was placing wooden balks on the sills of weirs to raise the permitted water level. The farmers complained of increased flooding because of this. *Report of the select committee on Thames flood prevention . . .* House of Commons, 1877, paras. 717-748.

45. Hibbert *op. cit* p. 456.

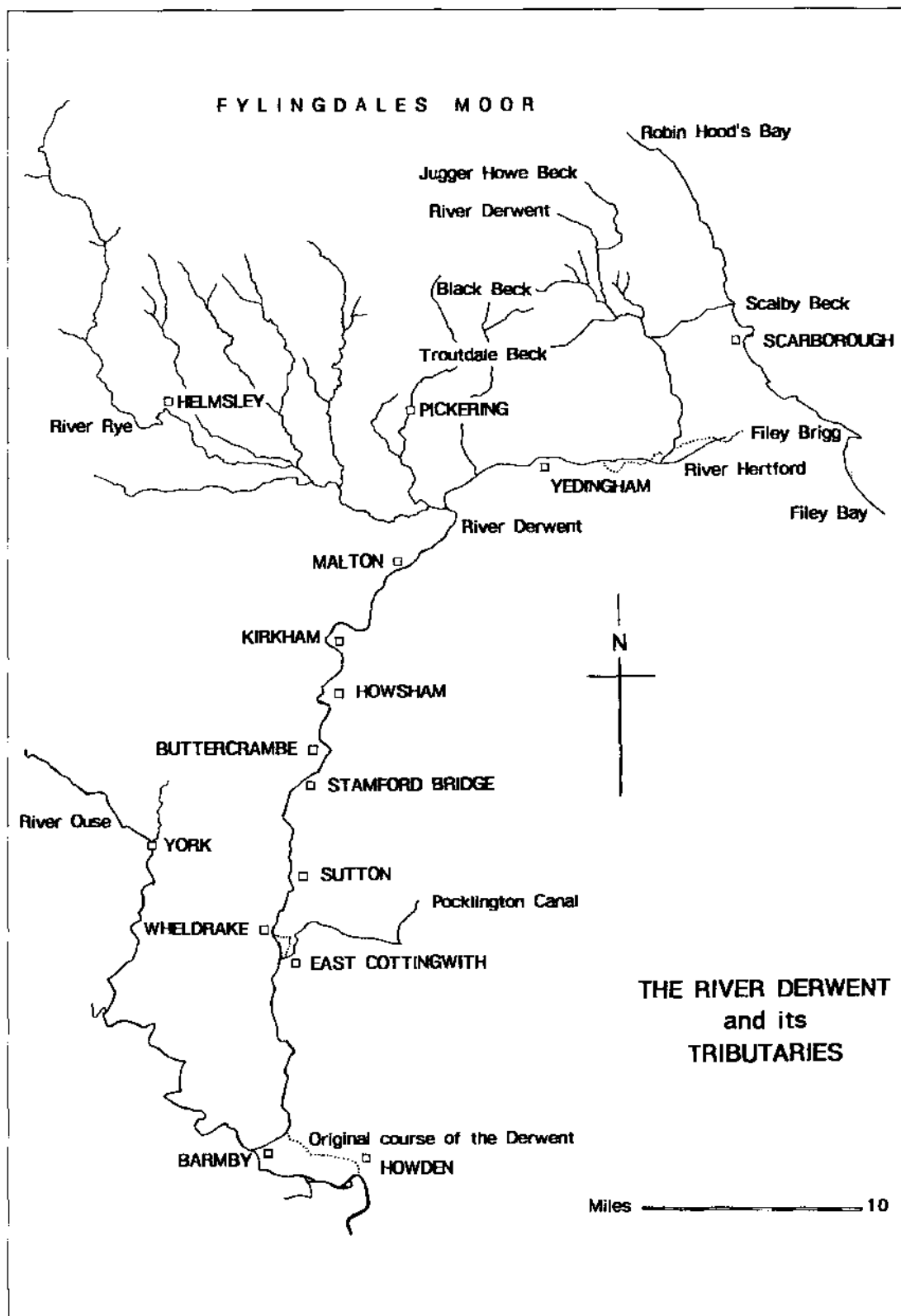
The Abbot of Fountains, Baron Duckham, and the Black Bank

BY PAT JONES

In his book 'Navigable Rivers of Yorkshire',¹ Professor Duckham refers to the records of the Court of King's Bench for the year 1351, which reveal King Edward III suing the Abbot of Fountains for 'obstructing the navigation of the Derwent by putting new pales and piles to his channel at Queldryk [Wheldrake]'. He comments: 'This could refer to a miller's dam, but it is most likely just another mention of a fish-garth'. It is known that the channel had been passable earlier in the 14th century, since complaints are recorded about fish-weirs further upstream, which were said to obstruct the passage of boats to Stamford Bridge.² This legal action by the king makes it clear that his subjects' rights extended to minor rivers, and must also have included the right of access to the river's bank for haling, without which progress upstream would have been impossible.

Wheldrake lies half a mile or so to the west of the river Derwent, on the Escrick Moraine³. It was originally an Anglian settlement, which was laid waste by William the Conqueror in 1069. Water-meadows to the south-east of the village were bounded on their western side by a minor channel of the river Derwent, and crossed by its main course, which flowed eastward to a junction with Pocklington Beck near Storwood. The combined streams then turned south-west, joining the minor western channel at East Cottingwith, and surrounding about 400 acres. The northern part is known as Wheldrake lngs, and a hundred or so acres to the south are known as North Hills, a misnomer if ever there was one; the land is all low and subject to flooding. In mediaeval times low-lying land north of Wheldrake lngs was known by the name of the mere which covered part of it: *Alemare*. During that period much of the land hereabouts became the property of the Church; Fountains Abbey established a Grange here, and by 1218 its possessions included Wheldrake lngs and *Alemare*.

Fountains Abbey had been founded as a Cistercian House in 1132, by Benedictine monks dissatisfied with life at St Mary's Abbey, York. The house gained a reputation for austere living, which seems to have persuaded rich landowners that the health of their immortal souls depended upon them lavishing gifts of money and land upon it. Fountains Abbey became wealthy and powerful as a result. The various benefactors and their Grants of land are listed in 'The Chartulary of Fountains Abbey';⁴ They are numbered sequentially, but unfortunately, few of them are dated. The first dated entry is numbered



37 and details proceedings 'at York, on the morrow of Ascension, 30 Hen. III' [1246]. The last is numbered 174, and refers to a Court Hearing of 'Friday after the feast of St Bartholomew Apostle, 19 Rich. II' [1396].

During the reign of King John (1199-1216), Richard Malbisse was Lord of the Manor, and he bequeathed 'all lands, rents, and possessions which he had in ... Wheldrake .. the mere called Alemare .. the mill and milldam', and all manorial rights, to the monks. Clearly it was a water-mill; it is known that the mill was situated at the end of the road leading from the village to the lngs, and apparently occupied the minor western channel or *Flete* variously named *Hoflete*, *Houhfete*, and *Huhflete*. (In Yorkshire the term 'milldam' usually described the water impounded to drive a mill, not the structure itself).

At an unspecified later date William de Moreby granted the monks 'a certain weir ... in Thireholme, in width 22 feet in all places, and length as it extends from the middle of the water of Derwent to the place called Alemare' with all the rights (of fishing, etc.) belonging thereto. The fact that at the earliest time of which we have knowledge the mill and weir were in separate ownership, implies that the weir was not built to serve the mill. The weir survived to be shown on current Ordnance Survey maps; it appears to be about 236 yards long, and was named 'Black Bank' on the 1851 '6 inch' map. It now only extends to the river bank, but it may be assumed to have been terminated in the river originally by a timber structure, which protected the weir from erosion and raised a head of water to drive the mill, while providing a channel through which craft using the river could pass. The size of the weir, and the manpower required to gather materials and build it, makes it very unlikely that it was built as a fishery, although it certainly created one. If it was not built to serve milling or fishing interests, it must be assumed that its intended purpose was to improve the river's navigability.

There is no suggestion in any of the entries that the gap at the river end of the weir could be closed with a sluice gate; it seems probable that the 'pales and piles' which the Abbot renewed, originally comprised a timber barrier which raised the river level by restricting the channel width for a considerable distance. A typical undershot-wheel water mill required a head of 3 feet (0.91 metres), although it was usual to raise the water a foot or two more, to provide a reserve for use in times of drought. The river's mean flow for the years 1976-9 exceeded 15 cubic metres per second (m^3/s).⁵ The mean flow prior to 1804 (when flood water in the uppermost part of the river was diverted into the sea through Scalby Beck) would have been greater. A flow of 17 m^3/s would result in 0.67m depth of water, in a 4.25m (14 feet) wide 500m long sloping channel with a fall of 1 metre.⁶ Greater flow, or a longer channel with the same fall, would result in increased navigable depth.

T. S. Willan's 1936 book 'River Navigation in England' described early inland trading craft, which 'ranged from rectangular punt-like structures of almost unbelievable ugliness, to the more graceful curves of the modern shape of barge. ... It would appear that boats on [minor] rivers had usually a burden of between 20 and 40 tons'. There is, of course, no need for graceful curves in a vessel which usually drifts with the current, or is towed slowly against it, and does not trade in broken water. It would have been quite possible for the Romans (or any of their successors) to build flat-bottomed cargo craft with a beam of about 3.5 metres, and the ability to carry in excess of 20 tons on a draught of 0.6 metre.

There is no evidence to indicate when or by whom 'Thireholme' weir was built; nor is there evidence indicating exactly when the Derwent's outfall into the Ouse at Barmby was

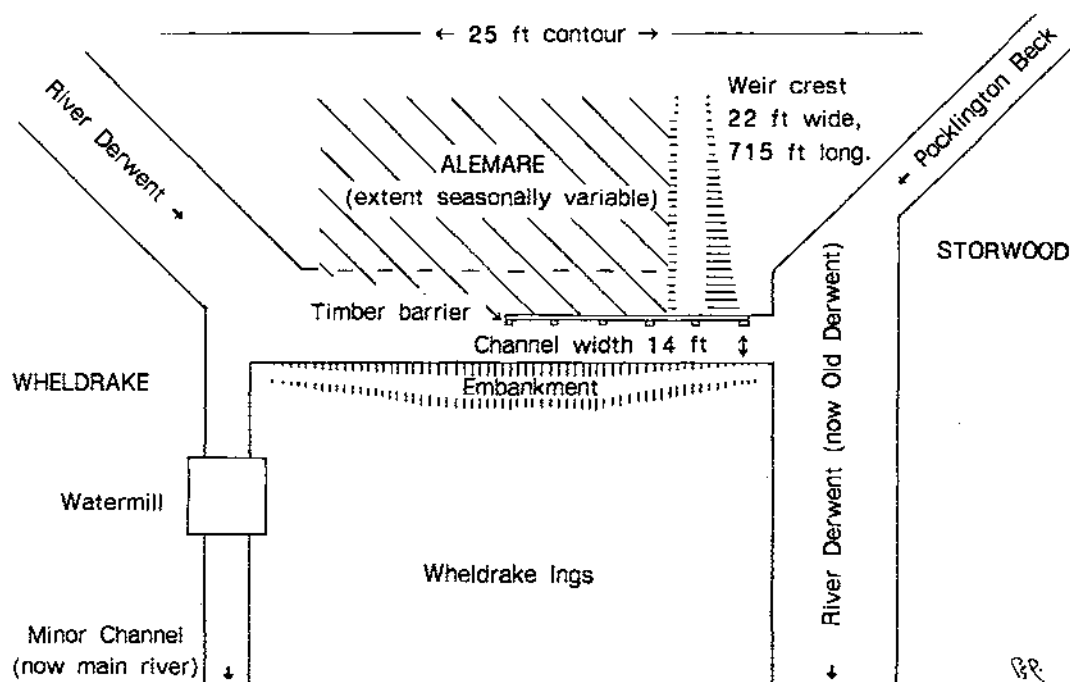
cut, (other than that it must have been before AD 959.) There is, however, archaeological evidence which suggests a purpose both could have served. During the years AD 71 to AD 74 the Roman 9th Legion advanced from its base at Lincoln to a new base at Eboracum (i.e. York). There was no stone suitable for building in the immediate vicinity, and material for its permanent buildings had to be transported for a considerable distance. The great volume of stone required to construct *Eboracum*, and the massive size of some of the blocks used, entirely precludes the possibility of delivery other than by water aboard substantial craft. Vast tonnages of Millstone Grit, Lower Magnesian Limestone, and Elland Flags (for roofing) were brought to York from the west, together with Jurassic oolitic limestone which could have come from either the Howardian Hills or the trans-Humber outcrops.⁸ But the fact that Roman Malton was also built with Jurassic oolitic limestone, suggests that stone for both sites was probably quarried from Howardian outcrops near the Derwent, and shipped up the river to Malton, or down the Derwent and up the Ouse to York. The original natural outfall into the Ouse was through Howden; the later artificial outfall at Barmby shortened the distance to York by 14 kilometres, and the time saved thereby would certainly have justified the work entailed in cutting a 3 kilometre long channel through sand and silt.

At the time of the Roman invasion the relative level of the Humber's tidal tributaries was probably in excess of one metre lower than at present, but the nature of the land through which the Derwent flows is such that *in favourable conditions* the river would have been navigable for a considerable distance. Spring tides would have flowed for about 16 kilometres, backing up the natural flow and raising the surface level for three or four kilometres further. Between the confluence with Pocklington Beck and Wheldrake there was an increase in bed gradient, and at Stamford Bridge the river ran over an outcrop of Sherwood Sandstone, on which it was usually fordable. But since the depth of water was often sufficient to justify the construction of the bridge which later contributed the suffix to the name of the town, it would seem likely that craft of modest draught could sometimes proceed further. Regular all-season navigation would have required some form of flow-management. The width of 'Thireholme' weir-crest suggests that the structure's original height was sufficient to retain a considerable rise in water-level during high-flow conditions, so as to enable navigation to continue during low-flow conditions. It seems likely that the weir was one of several Roman navigation improvements, effected to expedite *regular* shipment of building stone to York.

Research has shown that past fluctuations in mean sea level - and consequently the level of tidal rivers - follow a trochoidal curve when plotted, with peaks around the early years of the 4th century AD, and towards the end of the 13th century, with an amplitude of about 1½ metres.⁹ (There is evidence which quantifies the rise during the Roman period;¹⁰ its cause is unknown, but we may safely assume that the omission of catalytic converters from their chariots was *not* responsible). The high tidal levels which persisted into the 14th century were, however, responsible for a report from which the outcome of the events leading to the King's complaint may be deduced.

Sir William Dugdale's book 'History of Imbanking and Drayning',¹¹ tells how Drainage Commissioners met at Howden 'upon Thursday in Easter week 1 H. 4' (1399), to hear details of land drainage problems which were being experienced beside all the water-courses running into the lower Ouse and Upper Humber. The original course of the river between Wheldrake and East Cottingham, now renamed *Alderwent*, which 'ought to be xiiii foot [4.25 metres] in bredth, and six foot [1.83 metres] in depth' was said to be 'so obstructed that the adjacent lands, for default of cleansing thereof, were drowned.' The

DIAGRAM of RIVER DERWENT between WHELDRAKE and STORWOOD circa 1300 AD.



Abbot, together with other landowners, were ordered to effect the necessary repairs. It seems likely that 'xiii foot in bredth' was the original width of the navigation channel, and clearly, the *Alderwent* would not have been so named had it still carried the Derwent's main stream. The river must have scoured its way through the channel the mill had occupied, implying that the mill had ceased to exist.

The map and diagram show the position of the weir in relation to the supposed position of the watermill. The channel on which it had stood probably evolved when flood water burst around the end of the embankment, and scoured the channel on which it was built. The origin of the mill - like that of the weir - is obscure. Presumably the Abbot's new 'pales and piles' reduced the width of the channel to less than the beam of the craft using the river. A collier was based at Wheldrake; it is possible that the complaints of his customers initiated the action taken by the King. The reduced channel width may have caused exceptionally high floods, which washed the mill away. The Abbot probably decided that since his monks owned a windmill at Wheldrake,¹² rebuilding the watermill was unnecessary.

Rising ground half a mile north-east of the village is still known as 'Mill Hill'. No trace of the water-mill can be seen, but in 1970 the writer found a mill-stone on the river-bed, while struggling to clear a carelessly discarded fertiliser sack from the propeller of his cruiser. It may never be possible to show *with certainty* which of our successive invaders built *Black Bank*, but if an archaeologist were to cut a trench through it, or scan it with a metal detector, an artefact of identifiable origin just *might* be unearthed.

The diversion of the Derwent's main stream into its western channel lowered the river's

normal surface level, and reduced its navigable depth upstream from East Cottingwith, to the detriment of water-borne trade. It also caused Alemare to dry out in summer, seriously diminishing the fishery. (Which may explain the mid-14th century decline in the number of watermen and fishermen populating the hamlet of Waterhouses, previously - and perhaps wrongly - attributed to the Black Death).¹³ On the other hand, the lowered river level resulted in improved land-drainage, and enhanced the value of the water-meadows as pasture and a source of hay.¹⁴ Low embankments protecting them from damaging summer floods are thought to date from this time.¹⁵ The dimension 'six foot in depth' quoted by Dugdale was probably intended to limit the vertical distance between the river's bed and the crest of its embankments, so as to allow the higher winter floods to pass over them, and continue to enrich the meadows. The bridge built close to the site of Wheldrake watermill became known as 'The Hay Bridge' before the end of the century.

By 1462 the obstruction and general neglect of Yorkshire's navigable rivers was such that the Lord Mayor and commonality of the City of York were appointed their conservators by Royal Charter. They were authorized to 'correct and amend the defects of' the rivers Humber and Ouse, the Don to Doncaster Mills, the Aire to Knottingley Mills, the Wharfe to Tadcaster Bridge, and 'the water and river of Derwent from the said water and river of Ouse as far as the Town and Bridge of Sutton upon Derwent'. But navigation further upstream may have still been possible, given favourable conditions.

References and acknowledgements.

1. Baron F. Duckham, 'Navigable Rivers of Yorkshire', Dalesman Publishing, Clapham, 1964, p. 9.
2. 'Victoria County History .. York, East Riding Vol. III', K. J. Allison (Ed.) Oxford University Press 1976.
3. The 'core' main street runs along the ridge top of the moraine, on the driest ground.
4. Wm. T. Lancaster 'The Chartulary of Fountains Abbey', 1915, pp. 808-840.
5. Yorkshire Water Authority, 'Hydrographic Survey, the Tidal Reaches of the Ouse, its Tributaries and the Hull.' A report dated 23 June 1980, p.2. The writer is grateful for the comprehensive data defining the river Derwent's water levels and flow volume made available by Yorkshire Water.
6. Martin Eckholdt, 'Navigation on small rivers in Central Europe in Roman and mediaeval times' *International Journal of Nautical Archaeology and Underwater Exploration*, (1984) 13.1: pp. 3-10.
7. Moira H. Long, 'Howden and Old Drax' *Yorkshire Boundaries*, Yorkshire Archaeological Society, 1993, pp. 125-8.
8. P. C. Buckland, 'The Stones of York: Building Materials in Roman Yorkshire' in 'Recent Research in Roman Yorkshire' *British Archaeological Report* (1988) British Series 193, pp. 237-87.
9. G. D. Gaunt and M. J. Tooley, 'Evidence for Flandrian Sea-level Changes in the Humber Estuary and adjacent areas' *Bulletin of the Geological Survey of Great Britain* (1974) Vol. 48, pp. 25-41. The writer is grateful to Dr Gaunt of the University of Bradford's Department of Archaeological Sciences, who contributed geological information and encouragement.

10. A.C. and E. Waddelove, 'Archaeology and Research into Sea level during the Roman Era: Towards a Methodology Based on Highest Astronomical Tide'. *BRITANNIA* (1990) Vol. 21, pp. 253-266.
11. Sir William Dugdale, 'The History of Imbanking and Drayning of divers Fenns and Marshes both in foreign parts and in this Kingdom, and of the improvements thereby', Alice Warren, London, 1662, pp. 122-124.
12. Lancaster, *op cit.* P. 835. Richard Malebise's Grant to Fountains Abbey of his lands, mills, (plural) and other properties at Wheldrake, was confirmed by 'Pope Nicholas [III or IV] at St. Peter's, Rome, 10th kal. May, in the second year of the Pontificate' [1279 or 1289]. And, 'Fountains Abbey, Bursars Books', Surtees Society (1918) vol. CXXX p.84. 45s. 10½d spent on repairs to mill and millers house at Wheldrake in 1458-9.
13. VCH. *op cit.*
14. Surtees Society, *op cit.* Mention of mowing hay (1456-7, p.9) and hay-making (1457-8, p.43). The writer is grateful to Dr Patrick Mussett, of the University of Durham Department of Palaeography and Diplomatic, for drawing his attention to these references.
15. June A. Sheppard, 'The Draining of the Marshlands of South Holderness and the Vale of York' *East Yorkshire Local History Series No. 20*, (1966) pp. 16-17.

The Peak Forest Canal : Breaches in the Canal Banks 1797 to 1976

BY BRIAN LAMB

The Peak Forest Canal, from the south end of the River Tame Aqueduct (SJ99.93499837) and the Zero milestone of the Peak Forest Canal, extends 14 miles 58 chains to the eastern extremity of the canal main line at Bugsworth.' (SK08.02288203).

If no breaches had occurred during the period 1797 to 1976 it would have to be assumed that none had occurred or had not been reported. A breach of any canal is local news and, depending on the canal and the damage caused national news.

The writer has noted fifteen breaches of the canal during his researches, some reported in depth in the canal proceedings, others with just a passing paragraph.

The first breach occurred in July 1797 at SJ99.93479816 and is described as the Walk Mill (Dukinfield) breach. At a point 22 chains from the zero milestone, the canal bank had been cut or built very close to the River Tame and was retained and strengthened by a stone wall with a discharge sluice partway up. The Committee directed that the Engineer to erect a wall on the Towing Path side of the Canal and opposite to Walk Mill (SJ99.93319821) in Dukinfield, where the bank has slipped adjoining the River (Tame), in such a manner as will effectively secure the Canal and Bank from any further slip.

The stone wall built at the time may still be seen and is evidence of a good repair. At the

time of the breach the canal was still building and had no water in this section at the time of the slip and is thought to be the result of bad construction.

The following October 1797 at Strines Aqueduct (SJ98.96928607), 9 miles 61 chains from the zero milestone, the Company offered a reward of £100, for the discovery and conviction of any person/persons who cut and let-off the Water in the Canal by cutting or making a breach in the Bank over Strines Valley in Marple. The result of this breach was that 208 pieces of Calico, belonging to Bartons, Holt, Dodgson and Wright were damaged by the breach. The Company agreed to pay £40, for the damages to the Calico.

At Barlow Wood, Dukinfield (SJ99.93359774) in June 1798 the Committee agreed to pay, to Robert Schofield of Dukinfield for the damage done to his Lands by the breach of the Canal at Barlow Wood. The site of this breach, caused by weakness in the west or lower bank of the embankment at this point, 22 chains north of the former Great Central Railway main line bridge crossing the canal.

No other serious breaches of the canal banks were reported for the next thirty five years until Friday 1 November 1833 when the Gaskell Wood Culvert (SJ99.95159015) near to Hyde Bank Tunnel 6 miles 35 chains from the zero milestone, gave way. This was a



WALK MILL BREACH 1797
gr: SJ99.93479816

Looking north west at the rebuilt stone embankment with the canal to the right and the River Tame to the left. (15 June 1964)

serious breach and became the most detailed of all the breaches reported before and after, it was also unique in that within three weeks it had collapsed again.

The reason for the breaches in the same location was the very slippery nature of the towpath side of the bank, above the River Goyt, for a quarter of a mile and the very heavy rain prior to the second breach.



BARLOW WOOD BREACH

gr: SJ99.93359774

Looking south south west from Astley Street swing and foot bridges, towards the site of the 1798 breach. (13 August 1967).

The engineer, Mr. John Wood, reported on 2 December to the Committee:

The falling of the Culvert under the middle of the Canal... has been blocked up for some years with gravel laying in the Channel below... the bank of the Canal for a quarter of a Mile on the Towpath side being a very slippery one has slipped a number of times. The Culvert has been so full of Water and Gravel that no one could go through and examine it. The place that failed being the part in the Culvert where there is an alteration in the level of the bottom for the part on the lower side has but little fall, indeed almost dead level.

The force of the draining water along the bottom of the Culvert washed away any protection causing the towpath side to fail with disastrous results.

Stop planks were put in either side of the breach and the culvert was dug out and cleared to a depth of thirty feet with the sides stayed with timber. The culvert was repaired by Saturday 9 November and preparations were also nearly completed along the outer bank and above the River Goyt. Unfortunately on the night of Thursday 21 November, after a

night of torrential rain, the culvert was incapable of taking away the increased water and the whole bank collapsed.

The engineer reported that prior to Thursday 21 November, the culvert had been cleared of gravel, mud and debris and the engineer had been :

... through the whole of it up to the trunk we had put in the end of the culvert so that we could stop the water for 4 to 5 hours at once, to enable us to fill up the deficient parts of the Culvert bottom and replace it with stone...

After the second breach an inspection of the whole of the embankment proved it to be nothing but sand, except for the lining inside the Canal. The sand allowed the water to drain away with such force as to, leave the whole of the embankment so much saturated with water that it slipped down and was taken away by the discharge of water.

By judicious use of timber props and anchorages, the lining of the Canal was secured 'without stopping the Canal'. The original steep slope above and below the culvert was made shallower and the culvert was lengthened by 5 yards with the bank strengthened by stone bank supports, these may still be seen today along the towpath side of the canal - but care must be taken.

One unhappy event from this double breach was the death of Mr. John Rongsley, the



GASKELL WOOD CULVERT BREACH 1833

gr: SJ99.95159015

Looking north west at the bank supports put in after the breaches of 1st. and 21st November 1833. Looking towards the Hyde Bank Tunnel. (12 April 1968)

Company Agent at Chapel-en-le-Frith and the Stone Quarries.² John Ronksley had attended the breach to the detriment of his health and his subsequent death.

The Gaskell Wood breach occupied the Committee and the sub-Committee with suggestions and claims up to June 1836 and claims for damage from Mr. Peter Arkwright and Syddall and Addison; these latter submitting a claim to the Canal Company for damage to food, spirits, cigars and buildings amounting to £33.4s.10d.³

These two identical breaches at this location proved to be the most serious and expensive in the whole period of the Peak Forest Canal Company's existence from 1794 to 1846 and made it aware of the vagaries of nature and the ensuing chaos. Luckily for the Company the Gaskell Wood breaches were the last they were to experience before the Manchester, Sheffield and Lincolnshire Railway leased the canal in 1846.

No further breaches are reported or can be traced until December 1890, when the canal bank 300 yards south of the Furness Bridge was breached (SK08.01018334). The bank burst on the night of Sunday 14 December after water seepage saturated the bank causing it to slip and burst. Repairs were put in hand the following day and traffic was using the canal nine days later.

Just prior to the First World War during the early morning of Saturday 1 February 1914 along a high embankment 280 yards south of the third milestone near to the Apethorne embankment, the bank collapsed for a distance of 70 feet and to a depth of 30 feet and was carried down the valley side to the River Tame at the foot of the embankment. Luckily no one was injured. The breach caused a complete severing of the canal between both banks and the stoppage of the canal. Repairs were put in hand the following day and the canal was repaired within a short time. The fault was in a 36 inch stone culvert becoming blocked and the whole embankment becoming saturated prior to the collapse.

Twenty eight years later, in 1942, during the early years of the Second World War, close to Higgins Clough at Disley (SJ98.97828507) a breach⁴ occurred that was not reported in the local or national press due to wartime security, which was replicated at the same location 29 years later (in 1973). This breach had occurred because there were two culverts at this point, the south culvert was 58 inches square and the north culvert 54 inches square. Both were adequate for the normal rainfall and drainage of the area but in times of exceptional rainfall on Whaley Moor the ensuring water load brought down water, mud, branches and debris that caused the two culverts to become blocked. The valley south of the canal flooded and overflowed the banks of the canal causing the north, towpath, bank to become saturated and to subside into and along the north valley and engulfing the former Midland Railway line between Derby and Manchester. Work was put in hand immediately, both by the LMS railway engineers⁵ and the canal department, to clear away the debris and water and within a short time both the canal and the railway line were operating again. This breach held up both passenger and goods traffic for a short period which had to be cleared quickly to allow wagons from the nearby Gowhole Exchange Sidings to be cleared of wagons both from Manchester and from Derby, which at this stage in the Second World War was of national importance.

Twenty years on in January 1962, a major breach in the Marple Aqueduct occurred when the whole of the north east arch face burst into the River Goyt some 90 feet below. At this time, 1962, the Peak Forest Canal was 'in abeyance/disused' and the British Waterways Board (BWB) were hoping to pipe water across the ensuing gap, after demolition of the aqueduct and after the restoration/repair costs became known. The demolition was seen



MARPLE AQUEDUCT BREACH 1962

gr: SJ99.95549004

Looking west at the north face of the aqueduct showing the site of the breach in the face and on a level with the water channel. (23 June 1963)

as a *fait accompli* by BWB after the burst and costs involved. That is, until various waterways bodies and local authorities complained vigorously to BWB, who offered to donate the cost of demolition (approximately £38,000) towards its restoration, if the local authorities and waterways groups would find the balance required. The result was an agreement and the whole aqueduct was stripped and rebuilt with a reinforced concrete core and water channel and the original stonework tied into the concrete. It was completed by May 1964⁶ and is still in use today by boats completing the Cheshire Ring of canals⁷. The cause of the collapse was leakage of water from the channel through the lining and forming pools of water behind the outer stonework. During the very cold nights, the water froze and expanded causing the outer stones to become loose, bulge and eventually collapse, leaving a large gap in the outer wall of the aqueduct.

Captain Clarke's, or Woodend, Bridge (SJ99.94399422) situated across the canal as an access road to Wood End Cottage and 2 miles 66 chains from the zero milestone, was the scene of another breach caused by a blocked culvert in December 1965. The culvert was a 36 inch circular culvert that carried the Gower Hey Brook below the adjacent railway line and the Peak Forest Canal and, again, after a night of very heavy rain the culvert became blocked and the water built up to overflow the canal banks and to wash away the towpath and the embankment below it. No lives were lost but the breach left a large gap with only a small diameter gas pipe connecting both sides of the breach, all of which could be easily seen from the bridge just to the north of the collapse.



CAPTAIN CLARKES BRIDGE BREACH 1973

gr: SJ99.94399422

Looking south west across the canal at the breach and the unsupported gas-pipe. Captain Clarkes bridge is to the right. (3 January 1965)

Apart from securing the gas pipe nothing was done for some weeks before BWB tackled the repair and within six months the canal was restored and in water with a reinforced concrete bank edging showing the length of the repair required.

In July 1973, eight years after the previous breach and 29 years after the first breach in this location, the Higgins Clough at Disley breached again. This time there was no National security involved and both the *Stockport Advertiser* and the *Daily Express* published photographs of the breach with some lurid descriptions of its effects.⁸ It was repaired quite quickly and the extent of the breach may still be seen by the reinforced concrete edging to the towpath at this point. The writer was informed that the embankment was as solid as a rock.

A 242 yard length of the canal between Hyde Bank Tunnel and the Mancomb or Aqueduct occupation bridge (approximately 6½ miles from the zero milestone) was always referred to by the Peak Forest Canal Company as a slippery bank. At a point between the two aforementioned areas at SJ99.9494023, the bank slipped in July 1973 and caused a stoppage during repairs. At this same time the writer was mainly concerned with the Bugsworth Basin and the Disley 2 breaches and only learnt of the Hyde Bank breach some time after it had occurred.

Whilst not a bank breach of the canal, the Bugsworth Basin breach of the Blackbrook river bank which had occurred at SK08.02328208 and 02358200 was just as serious. The society clearing the Bugsworth Basin⁹ had made good progress during the preceding five

years, when in July 1973 after very heavy rainfalls the Blackbrook surged down the valley towards the River Goyt and burst through the river bank just east of the Navigation Inn and just west of the Chinley Road bridge at the opposite end of this inn. The surge of water swept over the river banks and flooded the canal basin, parts of which had been the scene of intense activity over the previous two years and were now back to their original condition plus extra mud and debris. BWB and the River Authority cleared the breaches and made them up again, though now higher than previously to counter any future surges.

At the Todd Brook Reservoir during November 1975 the inner stone embankment facing slumped at SK08.00728105 and caused loss of water. It was immediately inspected and the reservoir drained leaving only the New Brook Course to let any water into the feeder channels and into the canal at Whaley Bridge. Quite a considerable amount of investigation was carried out, both on site and in various Record Offices including the Mines Record Offices at Nottingham and St. Helens. The fault was found to be an old mine shaft that had not been securely capped during the initial building of the reservoir in the 1830s.¹⁰ A major repair was undertaken with a 'swallow' being formed over the centre portion of the embankment. During the construction of this swallow the engineers found a large area of quicksand where a large piece of earth-moving machinery was nearly sunk without trace. The drainage of the reservoir gave ample opportunity to study and to record the reservoir floor and construction, as well as the stone facing along the inner side of the embankment wall.



COOMBS BROOK RESERVOIR BREACH 1976

gr:SK07.03467980

Looking south east from the canal feeder and feeder outlet, at the slump on the outer face of the dam-head. (8 February 1976)

On the morning of Thursday 29 January 1976 a breach occurred in the Coombs Brook Reservoir embankment at SK07.03467980, with the embankment washed away by wind-assisted wave action and a high-water level acting on the water-side face of the embankment. The Reservoir Keeper, Mr. John Sidebottom, had been in attendance all through the previous eighteen hours, lowering water-levels at both the Todd Brook and the Coombs Brook Reservoirs, until the high winds, high rainfall and high water-level took charge causing the embankment to be washed away over a 30 yard length. An effective repair was not put in hand until 1978 when the embankment was built-up and widened with the former access road to Meveril and Tunstead farms laid across the top of the embankment and not along the foot as before. This work was completed in the early 1980s with the reservoir refilled and on stream during the ensuing years.

The breaches of the Peak Forest Canal may be placed in one of four categories: i. vandalism, as with the cutting of the canal bank at Strines in 1797; ii. faults in construction, as at Walk Mill in 1797 and at Barlow Wood in 1798; iii. mine workings, as at Todd Brook Reservoir in 1975 and iv. natural forces, as at Coombs Brook Reservoir in 1976.

The engineers at the time of the construction and cutting of the Peak Forest Canal and Railway were virtually working blindfold. What they were doing was new and an original type of engineering. Only the Romans had tackled water engineering on such a scale. There were reports and drawings available, but not as easily accessible as they are today. Whilst the original surveys and construction may have been found to be faulted, their repair techniques however, have stood the tests of time and are as good today as when they were originally made.

The writer would be interested to hear of any other breaches of the Peak Forest Canal that have occurred but have not been mentioned in the foregoing article.

THE PEAK FOREST CANAL COMPANY BREACHES IN THE CANAL BANKS 1797 to 1976

The following are the known or reported breaches in the Canal Banks/Reservoirs taken from the Canal Proceedings, Newspaper Reports or as witnessed by the compiler, Brian Lamb.

WALK MILL	JULY 1979
gr: SJ99.93478916	.600 yards
STRINES AQUEDUCT	11 OCTOBER 1797
gr: SJ98.96928607	.9¾ miles
BARLOW WOOD. Dukinfield	6 June 1798
gr: SJ99.93359774	.1½ mile
GASKELL WOOD CULVERT 1. Romiley	1 November 1833
gr: SJ99.95159015	.6½ miles
GASKELL WOOD CULVERT 2. Romiley	21 November 1833
gr: SJ99.95159015	.6½ miles
FURNESS	14 December 1890
gr: SK08.01028330	13 ½ miles
APETHORNE AQUEDUCT. Hyde	1 February 1913

gr: SJ99.94179391 3 miles
 DISLEY 1 1942
 gr: SJ98.97828507 10 ¾ miles
 MARPLE AQUEDUCT. Marple 15 January 1962
 gr: SJ99.95549004 6 ¾ miles
 CAPTAIN CLARKES BRIDGE. Hyde January 1964
 gr: SJ99.94399422 2 ¾ miles
 DISLEY 2 16 July 1973
 gr: SJ98.97828507 10 ¾ miles
 HYDE BANK. Romiley July 1973
 gr: SJ99.94949024 6 ¼ miles
 BUGSWORTH BASIN BREACH July 1973
 gr: sk08.02328208 14 ¾ miles
 TODD BROOK RESERVOIR November 1975
 gr: SK08.00728105
 COOMBS BROOK RESERVOIR January 1976
 gr: SK07.03467980

NOTES:

1. Bugsworth is the name of the Terminus of the Peak Forest Canal and is known as Bugsworth Basin instead of the revised Buxworth spelling approved by a census of villagers in 1930 when the village name changed. The Peak Forest Canal Act of 26 March 1794, 34 George III. Cap 26 used the original spelling, then in use, and unless an amending Act is passed to revise the spelling in the original Act the spelling of the canal basin is still BUGSWORTH BASIN. In May 1999 a referendum was held of the villagers with the majority vote choosing to retain the BUXWORTH so that only the canal basin is correctly called and spelt BUGSWORTH BASIN.
2. John Ronsley was appointed on 12 April 1809 and died on 25 December 1833, having served the Peak Forest Canal Company for 24 years.
3. Proceedings of the sub-Committee of 20 November 1833, 6 December 1833, 8 January 1834, 2 May 1834 and the General Committee of 13 January 1834.
4. Higgins Clough, Disley. The Marple Letter Book (1909 to 1947) shows that between 29 March 1943 and 10 October 1943, the time booked for the repairs to this breach totalled 111 man-hours.
5. The Midland Railway, Derby to Manchester line was absorbed into the London, Midland and Scottish Railway Company in 1923.
6. The most informative article on the restoration and saving of the Marple Aqueduct is in *Waterways World* issue of March 1996, volume 25 number 3, pages 64 and 65 by David Bolton 'How Marple Aqueduct was saved'.
7. The CHESHIRE RING is those canals that form a water boundary to the County Palatine of Chester - the Peak Forest Lower Canal - the Macclesfield Canal - the Trent and Mersey Canal - the Bridgewater Canal - the Rochdale Canal and the Ashton

Canal. It was first proposed in the late 1960s by the former Peak Forest Canal Society.

8. The following extracts are taken from the *Daily Express* issue of the 17th July 1973 page 5.

A deep depression over Southern England moved North, pushing warm moist air into an area of cold, dryer air. There was a first class collision and down it came. It was very much like someone breathing on a cold pane of glass and causing condensation - but magnified million upon millions of times. The rain belt was 175 miles wide and 60 miles deep, 200 feet above ground level and more than five miles high. Three inches of rain fell in 27 hours. It seemed like Niagara Falls - It was frightening. There was just this vast wall of water carrying everything before it - The water must have built up a tremendous pressure to cause this sort of mess, the only smiles were from Water Board Officials throughout the North as their drought threatened reservoirs filled dramatically.

9. The clearance of the Bugsworth Basin and its entrance canal was started in 1968 by Mrs Bessie Bunker and was completed with the official re-opening by Councillor Mrs Joyce Brocklehurst at 10.30am on Saturday 3 April 1999.
10. One of a number of open mine shafts that were at the time (c1830), left un-capped and into which surface water was allowed to drain. There are still a number of un-capped mine/pit shafts still in the Whaley Bridge area and care must be taken at all times.

'A Very Objectionable and Long Continued Practice': the Propelling of Passenger Trains on the Midland Railway

BY ROGER BRETTE

It is not always easy to discover details of railway operating practices in the steam-operated days of the nineteenth century. As a result, the extent to which the propelling of loaded passenger trains occurred has not perhaps been appreciated. This article considers the practice of reversing loaded passenger trains on the Midland Railway, not as part of the division or combination of trains, as for example occurred with Morecambe and Carnforth portions at Wennington but where the driver was on a locomotive at the rear of what might well be quite a long train, in a movement over an extended distance. Both express and local services were treated in this way. This sometimes, but by no means always, involved a triangular layout at the approach to a station.

This use of a triangular layout was possible at Derby, where the Derby avoiding line was brought into use on 1 October 1846.¹ At some date after that it became the practice for trains off the Midland Counties line from Sawley Junction continuing north of Derby to take the line from Derby South Junction to Derby North Junction and then reverse along the North Midland line through Derby Junction into the single platform at Derby station, a distance of 990 yards²; they did not take the direct curve from Derby South Junction to Derby Junction. Similarly, trains from the north turned off the North Midland line at Derby

North Junction and ran to Derby South Junction from where they were propelled for 770 yards past Derby Junction into the station. This mode of operation at Derby continued until the opening of the Litchurch & Spondon curve, from Spondon Junction to London Road Junction, Derby in June 1867.³ At about 1.40 am on 3 October 1854 the mail train from Rugby for the north was being propelled into Derby station on the arrival line when it hit a coal truck obstructing the line. The report⁴ of the inspecting Officer, Capt Tyler R.E., notes that the lack of siding accommodation at Derby meant that it was common for coal wagons to be left on the main line and that in these circumstances trains arriving at Derby station were sent along the departure line. In a later accident, on 19 January 1860, the 10.15 am all stations passenger train from Rugby also collided with a coal truck, on this occasion whilst running between Derby South and Derby North Junctions in preparation for the reversal into Derby Station.⁵ At Derby there is clear evidence of this practice in the surviving Working Timetables as two passing times are given at Derby North Junction for northbound trains and two times at Derby South Junction for southbound trains. For example in July 1860 nine passenger trains from the Sawley Junction direction were propelled into Derby station from Derby North Junction. Nine up trains reached Derby station round two sides of the triangle, finally being propelled in, but local services from Rowsley and Ripley, terminating at Derby, ran straight into the station.

Another busy location where this practice continued for many years was Leeds. The triangular layout outside Leeds (Wellington) station, bounded by Whitehall Junction, Water Lane Junction and Leeds Junction had been in existence since 1846.¹ It was used by trains of several companies in addition to those of the Midland Railway. The Working Timetables give no indication that propelling of passenger trains was occurring, as the passing times at the outer two apices of the triangle at Whitehall Junction, 946 yards, and Water Lane Junction, 990 yards, from Wellington station, are not given. The evidence here comes solely from the accident reports of the Board of Trade Inspectors. Capt. Wynne R.E. reporting on a minor accident on 17 March 1851⁷ noted that all trains came into Leeds (Wellington) station 'tail first' and that there were 50 arrivals and 50 departures a day. On this occasion the 3.10 pm MR express to Bradford and Colne leaving from a platform on the north side of the station and moving across to the up (departure) line was in collision with a Leeds & Thirsk Railway train being propelled into a platform on the down (arrival) line at the point just beyond the platform ends where two lines crossed. The movements were controlled by a switchman working on the ground. As the MR train was signalled away under clear signals the switchman saw the L & TR train approaching and decided, as he was entitled to do under the rules, that because the driver of the MR train had not whistled to acknowledge the right away signal from the station clerk, he would admit the L & TR train first. The incoming train often carried passengers wishing to catch the MR express, which was possible by a simple cross platform transfer. The switchman therefore quickly changed the aspect of the departure signal and sounded a bell. Unfortunately the driver of the MR train was looking back down his train as he set off and did not hear the bell due to the noise of his engine. By the time he looked forwards and saw the danger, his efforts to stop were too late to avoid a collision with the L&TR train, which was also being brought to a stop. No carriages were derailed in the impact. Capt. Wynne blamed the MR driver for the collision and made a number of recommendations, the most important of which was that departing trains should always take precedence over arriving trains. He raised no objection to the practice of propelling trains into the terminus.

When Capt. Tyler R.E. enquired into the next accident at the approaches to Leeds

(Wellington), on 5 October 1860,⁸ he noted that the practice of reversing loaded passenger trains into this terminus had been safely practised 'for a long time'. He nevertheless considered the practice to be undesirable since the drivers had a poor view from the rear of a long train and derailment at facing points was more liable to occur. In 1860, raised signal boxes, block telegraph working, interlocking, facing-points locks and continuous brakes had not yet been introduced. On 5 October two MR trains being propelled, one an up train and the other a down train, collided at Leeds ticket platform at the entrance to Wellington station. The 1.00 pm passenger train from Bradford, consisting of five carriages and two vans, and running on time, ran from Whitehall Junction on the up line round the Whitehall Curve to Water Lane Junction and was then duly propelled back round the curve to Leeds Junction and on across the Leeds & Liverpool Canal bridge past Canal Bridge Signal box and into the ticket platform, which was on the down arrival line. It would have been crossed from the up to the down line near Water Lane Junction. Meanwhile, the 10.25 am passenger train from Derby, consisting of an engine, tender, six carriages and a van and running 20 minutes late was being propelled round the north side of the triangle, having run along the down line of the Whitehall curve. The driver of this train passed Canal Bridge Signal Box, which lay sixty yards west of the ticket platform, on the arrival line, without the permission of the switchman, and collided with the stationary train which had arrived from Bradford, which was still standing at the ticket platform. It was a minor collision, but three ladies were injured. Capt. Tyler attributed the collision to forgetfulness on the part of the driver of the moving train. In his report he called for better arrangements to be made in view of the very heavy traffic in the area and called for alterations at Canal Bridge Signal Box and the provision of a raised stage. Traffic was at this time controlled by a pointsman working signal levers in a box at ground level. The point levers, also at ground level, were in two groups of four, one group close to the box and the other across the tracks from the box and some 60 yards away; the switches were used to direct trains into carriage sidings behind the ticket platform. The points were operated by an assistant to the signalman. The MR considered that, since most of the points were in the carriage sidings, working by long rods from the box would be objectionable, and that at night the pointsman would not be able to see where the carriages were with respect to the points, and three years later had defiantly still not implemented the recommendations.⁹

North Eastern Railway passenger trains approached the Leeds triangle from both the north and the south. On 7 September 1863 a stalled NER train from York and Hull which had used MR tracks from Methley Junction, and which consisted of an engine, tender, six carriages and two brake vans, was hit in the rear at 5.07 pm by a MR passenger train, 100 yards south of Water Lane Junction. It used the impetus of the collision, which injured four of its passengers and broke the screw couplings but not the side chains, to restart and continued to Whitehall Junction. It then, as usual, reversed into the ticket platform and Wellington station.⁹

On 4 November 1864 the 6.10 p.m. NER passenger train from Harrogate via the former Leeds & Thirsk line which had joined MR tracks at Leeds & Thirsk Junction, 200 yards north of Whitehall Junction, ran past Whitehall Junction to Water Lane Junction arriving at about 7.05 pm. The signalman there signalled it to run forward on up the line to beyond the crossover, south of the junction box and then walked the 80 yards to the point lever controlling the crossover points and held the points open for the train to reverse onto the down line so that it could be propelled to the ticket platform at Wellington station.⁹ From his position at the points the signalman could see a departing NER Leeds-York service

via Methley Junction standing at the up home signal on the curve from Leeds Junction, waiting for the reversal movement to be completed. He returned and cleared the signal to allow this train to proceed. In the absence of telegraphic communication he was unaware of an up MR transfer goods train, with the engine running tender-first, approaching Water Lane Junction from Whitehall Junction en route to Hunslet Lane yard, until he saw its lights. Following a long-standing and by this time unique MR practice, on which members of the Railway Inspectorate had frequently commented unfavourably for many years, the up signal at Water Lane Junction applied to either converging line and the MR driver wrongly assumed that it was meant for him. Despite last minute attempts to avert it, a collision between the two converging trains ensued. This accident highlighted the density of the traffic at the Leeds triangle and the antiquated and dangerous signalling arrangements still in use. Capt. Tyler roundly condemned the common signal for the two converging routes and called for improved signalling and interlocking at Water Lane Junction and for better telegraphic communication in the area.¹⁰

The practice of reversing trains into Wellington station continued and another NER train was involved in a collision on 16 April 1868. On this occasion the 8.45 am passenger train from Harrogate, which had started at York, was being propelled into the station at 9.23 am, two minutes early. It consisted of an engine, tender, five carriages, a brake van, a 1st class carriage and a slip carriage attached at Harrogate. The slip carriage was therefore at the front of the train as it approached the station from Water Lane Junction. This NER train did not have to call at the MR ticket platform. The driver later claimed that the arrival signal was off but the signalman and his two assistants all maintained that it was changed when the driver whistled for it. One of the assistants was holding open the points for the line serving platform four. The train was being propelled in at 7-8 m.p.h. when a MR passenger train departing for Bradford from platform five passed a signal at danger and there was a collision. There were no serious injuries to the 30 passengers and the fireman and guard of the NER train or the 30-40 passengers on the MR train. At this date all platforms at Wellington station were used indiscriminantly for arrivals or departures by trains of the MR, NER and London & North Western Railways. The MR train, the 9.20 am departure, consisted of an engine, tender, guard's brake van, six carriages and a rear guard's van. The guard signalled it away within 15 seconds of the departure time, the driver whistled for the departure signal to be lowered and began to move forward. The driver and his fireman both saw the signal lowered just as their train started and subsequently only realised too late that the train which was being propelled into the station would cross their path. Col Hutchinson R.E. conducted the enquiry into the accident.¹¹ The starting signal for each platform was worked by a MR signalman from a cabin called the Bell Box situated 90 yards from the platform ends at the point where the lines merged into the up and down main lines. 90 yards further on were two arrival line signals also worked by the Bell Box which were situated at the town end of the ticket platform for each of the two arrival lines which merged into one before the Bell Box. The crash occurred at the site of the 1851 collision⁷ where the line into platform four crossed on the level the line into platform five, 60 yards from the end of the platforms at Wellington station. None of the signals or points operated by the Bell Box was interlocked. Although the crew of the MR engine of the departing train said that their departure signal was lowered just as they started, the signalman at the Bell Box strenuously denied this. An explanation for these opposed views was uncovered by Hutchinson when it transpired that the departure signal was lowered but then almost at once raised; the arrival signal for the incoming train was then turned on. These events were reported to the Inspecting Officer by an experienced MR

signalman at Canal Bridge box 200 yards beyond the Bell Box, who had been watching train movements to see if he could allow a pilot engine to shunt. Hutchinson in his report objected to the practice of propelling trains and to the tender-first running which thereby resulted.. He also trusted that the MR would now interlock the Bell Box.

By the time of the next accident due to propelling trains into Leeds (Wellington) the complexities of operations at the approach to the station had been increased by the opening of Leeds (New) station by the NER and LNWR and by the closure of the MR engine house at Wellington station and its replacement by a new engine shed at Holbeck, just south of Water Lane Junction, which increased the number of light engine movements.¹² The lines into and from Leeds (New) station joined MR lines at Leeds Midland Junction between the eastern apex of the triangular layout and Wellington station. On 23 November 1871 the 9.35 am MR passenger train from Bradford to Leeds, consisting of an engine, tender, six carriages and two vans was reversing south of Water Lane Junction from the up line over a crossover onto the down line on which it would be propelled into Wellington station. The signals at Leeds Junction were set clear for this move. The train had reached Water Lane Junction at 10.25 am and immediately began to reverse. There was dense fog at the time and fog signalman were on duty at distant signals. One such railwayman had, following instructions, put down a fog signal and then followed the 9.47 a.m. MR up fast passenger train for London to see that it cleared the junction at Water Lane. Just before the train from Bradford started to reverse, a man in the fog shouted 'All clear. Let them come in'. This was heard by this fog signalman attending the Water Lane up distant who assumed that the shout referred to the next up train due round the curve from Leeds Junction. This was the 10.00 am Lancashire & Yorkshire Railway passenger train. Its driver found the Water Lane up distant signal on, but the fog signalman ran back and signalled him to proceed. However, the shout had been meant to refer to the incoming train. The result of this misunderstanding in the fog was a slow speed collision at the crossover at Water Lane Junction between the LJR and MR trains, which resulted in 17 minor injuries. Col. Yolland R.E. the Board of Trade Inspecting Officer in his report attributed the accident to a mistake by the fogman, who had only been in the service of the MR for a short time. Yolland expressed himself forcefully, castigating the 'very objectionable and long continued practice of shunting trains so great a distance'. It was no credit to the MR Company. He noted that he understood that the practice might shortly be done away with.

Almost at once a further propelling accident occurred at Water Lane Junction, this time involving a Manchester, Sheffield & Lincolnshire Railway train. With the opening two years earlier of Leeds (New) station fewer companies were running over the MR from Wellington station, but there were still L&YR trains to Pontefract and one MSLR train a day to Manchester. On 13 December 1871 the 3.21 pm MR express from Ingleton to Leeds left Ingleton 15 minutes late due to a late connection from the LNWR. The express, consisting of an engine, tender, two carriages and three vans left Skipton at 4.24 pm, and arrived at Water Lane Junction at about five o'clock, still running 15 minutes late. Whilst preparing to reverse, the express was struck by the 4.57 pm MSLR train for Manchester, consisting of an engine, tender, two carriages and two brake vans, which left on time. When the MSLR train whistled for signals at Leeds Junction, they were lowered. At this date the side of the triangle from Leeds Junction to Water Lane Junction was not yet being worked by the block system, but the two signal boxes were linked by electric telegraph bells. At Leeds Junction the signalman, as required by the rules, gave a green caution to the MSLR driver, but observed that the driver took no notice of it. Water Lane

up distant signal was only 60 yards from Leeds Junction, and the MSLR driver was later unsure whether he saw a white light, but was certain that he did not see a red one. When he saw the Water Lane home signal at danger, protecting the express, he was only 150-200 yards away from it. He used his tender brake to reduce his speed to 5 m.p.h and whistled. He then suddenly saw three red lights on the rear of the reversing express but could not avoid a slow speed collision. His locomotive hit the last coach of the MR train, the rear brake van having already been propelled through the crossover. The MR driver had been signalled to start the reversing movement and had travelled about 30 yards when the collision occurred. He did not see the oncoming MSLR train. Eight passengers and the guard in the MR train were injured in the accident including the Duke of Buccleuch, a Director of the Furness Railway, and other aristocrats. The Inspecting Officer was Capt. Tyler.¹⁴ He discovered that the MSLR driver was a senior man, who after instruction and road learning had taken out the 4.57 p.m. departure on three occasions, the third being the day of the accident. Needham, the MR's Superintendent of the Line, told Tyler that he had informed Bradley, his opposite number on the MSLR, in writing that the up Water Lane Distant had been resited. Tyler found that the MSLR driver was primarily responsible for the accident. Both the up home and distant signals at Water Lane had been at danger. Tyler called for an enlarged cabin at Water Lane Junction and for the institution of block working from there to Leeds Junction. He, too, objected to the reversal procedure, which he was told had already been partly discontinued. He was also told that further alterations in Wellington station and its working were projected.

There are no later reports of accidents involving trains being propelled into Leeds (Wellington) station. When the 9.30 am Derby-Leeds train was involved in a minor buffer stop collision at Leeds (Wellington) on 26 March 1873 it had entered the station directly from Water Lane Junction with a locomotive at its head.¹⁵

Another triangular location where it seems likely that trains were propelled on the MR is Shipley, but unequivocal evidence does not seem to be available. The original Leeds & Bradford Railway station there was situated some 200 yards on the Bradford side of the triangular layout bounded by Leeds, Skipton (later Bingley) and Bradford Junctions.¹ The evidence from the Working Timetables is inconclusive but the Leeds to Bradford, Skipton, Colne and Lancaster Table certainly suggests that propelling may have occurred. For example in July 1860 the Mail leaving Leeds at 6.00 am is shown as leaving Apperley Bridge at 6.21 am and arriving at Shipley at 6.30 am. The train is then shown as leaving Shipley at 6.37 am and continuing to Bingley and the north. No connection to or from Bradford is shown. It is thus possible that the train ran from Leeds Junction, Shipley to beyond Skipton Junction, Shipley and was then propelled wrong line into Shipley station, a far more convenient move than running the train directly into Shipley station, as the train engine could immediately resume its journey after the station stop, without running round or being replaced. When Shipley station was rebuilt in the early 1870s¹ with platforms actually along the two sides of the triangle away from the main Leeds-Skipton line the option of main line trains reversing in and then out of Shipley station was still available. For example, a possible candidate would be the down mail train leaving Leeds at 6.00 am in July 1899 shown in the Working Timetable¹⁶ as calling at Shipley from 6.30 am until 6.37am but with no connections to or from Bradford.

Another situation where propelling was in regular use on the MR involved the reversal of a loaded passenger train in order to reach a station platform, before proceeding further, at locations where no triangle existed. The classic example of this was the method of operating passenger traffic at Gloucester.¹⁷ With the conversion of the Bristol-Gloucester

line from broad gauge to mixed gauge and the opening in 1854 of the largely new standard gauge line from Gloucester Passenger Junction to Standish Junction it became possible to run through trains from Bristol to Birmingham without a change of train at Gloucester due to the break of gauge. However the nature of the layout meant that trains from Bristol to the north calling at Gloucester had to be propelled into the station, which remained a terminus, from Gloucester Passenger Junction. Conversely trains from the north which ran directly into the station at Gloucester had to be propelled out beyond Gloucester Passenger Junction before they could resume their journey southwards over the new line. This state of affairs lasted until the opening of the new through station at Gloucester in 1896.¹ It is surprising that the Board of Trade allowed this to continue for so long especially in view of the fact that the MR standard gauge lines crossed on the level the lines of the GWR, which were broad gauge until 1872, and in the early years, the tramway of the Cheltenham & Gloucester Railway as well.

For a two year period from May 1857 to February 1859¹, until the site of the MR station at Bedford was agreed and the station then constructed, passenger trains on the main line between Hitchin and Leicester had to be propelled for a distance of about 400 yards round a single line curve in order to use the LNWR station at Bedford.¹⁸ Up trains ran directly into the LNWR Station but had to be propelled out again northwards to regain the MR main line. The Board of Trade Railway Inspectorate was not at all happy with this way of operating a main line but allowed it as a temporary expedient.

On 15 July 1861 the L & YR inaugurated a connecting service between Wakefield (Kirkgate) and the MR station at Oakenshaw.¹ The trains left the L & YR Wakefield-Goole line at a new junction at Oakenshaw and ran over a connecting line to a junction with the MR's Leeds-Masborough main line at Oakenshaw (later Oakenshaw South) Junction, ¼ mile south of Oakenshaw station. To reach Oakenshaw station the L & YR exercised running powers over the MR; the trains were propelled into Oakenshaw station from the junction¹⁹. This awkward reversing manoeuvre on the busy main line was eliminated from 1 June 1870 when Oakenshaw station was closed and a new station at Sandal & Walton, south of Oakenshaw Junction, was brought into use.

When the MR opened its line through Sheffield in 1870 a short lived north-facing connection was provided between Sheffield and Attercliffe Road stations leading up to the MSLR Sheffield-Woodhouse Junction main line some way to the east of Sheffield (Victoria) station. The connection to the MSLR faced eastwards. The MR used this connection to operate a passenger service between its new station at Sheffield and Huddersfield, via Penistone, using running powers it already possessed. On the insistence of the MSLR, Allport, the MR's General Manager, agreed that the MR trains starting at Sheffield would be backed over the junction onto the MSLR before running forward to Penistone; trains from Huddersfield were to be propelled from the MSLR junction down into the MR's Sheffield station.²⁰

An example of loaded MR passenger trains being routinely propelled for a short distance is provided by the operations at the Great Eastern Railway station at Kings Lynn adopted with MR trains arriving from Peterborough over the Peterborough, Wisbech & Sutton Bridge and Midland & Eastern Railways. A report²¹ into an accident at King's Lynn on 29 April 1882 shows that it was the practice to stop a train at a ticket platform 300 yards outside the station and detach the locomotive, which was then moved away to be turned. A second MR locomotive was then attached to the rear of the incoming train and used to back the train into one of the terminal platforms and subsequently to take out the same

set of carriages as the next service back to Peterborough. In this accident the reversing train collided with some vans at the far end of the platform because the MR driver was unfamiliar with the continuous vacuum braking system fitted to his locomotive. Col Rich, R.E. in his report¹⁹, drew attention to the objectionable practice of backing loaded passenger trains. The practice at King's Lynn was safer than the practice revealed in the report²² on an accident at Mansfield on 11 October 1855 where, after the detachment of the engine at the ticket platform, 100 yards from the platform end, the carriages were allowed to run by gravity into the terminus. There was a requirement that there should be two brake vans for every train, which averaged eight or nine carriages. A porter collected the tickets and subsequently boarded the train and worked the hand brake in the second brake van. On this occasion, owing to the precipitate action of the guard, the porter had to leap into the moving van and could not immediately get at the brake lever, because of piled up luggage. As a result, with only the guard operating the hand brake in his own van, there was insufficient brake power to prevent a violent contact with the fixed buffers. At this earlier date, the Inspecting Officer, Capt. Wynne, did not, in principle, object to this practice.

Another example of the propelling of loaded passenger trains on the MR is provided by the mode of operation being used in 1870 to provide a through service from Bradford to Otley and to Ilkley before the opening of the Shipley & Guiseley line in December 1876.²³ The Otley & Ilkley line from Guiseley made a double line junction with the Shipley-Leeds main line facing towards Leeds at Apperley Junction a location at which there was no station. There was an intermediate line between the up and down lines of the branch, joining the up branch (to Leeds) close to Apperley Junction and the down branch line 200 yards from the junction. 100 yards along the intermediate line there was a crossover to the down branch line. The points on the intermediate line were controlled by a separate switchman and not by the signalman at Apperley Junction Signal Box. Trains for Otley and Ilkley left Leeds and Bradford at the same time. The train from Bradford, which reached Apperley Junction first, ran past the junction and was then propelled through the junction points up the branch on the up line and immediately afterwards onto the intermediate line. Next, the train from Leeds ran directly onto the down line of the branch and stopped on that line between the crossover and the junction at the far end of the intermediate line. The train from Bradford was then drawn through the crossover onto the down branch line. The two sets of carriages on the down branch line were then shunted together and pulled clear of the crossover from the down branch line using the engine of the train from Leeds. Next the engine of the Bradford train ran back onto the intermediate line and at the far end through onto the down line of the branch, finally backing down to couple ahead of the engine which had come from Leeds. The train then departed double-headed. On 30 September 1870 the trains leaving Leeds and Bradford at 7.45 pm collided at Apperley Junction due to an error by the signalman made possible by the lack of full interlocking at Apperley Junction. He gave a hand signal to the train from Bradford, consisting of ten vehicles including three brake vans, one of which was manned, which, before he had moved the up branch line points, was then propelled back along the up main line so that it was in collision with the train from Leeds passing under clear signals from the down main line onto the down branch line.

Another place where loaded passenger trains were propelled for a relatively short distance was at Masborough. In 1882 local trains from Chesterfield to Sheffield via Staveley were being reversed at Masborough. The station was still the original North Midland Railway station of 1840 with staggered platforms and just two running lines. The

down platform was to the north of the up platform and the two platforms were linked by a board crossing. Masborough Junction signal box at the point where the lines from Sheffield and from Chesterfield via Staveley converged, was immediately south of a crossover at the south end of the up platform. A report²³ on an accident on Sunday 14 May 1882 reveals that it was the practice for trains from Chesterfield to run through the station on the down line without stopping until the train was clear of a crossover at the north end of the down platform. The loaded train was then propelled through this facing crossover, controlled by a small subsidiary cabin at the board crossing, to place the carriages in the up platform. The engine then ran round its train, using both crossovers. This manoeuvre, properly signalled, at this date took place eight times a day. At the time of the accident, the lever for the signal controlling entrance to the down platform, operated by the signalman at Masborough Junction, was bolted to the point lever at the crossing cabin and operated a disc in the cabin. On the occasion of the accident a second down passenger train, from the Sheffield line, was signalled into the down platform after the local train had stopped beyond the northerly crossover. The crossover points were thus locked until the second train had arrived and the signal had been returned to danger. The impatient driver of the local train, who never received a signal to set back from either the guard or the crossing signalman, began to propel his nine coach train, with his locomotive running tender-first, through the crossover before the points had been changed, and the movement of the points derailed part of the train passing through the crossover, at low speed. The first six carriages were fitted with vacuum brakes but the engine only had a steam brake. The Inspecting Officer, Major Marindin RE, wrote²⁴ that the accident furnished 'another instance of the danger arising from the practice of backing loaded passenger trains, which has led to many accidents and should be avoided as much as possible'. Masborough South Curve had been opened for goods traffic in the previous November but the all-stations passenger service between Chesterfield and Sheffield via Staveley was not diverted over it until 1 January 1890, 'thus finally ending the practice of reversing the trains at Masborough.

The final adverse comment from a member of the Railway Inspectorate on the propelling of loaded passenger trains on the MR occurs in a report on a derailment at Ashchurch on 16 September 1899.²⁵ In 1890 the MR had put on a service of one train a day each way between Cheltenham and Malvern, via Tewkesbury.²⁶ Apart from excursion trains,²⁷ until this time there had been no passenger service running directly from the Gloucester-Birmingham main line onto the Tewkesbury branch; trains to Tewkesbury and Malvern ran to and from the single Tewkesbury line platform at Ashchurch in connection with main line trains. The only connection from the Tewkesbury branch was onto the down main line. On the occasion of the 1899 accident the 1.56 pm train from Cheltenham ran non-stop to Ashchurch and stopped at the up (northbound) main line platform at Ashchurch, where passengers alighted. Following the practice since 1890, the train was then propelled back past the junctions with the Evesham and the Tewkesbury branches and through a crossover onto the down (southbound) main line. The train then ran forward onto the Tewkesbury branch where it was directed, in error, into the run-round loop and was derailed. Lt. Col. Von Donop RE criticised the operating procedure, which arose because, when the layout was installed, through working from the main line onto the Tewkesbury branch had not been contemplated. He called for a double line junction to the branch, with appropriate facing-point locks and signalling, and a second branch platform.²⁸ The MR's response was to modify the junction by providing an additional, direct connection from the up main line onto the Tewkesbury platform line.²⁸ A replacement signal box was opened at Ashchurch Junction on 19 December 1900.'

References and Notes

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An Inspection of Box Tunnel

BY JEFFREY WELLS

Descriptions recounting the construction of Isambard K. Brunel's Box Tunnel abound with superlatives. Between 1836, when trial shafts were sunk to test the nature of the substrata, to the informal opening day of 30 June 1841, the details of construction are fascinating; a veritable catalogue of awe-inspiring statistics. The Box Tunnel story is one of endeavour against all the odds, the stuff of which would make for headline news today. There were episodes of flooding which seriously impeded progress; fatalities due to negligence and sheer bad luck; of inebriate navvies whose shocking pugnacity terrorised rural communities; and the dogged determination of the contractors Burge, Brewer, and Lewis. Added to these were the censorious opinions and dismal warnings of such notables as Dionysius Lardner and the Reverend William Buckland. It is a wonder that the Tunnel was ever completed, let alone used. The intention of this essay is not to repeat the many comprehensive accounts which already exist. Instead, the following is an attempt to relive the experience and feelings of an intrepid visitor who was afforded the opportunity of seeing for himself the crude and unfinished tunnel in the summer of 1839.

The visitor began his treatise by outlining the *raison d'être* of the Tunnel, and continuing with some of the principal working details and practices intimated to him presumably at a 'briefing' prior to his examination at depth. One of the greatest obstacles to the completion of the GWR's line between London and Bristol 'was found to exist in Box hill, a large extent of elevated ground lying directly between, and about equidistant from, Chippenham and Bath'. The hill could not be avoided and it was considered to be impossible to form an open cutting through it; the highest part of the eminence had been determined to be 400 feet above rail level. Even tunnelling through it was denounced by many as being equally impossible. Undeterred, and 'with that boldness for which he is so celebrated', Brunel adopted a plan to bore a tunnel through the hill, 1¾ miles in length, 40 feet high, and 30 feet in width. To accomplish this, it would be necessary to pierce through massive, solid beds of freestone, the work being commenced in 1836 with the exploratory shafts. The difficulties of the work, especially at the eastern end, had been met with 'the enterprise, skill, and perseverance of Mr Brewer of Rudloe, and Mr Lewis of Bath', the contractors for the work at the eastern end. Their contract extended from Shaft No.8, 'which was sunk at the proposed mouth of the tunnel on the east side', to a point about 300 yards towards Shaft No.6, altogether comprising 2,418 feet from the entrance at the Chippenham end. In the summer of 1839 this portion was expected to be finished by the January of 1840.

Our visitor emphasised the problem of flooding which bedevilled operations, especially during the so-called rainy season (autumn and winter) when the ingress of water was described as being 'so formidable as almost to destroy all hope of being able to contend

with it'. During November 1837 a steam pump which had been installed was found to be inadequate, the water filling the tunnel and rising to a height of 56 feet in a shaft 'as to cause the total suspension of the work till the July following'. A second 50 horse power engine was installed by Brewer and Lewis so that work could continue, thereby fulfilling their contract. Notwithstanding this, the work was again stopped in November 1838 when an influx of water flooded the workings. On this occasion, some 32,000 hogsheads' of water had been discharged daily over a period of ten days.

On the day of his visit, the our visitor noted that the tunnel between shafts 7 and 8, (comprising 1,520 feet) was completely finished at the roof and down to 6 feet below it, where the base was 14 feet wide, and about 350 feet of cutting still had to be done half way between the two shafts. Messrs Brewer and Lewis had started tunnelling from one of the shafts and had worked towards each other. There had been some anxiety when the two borings had approached each other 'lest a straight line should not have been kept, and the union of the two portions of the work should not be true'. To the joy of the tunnellers, the final breakthrough proved the accuracy of the scientific work, and 'it was found that the junction was perfect to a hair as to level, the two roofs forming an unvarying line; while at the sides, the utmost deviation from a straight line was only one inch and a quarter'.

Naturally our visitor was most impressed when such accurate working through a distance of 1,520 feet had been accomplished, 'perhaps unexampled in the annals of tunnelling'.

The cutting which approached the Tunnel at the Chippenham end was already 2,000 feet in length on the day of the visit, and this through a solid bed of freestone some 150 feet thick in places, and resting on a bed of Fuller's earth (or clay), 120 feet thick. The freestone at the eastern end of the Tunnel was so compact 'that no masonry is required in any part of it - the stone itself forming sides and roof, and nothing being required at the bottom but the rails on which the carriages will run'.

Blasting of the solid rock was carried out using large quantities of gunpowder. On Messrs Brewer and Lewis's contract alone, one ton of gunpowder was consumed in a period of seven to ten days, most of it employed in charges of two or three pound each, while coal for the stationary steam engines consumed 35 tons a week.

The primitive use of gunpowder led to frequent accidents, although precautions were taken to minimise their occurrence. A contributory fund had been set up by the contractors whereby men falling ill or unable to work due to an accident were entitled to one shilling a day for sickness, and 1 shilling and sixpence a day for incapacity due to an accident. This contingency met with collective approbation:

The adoption of this plan has given general satisfaction to the men, whose liberal wages enable them, by a small sacrifice, to provide for themselves when unable to follow their usual avocation.

On the subject of accidents, our visitor recalled one incident in particular which illustrates the hazardous way that working practices were undertaken:

A few weeks ago, a man was about to 'fire a shot', that is, to blow up a piece of rock. He had prepared a hole for the charge, and was in the act of pouring gunpowder into it from an iron canister, containing about 20lbs, which he held under his arm, when a drop of water having fallen from the roof upon the wick of his candle, most imprudently placed close by the hole, a spark flew from it into the powder, causing a most terrific explosion. The canister was burst to atoms, but not one piece entered

the unfortunate man who held it; he was dreadfully burnt, his clothes torn off, his hair and eye brows completely destroyed, and his skin burned off all round his body; but, wonderful to relate, his eyesight was uninjured; and although from the action of the flames he was miserably wounded and disfigured, he is now in a fair way of recovery. Some of his fellow workmen, who were at a distance of several yards, were knocked down and severely scorched.

A visit to the tunnel works was full of interest; it was both 'a rich treat for the geologist', and 'a source of high gratification' for those who looked forward to the results of the unity of science and applied labour. The main contractor, Brewer and Lewis, afforded generous facilities, and the exploration of the underground workings began with the descent of No.7 shaft, 136 feet in depth, which was described as:

Effected on a platform, without any railing or other security on the sides, attached to a broad flat rope wound and unwound by a steam engine, and is attended with no inconvenience . . . except the hard bump with which your arrival at the bottom is announced to you.

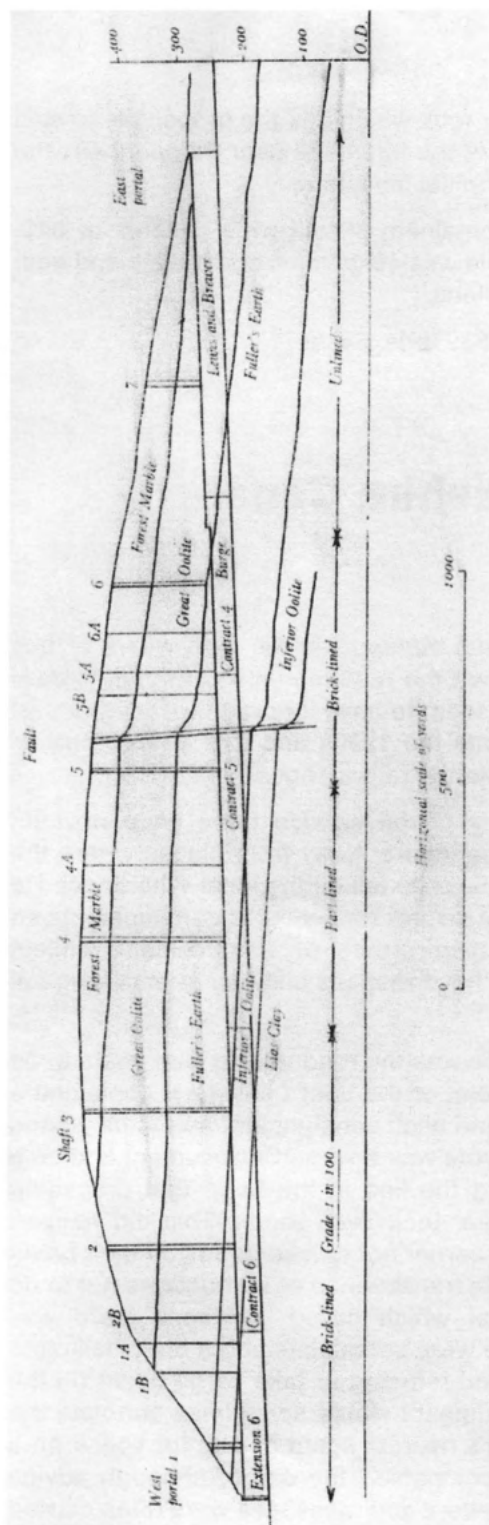
After stepping off the platform and attempting to avoid the constant drips of water, the visitor found himself in an 'agreeably cool' temperature, although the air was oppressive owing to the smell of gunpowder smoke, and the lack of ventilation. There cannot have been much a visitor could see in any direction, for

The dark dim vault, filled with clouds of vapour, is saved from utter and black darkness by the feeble light of candles which are stuck upon the sides of the excavation, and placed on trucks or other things used in carrying on the works.

Taking a single candle, our visitor (along with his companions - other visitors on the day), picked his way through pools of water, over pieces of temporary rails, blocks of stone, and chains attached to machinery, all of which now and then arrested his progress through the tunnel. Eventually, after stumbling forward over the wet and rocky floor, he and his companions approached a strange light, 'the perfect darkness above is broken by a faint grey streak', puzzling at first until you find yourself and your companions standing under an opening from above in an uncertain and unearthly light'. The opening alluded to was a ventilation shaft. The solid walls of the tunnel were observed to be etched by natural rills of crystal-clear water, spouting from fissures, and running down the tunnel sides. Eyes could not detect much in the darkness, but the ears were assailed by 'the sounds of the pick, the shovel, and the hammer', increasing in loudness until voices announced the presence of men at work. The light was here stronger, with candles everywhere, from floor to roof. This was the work-face, the junction between the two cuttings:

As you advance a busy scene opens before you, gangs of men are at work on all sides, and the tunnel, which at this point had been cut to its full dimensions, suddenly contracts; you leave the level of the floor, and scrambling up among the workmen, stepping sometimes on the solid rock, at others on loose fragments, you wind your way slowly and with difficulty.

Our visitor was warned of the imminent firing of a shot. In the days when the concussive effects of explosions upon sensitive ear drums were not appreciated, fulminations of this kind within an enclosed space must have been harmful. The description given by the man who was there, however, was a relatively modest one: 'solid rock appears to shake, and the reverberation of the sound and shock is sensibly and fearfully experienced; another



Longitudinal Section through Box Tunnel.

and another follow'.

Undaunted, our visitor continued his underground journey to a point where the two cuttings had almost met and so close to the roof that he was able to examine the solid rock above his head, and marvel at the skill of the engineers in keeping a true course in such difficult working conditions. His final words are a fitting conclusion to his experience:

After traversing considerable space within each of the roof, you find your way to the bottom, among the gang of labourers who are working from the other end, and having arrived at the shaft at the Chippenham side of the tunnel, you step upon the platform, the word is given, and you are once more elevated to the surface of the earth, glad to breathe the pure air, and full wonder at the skill, enterprise, and industry of your fellow men.

Postscript

A further two years elapsed before Box Tunnel was completed and opened the way for GWR trains between the Metropolis and Bristol. Our visitor saw it in its raw state, a subterranean building site, wet, dark, noisy, and frightening. Dr Lardner turned his attention to other matters, leaving the Reverend William Buckland, from the safety of his rectory, to arouse public fear concerning the unlined portion of the Tunnel which he contended would collapse as trains passed through. But that is another story.

References

- [1] Freestone is a term applied to sandy or gritty rock which has the propensity to split or be formed easily by the mason. The case of the freestone near Chippenham, the rock was known as Bath stone, a variety of oolitic limestone.
- [2] A hogshead was a measure of capacity containing 63 old wine gallons, or 52½ imperial gallons. The London hogshead of ale was 48 gallons, and the ale and beer hogshead for the rest of England was 51 gallons.

Source of material: The Railway Times, 20 July 1839, pgs. 548/9

Part Load Traffic On A Cheshire Canal 1846–1870

BY L. T. FOXON

One of the arguments used by detractors of canal transport in the early years of this century was that canal boats were too large to suit the requirements of British traders who wanted small and frequent deliveries¹. They seem to have ignored the fact that part loads and sundries traffic survived on canals until the 1930s and that a large part of canal transport was carried on in this way well into the railway age.

In the days before the telephone and next day postal service there were obvious difficulties in the day to day operation of such transport. Away from places where the carriers had their own agents, much of the responsibility fell on the local Wharfinger. He would have to arrange for the journey which might involve one or more transhipments en route; store goods awaiting collection, forwarding orders or transhipment; collect charges on behalf of the carriers and could also have responsibility for supervising toll clerks.

A key document in the operation of part load traffic was the roadnote, in later years to be known as the waybill. Made out at the starting point of the boat's voyage it contained a list of all goods on board with their destinations and each consignment had to be signed for by the Wharfinger at its destination. The roadnote was a versatile document and on it might be noted space booked at wharves along the line in the hope that preceding wharfingers would not occupy that space to clear their own goods. This did happen sometimes and might provoke a request from the carrier not to load goods on their boats without prior arrangements. Generally speaking, in the absence of instructions not to do so, wharfingers would use space on any boat which called. At times there was considerable difficulty in clearing traffic and there were complaints about boats failing to call to see if there was traffic to be picked up and refusing to take cargo when (in the opinion of the wharfinger) they had space. Wharfingers would sometimes annotate the roadnote of a boat with a message to the carrier's nearest agent asking for space on a boat in the other direction. Invoices usually accompanied the cargo, although advice notes to customers often went by post. Carriers letters and messages were often carried on the boats at this time.

Mr William Mosely was the wharfinger at the Trent & Mersey Canal Company's wharf at Middlewich in 1846-47. He dealt with five main carriers: Sutton's, Soresby's, Henshall's, the Anderton Carrying Company and Pickford's. The Ellesmere & Chester Canal Company provided connecting services to Barbridge and beyond. Most of the southbound boats in the part load trade started their journeys at either Manchester or Preston Brook. At the latter place, traffic from Liverpool was transhipped from Mersey flats to canal boats and all the main carriers had agents there. There was a large and varied trade at Middlewich but the commodity which seems to have caused Mr Mosely the most problems was cheese, which was sent in small amounts at a time to London and Manchester and also as far afield as Shrewsbury. Shrewsbury also sent cheese to Middlewich.

Goods were sometimes put off at the wrong wharf, which was to be expected, but another problem of the time arose where the final destination, to be reached by road wagon, was more or less equidistant from two canal wharves. Thus we have a gentleman from Withington making numerous enquiries at Middlewich about a consignment of sheep nets from Gainsborough when these had been in the warehouse at Macclesfield for some time. Mr Mosely kept in close touch with his colleagues, Arthur Shenstone at Wincham and S. Clowes at Barbridge. Wharfingers perhaps felt a common bond because, even when they were on rival canals, there was close cooperation between them. He also supervised a Toll Clerk at Wardle Junction².

Twenty years later, well into the railway age, we find Geo. Caldwell, wharfinger at Wincham Wharf seven miles from Middlewich, busy with part load traffic. He dealt with three main carriers: the Anderton Company, the Bridgewater Trustees and the Shropshire Union Railway & Canal Company.

As an example of the size of consignment handled, James Hesketh accounted for the following for May 1867.

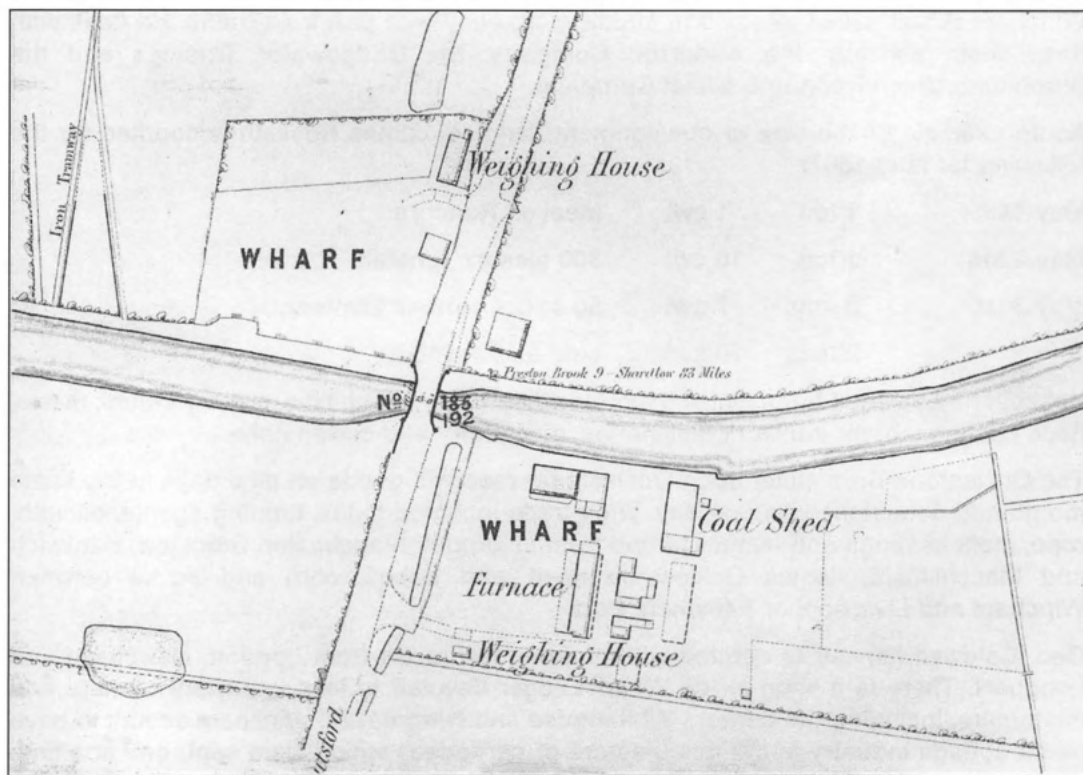
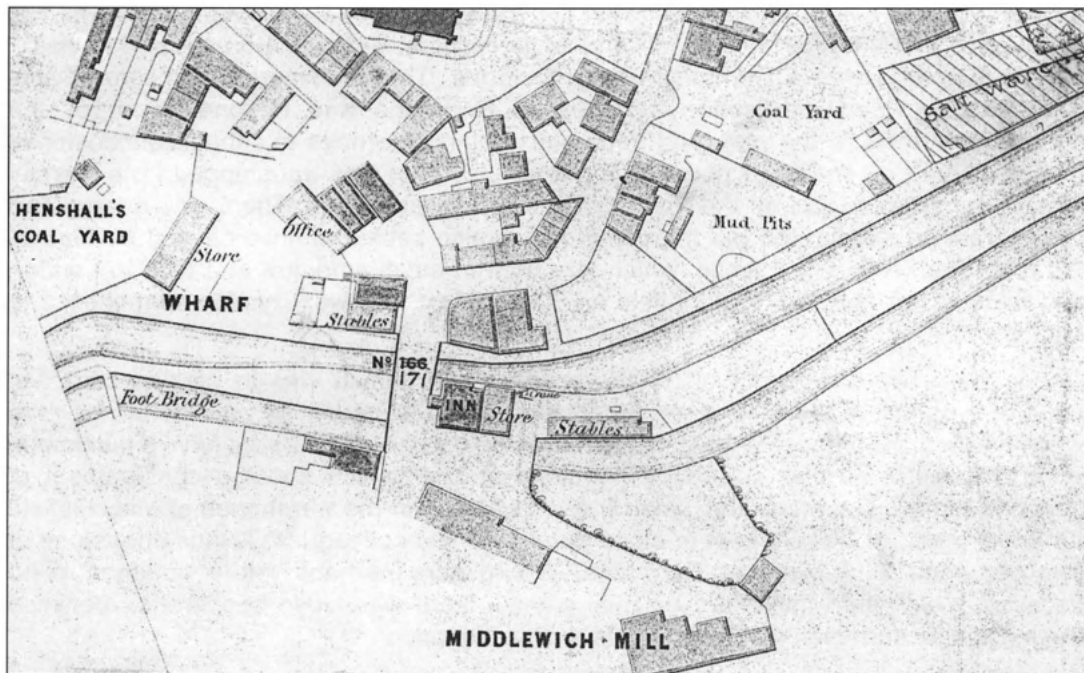
May 11th	1 ton	1 cwt	meal ex Runcorn.
May 22nd	1 ton	10 cwt	300 tiles ex Tunstall.
May 31st	5 tons	7 cwt	50 sacks corn ex Liverpool.
	2 tons	10 cwt	oats ex Liverpool.

Hesketh had a varied trade which included wheat, oats, meal, tiles, pottery crates, maize, flour, castings, bran, ironwork, millstones, machinery and cotton cake.

The Ocklestone Bros. (later John Ocklestone) received goods on nine days in the same month and despatched on one day. Their trade included hides, tanning agents, oilcloth, rope, mats castings and leather to and from Liverpool, Manchester, Stockton, Nantwich and Macclesfield. James Ocklestone dealt with bones, corn and sacks between Wincham and Liverpool or Ellesmere Port.

Geo. Caldwell himself is debited with charges for goods from London, Newcastle and Longport. There is a page in the Wharf Ledger devoted to less important carriers and customers, including the carriers Whitehouse and Hargreaves. Wincham seems to have had a cottage industry in the manufacture of cartledges which were sent, one at a time by a number of individuals to Ivy House (Hanley).

Caldwell was responsible for accounting for the nearby Cheshire Amalgamated Salt Works but its traffic is not itemised. The Wincham wharfinger also appears to have been



Trent & Mersey Canal Wharves at Middlewich and Wincham as shown on the 1847 survey of the northern part of the Canal by C. F. Cheffins for the North Staffordshire Railway (BW 4341.95)
 Courtesy of British Waterways Archives.

responsible for accounting for the tolls on traffic entering the canal by transshipment at Anderton. The only itemised full load traffic in the Ledger (1866-70) is 50 tons of manure from Rochdale Corporation (for J. Bull) and some roadstone for Hesketh³.

References.

- 1 Edwin Pratt, *CANALS AND TRADERS*, London 1910
- 2 Graham Moss, *THE MIDDLEWICH LETTERS*, Postal History Society of Lancashire and Cheshire 1989.
- 3 Wharf Ledger, Wincham, British Waterways Archives, Gloucester WM 77.51

Samuel Morton Peto and the Building of the Eastern Counties Railway

BY J. G. COX

Samuel Morton Peto was already a major railway contractor when he took his first contract with the Eastern Counties Railway in July 1843. In partnership with his cousin Thomas Grissell he had executed portions of the Great Western and South Eastern main lines, including the viaducts at Hanwell and Folkestone, most of the London & Blackwell Railway and Curzon Street station in Birmingham. Grissell & Peto was one of the largest building firms in London with some impressive achievements to its name, including Hungerford Market, the Reform Club and the Lyceum Theatre. Its most prestigious ongoing project was the new Houses of Parliament, which would fully occupy Grissell for the remaining 2½ years of their partnership, leaving Peto, still only in his early thirties, in virtually complete charge of the railway side of the business.¹

The first ECR contract, for five stations on the Colchester line, was quite small, the most expensive buildings, at Chelmsford and Colchester, costing only £2,000 each.² Before the work at Colchester was completed, however, Peto had embarked upon a private speculation. Using some surplus land he was able to purchase from the company, he erected a hotel alongside the terminus, which aimed to cater for passengers using the new railway. He was very successful with a similar project at Reading after completing his Great Western contracts but the Colchester venture proved a failure from the start. The massive Italianate building costing £15,000, which Lewis Cubitt designed for him, would stand as the physical reminder of this expensive blunder, functioning for many years as the County Lunatic Asylum, before being finally demolished for housing development in the 1980s.³

Peto already had two other railway works in hand in 1843, the Yarmouth & Norwich Railway and the Broxbourne-Hertford branch of the Northern & Eastern Railway.⁴ Robert Stephenson and George Parker Bidder were involved in the engineering of both these lines and had also carried out work on the London & Blackwall, which was probably where Peto had first made their acquaintance.

In December 1843 the ECR took a lease of the N&ER and immediately promoted an extension from its erstwhile terminus at Bishop's Stortford, through Cambridge and Ely

to Brandon, where it was planned to link with a line the Y&NR was promoting from Norwich.⁵ The ECR entrusted their portion of the route to Stephenson and the Y&NR, soon to re-name itself the Norfolk Railway, gave Bidder responsibility for the Norwich-Brandon line.⁶ Peto was already on friendly terms with both engineers, which, together with his previous work for the companies, put him in a strong position to obtain the contracts. His willingness when the need arose, to accept shares in lieu of cash from the Blackwall and N&ER companies, would have been another point in his favour, as neither the ECR nor the Norfolk, was certain at this stage it could raise all the capital needed. The ECR directors accepted Peto's tender in January 1844, apparently without even bothering to seek quotations from other firms,⁷ and the Norfolk entered into an arrangement with him about the same time.

The joint project, designed to establish the first rail link between London and Norwich, required the construction of over eighty miles of track. This was a formidable undertaking for any contractor, as most railway works were still being let in considerably shorter lengths. The generally favourable terrain and the substantial resources at his firm's disposal made it a less daunting proposition for Peto. His contract with the ECR was forty-six miles in length, beginning at Newport rather than Bishop's Stortford, because the works had already been let that far to another firm.⁸ The terms under which he undertook it are not known, except that he was required from the start to purchase all the land required, which also gave him the potentially difficult task of treating with Lord Braybrooke over the compensation to be paid for the railway crossing the Audley End estate. This matter appears to have been resolved without too much difficulty, however, Peto managing at the same time to obtain consent for one of the three tunnels originally insisted upon to protect the view from the house, to be replaced by a cutting.⁹

Whatever the arrangements for the line itself, the records show that most of the additional works, including stations, locomotive sheds and warehouses, were carried out on a pre-agreed schedule of prices. This system required Peto to itemize all the materials he used, and in some cases to record the hours worked by his employees, everything being charged at pre-agreed rates. The surviving ledgers show the detailed nature of the returns he was obliged to make and that they all had to be authorized by the company's architect before payment was made. It is not possible to know what margin Peto took on the materials, as no records survive of his purchases of these, but we can have some idea of the profit he made on the charges for labour, because in 1846 he was required to inform the Parliamentary Select Committee on Railway Labourers the rates of pay his men were then earning. These varied between seventeen shillings a week for a labourer and thirty-five shillings for the most skilled operative.¹⁰ At the time he was charging the ECR for the additional works at Cambridge, between 19s 6d a week for a labourer and 34s 6d for a plumber,¹¹ but this included overtime whilst the ECR were charged on the basis of a standard working day of ten hours, so no exact comparison is possible. Nevertheless there seems little doubt that Peto was taking a cut of at least 10% on the bill for labour.

The ECR decided to construct the Brandon extension on the 4ft. 8½ in. gauge and in 1844 Peto was given the additional task of converting the N&ER and the London-Colchester lines from the unusual 5 ft. gauge upon which they had been constructed. The company also decided at a comparative late stage to have double track on all of the extension, where earlier it had planned to economize by keeping the Cambridge-Ely section single. This caused Peto to make a claim for an additional £7,000, on the grounds that the price of the additional rails needed had increased by this amount since he

originally agreed terms with the company. When the ECR refused to comply he did not contest the matter, however, accepting the directors' assurance that he would receive 'a liberal adjustment' when the contract was completed. At the end of 1844 he was informed that he would receive a bonus of £25,000, provided he completed the whole route through to Norwich by July 1st the following year.¹² Although Peto failed to meet the deadline by a month, the directors were so impressed with the overall achievement, they paid him his bonus, at the same time recording in their minutes:

The works have been completed with a degree of expedition unparalleled in the formation of railways, the whole having been executed within twelve months after the Act.¹³

Peto's original tender had also provided for an extension from Ely to Peterborough. Although he began purchasing the land for this in the summer of 1844, the decision to divert the route through March delayed the commencement of operations for some time. The line crossed the heart of the Fens, which were still not completely drained at this time, so its construction presented some problems, although Peto had the advantage of having already constructed the Yarmouth & Norwich Railway across similar terrain. Double ballasting was needed throughout to ensure adequate drainage whilst in places piles had to be driven into the peat to stabilize the trackbed. The major single work on the line was the 120 ft. wooden truss viaduct - one of the largest of its type at the time - over the New Bedford River. The Commissioners of the Bedford Level originally wanted to have a second similar structure over the adjoining Old Bedford River, but Peto managed to persuade them to agree to a much shorter bridge instead, which saved the ECR about £6,000. Whilst the viaduct itself appears not to have caused too many problems, the embankments on either side proved very troublesome, continually slipping until the foundations were finally stabilized by dumping large quantities of earth and brushwood.¹⁴

Peto had 3,700 men at work on the Peterborough line in 1846 and completed it ahead of schedule early the following year. There is no record of him being paid a bonus on this occasion, however, although he did have the satisfaction of being complemented for his efforts by the Government Inspector, Captain Coddington, who wrote in his report sanctioning the opening of the line:¹⁵

The energy and skill shown by Mr Peto, the contractor, who has executed this work reflect high credit upon his talent and engineering knowledge.

Following the completion of the link to Peterborough, Peto constructed branches from March to Wisbech and St Ives, as well as a direct line from Cambridge to St Ives. He agreed to build this for £160,000, inclusive of land, ¹⁶ although, as elsewhere, the additional works were executed on a schedule of prices. The bill for these came to about £7,000 at St Ives at Wisbech and £16,000 at March. Much larger sums were expended in this way on the main line; at Cambridge around £55,000, at Ely £80,000 and at Peterborough £90,000. Whilst it is not fair to compare these sums with the fixed price contracts for the stations on the Colchester line, where only a very basic station building was provided, there are nevertheless grounds for suspecting that Peto overembellished some of the work to increase his profits, the final bill for the refurbishment rooms at Peterborough for example coming to nearly £4,000. If this was so, the architects responsible for measuring and approving the work, initially Francis Thompson and later Henry Hunt, must bear their share of the responsibility.¹⁷

The ECR appears to have paid Peto in cash for most of his earlier work, the company even advancing him a loan of £75,000 in 1844, but by May 1846 it acknowledged that it owed him 'upwards of £14,000'. Henceforth most of his payments would be in bonds and bills,¹⁸ which he accepted without complaint, suggesting he did not have too much difficulty in cashing them. He was fortunate to receive payment at all, as the ECR was on the verge of bankruptcy, only being saved from this by the financial manipulations of George Hudson after he became Chairman at the end of 1845. Peto certainly owed a considerable debt of gratitude to the 'Railway King' because the company only owed him about £7,000 when all the work was finished in 1849.¹⁹ This was a trifling sum compared with the £1,200,000 he had received by this time.²⁰

Between 1844 and 1849 Peto had constructed 115 miles of new line for the ECR, a significant achievement in itself, but even more impressive because during the same period he completed as many miles again for the two other companies for which he had worked, the Norfolk and the Southampton & Dorchester. The ECR was by far the largest of these contracts, however, and the one which established his status henceforth as one of the country's foremost railway contractors. In its execution he had shown his ability to expedite the largest works on offer, and even more importantly for the future, his capacity to sustain operations when the project ran into financial difficulties. The support he provided for the ECR predicted his future role as a major railway financier, one which in the end would have disastrous consequences for himself and another railway company.²¹

References

- (1) Peto, H. *Sir Morton Peto*. London, 1893 p. 10-54. After the dissolution of their partnership early in 1846, Grissell executed some work for the ECR independently at the London end of the line, including the workshops at Stratford PRO RAIL 186/84-87.
- (2) PRO RAIL 186/5 The other stations were Witham, Kelvedon and Ingatestone.
- (3) PRO RAIL 186/69; Gordon, D.I. *A regional history of the railways of Great Britain*; Vol. 5: The eastern counties. Newton Abbot, 1968 p.57.
- (4) PRO RAIL 541/1; Dow, G. *The first railway in Norfolk*; 2nd ed. 1947 p. 10.
- (5) Gordon *op. cit.* p. 104.
- (6) PRO RAIL 385/1; Clark, E.F. *George Parker Bidder*. Bedford, 1983 p. 495.
- (7) PRO RAIL 186/71.
- (8) PRO RAIL 186/71.
- (9) Only £2,500 additional compensation was paid to dispense with the third tunnel. PRO RAIL 186/71; Gordon, *op. Cit.* p. 111.
- (10) House of Commons. Select Committee on Railway Labourers. *Minutes of evidence*. London 1846 p. 75.
- (11) PRO RAIL 186/78.
- (12) PRO RAIL 186/69.
- (13) PRO RAIL 541/2.
- (14) Gordon *op. Cit.* p. 213; PRO MT 29/6.

- (15) Select Committee, *op. Cit.* p. 72 ; PRO MT29/6.
 - (16) PRO RAIL 186/69.
 - (17) PRO RAIL 186/83; ECR Committee of Investigation. Report. London, 1849.
 - (18) PRO RAIL 186/71.
 - (19) ECR Committee of Investigation, *op. cit.* p. 82.
 - (20) This figure is based on the ECR records and excludes the cost of land; Peto said he received £1,120,000. Peto, H., *op. cit.* p.22.
 - (21) Peto fell victim to the 1866 financial crash whilst in the final stages of constructing the London, Chatham and Dover Railway's Metropolitan Extensions.
- PRO are records are held at the Public Record Office, Kew.

From the RCHS Photographic Collection No 10

This station is Coleford in the Forest of Dean, on the former Severn & Wye Joint Railway. The occasion was one of the trips organised by the Birmingham Locomotive Club in 1950, and two of the replies with identification came from people who had been on these tours. The first was on 22nd July, and the second on 23rd September, with possibly a third trip on 2nd June 1951. GWR railcar number 7 was used each time. One apparently appears on a Patrick Whitehouse video, and was written up in the Meccano Magazine in an article by O H Prosser.



Coleford (Severn & Wye) station. Birmingham Locomotive Club railtour, 23/9/1950. GWR railcar number 7.
(Photo courtesy of Ian L Wright).



Coleford (GWR) station. Photographed on 23/9/1950 on occasion of Birmingham Locomotive Club railtour to Coleford (S&W). (Photo courtesy of Ian L Wright).

The original station building was built of timber and destroyed by fire in July 1918. The smaller brick building on the right (the ladies room) was built in 1919, and the main building followed in 1925. The station closed for passengers in 1929. The railcar could not move any further into the station because of clearance problems. Most of the passengers walked the short distance to the GWR station nearby.

The tour ran from Birmingham Snow Hill, and Ian Wright was on the 23rd September 1950 trip, joining it at Gloucester and leaving it at Lydbrook Junction on the Monmouth-Ross line. He writes "participants on this tour were issued with a traditional green GWR style outward/inward card ticket overprinted ST (Special trip), and the ticket indicated the route 'Via Gloucester Sharpness & Lydney Town'. It was probably a first among enthusiast railtours to the Forest and there was much of unusual interest to see. No doubt, too, it was one of the steepest to be encountered by a GWR railcar, the climb from Parkend to Coleford involving nearly 3 miles in low gear on a bank of 1 in 30/31. The tour also included the Serridge Junction - Drybrook Road - Cinderford section of the Forest lines. Returning to Serridge it continued to Upper and Lower Lydbrook via a well wooded curve that wound through 180 degrees. We call it 'Speculation corner' said the driver to the mass of faces viewing the line ahead; 'its always speculation whether we get round it'. Other unusual features of the railcar's route to Lydbrook were the completely unlined Coles Rock Tunnel and the lofty lattice spans of the Lydbrook viaduct with its views of the Wye."

My thanks to John Edgington, Mr Foster, John Lee, Harry Paar, John Sharp, Peter Witts and Ian Wright for their comments on this photograph.

From the RCHS Photographic Collection No 12

Print LGRP 27544 and LGRP 27546



LGRP 27544



LGRP 27546

Two unlabelled prints from the Ray Cook collection. The close proximity of the numbering of the photographs, together with the similarities of style of stonework suggests they might be on the same line. Earlier labelled prints in this number series moved geographically from Lancashire to Cumberland. Whilst the LGRP collection is now housed in the National Railway Museum, prints with these numbers do not appear in either their collection or in the registers.

If you can identify the locations or provide information about the views, please contact Stephen Duffell, Hillcroft, Ford, Shrewsbury, SY5 9LZ, or telephone 01743 851154 (weekends), or 01625 514828 (office hours), or e-mail Stephen.Duffell@ctl.astrazeneca.com.

From the RCHS Photographic Collection No 10

Print JGS6/13/2

(Reproduced on page 174 of the November 1999 *Journal*)

Correspondence

The Clinker Lecture

The publication of Professor John Hibbs's lecture "Some rail replacement bus services in the Eastern Region 1929-1969" is greatly to be welcomed. Not only does it deal with matters specifically included within the scope of its title, but also it should bring blushes of shame to the cheeks of nearly all of our so-called railway historians. The most important issue of policy facing the railways during this period was not how to go a bit faster with steam locomotives, or what kind of motive power or signalling was to be preferred. There is plenty of information about the hardware of the railways, carefully and sometimes tediously set down. But on what can now be seen, and should have been seen at the time, as the outstandingly important question before the railway boards and managements - how to meet and deal with increasingly successful competition from hauliers on the roads, both of passengers and of freight - there is virtually nothing published.

Professor Hibbs calls attention to the attitudes of the railway companies' representatives before the Traffic Commissioners. He writes of the 'cultural gap' between railway and bus company managers, and his experiences illustrate the 'adversarial' nature of most proceedings before the Traffic Courts. I am sure that he is right about this - and I can add from my experience at London Transport that it was always more difficult to come to an understanding with the nationalised Tilling group companies than with those within B.E.T.

What is I think clear is that common ownership or financial interests had little to do with the attitudes of railwaymen and busmen. They wrangled and fought every step of the proceedings. Was this part of a concerted policy decided by the railways and made clear in instructions given by general management to local representatives? I have never yet seen any evidence that the railways had a policy apart from acquisition and pugnacious defence. Such evidence may exist, but the present generation of railway historians is not likely to be much interested in it.

But I know of one exception, about the attitude of the Southern Railway's representatives on bus company boards. I quote from Sir John Elliot, whose tales of the Southern had to be taken with large pinches of salt - they got better with every telling. But he did go into

print, with a serious evaluation, in an article 'Early Days of the Southern Railway' (*Journal of Transport History*), vol. 4 (1960), pp. 197-213; I know he took a great deal of care to check this article (which is largely, and very properly, about Sir Herbert Walker), and I think it can be relied on. He wrote there (p. 212): 'His [Walker's] attitude of mind to road transport is well shown by the instructions he gave to the writer, when the latter was appointed to a number of the bus companies' boards, in which the Southern Railway had taken a large financial interest. You must understand clearly, he said, that when you are attending Board meetings of a bus company you are there as a director and not as a railway officer. Your first duty is to ensure that the bus company is able to earn the maximum interest on the money we have invested in it. You must not go there to hamstring the bus company in the interests of the Traffic Department of the railway, but you must do what you can to see that coordination, and not unnecessary competition, is the guiding principle.

We have it on Professor Hibbs's authority that similar instructions were given to all railway directors or senior officers on bus company boards - J. Hibbs, art. "buses" in *Oxford Companion to British Railway History* (1997), 62. How this generalised direction was interpreted in detail we have at present no idea. It gives no guidance, of course, on the difficult specific issues that were to emerge: whether every station on every branch line, however badly situated, must continue to be served; and, as a matter of daily operation, must the thirty or so passengers in the bus leaving town be held up for half an hour for the (possibly) two passengers on the main-line train which was running late?

All these things did get sorted out in different, sometimes contradictory, ways. There are many questions left by Professor Hibbs's contribution which I am sure he would agree are well worth pursuing by the historian who is trying to get and communicate a clearer understanding of how transport has performed. M. ROBBINS

Deaths of the Engineers.

This interesting article contains one serious error. George Granville William Leveson-Gower was the third Duke of Sutherland. He was not only a director of the London and North Western Railway but also of the Highland Railway. He was responsible for the building of the Duke of Sutherland's Railway from Golspie to Helmsdale as his own private railway. It was worked by the Highland Railway and taken over by that company in 1884. The Duke was a director of the H.R. for many years before that date. Both directorships appear to have been hereditary as the fourth and fifth Dukes continued to hold that position until the Grouping of 1923.

The only Duke of Portland who may claim engineering fame was the fifth Duke. He was an eccentric who built underground rooms and extensive subterranean passages under his estate at Welbeck Abbey, Nottinghamshire.

An engineer who, in the opinion of the writer, does not receive the recognition he deserves, was Josias Jessop, born 1781, the son of William Jessop, a well-known canal and railway engineer. Josias was the engineer of the Mansfield and Pinxton Railway. He was called in as a consultant to the Liverpool & Manchester Railway and to the Newcastle & Carlisle, in the first case to the resentment of George Stephenson. He was appointed engineer of the Cromford & High Peak Railway. He died at the early age of 45 in 1826 only a year later than the incorporation of the Company, allegedly due to exposure. Had he lived, he might have ranked equally with Robert Stephenson, Brunel and Locke. It is possible that some of the premature deaths of the engineers may have been caused by Tuberculosis, a theory which can neither be proved nor dis-proved after this period of time.

An even more tragic figure, little known in this country, was Charles O'Connor. He was an Irishman, trained in his native land. He emigrated first to New Zealand and then, in 1892, to Western Australia where he was appointed engineer-in-chief to the Colony. He was responsible for building many miles of railway, trebling its mileage. His two monumental works were the construction of Fremantle harbour and the building of a dam near Perth and a pipe-line to carry water over the Darling Range, 350 miles to serve the rapidly expanding population of the gold-mining town of Kalgoorlie. When pumping started, water failed to appear at the other end. In 1903, O'Connor, tired of political opposition and the fear of failure, shot himself on the beach at Fremantle, near the harbour he had constructed. Ironically, water started, a few days later to pour into the reservoir built to receive it. A. L. BARNETT

I am not very convinced by some of John Rapley's arguments regarding the relative longevity of railway engineers.

He seems to have made the common mistake of confusing the average life expectancy of all people (ie babies) with the average life expectancy of adults. The statement that "a child born in 1840 could on average expect to live only forty years" does not mean that the average age at death for *adults* was forty years. The low average life expectancy can, as he says, be explained by the "very high rate of deaths in infancy and childhood". However, this implies that the life expectancy of adults (ie those who survived childhood) was actually much higher than the overall average and certainly does not explain why "so few could expect to attain the biblical three score years and ten", even supposing this were true.

The fact that "of 304 engineers studied, no fewer than 165 attained the age of seventy or more" may therefore not be particularly remarkable, since presumably they were all adults. I suspect one might get similar results if one looked at any other white-collar profession of the time. M. BERTINAT.

I have spotted one or two errors which I think could usefully be corrected in the next issue, viz.:

1) p. 238 last para. Duke of Portland should be Duke of Sutherland.

2) p. 240 line 5. 1855 for the date of Sacre's resignation is clearly wrong: to be consistent with his date of death as stated it should be 1885. However Dow's Great Central vol 2 states (p.97, 196, 198, and in the table of officers p. 352) that he resigned in 1886 (p. 198 April 1886).

3) p. 262 line 5. The British Ambassador was the Right Hon. Alfred Duff Cooper, later Viscount Norwich, and not as stated.

4) p. 269 last para. The date 1938 appears to be incorrect, as 1936 is quoted in the captions on pp.266 and 267, and note 17 on p. 272. R. GRAHAM

Danger - Chronologers at Work

Peter Kay's thought-provoking article (*Journal*, Vol 33 Pt 4) raises a number of interesting points.

As he suggests, for those with a certain turn of mind 'impressive-looking pages of

tabulated fact' have a strong intrinsic appeal - whether they relate to railway chronology, sporting achievements, scientific advances, or any other topic which lends itself to this form of presentation. This is perhaps the heart of the problem, since the truth is rarely as straightforward as such lists make it appear; if one looks behind their content, it is likely that many caveats will be needed to qualify 'facts' (and record uncertainties) which do not readily match the chosen format.

A recent example may serve to illustrate this. Docklands Light Railway publicity material announced that the former Mudchute and Island Gardens stations would be closed with effect from Monday 11 January 1999. Given that the service operated daily, one might reasonably conclude that the last trains must have run on Sunday 10 January. But this would not be correct since at the time both of these stations were already closed at weekends for engineering works. The last train therefore ran on the evening of Friday, 8 January. Given that the engineering works were themselves in preparation for the closure, we thus have two possible 'first days' - 9 and 11 January - on which trains 'did not run when they would have run if the line had not closed'.

There have of course been cases where otherwise-closed lines were used for long-term storage of rolling stock, or where enthusiasts' specials operated months, or even years, after the last regular service - so at what point does a line actually 'close'? If freight trains operated only when traffic was available, it is clearly impracticable to identify a date when they first 'failed' to do so. Freight lines may also be cut back to points such as collieries or oil depots, whose locations do not coincide neatly with those of former passenger or goods stations. The only way to identify these satisfactorily is by referring to distances from a specified point. And how is the chronologer to treat temporary platforms such as those provided for exhibitions, sporting events, depot open days and the like? While not 'stations' in the conventional sense, they do nevertheless handle revenue-earning traffic - however briefly - and deserve to be recorded in some way. None of these cases fits comfortably into a straightforward listing.

Mr Kay also refers to the equally tricky topic of station names. Differing versions of these may appear in a wide variety of places such as board minutes; accident reports; working timetables and instructions; public timetables and notices; tickets; station nameboards; destination blinds, boards or indicators; OS maps, town plans and road signs. There will sometimes be variants, but few chronologers will take the trouble to detail all of these, even if they are aware of their existence. The problem of identifying a station's 'real' name is not confined to the early years of railways. The 1999/2000. National Rail timetable, for example, indicates that local trains from Euston to Watford serve a station called 'Harrow & Wealdstone D.C.' while the suffixed initials will hold no mysteries for local railway staff, the timetable is a public document, so should not the occurrence of this variant be recorded (and explained) by the chronologer for the benefit of the future historian? The prefix 'London' is now widely applied to the main London termini, but the signs at their entrances do not always reflect this usage. Are they simply out of date, or have the names not genuinely changed? And is 'Waterloo International' a free-standing station or just a subsection of '(London) Waterloo' under another name - albeit a much-publicised one?

At one time it was fairly common for platform nameboards to include supplementary advice such as 'Change (here) for ' or 'Junction for'; this was clearly intended as information only, rather than being part of the station name. The same is no doubt true of recently-installed platform signs such as 'Ladbroke Grove for Portobello Road'.

However the *RCH Handbook of Railway Stations 1904* (David & Charles reprint 1970) lists examples such as 'Ferrybridge (for Knottingley)' and 'Newton (for Hyde)' where the bracketed suffix does appear to form an integral part of the name. And the last three words of the cumbersome 'Cutty Sark for Maritime Greenwich' appear on maps and most other publicity material, as well as the station signs, and must presumably be treated similarly. Perhaps the only tentative conclusion we can reach is that any version which appears in printed material, particularly if it is also displayed at the station entrance, is more likely to be the 'official' name than alternative versions on platform signs or elsewhere - but that these other variants should not be overlooked, however 'untidy' they may be.

To address the situation comprehensively, then, chronologies would need to embrace a format capable of taking all such uncertainties into account. As Mr Kay notes when dealing with the concept of the 'Single Oracular Statement', however, this would make them impossibly unwieldy and expensive. Perhaps the most that can sensibly be done is to encourage compilers of future chronologies, whether regional or national, to add a disclaimer along the lines of 'This information is given in good faith and is based on official and other recorded sources. In practice, however, trains sometimes operated before or after the dates quoted, and alternative versions of station names were sometimes used in different official and other media'. GRAHAM BIRD.

I should be grateful if you would allow me, as one of those who has tried his hand at a national chronology, some space in the RCHS Journal to comment on Peter Kay's article *Danger - Chronologers at Work* (March issue); my book was reviewed by Peter Kay in the November 1997 issue of the Journal. Since we both have accuracy as our ultimate goal it would seem much more sensible for us to work together than to become embroiled in public debate. However, I feel that certain points publicly made have to be publicly answered.

The first concerns choice of topics. He seems to believe that there is only one right way forward, a way that involves detailed consideration of every aspect of a railway. He does not appreciate that there are some of us who are only interested in *some* aspects of railway history. My own interest arose originally as a by-product of British Social History. I wished to know where and when it was possible for those who wanted to travel to do so. In order to determine this I started to draw detailed maps for my own interest. My initial assumption was that the necessary material was in print and when I found that coverage by works I print was patchy, I sought to fill the gaps for myself. The lack of regional chronologies was the *source* of my action, not the result. What was originally seen as a means to an end has, for the time being at least, become an end in itself. The aim involved would seem to be a legitimate one and, if achieved, could provide something of use to a wider audience than just those who regard themselves as railway enthusiasts. Indeed, since the whole purpose of building railways was to carry passengers and goods whilst making a profit for the shareholders, many might regard my target as a more appropriate one than the detailed consideration of abstruse technical details. True, I tell only the passenger part of the story, but that is the part of most direct interest to the majority of users, especially when it is remembered that once the system settled down 'passenger' = 'passenger + parcels'. Furthermore, at that level, it hardly seems necessary for one to have a detailed knowledge of London in order to make sense of a company minute that refers to the existence of a station at Willesden in June 1841 or a newspaper article describing the actual use of

Fenchurch Street for a few days before its advertised date. I have not (and shall not) try my hand at a line history because many of the necessary matters have little interest for me: for example, throughout my life when travelling by rail my only interest in what is powering the train is whether it is in working order or not. Rather than decry each others' interests, it would seem most sensible to me that we should accept that all approaches have their uses and should be prepared to work together.

His article follows an approach unfortunately common with those of destructive intent: you produce a caricature of your target and then attack that. He attacks the rigidities adopted by some chronologists, the presentation of facts in tabulated form and the presentation of single dates as established fact when qualification is needed and then argues, as if all (or should that be 'both'?) of us operate that way. Anyone reading the article and seeing my work mentioned in a footnote would, unless they had seen the book, assume that it was just a list of dates. The reality is that I am (and was) fully aware of the dangers he mentioned and adopted a form of presentation designed to deal with them. It was published when it was because I felt that something correcting many of Butt's multitude of errors was worth publishing as soon as possible. One of its purposes was to show the need for such qualifications *and also to show ways in which these could be provided*; the Introduction includes: 'The railway system needs to be seen as one that evolved, not as something that suddenly appeared working as our present day services do.' It emphasised the need for flexibility of approach. There were some, admittedly rather hesitant, remarks about the jungle of name changes, which were mostly avoided then by referring people to Clinker. Ironically a fuller treatment of this topic by me, much in line with Peter Kay's views appeared in the *Newsletter* of the Chronology Group in the same week as the *Journal* appeared. More importantly, detailed notes were given for certain lines which outlined the available evidence, gave the limits of possible dates and showed why it was impossible to give exact ones for some lines and stations. A mechanism was included to deal with those stations where the timetable evidence is such that one cannot be certain whether the station opened with the line or a little while afterwards. It was in no way an attempt to lay down the law on the subject and no intelligent person should have interpreted it in that light. Peter Kay makes no attempt even to begin to consider the possibilities provided by this approach.

Theoretically, his idea of regional chronologies is a good one. However, the likelihood of ever achieving full national coverage is slight and it would seem therefore to be reasonable to accept what is on offer and work from there. A major obstacle is his perfectionist approach - even if some were to come forward few, if any, would be likely to meet his specifications. His work is accurately and thoroughly researched but very few match his standards so that in practice his demands become a barrier to any worthwhile progress. There is a serious practical problem with the passengers plus goods chronologies he wants: the passenger side will best be covered from the local press whilst most of the goods information is at Kew. That presents enormous strategic problems for those living any distance from London. For some areas the job could only be done by a Londoner dividing his time between the Public Record Office and the National Newspaper Library. In any case, his detailed requirements are totally unrealistic even on a regional basis. The list of points he wants covered would require far, far more work to create a regional chronology for even the simplest of regions than is required to produce a national passenger one. Oddly, he puts forward Johnson's Irish Atlas as a possible model though this gives stations on a year only basis and makes no attempt to give different opening and closing dates of stations for passengers and goods purposes.

The normal way forward in any branch of knowledge has been that a work is published, others improve on it, and so on. That would seem to be the answer here: publish as accurate a version as is possible at the moment and improve on it over time. Railway enthusiasts might remember that the Rocket, by our standards a poor machine, was itself the product of a quarter of a century of trial and error; if Peter Kay's principles had been followed the whole idea of moving steam engines would have been abandoned at a very early stage.

On one point we are certainly now in agreement. Whilst initially I assumed that most books in print were acceptably accurate, apart from the occasional inevitable misprint here and there, further research has made it increasingly apparent that a very large proportion of works have, at any rate for material on opening dates, been content to copy past errors. Unfortunately this includes many works that have been favourably reviewed in the *Journal*. I also agree that it would be beneficial for many more 'ordinary' works to include chronologies at the back. There is a practical snag here, worth pointing out to those who follow his advice. If an amendment to an already completed portion becomes necessary it is all too easy to correct it in one place and not another. I have done this and it would be possible to compile an impressive list of works in print where the dates in the chapters differ from those at the back- oddly enough, reviewers rarely seem to spot this. This would seem to be the place for a plea that we should all try a bit harder for consistency here.

Certainly, care needs to be taken over sources. However, too much caution is again a block against any action. A basic principle of any form of historical research is that all sources should be approached critically. Strictly, the only way of validating information is by finding it in two or more contemporary sources that you can be certain were first hand witnesses and completely independent of one another. The dangers of working from a single source can be illustrated by a couple of examples. The Liverpool and Manchester timetable for March 1831 (PRO RAIL 981/226) shows a rail service from Liverpool to Bolton; fortunately another member of the Society was able to supply me with a far more detailed selection of references from the Bolton press than is included in anything in print and from these it was clear that the 'accepted' sources were right- the Bolton rail service had not started. Anyone using the 1872 RCH Station Handbook in isolation would conclude that there was then a station called SHAFTESBURY at or near SEMLEY whilst what it really meant was: 'If you see a parcel addressed to Shaftesbury, send it to Semley LSW'. This might also be the point at which to state that while the RCH might ultimately have introduced much needed order to station names, its (or Airey's) early offerings add to the chaos facing the modern researcher rather than clarify. The 1877 book included CHILD'S HILL & CRICKLEWOOD and CRICKLEWOOD & CHILD'S HILL, both with passenger facilities only and both of apparently equal status- and there were others like this.

In reality such cross-checking is not always possible- indeed, it would make much railway history impossible since it has to be written from railway records alone, without outside corroboration. Here it might be pointed out that railway officials and clerks were just as capable of errors of various sorts as other mortals. In all walks of life people have been known to 'manufacture' records, especially if they regard them as time-wasting and irrelevant bureaucracy- thus the 'daily' record is compiled monthly from memory just before the visit of a supervisor known to be satisfied as long as the spaces are filled. If early railwaymen were as cavalier in their approach to record keeping as they were in the operating practices which led to so many accidents, some very debatable 'facts' will have

been faithfully copied by historians using their records. In practice, therefore, one has to use what is available and accept that perfection is not attainable. What matters most is that any published work should be honest. Where there are gaps in knowledge, as there always will be, these should be admitted - who knows, this might just inspire someone to fill those gaps by research of his own.

Has the Society any place in this? The answer to this depends on how much concern it has for improving the accuracy of published material. Should it encourage the publication of material which would at least provide considerable improvement in accuracy, at any rate for those prepared to take note of the information (admittedly many will not)? Or leave the lot to gather dust while *all* the current inaccuracies go unchallenged? Certainly there is a danger that a new 'holy writ' will be created but the answer there is to stress in the Introduction that more still needs to be done. I know even this will not necessarily work since not all people read introductions, but there are limits to what can be done to open minds, and at least the new, unintended, holy writ would be more accurate than the old. It can be safely assumed that we should give opposite answers to these questions but at least I feel that the opposing view to his should be put. Indeed, my view would seem to be supported by the past policies of the Society. In 1975 it published *North Eastern Railway Historical Maps*. In 1991 it published a revised version whose preface included: 'In all historical works, whatever one's chosen subject, it is ever true that yesterday's facts are today's - and indeed tomorrow's - fallacies'. At least if something is in print some of today's fallacies might not be tomorrow's and a guide will be given as to which areas are most in need of detailed treatment. It would seem to be a strange society that claimed to have the furtherance of accuracy as one of its aims but stood back and did nothing while a host of inaccuracies passed from book to book. If anything is produced, it is vital that it should be regularly revised even if the original compiler is dead or no longer interested. Borley's work is now nearly 20 years out of date. Are any steps being taken to bring it up to date? If not, why not?

It is *vital* that the sources used are included in any chronologies produced. Omitting them would rob the whole exercise of its main point. Those looking at our lists would find many dates differing from those used in what are at the moment regarded as standard works. Since the displaced dates will almost certainly be found in several works, those noting the discrepancy will be likely to outvote our offerings as misprints - or the authors will face a steady stream of demands for explanations as to why there are differences.

Lastly, a return to where I started, the desirability of working together. Peter Kay's article has much to say about those who have attempted chronologies. He loudly calls for volunteers to produce regional chronologies to a job specification that would leave a real-life version of Simon Legree amazed at his own moderation. Nowhere in all this did I see any reference to what he would be doing while the slaves labour on the plantation. MICHAEL QUICK

P.S. A technical point on p 238, concerning the life expectancy of engineers. If you are concerned to show the effects on life expectancy of a person's occupation, you need to work from average expectation at, say, 20 years of age, not at birth. Those who did reach 20 lived, on average, much longer lives than is implied in the article, and this needs to be taken into account when making comparisons of the sort made there.

Despite being one of those who was severely castigated by Peter Kay in the second paragraph of his article, I would like to congratulate him on a well-thought out and very

interesting monologue on the subject. However he made me cringe with his use of the word 'Chronologer'. I believe that Chronology comes from two Greek words; 'er' is a Latin ending, whereas 'ist' is a Greek one. I do not pretend to be a classicist but I propose to continue to call myself a Chronologist and hope that others in the Chronology Group will agree with me. M H COBB

The Journal Format - the final round

I wonder if I might add a note of appreciation of the new format of the *R&CHS Journal*, whilst at the same time supporting M. A. C. Horne's letter in the last issue, suggesting that a reversion should be made to a serif type face. I understand that it is widely accepted in media circles that this makes reading easier, the serifs leading the eye from one letter to the next in a way that a sans type does not.

This does seem to be so in my case, being somewhat elderly, a sans type giving a 'jerky' appearance. G. HUGHES

Like many, I am uncertain about the benefits of the new format of the Journal. I think a move to a conventional A4 page size would have resulted in a magazine that would be both economical and flexible. M. JOLLY

As one whose eyesight is not of the best, I appreciate the new larger size type used in the Journal. P. S. RICHARDS

Before you lose patience and decree "This Correspondence must now cease", may I please register a protest alongside those who are finding the new *Journal* presentation difficult to live with. My objection is not to the format but to the layout and fount chosen. The great slabs of bold black type in 13-15 word lines across an 180mm page are to me tiring to read; they seem to shout at the reader like Government Emergency posters in a desperate wartime situation. And surely there are practical problems inherent in this presentation; any attempt at emphasis seems doomed to failure as italics do not stand out well against the rest and use of bold type is obviously out of the question as all is in bold. There is also an inherent lack of elegance, which shows up not only in the style of the "References" sections but also emerges in the crude way four lines of the Aldestrop poem appear on page 283 of no. 175.

The use of sans serif fount en masse becomes irritating as it differs from what we are accustomed to encounter in newspapers and many books and magazines. Serifs seem to be easier to read as their fine lines give a lighter, airier impression. Another point, already made, deserves a little analysis: when reading, the eye tends to pick up whole phrases, even whole sentences, so words should run comfortably along one line and down to the next but if lines are over-extended and exceed 10-11 words, it is not easy for the eye to take in the beginning of the next line. Two columns could make things more comfortable on this wide page.

Some say that our eyes "read" the white space, not the black, which may explain why a page of heavy lettering with minimal white space tends to create a daunting even aggressive effect, which is perhaps not helpful to concentration and absorption of what is sometimes quite densely-written material with overlong paragraphs.

Could the Managing Committee consider seeking a view from an expert in typography?
It would be interesting to have a professional assessment. A. A. JACKSON

No more letters on this subject, please. Editor.

The Journal : General Comments

RAILWAY AND INN SIGNS

On page 140 Philip Scowcroft comments that it is "appropriate" that there is a Thomas Cook public house in Leicester. Surely for an entrepreneur whose business was, in some degree, founded on running temperance excursions, appearing on a pub sign - even in his home town - would be the opposite?

CORRESPONDENCE: THE JOURNAL'S NEW FORMAT...

I find the sans serif type face, at the point size used for the main body of the magazine, less attractive to look at and to read than a serif face. On the other hand, I find it perfectly acceptable at the size used on the inside front cover, and would be happier to see the whole magazine at this size; at the moment it reminds me of a children's early reading book. Alas, I can give no technical explanation why this should be so. I find the practice of making the names of reviewers and letter writers appear to be part of their last paragraph annoying, preferring one carriage return (if not two) to intervene.

A BIBLIOGRAPHY etc. (p. 165 *et seq.*)

Am I alone in feeling that it is inappropriate that this reference document should take up nigh on half an issue each year? Surely it would be more convenient for future reference that it be a "free standing" document (able to be stored either with the *Journal* or with Ottley), issued alongside the *Journal* in the fashion of the piece on the Macclesfield Canal. Or better yet that the series be available in electronic storage medium so that it could be searched electronically.

THE BUILDING OF THE MACCLESFIELD CANAL

While I fully approve of longer articles being published as "free standing" documents, I would ask that some indication of provenance should be included for future reference. In this case, I have endorsed my copy "Issued with the *Journal of the Railway and Canal Historical Society* Vol. 33 Pt. 3 No. 174 November 1999". R. MAUND

Coach Services in Cheshire, 1934

On receiving the March issue of the *Journal* (No. 175), I was most interested to read the article by Mr. Allan Brackenbury, 'Coach Services in Cheshire, 1834'. What particularly intrigued me was his reference to 'Bullocksmithy', and on checking 'Peakland Roads and Trackways' by A.E. & E. M. Dodd (Moorland Publishing, 1974) pp. 127, I found the following reference:-

'North of Leek the road to Manchester as far as Hazelgrove was the responsibility of the Sandon to Bullock Smithy Turnpike Trust authorized in 1761; Bullock Smithy, named from Richard Bullock who in 1560 leased land there on which to build a smithy, stood near the junction of the turnpike with that from Buxton through Whaley Bridge and Disley.'

I trust this may throw some light on the curious name of this place. F.R. HARTLEY

The Sonning Cutting Accident and the Board of Trade Inquiry into Third-Class Carriages.

I think that the rolling stock of the GWR at this period, 1841, requires a little more consideration. The third class illustrations used by Jeffrey Wells were taken from MacDermot and are somewhat misleading.

The first trains ran on the GWR in June 1838 so that by late 1841 the GWR had two and a half years to perfect rolling stock. By 1841 the first class carriages were comfortable six wheel vehicles. The second class with open sides and bare seats were designed to provide a marked contrast with the first. There were not third class carriages. This is made quite clear from stock returns recorded by MacDermot and brief notes at the PRO. The illustration of the third class carriage 1844 shows the 1842 third class carriage as rebuilt in 1844 to comply with the "Gladstone" Act that required third class carriages to be covered in. As built the sides were four foot six inches high, approximately to the top of the diagonal bracing on the drawing. It would not therefore have been possible, in 1841, for the GWR to make returns of third class carriages, as they did not have any!

The third class "carriage" illustrated by MacDermot is neither a carriage nor does it date from 1840. The earliest known drawing for an open wagon dates from December 1841 and is of a more primitive type. It has a short wheel base with a narrow body between the wheels like other goods/luggage stock of this period. They also had a batter to the sides like the 1842 third. MacDermot's assertion that only carriage trucks and posting carriages were built with bodies between the wheels does not apply to goods stock.

Despite the Sonning accident and the subsequent legislation this was not the end of travel in open trucks or carriages. A number of stone trucks had extended sides fitted along with benches in 1850 for excursion traffic. In the late 1850s in order to cater for exceptional excursion traffic on the Weymouth line there is a report of benches (from the station platform?) being placed on carriage trucks. Not only did these trucks have low sides but no ends. Such trains were exceptionally long and probably never travelled any quicker than that of a bicycle so perhaps the passengers were not in danger that might be at first thought; one just hopes that the weather was fine. M. JOLLY

Book Reviews

THOMAS TELFORD, Anthony Burton, 232pp. 25 photographs, 6 maps, 13 diagrams, boards, Aurum Press Ltd, 25 Bedford Avenue, London WC1B 3AT, 1999, ISBN 1 85410 652 X, £19.19.

The student requiring a single volume about Telford will need no more. This is the best yet published. It strikes a fine biographical balance between Smiles, Gibb, Rolt, Beckett and Telford himself. Particularly pleasing is the handling of Hadfield's late surprising and often tenuously speculative allegations impugning the Engineer's previously respected and unchallenged integrity.

Disenchantment with the Ulster Canal, collapse of the Banavie staircase and later problems with the Caledonian Canal, embankment nightmares, initial weakness at Menai and failure with the Clifton Bridge competition is not shirked. Conversely, emphasis is given to works sometimes superficially treated by earlier writers, especially St. Katherine's Dock, road problems in Wales, port work at Aberdeen, the new tunnel at

Harecastle and the Gotha Canal. Proper attention is drawn to the great detail of Telford's many reports-the proposed Glasgow to Berwick railway and planned Great North Road improvements are examples. The wonderful long-lost bridge at Broomielaw and the lofty structure over the Water of Leith, cast-iron dreams for a Thames bridge and pioneering experiments for a suspension solution at Runcorn are not overlooked. Similar treatment is given to an outline of completion work on the Glos. & Berkeley Ship Canal.

Use of quotations from correspondence is liberal, some of it new. Interpretation is droll. Omissions are few although the 32 churches and 41 manse erected under the Parliamentary Church and Manse Programme for the Highlands and Islands, 1823, attract only one short sentence. Little is made of the engineer's close association with numerous small county bridges in Shropshire or the adoption of the delightfully simple small pioneering prefabricated iron structure of Thos. Stanton's *Meole Brace* pattern. An example of the latter is at Cantlop and another over Telford new town inner ring road. The important iron aqueduct at Nantwich, very similar to that over the A5 at Stretton, seems to have been overlooked. The keener student will still need the superlative list of all works published in Gibb.

An admirably wide bibliography would be further improved by the addition of Dunlop's *The British Fisheries Society 1786/93*, Quenby's *Thos. Telford's Aqueducts on the Shropshire Union Canal*, Maclean's *Telford Highland Churches*, Blackwall's *Historical Bridges of Shropshire* and Norris' *The Stratford & Moreton Tranway* - but for a book of such general excellence these points are trivial. A very fine acquisition for any library.
GEOFFREY TANNER

THE THAMES HAVEN RAILWAY, Peter Kay, 76pp, approx. 80 photographs and maps, A4 size, soft covers, published by the author from Orchard House, Orchard Gardens, Teignmouth, Devon TQ14 8DP, 1999, ISBN 1 899890 27 0, £10.95.

The first three chapters of this comprehensive and well-researched work deal with the early history of the Thames Haven Dock & Railway Company. This was incorporated in 1836, to build a dock near Shell Haven, on the north bank of the Thames estuary, and a railway from there to join the Eastern Counties Railway near Romford. Some desultory excavation was done in 1838 and again in 1847/8. Eventually, after agreement had been reached with the London Tilbury & Southend Extension Railway, which obtained its Act in 1853, the section of the TDH&R from Mucking on the LT&SER to Thames Haven was built, together with a pier at Thames Haven, and opened in 1855.

The subsequent history of the branch can be inferred from the headings of succeeding chapters - Thames Haven for Margate (passenger services, 1855-1880): Cattle and Sheep (1864-1895): Petroleum and Explosives (the private sidings, 1878-1939): The Workmen's Train Service (1923-1958): and The Oil Boom Years (1948-1993). There are also chapters describing in detail the development of Thames Haven Station and Pier, the operation of the goods services, and the signalling system.

No photographs of the branch in pre-grouping years have been found but the author has assembled a fine collection of views of both trains and sites in the period 1923-1993 and given them extensive captions. They are supplemented by clear reproductions of OS and other maps and plans covering the various stages of development of the whole line.

There must be few other short branches that started life with a summer service of a

couple of boat trains a day but were originating some 20 daily block trains more than a century later. The traffic is now down to 10-15 trains per week but it is a nice change to read the history of a branch that is still alive. The book is good value and recommended. STEPHEN BRAGG

THE LEEDS & LIVERPOOL CANAL IN YORKSHIRE, Gary Firth, 128 pp, softback, Tempus Publishing, 1999, ISBN 0 7524 1631 6, £9.99.

On occasions this book of over 200 old photographs, including a few modern ones, strays well into Lancashire. Some illustrations are familiar, many are not, and in that sense it forms a valuable record. The author has used his detailed local knowledge effectively. In choosing old photographs one is always torn between historical interest and clarity of reproduction; here, frankly, one or two would have been better left out. The text includes a brief history of the canal. Chapters comprehensively cover the route, boats, maintenance, boat life, trading and special events. A chapter on branch canals depicts only the Bradford Canal and the Springs Branch at Skipton, although pictures exist of the unusual 'Dark Arches' at Leeds and the Rainhall Rock branch at Barnoldswick. It would also have added interest to see illustrations of some of the Leeds & Liverpool's unique features like the ground paddles at Greenberfield. The boat on p 48 looks more like a diesel than a steamer, and the photograph of Idle surely shows a train leaving Thackley tunnel, not entering? There is some sloppy writing, too. For example, in the chronology we read: '1923. The L&NW Railway Company and the Canal Company both bought by the LMS Railway Company'; hardly the case and, as the text states elsewhere, the canal remained independent until 1948. Most captions contain irritating repetition, wasting space which could have been used for, say, explanations of canal terms. With better text and sharpened-up editorial control, a companion volume on Lancashire would be very welcome. GORDON BIDDLE

TRIUMPH & BEYOND: THE ECML 1939-1959 Part One [on title page but not cover], B. W. L. Brooksbank, 184pp, 280mm x 220mm, 161 b&w photographs, 28 other illus., boards, Challenger Publications, 15 Lovers Lane, Grasscroft, Bolton, OL4 4DP, 1997, ISBN 1 899 62421 X, £17.99

Persevere through the diatribe against the Roads Lobby and Government policies to reach an encyclopaedic labour of love spiced with nuggets of opinion. The main chapters provide a largely statistical survey of every type of passenger and freight traffic, comparing, in particular, summer 1939 with a wartime year and another in the mid-fifties. All this is done without a single numerical table, graph or pie chart, and is not always easy to follow, as the promised maps, together with bibliography and index, are in the unpublished Part Two. The appendices include lists of private sidings and wartime installations along the ECML, together with surveys of war damage and more than a hundred accidents.

The sometimes unusual photographs are all relevant and appropriately positioned. Most depict significant features of the infrastructure as well as trains, and they are supplemented by illustrations of handbills and official notices.

The second part, which is to include a survey of the line and the locomotives operating it, will place the present volume in context, to provide a flawed, but indispensable mine

of information for the reader to analyse. DENNIS HADLEY

THE NEW LINE TO LONDON OF THE GREAT CENTRAL RAILWAY, Michael J. Soar, 115 pp. 280 x 220 mm, 29 line drawings, 6 maps and plans, soft covers, Rook Books, 16 The Green, Chilwell, Nottinghamshire, NG9 5BE, 1999, ISBN 0 9536526 0 2, £14.95 (p+p £1.55).

This is an unusual type of book, about the planning and construction of the Great Central main line from Annesley, north of Nottingham, to London. It is based on a transcription of an article in small print covering four broadsheet pages of the *Nottingham Morning Guardian* of 10 March 1899, with line drawings, maps and plans, which was given to the author in 1996 by a friend who was clearing out his uncle's house. It was in poor condition, as can be expected of newsprint nearly 100 years old, with sections missing. With the help of other material, mostly in Nottingham Public Library, he has painstakingly filled in the gaps and produced a fascinating book. The original was clearly based on a press handout prepared by the engineering staff and contains much technical detail of dimensions of tunnels, depths of cuttings and heights of embankments, spans and heights of bridges and viaducts and details of all the stations.

What this book brings out so clearly is the faith that the railway's promoters and builders had in its future. Everything on the railway was superbly designed and constructed. It is facile to argue that it should not have been built; any fool can say that. But it was and, furthermore, built to the Bern gauge and laid out for high speed with no level crossings (remember Hixon); altogether a magnificent main line which, via the GC/GW joint line, could have connected with the Channel Tunnel, as was the original intention. The book leaves one wishing that those in control of our railways, particularly in the 1960s, could have had such faith in the future and could have seen beyond their noses. JOHN MARSHALL

THE GLENCORSE BRANCH, Jeff Hurst, 176pp, 118 b/w photographs, 16 maps, 11 facsimile documents, 9 drawings, 9 signalling diagrams, gradient profile, soft covers, Oakwood Press, 1999, ISBN 0 85361 539 X, £10.95.

This book follows in the Oakwood Press tradition of documenting lesser known railway backwaters and its publication fills a gap in the literature. The subject is a nine mile North British Railway branch from Millerhill to Glencorse in the Midlothian coalfield.

The first eight chapters are chronological. After a general historical introduction and discussion of early railway schemes, they follow the story of the line from its genesis as the Edinburgh, Loanhead & Roslin Railway to its ultimate demise following the closure of Bilston Glen Colliery in 1989. The remaining five chapters describe the route, present remains, traffic, signalling and accidents, while the appendices include useful and revealing tables of traffic returns from 1875 to 1933. Links between the railway and local industries form a central theme throughout. The text is liberally illustrated with photographs, maps and diagrams but there is no index, a notable defect because to get the best from it the book demands much cross-referring by the reader. Overall this is a well-researched volume and offers good value for money. TIM EDMONDS

THE WEY & ARUN JUNCTION CANAL, P. A. L. Vine, 128pp, 147 photographs, 27 maps, soft covers, Tempus Publishing Ltd, The Mill, Brimscombe Port, Stroud, Gloucestershire, GL5 2QG, 1999, ISBN 0 7524 1721 5, £9.99.

This collection of photographs, paintings, drawings, documents and extracts from maps covers Stonebridge Wharf on the Wey Navigation and the Arun Navigation as far south as Stopham, as well as the Wey & Arun Junction Canal itself.

A third of the photographs were taken in the last decade, and a third date from the 1950s, mainly 1952. Only 14 predate the First World War, most of these being of the river navigations. None show the working days of the canal, not surprisingly as the order for closure was made in 1871. The quality of reproduction is reasonable. Extracts from old Ordnance Survey maps cover the main features of the canal, but the actual scale of reproduction is not indicated.

Some 24 of the photographs and 17 of the other items appeared in the fourth edition (1986) of the author's indispensable *London's Lost Route to the Sea*.

As a record of decay and the beginnings of restoration, this book would be more appreciated by people wanting to examine the line of the canal than by those whose principal interest is waterways history. PETER BROWN

THE ISLE OF WIGHT RAILWAY, RJ Maycock & R Silsbury, 240 pp., 95 photographs, 57 diagrams, 8 maps, casebound with spine, Oakwood Press, 1999, ISBN 08533615446, £19.95.

There may be initial doubts that a railway with 7½ miles of single track main line and a branch of 2½ miles should merit a book of 240 well filled pages. Reading it will convince any doubters that this detailed study is worth publication. The study is confined to its period of independence, from its incorporation in 1860 until its absorption by the Southern Railway in 1923. Although it was very much an Island railway, most of its Directors were 'Overners' and Board Meetings were held in London. (Of the original promoters, six gave addresses on the Island and nine had London addresses). Perhaps the most influential of the Directors was Captain Mark Huish, formerly General Manager of the L&NWR, who had retired to Bonchurch near Ventnor. He took a leading role from 1861 until his death in 1867. The main source of revenue was prosperous visitors and residents, making journeys to and from the mainland - the 'locals' could not afford railway fares. As the authors show, as time passed, passenger traffic covered a wider social scale. Ventnor remained a health resort, but Sandown and Shanklin developed for seaside holidays, or even day trips from the mainland. Freight traffic, mostly coal, brought in only about one fifth of the revenue earned from passengers.

Every aspect of the line is covered including its distinctive tank locomotives, well suited to short journeys. Initially the company ordered new coaches, but later acquired second hand stock, including coaches from two London railways - the North London and the Metropolitan. The company conformed to Board of Trade requirements, and the Directors visited their railway, but there was a tendency to informality. For instance, in 1871, a notice stated that wagons could be left on the main line for unloading at a spot convenient to the customer. (When the late Charles Anderson went to manage the Island railways for the Southern in 1923, he was horrified to find that the coal wagons for Newport Gas Works on the IWCR were left on the main line overnight). A special merit of

the book is its collection of contemporary photographs. The research on which it is based was time well spent and it deserves a place on the shelves of railway historians.
EDWIN COURSE

THE KENT & EAST SUSSEX RAILWAY, Stephen Garratt, 112pp, 130 photos, plans, maps etc., soft covers, Oakwood Press, ISBN 0 85361 516 0, £8.95 post free.

This is a third edition of a book first published in 1982, updated to 1999 and revised and corrected as necessary. Art paper throughout ensures optimum quality of photo reproduction and the full colour laminated square back cover makes the book both visually attractive and easy to handle. All aspects of this typically English standard gauge rural light railway, now well on the way to restoration over half its original 21½ mile length, are covered in a detailed and well-researched text, illuminated by an excellent selection of illustrations, timetable reproductions, maps and plans.

There is not much to criticise adversely: the updating material seems over-brief on the crucial link to the national railnet at Robertsbridge, of which nothing is said in the text after 1991; some identifiable commercial postcards are perversely attributed to the "Author's Collection"; and there is no index. Any inconvenience caused by this last deficiency is somewhat minimised by the logical arrangement of the contents. ALAN A JACKSON

BRITAINS WATERWAYS: A UNIQUE INSIGHT, Brian Roberts, 128pp, 250x210mm, numerous photographs, 90 maps, soft covers, wire-bound atlas, Geo Projects (UK) Ltd, Berkshire, RG1 4QS, 1999, ISBN 0 86351 115 5, £12.95.

This is an odd book to be asked to review for such an august body as the R&CHS for, although written by a member, it has no academic pretensions. It is a comprehensive directory which lists all the inland waterways of Britain in alphabetical order with, for many, a detailed individual map (1:350,000) accompanied by a brief outline with dates, engineer, location details and statistics. Salient features of each are described together with general directions for finding them. There also are 21 "short strolls", illustrated at larger scale (1:15,000), where a canal is close to a tourist attraction, site of industrial archaeology or aspect of early engineering. Finally 14 small scale regional maps (1:700,000) set the whole system in a national context and also show abandoned navigations and those under restoration.

Whereas this may sound familiar and suggest yet another coffee table tome, this book is actually very good. The reproduction of the maps, colour and black and white photographs is outstanding and it is well laid out and easy to use with a comprehensive index. The spiral binding is a struggle initially but it allows the book to lie flat when open. It packs easily for the car or holiday.

For an inveterate collector of minor canals, it was pleasing to find those in Scotland on the regional maps, and in the directory, albeit briefly (eg. Kilbagie, Burnturk) and to discover many in England and Wales that had previously escaped notice (eg. Adelphi, Rhuddian, Llechryd). Thus one is encouraged to read more widely and herein lies the strength of this book. JOHN HOWAT

CHERWELL VALLEY RAILWAY, Peter Allen, 160pp, 85 monochrome illustrations, 1 map, softback, Tempus Publishing, Brimscombe, Stroud GL5 2QG, 1999, ISBN 0 7524 1718 5, £14.99.

This excellent book is an account of the railway in the Cherwell Valley from North of Banbury to Oxford. It is an interesting railway - from the tense history of its birth in the teeth of rivalry between the GWR and the L&NWR, to its effect upon the area through which it ran, its later connections to other railways such as the Great Central, its branches to Woodstock and Chipping Norton and its varied traffic.

Subtitled a social history, this book will fully satisfy the railway enthusiast as well as the more general local historian. The research which has gone into the book is impressive as to both width and detail of study. Unusually for a railway history book, the railway is put into the context of the society and its transport which existed before it came. The social history side is thin on broad effects but thick in anecdote and example. The neighbouring aristocrats such as the Marlboroughs of Blenheim and the Jerseys of Middleton Stoney feature as do the ordinary people in their early excursions. The accounts of traffic working are thorough and well embroidered with incident. The accident at Hampton Gay on Christmas Eve 1874 is particularly well described as to both cause and effect. There is a chapter on the railway in war and on Kidlington as a case study of one station on the route.

The book is very well written and much easier to read than many books on railway history. It fails two tests, there is no index and the sources of information are not identified. The pictures are varied and well chosen and most of good quality. That there is a picture of the 'junction' with the never opened line to Rugby at Knightcote exemplifies the trouble which has been taken in assembling them. MARTIN BARNES

RAILWAYS AND THE VICTORIAN IMAGINATION, Michael Freeman, 264pp, 71 colour illustrations, 208 monochrome illustrations, boards, Yale University Press, 1999, ISBN 0 300 07970 2, £25.00

This book sets out to examine the impact of railways on the evolving culture of the Victorian Age. It considers the interaction of railways with various aspects of society, including the familiar themes of politics, capitalism, urbanisation, art and science, but also venturing into such areas as territorialism, education and popular culture. There are eight main chapters, preceded by a well-argued introduction and followed by an epilogue which takes the ideas into the twentieth century. The volume ends with an index.

The subject matter of the book is wide and it draws upon a vast array of contemporary and modern sources. These include literature, photographs, art and music, as well as books, articles and maps. Reliance on secondary sources has led to ambiguity on some matters, such as the implication on page 171 that all light railways were narrow gauge. However, the author has been meticulous in acknowledging his sources through no less than 1,223 footnote references.

Contemporary illustrations are central to the book and they include the well-known work of engravers such as Bourne and Tait, cartoons from *Punch*, maps, railway company posters and pictures from *The Illustrated London News*. These are balanced by a good selection of some less familiar material, including sheet music and children's games. Unfortunately the value of many illustrations is greatly reduced because they have been

reproduced too much too small a size, twenty being less than the area of an Edmondson ticket. The quality of reproduction of a few colour illustrations also means that detail is difficult to see. This book succeeds in presenting railway history from a different viewpoint. It has an academic approach, but it is a stimulating read and has been illustrated and priced such as to attract the general reader. It deserves to do so, and is recommended. **TIM EDMONDS**

WATERWAYS IMAGES FROM AN INDUSTRIAL AGE, Nick Billingham in association with British Waterways, 128 pp, 157 monochrome photographs, boards, Tempus Publishing Ltd, The Mill, Brimscombe Port, Stroud, Gloucestershire GL5 2QG, 1999, ISBN 0 7524 1725 8, £14.99.

This book is a selection of photographs with captions, illustrating the waterways of England. The majority of the photographs are from the British Waterways Archive. A number of the photographs included in the book have appeared in previous publications. Considering the age of some of the photographs they have reproduced remarkably well. The author's selection is excellent and it provides an evocative pictorial record of the way of life and work of the people and boats that could be seen on navigable waterways during the period from the late Victorian era up to the 1940s.

The photographs in each chapter relate to a particular subject. The five chapters are dedicated to boat types, people, accidents, architectural features and structures, boat building and waterway maintenance work. The book has an eight page introduction and each chapter also has a short introduction.

The captions are reasonably informative but in some instances could have been expanded to provide more facts. A minor criticism is that, although a number of the captions state the exact location where a particular photograph was taken, no reference is made to the name of the actual waterway.

The book will be of interest to those who like to view and study old photographs. **GERALD LEACH.**

RAILS TO POOLE HARBOUR, Colin Stone, 144pp., 161 photographs, 6 diagrams, 4 maps, card cover with spine, Oakwood Press, 1999, ISBN 085361 5535, £9.95.

The title of this book could mislead. It does cover all the lines that ran down to the waterside but also includes all the railways that have existed within the Borough of Poole. While there is a chapter on the main lines, the book concentrates on the other railways. The Hamworthy Goods branch and the unusual Poole Quay Tramway, both public railways, have the leading roles. However, private lines such as those linking clay workings to the harbour and the system in the Royal naval Cordite Factory are included. Each line is described in detail, with its history geography, traffic and rolling stock well illustrated with photographs and maps. While it is essentially a local study, not many places have as interesting a railway story as Poole. For instance, the Hamworthy Goods Branch provided the first railway route to the tow, comparable to the Kingswear line to Dartmouth. It also carried, briefly, a kind of boat train service, forming part of the rail route from South Wales to France, promoted by what became the Somerset and Dorset Railway. The authorship of this book is unusual. It is not the work of an established railway author but rather of somebody dedicated to Poole, who is an expert on its

railways. In connection with a school project, he wrote a small booklet. Fellow local historians persuaded him to write for publication. His knowledge and his affection for Poole are reflected in the way he relates the traffic of its railways to its industry and commerce. His book is strongly recommended. EDWIN COURSE

THE WRECK OF THE *STELLA*. *TITANIC OF THE CHANNEL ISLANDS*, John Ovenden & David Shayer, 112pp, 308 mm x 218 mm, 96 photographs, 11 caricatures, boards, Guernsey Museums and Galleries, Candie Gardens, St Peter Port, GY1 1UG, 1999, ISBN 1.871560, £21.95 (inc p&p).

This book deals with the wreck of a London and South Western Railway steamer, the *Stella*, on the Casquets reef in 1899 with the loss of over 80 lives. The *Stella* was on a routine run between Southampton and Guernsey, encountered foggy weather, miscalculated her position, and tore her bottom out on the reef. She sank within eight minutes.

This lavishly-illustrated book tells that story in great depth. There are detailed vignettes of each of the passengers and crew who were involved in the disaster, and how each struggled to survive. The memorials to the heroes are listed. The Board of Trade enquiry into the circumstances of the wreck is covered in full, with most of the questions and answers being given verbatim along with court room sketches of the proceedings. There then follows a very precise account of how the wreck was discovered by modern-day divers in quite deep water, the dives made upon it, and the objects retrieved. There is a comprehensive list of the passengers and crew and the fate of each, and the poems written about the wreck are reproduced.

The authors weigh up the causes of the wreck judiciously. Racing, between boats of the same company, and between GWR and L&SWR packets, was not unknown and the captain may have wanted to make a fast passage. Certainly the weather contributed as did the failure of the dead reckoning system on this occasion. This is a detailed, well written book on a tragic event. Sadly there is no bibliography, although other works have dealt with the incident such as Jamieson's huge 1986 volume. JOHN ARMSTRONG

DECADES OF STEAM 1920 - 1969, Michael Harris, 176pp, approx. 200 monochrome illustrations, hard covers, Ian Allan, 1999, ISBN 0 7110 2683 1, £19.99.

Michael Harris is a professional writer on railway matters and is editor of *Railway World*. This book is an account of the railways of the UK from the end of the First World War to the end of steam traction. After an introductory chapter, each of the five decades is covered separately. The book could be another picture album of the big four and their trains, moving into the BR era. It is triumphantly more than this. Most of the familiar stories of the fight against growing road transport, the rivalries through the thirties, the developments of the great locomotive stocks under Stanier, Gresley *et al*, the rush to 'modernisation', etc. But the book has two distinctive strengths. Firstly, the writing takes a broad view of the era it covers and gives a fair picture of the history of UK railways over the half century with an eclectic eye to detail which adds interest. This is not just an augmented locomotive history. Secondly, putting each decade for each major railway alongside in the text reveals their contemporary strengths and weaknesses in a way which no more specialised book has or can. The photographs are all good and well

reproduced. Many are familiar but many are not, many are of trains but many are not.
MARTIN BARNES

VICTOR WADDINGTON, GIANT OF THE SOUTH YORKSHIRE WATERWAYS, Mike Taylor, 80pp, 125 b/w photos, map, card covers. Yorkshire Waterways Publications, 27 Summerfield Road, Dronfield, S. Yorks. S18 2GZ, £7.95 incl p&p.

There have been five generations of the Waddington family based in Mexborough/Swinton on the Sheffield & South Yorkshire (formerly Don) Navigation as boat builders and repairers and, during this century, also as carriers and wharfingers. Victor (1908-99), the fourth generation, was the greatest of the Waddingtons and this is his story, much of it told in his own words, as given to Mike Taylor, who supplies a chronology and linking paragraphs. Victor Waddington at first repaired and built canal boats in the family tradition, then, from 1928, carried cargoes of, among other commodities, coal, grain, sand, timber and latterly ferrosilicon and steel. Waddington's now carry most of what little commercial traffic remains on the S&SYN. This is a fascinating, highly recommendable book, its value enhanced by the photographs, mostly from Victor's and Mr. Taylor's collections, covering the whole of the 20th Century and excellently reproduced, considering the age of some of the originals. **PHILIP SCOWCROFT**

HILLHOUSE IMMORTALS, Neil Fraser, 112pp, 113 photographs, 13 maps, 1 diagram, soft covers, Oakwood Press, 1999, ISBN 0 85 361 548 9, £8.95.

This book tells the story of the drivers, firemen and other railway workers at Hillhouse shed, near Huddersfield on the L&NWR. It is the story of a relatively little known and humdrum part of the network, unlike the well known such as Crewe, Willesden or Carlisle on the more glamorous main line. It is well produced. The inclusion of various maps of the shed and of places mentioned in the text does a lot to clarify the areas and operations described. Some of the photographs are rather muddy, but this is probably because they have been reproduced from amateur snaps. The photographs include views of the shed, period West Riding views, photographs of the staff and even of the shed cat!

The appendices include summaries of engines allocated to Hillhouse, locomotive foremen and accidents. The book includes some horrific lists of accidents to staff, illustrating how dangerous life on the railway could be. The publication casts a great deal of light on the social history of footplatemen, their leisure and political activities, as well as on many aspects of railway operation. One error is apparent on p27. The quotation from the Greek is from Thucydides not Thycudeses!

It is certainly a cut above many of the books of locomotive reminiscences and would be of interest to anybody interested in the railways of Huddersfield and the West Riding or in the social history of railwaymen. **WARWICK BURTON**

OUR CANAL IN OXFORD, Mark Davies and Catherine Robinson, 54 pp, 15 photographs and two maps, A5 paperback, Towpath Press, Oxford, 1999 ISBN 0 953 5593 00, £4.95.

Running through the seven chapters of this exquisite book one cannot help noticing the design and illustrative work done by Ruth Bateson which makes for a pleasing affect on each page.

Although the canal history is restricted to the City limits, one can rightly be impressed by the depth of information about the canal and those who used it from its inception to the present day.

Simon Ainley, British Waterways Manager at Braunston, has kindly penned an interesting foreword and the list of sources used and people whose knowledge has been drawn upon show that the co-authors ought to be proud of their result. May we hope that this book will be the fore-runner of further historical publications about the Oxford canal.
HUGH COMPTON

THE LONDON BRIGHTON & SOUTH COAST RAILWAY, John Minnis, 128pp, 209 photos, soft covers, Tempus Publishing, Stroud, 1999, ISBN 0 7524 1626 X, £9.99.

Introduced by two pages of text, this is a picture book in the publishers' 'Images of Railways' series. It covers most aspects of this ever-popular undertaking, setting out to include as much unpublished material as possible and in this respect is not without success. The inimitable character of "The Brighton" shines through, but alas, picture quality tends towards the all too familiar soft grey, not worthy of the excellence of many of the originals. A quick comparison of the bright contrasty print on the cover and the misty reproduction of the same picture on page 2 will demonstrate this.

The name of the compiler guarantees well-informed and satisfactory captions and a commendable effort has been made to give the dates and locations which are so important to the historian. As there is no index, consulting this album after an initial perusal promises to be time-consuming, if serendipitous. ALAN A. JACKSON

BIRMINGHAM'S CANALS, Ray Shill, 128pp, approx. 200 monochrome photographs, 13 maps, soft covers, Sutton Publishing, 2000, ISBN 0 7509 2077 7, £10.99.

The latest in Sutton's 'Photographic History of Transport' series, this is an excellent collection of pictures and well researched, detailed captions by our member and activist, Ray Shill. It deals with all the canals within the 1931 boundary of the City of Birmingham and the neighbouring borough of Smethwick. It is not just the BCN story, the Warwick, Stratford and Worcester canals are also covered. The history of each canal is outlined in order to set the scene. The pictures are mainly from the commercially active period of Birmingham's canals with a few modern pictures to help locate the scenes and to provide contemporary comparison. There are maps of each canal showing every road and railway bridge. It might have been helpful to show the locks as well and a larger scale map of the area around Old Turn, Farmer's Bridge, the Newhall Branch and Gas Street would have been useful.

Nearly all the pictures are of high quality and, taken together, are not only intensely evocative of the canals and their commercial use but a comprehensive record of almost every basin and wharf in the area. The reproductions of Birmingham Reference Library's glass slides from the early twentieth century are stunning. The picture of coal boats being unloaded in the shadow of Pugin's St. Chad's Cathedral should be in the 'greatest photographs of the twentieth century'.

Ray Shill's captions fully explain the canal features and the traffic shown in the photographs. The range of traffic handled in the great days is impressive. Nearly every

factory in the city and its surroundings depended upon the canals for their raw materials as well as for the coal which powered all their processes. It is remarkable that it was possible to live and work in Birmingham in those days when canal transport was so important to the city and see none of it. This book will be a revelation to people who thought they knew Birmingham but never looked over a canal bridge parapet or found their way onto a towpath. MARTIN BARNES

RESPECTABLE RADICALS, Professor David Howell, 454pp, no illustrations, boards, Ashgate, Gower House, Croft Road, Aldershot, GU11 3HR, 1999, ISBN 84014 6893, £55.

This book is to be welcomed, as it for once gives a detailed, academic, well - researched and readable account of labour relations on the railways from the 1890's to the 1950's. Its author is Professor of Politics at York University and this shows in the clarity and incisiveness of the text.

The book is well bound, and opens easily in contrast to many badly bound modern books. It has a comprehensive index and is easy to read. But it has not a single photograph, map or diagram in it, which could have enlivened and illustrated the text. At £55 it will mainly be purchased by libraries, and with lack of photographs, may lack popular appeal. This is a pity as the book is full of information and well written.

The introduction starts with the Labour victory at the 1997 General Election, and links back to the growth of the Socialist Movement in the late 19th century and to developments in labour relations and discipline on the railways in the 20th century.

Part one of the book, about half of the total, deals with the pre First World War period, with a series of chapters each dealing with a different topic, covered in some detail. These include the accident at Grantham in 1906 and the light it casts on railway discipline and labour relations; the early 20th century modernising of the N.E.R., strikes and conciliation, and comparable progress on the Midland; the 1911 railway strikes; the dreadful Aisgill disaster on the Midland in 1913 and the attempt to blame the driver rather than the company's operating practices; the rise of Edward Harford and parliamentary politics in the years around 1900; and the emergence of Socialism as a major political force in the early 20th century.

Part two deals with the post First World War period and includes sections on the New Deal of 1928; the General Strike of 1926 and its aftermath; the first Labour government and railway strike in 1924 (these three chapters apparently in reverse date order) and the Lodging Turn Strikes of 1949.

This is a very interesting book, basically a series of essays on aspects of labour relations, but well tied together by summaries and conclusions. A book like this is to be applauded for attempting to break the mould of so many railway reminiscence books, going into the issues in a well reasoned and analytical manner. WARWICK BURTON

WOODFORD HALSE: A RAILWAY COMMUNITY, Ruth Irons and Stanley C. Jenkins, 112pp, 109 b&w photographs, 4 maps, pictorial thin card covers, Oakwood Press (RS6), 1999, ISBN 0 85361 529 2, £8.95

Amidst the Northamptonshire countryside, sixty-nine miles north of Marylebone, the GCR established a large locomotive shed and a wagon repair depot. The population of

Woodford more than doubled, as the land between its ironstone cottages and the railway was filled with terraces of red brick houses, unbeautiful but desirable because of their mod. cons.

Stanley Jenkins contributes an all-too-brief account of the growth of the GCR and its activities in the Woodford area as an introduction to a charmingly written and very personal memoir by the daughter of Wilfrid Irons, who forsook the family shoe trade for the security of a railway career; becoming an engine driver and also a trusted but unqualified medical adviser to his colleagues and their families. These recollections of an upbringing in a closely-knit community, with its trains, tuberculosis, chapels and concert parties, evoke a long vanished way of life, to complement the working timetables and locomotive rosters of conventional railway history.

Both old and new villages, the railway and its locomotives are illustrated, together with the Irons' family album, but a clearly labelled plan of the mature settlement is lacking.
DENNIS HADLEY

THE WINSFORD & OVER BRANCH, R.W. Miller, 104pp, 55 monochrome photographs, 19 maps, 6 Appendices and 15 drawings, timetables & notices, soft covers, Oakwood Press, 1999, ISBN 0 85361 546 2, £8.95.

This branch line was just over six miles in length and was promoted during the 1860s to bring in coal and take out salt from the numerous salt works located on the west bank of the Weaver Navigation in the mid-Cheshire town of Winsford.

The book provides a comprehensive and interesting history of the branch which was owned and operated by the Cheshire Lines Committee from its opening in 1870 up to nationalization in 1948. From the outset the CLC resisted the carriage of passengers who were considered to be a nuisance as they interfered with the coal and salt traffic. The author describes the subsequent legal battle between the CLC and representatives of the Winsford ratepayers for the provision of adequate passenger services and facilities. Detail descriptions of the building and operation of the line, locomotives, carriages, goods wagons, signalling and details of passenger and goods train services are included. In addition there is a chapter on the history of salt production in the Winsford area.

This a well-researched and readable book, generously furnished with photographs, maps, line diagrams and appendices and represents good value at a price of £8.95.
GERALD LEACH

Short Reviews

INDUSTRIAL LOCOMOTIVES OF NOTTINGHAMSHIRE, Ian R Bendall, 432pp, 95 monochrome photographs 25 maps, hard or soft covers, Industrial Railway Society, 1, Clifton Court, Oakham, Rutland LE15 6LT, 1999, ISBN 1 091556 11 5, £27.50 (incl. p&p) (hardbound), ISBN 0 091556 12 3, £22.50 (incl. p&p) (softbound).

A major amplification of a Pocket Book first published in 1963. Industrial locomotives working at any time anywhere in the county are listed in considerable detail and following painstaking research. Industrial locos working temporarily on civil engineering sites are included as well as the huge number of locos which worked around the collieries of Nottinghamshire in their great days. Locos at nearly one thousand sites are listed, from all imaginable industry sectors. There are full separate indices of locomotives, locations and locomotive manufacturers. Photographs are varied and clear. Maps detailed and clear.

THE DOUGLAS HORSE TRAMWAY, Keith Pearson, 96pp, 290mm x 210mm, 99 photographs, 22 maps, 15 diagrams, soft covers, Adam Gordon, Priory Cottage, Chetwode, Buckingham, MK18 4LB, 1999, ISBN 1874422257, £14.50 (£2 p&p).

This is a beautifully produced book, with a fine set of coloured photographs on the cover and well reproduced illustrations inside. The maps are finely drawn and there are plenty of diagrams of tramcars and all sorts of aspects of operations. The book is well written and includes analysis of the tramways' fortunes as well as much interesting history. The first chapter deals with the Douglas Bay Tramway 1876 - 1900, the second chapter with continuing horse drawn operations up to 1976, the centenary year. There is a lot of fascinating detail about horse operations. There is then a chapter on the horse tram fleet, followed by one giving the story of the system up to date, 1976 - 2000. Two appendices deal with tickets and cliff lifts in Douglas.

MOUNTAIN RACK RAILWAYS OF SWITZERLAND, J. R. Bardsley, 80 pp 210 x 150 mm, 48 colour and 72 b/w photographs, soft covers, Oakwood Press, 1999, ISBN 0 85361 511 X £9.95.

This little handbook gives opening dates, lengths, gauges, particulars of locomotives and coaches and views to be seen from the trains of 11 mountain rack railways and 12 rack/adhesion railways in Switzerland. Useful for planning a holiday; but the book does not mention fares!

BIRMINGHAM TRANSPORT, Keith Turner, 128pp, about 220 monochrome illustrations, soft covers, Tempus, 1998, ISBN 0 7524 1554 9, £9.99.

A collection of photographs from Birmingham Central Library collection. The book contains twenty canal photographs and fourteen railway photographs so the coverage is not intended to be comprehensive. There are some distinctive images and some which are not. There are many more pictures of buses and trams but also of cars, lorries, delivery vans, etc. The collection is very evocative of the old Birmingham.

THE MILLENNIUM GUIDE TO TRAMS IN THE BRITISH ISLES, David Voice, 144pp, 43 photographs, soft covers, Adam Garden, Priory Cottage, Chetwode, Buckingham, MK18 4LB. 1999, ISBN 874422 2 9, £10 (p & p £1).

This well produced book contains all you could want to know about current tramways ancient and modern in the British Isles. It covers everything from the Docklands Light Railway to Crich Tramway Museum. It lists all museums and the whereabouts of all preserved historic trams. There are lists of tramway magazines and societies, model tramways, modelling shops and bookshops. The photographs are excellent; the only criticism is that it has no maps of the various systems. They would have enhanced its usefulness.

CORRECTION from Journal issue No. 175 p. 278.

THE HIGH LEVEL BRIDGE AND NEWCASTLE CENTRAL STATION, by John Addyman and Bill Fawcett may be obtained from: HLB book Sales, 12 Beverley Park (not Road), Whitley Bay, NE25 8JL.

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Other interesting material included the G A Hookham Collection of negatives of British Railways sold for £1265, a GWR cast iron towing path sign £621, a brass Doncaster No 2036 1948 works plate £632, a run of Great Central Railway Journal Vols. 1 to 6 and 8 to 13 £575 and a single vendor collection of Airey's and Railway Clearing House maps totalled over £3000.

Nameplates continue to sell well as seen in Dominion of New Zealand for £6820, Princess Eugenie £4510, Earl Bathurst £4730, Twineham Court £4950 and Excalibur £4510. The coat of arms Crewkerne in vitreous enamel from SR West Country Class No 34040 realised £4180 and the smokebox number plate 6018 from GWR King Henry VI £2640. Two oval cast brass plates from LMS Royal Scott Class Locomotives Lancashire Witch and Velocipede realised £2640 and £3300 respectively. Most recently GWR/BR Athelney Castle sold with associated paperwork for £7200. It had been purchased by the vendors father from BR in 1964.

We have also sold a fine collection of dining car and railway hotels silver-plate for £10,360, an important collection of locomotive works plates that totalled £18,386, the private antiquarian railway library of Norman Kerr of Cartmel for £33,000 and the railway contents of Wolferton Station Museum, the former royal station for Sandringham for £70,000.

The Poster sales include many travel posters of the 1920's and 1930's published by the Big Four Railways, London Underground, Shipping Companies and Airlines. Prices for these have risen sharply in recent years and they continue to grow in popularity along with early British Rail examples. A fine collection of LNER and early BR posters sold for a total of £160,000 in 1996. The rarest example was The Night Scotsman by Alexander Alexeiff which realised £11,000. These had been discovered by a woman from East Anglia when she was moving house. Her late husband had worked for British Railways as an area maintenance engineer in the late 1950's and salvaged them from Liverpool Street Station when they were being thrown out with other advertising material.

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