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**Articles marked with an asterisk are based on papers presented to the seventh Waterways History Conference held at Birmingham Central Library Theatre on 9 April 2011*

Cover images:

front: Operating the crab at Rotton Park Reservoir, Birmingham (see page 25)

back: (top) Mass production of Spitfires at Castle Bromwich after the factory was fully operational (Birmingham Central Library) (see page 48, top)

(bottom) The model railway at the School of Transport, showing how railway working was replicated on the layout (Derby Silk Mill Museum) (see page 48, top)

Early Lectures on Railway and Canal History

Stephen Bragg and Martin Barnes

Stephen Bragg — Derby

Like many children in the 1920s and 30s, my first interest in railways was collecting the names of locomotives, particularly those of the ex-L&NWR seen on holiday in North Wales or later when we had moved to Alderley Edge. As a train spotter at school in Rugby from 1937, I had to interpret the signals on the magnificent 44-arm gantry south of the L&NWR station. This led to an interest in junctions and track plans. By the time I left Rugby, I had a signalling and track diagram of every line within ten miles of the town. After Cambridge University I worked for Rolls-Royce, first at Barnoldswick and then in Derby. After disentangling the web of railways in the industrial areas of Lancashire and the West Riding, I continued to expand my knowledge of railway geography.

In the summer of 1954, a flyer appeared in Derby's trolleybuses advertising a course of lectures on Railway History to be given by Mr C R Clinker under the auspices of the Nottingham branch of the Workers' Education Association. I enrolled on the course and we had our first lecture on Wednesday 29 September in the Derby Guildhall.

We met regularly on succeeding Wednesdays and were treated first to a masterly *tour d'horizon* reviewing of the procedures which had to be followed to create a railway — parliamentary powers, financing, land acquisition and civil engineering. We then learned that the Stockton & Darlington of 1825 had been preceded by the Oystermouth as a passenger carrier and the Middleton as to the use of steam power. We then considered railway development in particular areas with experts brought in for their local expertise such as G O Holt for north-west England. In one lecture, as an ex-GWR man, CRC gave special attention to the gauge question.

For the second year, the group became the Derby Railway History Research Group and migrated to the Derby Public Library. There we pored over bound copies of the *Derby Mercury* for the period 1820–1840 seeking out references to transport developments in the area. An example was a discussion about where to site the Midland Counties/North Midland/Birmingham & Derby Junction station in Derby. Some of the information we obtained was

later incorporated in the R&CHS book about the Midland Counties Railway.

After each session we repaired to the Gainsborough Café, the only establishment in Derby which served food as late as 9 p.m., to refuel CRC for his journey home to Rugby. John Sheldon, like me a Rolls-Royce employee, was a member of the course from the start as were Ken Fullagar, Kathleen Stephens and her brother Tom. Peter Stevenson soon joined.

I have no record of meetings of the group after the 1956-7 session as its functions were effectively superseded with the creation of the East Midlands Group of the R&CHS centred upon Nottingham. I do remember expeditions led by Clinker to such local sites as the Ticknall Tramroad's cut and cover tunnel under the drive to Calke Abbey, the Swannington Incline and Engine House, the abandoned connections at Long Eaton/Trent and the Ilkeston Town branch.

After the course finished, I wrote to CRC from time to time to ask about particular historic details and always received a considered reply. Soon after I moved to Brunel University in 1971, Clinker told me that he was concerned about the future of his railway material. He had written to Bristol University about it but got no reply. I despatched the Brunel librarian to meet him at his home in Padstow. He came back with an agreement that, if we staged an exhibition of some of it, Clinker would leave his whole collection to us. This we did and the exhibition was very popular. The Brunel University Transport Collection has since been enhanced by other donations and acquisitions. The first was David Garnett's collection of Railway Clearing House maps and plans.

Clinker's lectures enhanced and widened my interest in railway geography. He also instilled respect for primary sources and accuracy in detail. Apart from monumental tomes such as McDermot on the Great Western Railway and Tomlinson on the North Eastern, relatively few serious works on railway history had been published before 1950. The enthusiasm engendered by Charles Clinker's lectures was certainly an important factor in making the *genre* more popular and in expanding the interests of railway enthusiasts far wider than locomotives and station architecture.

Martin Barnes — Birmingham

My father told me about a forthcoming series of lectures on 'The History of Midlands Transport' which had been organised by the University of Birmingham Extra-mural Department, starting in the autumn of 1955. I was then a 16 year old enthusiastic spotter of ex-LMS locomotives with no interest in the ex-GWR variety. Brummy schoolboys of those days were either in one camp or the other. I enrolled for the lectures.

They took place in the original Mason College building of the university in Edmund Street facing the town hall. The building was exuberantly ornamented gothic revival, outside and in. Later I was surprised to find that not all university buildings were like that. I took notes at the lectures in a notebook which I still have.

The lectures began with the early history of roads across the Midlands and from Birmingham to surrounding towns. The second block of lectures was about the development of early railways and tramways associated with canals, preceding the passenger carrying railways.

Next was a series of lectures given by Charles Hadfield about the history of Midland canals ranging from Leominster in the west to Oakham in the east. The Birmingham and Black Country canals were dealt with in the greatest detail of course. My notes include such gems as the service of both Boulton and Watt on the board of the Birmingham Canal Navigations.

We warmed to Hadfield as a person and he must have warmed to us as he ended his lectures with an exhortation to stay in touch and gave us his address in Newton Road, London W2.

C R Clinker then took over and gave us a series of very detailed lectures about the history of the railways of the Midlands. Opening dates and some closing dates featured of course but traffic details gave contemporary colour. The intensity of the early urban services he described was amazing. For example, 27 trains a day in each direction on the

Midland's circle line in 1902, 19 trains a day each way on the L&NWR's Harborne branch. The service on the Harborne branch in 1914 included trains for office workers in central Birmingham going home for lunch and coming back. To speed up the commuter service to Sutton Coldfield, alternate trains stopped at alternate stations. Presumably nobody grumbled that there were no trains to or from their next station during rush hours.

As with his Derby lectures, Clinker gave us all 'homework'. Ours comprised searching early copies of *Aris's Birmingham Gazette* for references to railways. Our allocation of editions of the newspaper to scrutinise was supposed to take an hour a week to read in the Birmingham Reference Library but it took me much longer as there were always interesting non-railway things to read as well.

The lectures concluded with a series on the street tramways of Birmingham and the Black Country given by Alick Jenson. I had used the trams on routes 2, 42 and 36 to get into and out of Birmingham city centre at various stages of my childhood but it was a revelation that the trams had clanked and swayed all across the Black Country as well.

We students had a growing camaraderie as the course progressed. As the only schoolboy, I was seriously impressed to be able to make friends with some of the great railway enthusiasts of the time. W A Camwell, for example, a bank manager in Birmingham and a driving force of the Stephenson Locomotive Society, agreed to come and show some of his films to the railway society at my school and did so several times.

These lectures 56 years ago founded my interest in the history of our railways and canals. This has been hugely absorbing and rewarding ever since. They also showed me, in a way which no other medium has, how the history of the industry and people of an area of our country is founded in and depends upon the evolution of its means of transport.

Trent Navigation Improvements in the 20th century

Ray Shill

Early navigation of the Trent

The River Trent was naturally navigable as far as Wilden Ferry, near Shardlow, although the course of the river has varied with time. River improvements in medieval times led to alterations to the bed of the river in certain locations; both Newark and Repton were once close to the river. Artificial improvements were most marked at Newark where the main navigation channel became the course by Kelham. The course via Old Newark Dike (Dyke) had been barred by a long causeway that diverted the channel to join up with the River Devon, evidently to improve water supply to the mill owners on the Devon, rather than with any notion of navigation.¹

Navigation limits edged gradually northwards, first to Nottingham, then Wilne Ferry. The first locks enabled navigation to be extended to Burton and whilst this was sanctioned by Act of Parliament (1699), the completion of the two locks was delayed for at least a decade.²

A major improvement to the River Trent had been made at Newark, in 1773, with the making of a navigable waterway (Newark Navigation) from Averham to join up with the River Devon. This navigation included part of the old Newark Dike from the east end of Averham Weir through Farndon parish towards the Devon. Two locks at Newark and Newark Nether lowered the navigation enough to rejoin the western course of the Trent north of the town, near Crankley Point. The promoters and initial operators of this waterway were known as the Newark Navigation Commissioners.

Whilst the Trent was an established navigation, there was no proper towing path and the various shallows and bends hampered navigation. There were also several ferries and fords. During 1783 the Trent Navigation Company was established to improve river navigation and build haling paths for the waterway carriers. Work began on leasing land for the towing path from Cavendish Bridge through to Gainsborough and then laying out the path. Such work included the provision of suitable bridges where streams and tributaries were crossed. Certain bends

in the river were also eliminated. Yet essentially it remained the same navigation as before. The Trent Navigation Company also leased the Newark Navigation from the Commissioners.

Toll collection started from 1 January 1784 and the company began to accrue finance for further improvements. The first was the straight cut through marsh land at Hemmington Pasture near Sawley, which was started during 1790. The cut was made through the land of Henry Harpur, who gave permission for the making of a single lock there. Then came the important survey conducted by Robert Whitworth and William Jessop that looked at the shallows and winding course of the river.³

The two engineers made their report to the Trent Navigation board in 1793. Their suggestions involved major reconstruction including the building of weirs at Sawley, Soars Mouth, Beeston and Holme. The weir across the Trent east of the meeting of the Soar benefited both the Trent and Soar navigations and led to the making of the Cranfleet Cut and Lock on the Trent and the new Redhill Lock on the Soar. Deepening, further straightening and the making of additional towing paths were also needed.

At Beeston the weir raised levels on the section through from Cranfleet to Beeston, and with the making of the Nottingham Canal underway, Whitworth and Jessop suggested a union between river navigation and canal to bypass the difficult and shallow approach by river to Trent Bridge. A new cut from Beeston to Lenton to join the Nottingham Canal was ratified by an Act of Parliament, which received the royal assent on 9 May 1794.

In order to preserve trade to Wilford a second lock was provided at Beeston for Trent boats to pass onto the Trent again. Any boat choosing to avoid the tolls on the Nottingham Canal could also pass this way and face the troubles of the shallows to Trent Bridge. Making the cut and weir at Holme, north of Trent Bridge, raised water in the river there, creating a pool for boats entering or leaving both the Grantham and Nottingham Canals.

Improvements to the Trent Navigation

The Act that authorised construction of the Midland Counties Railway included a clause for the relocation of the weir at Soars Mouth northwards towards Thrumpton. The Midland Counties Railway company seem to have successfully opposed this stipulation of the Act despite a mandamus being made that they relocate the weir; an alternate case was argued for the construction of a stop lock near the entrance to Carrington Cut. This lock was made and the weir alteration evidently postponed. However, and perhaps as a result of the construction of a second bridge, through the quadrupling of the railway tracks across the Trent (completed in August 1893), the weir was moved to Thrumpton.⁴

Subsequent bridge improvements were to have an effect on navigation. At Burton on Trent, navigation of the Upper Trent had all but stopped when a new stone bridge was constructed (1863–64) to replace the 12th century bridge, yet a navigation channel was evidently retained on the Burton side of the new bridge, which also included an arch for the brewery railway system. Trent Bridge at Nottingham was another medieval stone built structure of many arches and flood arches that had been an obstacle to craft navigating the river, as no towpath was provided for haulage. The construction of a new bridge a few feet downstream of the old bridge (1868–71) remedied the problem with the provision of a towing path. This proved to be of use for craft passing upstream to the new colliery development at Clifton (opened June 1870).

A toll bridge was also provided at Gunthorpe, which was completed in 1875. This bridge linked East Bridgeford with Gunthorpe and provided better road access than that hitherto provided by the chain ferry near there.

Railway crossings in the Nottingham district first included the railway to Grantham, which crossed the river near Colwick and was completed in 1850. Another railway river crossing was effected downstream of Nottingham Trent Bridge near Lady Bay. An iron bridge supported by stout circular iron piers was constructed over the Trent to carry the Midland Railway (Nottingham–Melton), which was completed in 1879. This line, from November 1879, carried goods and mineral traffic and from 2 February 1880 passenger traffic.

The River Trent had water shortage problems a certain times of the year and this was most noticeable during the summer months. In December 1878 B S

Blundell of Doncaster, following a request by the Trent Navigation Company, who were keen to introduce steam towage on the river and generally to improve a declining carrying trade, read a report at Newark Town Hall as to the state of the River Trent.⁵

Blundell's investigation looked at the river from Nottingham to Gainsborough. Within the Nottingham to Newark section, a distance of about 24 miles, there were 11 shallows, some of which had as little as 27 inches of water on them. The barges that traded between Nottingham and Gainsborough carried between 50 and 60 tons and when fully loaded had a depth of 42 inches. There were then only four locks on the section north of Nottingham. Upper Holme Flood Lock, whose gates were only shut when the river was in flood, Lower Holme Lock, Newark Lock and Newark Lower (or Nether) Lock.

Amongst the suggestions made by Blundell was the system of wire cable steam towage. He observed that two steamers could work the 56 miles between Nottingham and Gainsborough. The improvements involved dredging shallows, lengthening Newark lower lock, altering the bridge at Newark Mill, cable laying and the purchase of two 20 HP steamers.

This proposal was not carried out, but the Trent Navigation Company continued to pursue means of river improvement. Some members of the company decided to form a carrying company in 1883, which merged with the old Navigation Company to form a 'new' Trent Navigation Company, authorised by Act of Parliament in May 1884. This company set about improving trade and had in mind associated canal improvements to Derby and Burton. A separate company came into existence with the express aim to improve navigation along the Upper Trent to Burton and make a new navigation from Burton along the Trent and Tame to join the Birmingham & Warwick Junction Canal at Salford Bridge. This scheme and the wider aims of the Trent Navigation Company were not proceeded with, although within the Trent Navigation Company there was tenacity for improvement that would not die.

20th Century Improvements

(a) Cromwell Lock

In the East Midlands river navigations and canals were broader, to admit craft up to 14 ft wide, but there were hopes for larger craft to use the Trent as early

as 1905. Such plans were initially put together by the Trent Navigation Company who obtained an Act that included the replacement of Holme Lock, Nottingham and Nether Lock at Newark, the construction of three new locks between Holme and Newark Town Lock and the making of another lock above Newark that was called Cromwell Lock. The river was also to be deepened.

The task of deepening the river was aided by a contract, signed in 1907 with Pearson & Sons, contractors for the new Joint Docks at Hull, to supply them with ballast.⁶ This essentially comprised river gravel to be utilised in making concrete. A systematic dredging of the river was conducted and a fleet of twelve boats was provided to convey the ballast to Hull. Dredging commenced on 14 July 1908 and was later assisted through the purchase of a new dredger from Holland, which commenced work on 28 June 1909.

Work on making Cromwell Lock was authorised by the Trent Navigation Board in 1909 and carried out by navigation company staff under the directions of their Engineer, Frank Rayner. B Woodger was appointed resident engineer at Cromwell Locks in May 1909.

Steam cranes, steam powered pile drivers, pumps and a light railway were purchased and delivered to Newark Town Lock where the lock was deepened. Reconstruction took less than a month. The Town Lock was closed for traffic on 19 June and re-opened on 12 July 1909. The work comprised the lowering of the sills and deepening of the lock to give a minimum depth at all times of 6ft 6in. New tail gates were made and head gates rebuilt. The temporary light railway was laid through the Lock for dealing with through traffic, although a portion of this trade was carted from Newark Town Wharf to the wharf on the basin beyond the lock. The plant was then relocated to the site chosen for the new Cromwell Lock and Weir.

Twentieth century lock construction was a very different practice that that conducted by eighteenth and nineteenth century navvies. The lock chamber was made from concrete, with piling forming part of the approaches. The method adopted at Cromwell was first to dig trenches down to the bottom of the intended depth and gradually build the walls with concrete to the designated height. Once the walls were in place, the wing walls were made and then the spoil in between was dug out for the bottom to be made and covered with concrete. Gates then had to be hung and fixed into place. It was a practice that was to be adopted in making all the other Trent locks.

A bungalow served as office, a house was provided for the ganger and lodgings for 28 workmen built. The construction of the lock chamber had reached completion by November 1910⁷ when the lock gates had been hung in place, but piling and excavation was still to be done and the lock not ready until May 1911 to allow passage of craft. Work was dictated by the state of the river and delayed at times of flood. In the final stages dredgers were used on the approaches to link up the lock with navigation. Only when the lock was operational did work start on the weir. The placing of coffer dams raised the level 2 ft whilst the weir and sluices were constructed. Mr Rayner in his report for September 1911 reported the weir and sluices complete.

(b) Corporation of Nottingham Scheme

No work was done on the making of the three new locks between Nottingham and Newark and with the onset of the First World War there was little chance for the work to begin. The challenge was then taken up by Nottingham Corporation who saw benefits for their city if larger barges were able to dock alongside wharves north of Trent Bridge. They obtained an Act in 1915 to take over the section north of Trent Bridge and the powers to rebuild Holme lock and make the three new locks to Hazelford. The Trent Navigation Company still had the obligation to rebuild Newark Nether Lock.

A suggestion, made in 1917 that Nottingham Corporation use German prisoners of war to assist with the scheme was not taken up and any further construction delayed until the War was over.⁸ From 1919 the task of employing men returning from the War became an important issue. The Demobilisation (employment of sailors and soldiers) Committee circulated the following notice:

That in view of the possible demobilisation of large numbers of men the several committees of the Corporation be desired to prepare schemes of work which would involve the employment of a considerable number of skilled and unskilled men and submit particulars thereof to this committee at an early date.⁹

Nottingham Corporation considered ways servicemen might be employed, including road repair and the projected Trent improvement.

Britain's waterway operations then came under the jurisdiction of a government organisation known as the Canal Control Committee. A dialogue between

the Corporation and this committee, as to trade on the Trent, was begun during 1918 and by 1919 included discussions regarding improvement of the Trent. Consideration was already given for a lock and weir at Gunthorpe.¹⁰ Captain Rayner, Engineer to the Trent Navigation and Edward Crutwell were asked to prepare a report and revised estimate for the Trent improvements to the Canal Control Committee.¹¹ The nature of the discussions included funding for the project. These talks were transferred to the newly set up Ministry of Ways and Communications, which quickly became known as the Ministry of Transport. The Ministry first asked for a new survey to be made.¹² Sir George Beharrell, of the financial and statistical section of Ministry of Transport, conveyed the ministry viewpoint. He noted the minister regretted that proposed works were considered not to be of sufficient urgency to warrant a loan being made from exchequer funds. The application for funding was therefore refused. In an effort to diffuse such a blunt statement, Sir George then added that a general survey was about to be made into the question of the inland waterways in the United Kingdom.

Nottingham Corporation was forced to wait for the Committee on Waterways to be set up. Meanwhile Frank Rayner continued to engage further support for the Trent locks scheme. During June 1920 he gained the help of Mr Impey, secretary to the Waterways Association.¹³ Joint deputations to the Ministry of Transport were arranged to take place on 11 August 1920. During November 1920 the Corporation was asked to make a presentation to the Committee on Waterways chaired by Neville Chamberlain.

By January 1921 the Trent Navigation Company were keen to start work on Newark Nether Lock and reminded the Corporation of their obligations for their section. Nottingham Corporation was financially handicapped in this respect, as they could not borrow money authorised under the Act without consent of the Treasury. Fresh representations were made to the Ministry of Transport. A meeting was arranged with the Labour government ministry, who were sympathetic to the cause, but evidently not supportive enough to sanction a loan.

Support for the scheme continued to gather. The Ministry of Transport invited local Members of Parliament to discuss the interim reports of the Inland Waterways Committee, which specifically referred to River Trent. Finally when the second report issued

by this committee was published, a way was opened for the work to commence. At the core of the proposal were employment for the unemployed and the setting up of a trust for the project.¹⁴ Meanwhile land near Fiskerton was acquired for the making of Hazelford Lock.

The Trent Navigation continued to press for the Corporation to start on at least one of the works in connection with navigation of the Trent. Yet another Corporation deputation was formed and a meeting was arranged with Neville Chamberlain. The deputation had three key considerations:

- 1 Whether help would be forthcoming from the Government

- 2 To urge the early formation of the trust

- 3 To promise the full support of the Corporation to the Trust when formed

Neville Chamberlain evidently gave the necessary assurances for, at the Corporation Trent Navigation committee meeting held on 29 September 1921,¹⁵ authority was given to proceed with the work immediately. Men were engaged to start work on the new lock at Holme.

Both Sir John Jackson Ltd and Edward Crutwell offered to undertake the construction but the Corporation were tied to performing the work with the assistance of the Trent Navigation Company. Labour was recruited directly through the local Labour Exchange.

Frank Rayner became chief engineer for the project and P B Woodger was appointed resident engineer.¹⁶ Amongst the first tasks undertaken was to obtain a steam rail crane and standard gauge railway track for it to run along. 24-inch gauge Decauville track with tip wagons were also purchased to assist with excavation work.

Improvement of the Trent had important allies in the Departmental Committee on Inland Waterways and their chairman, Neville Chamberlain. He summarised his views in a paper presented to the Institution of Civil Engineers in 1922.¹⁷ He was particularly concerned about the varied ownership of waterways that linked to the sea. About a third was owned by their principal competitors — the railway companies. Chamberlain wanted a new policy adapted to the time and one best suited for the businessman. Waterway improvement should proceed by steps and not all once. Central management and control of the water communications was required throughout the district

comprising the group. Properly equipped terminal facilities with adequate lay-by space, handling apparatus and warehouse accommodation were needed and above all regular and punctual services provided.

Such suggestions if carried out involved the transferring of railway owned and controlled canals to the water groups to which they belonged. Expenditure of capital was also required. The absence of regular services had been, in Chamberlain's opinion, one of the principal causes of failure of canals and to offer satisfaction to the trader, and the power at least of supplying them should be granted to those waterways. The Trent Navigation improvement was seen by the Departmental Committee on Inland Waterways as the first step. They fixed on the Trent Navigation as the most favourable field for experimental advance.

Nottingham Corporation had created a waterways committee in the 1880s, and with the 1915 Act gained a greater responsibility that not only involved the improvement of the River Trent from Trent Bridge to Averham Weir, but also led them to build a new dock and wharf, be responsible for the maintenance and collect tolls on this section.

In addition to making locks Nottingham Corporation were required to maintain a minimum channel width of 50 feet and depth to 6 ft. The Trent Navigation Company was required to have a minimum channel width of 30 ft from Averham Weir to Newark Nether lock and also ensure a depth of 6ft. A time limit was set for all lock building and dredging to be completed. It was a deadline that altered with the delays and legal arrangements needed for the agreements between the Corporation and the Navigation Company. Finally when this was done Nottingham Corporation assumed control of the Trent between Trent Bridge and Averham.

Frank Rayner's role as engineer for the Waterways Committee was one that ran parallel with the post he had with the Trent Navigation Company. He was able to use his considerable skill to ensure the locks were completed to the required standard. Assistance for the work was also provided by the State under an Employment Relief Scheme.

Each new lock was made for craft up to 100 tons. Holme Lock was constructed first and was completed in September 1922 and Stoke Bardolph by October 1923. Gunthorpe was completed jointly with Hazelford in 1926.

The work at Holme required the making of a new

lock to the south of the existing structure. The channel and lock chamber was cut at an angle to the existing channel and both old and new locks formed a Y-shaped entrance from the lower level. Lock making like others on the Trent began with the excavation of parallel trenches where the concrete was poured to make the walls. A photographic survey of Stoke Bardolph lock from October 1921 to September 1923 is particularly informative about the method of construction. Labourers started in October with digging the trenches and soon standard gauge track was laid for steam cranes to work along.

Purchase of steam cranes was integral to the construction work. New and second hand cranes were purchased. The new cranes were supplied by Smith of Rodley, whilst second hand cranes purchased included one from the contractors Scott & Middleton (Newark) and one from Richborough Port. Rayner was keen to have five cranes on the Holme Lock construction, whilst there were at least three at Stoke Bardolph.

Photographs at Stoke Bardolph¹⁸ (see pages 12 and 13) show that there were three sets of track, one either side of the chamber and one in the middle. A siding from the track nearest the river led onto a jetty where goods could be unloaded from barges or narrow boats on the river. The jetty was placed near offices, cabins and a corrugated iron engine house where the steam powered pumping engine (supplied by Clayton & Shuttleworth) was placed. The task of digging out the earth and spoil in the middle commenced once the lock walls were made. Excavation of the two river cuts also began again with concrete walling being laid down. 2-ft gauge track and skips was used to move the earth from the two lock channels and elsewhere on site. Each skip was propelled by hand; there was no locomotive or horses used here. The steam cranes were essentially used for moving excavated earth from the chamber or entrance channels.

Another two steam cranes were delivered during December 1921, but some staff had little experience of their use. The Richborough crane overturned at Stoke Bardolph. The minutes record that there was fortunately no loss of life.

The numbers of staff now at work were as follows:¹⁹

Home Lock	133
Stoke Bardolph Lock	125
Total	258

A further three steam cranes were ordered from the Rodley works, as Rayner was keen to get Holme and Stoke completed as soon as practical. By the summer of 1922 the lock chamber at Stoke was completed and the bottom concreted. The concrete was supplied by G T Earle whose quotes were less than the 'Federation suppliers'.

Work then started on assembling the lock gates, which were put together by carpenters working with the timber on site. The frames were laid out at the bottom of the lock and then panelling was added and then the fixings for the paddle gear. The upper gates were completed first and set in place. The larger lower gates were then constructed and fitted. When all gates were in place the paddle gear equipment was fitted to the gates. Each gate had two paddles that was raised and lowered by turning a large wheel fitted to the mechanism. Similar arrangements were installed for the ground paddles on either side of the gates. A house for the lock keeper was also constructed during this period. In order to expedite construction at Stoke double shifts had been commenced by April 1922.

Work then concentrated on completing the two entrance channels, making outside walls along the river and building the weir. Dredging finally completed the task of clearing the links with the Trent at either end. A dredger (Trent Navigation No. 2) was purchased to carry out the work for £3000; J A Saner of the Weaver Navigation Trust provided an independent valuation (£3750). Six barges were also purchased and an order for a new dredger was placed with Messr Schmidt (£5950).²⁰

Men were then progressively transferred to the Hazelford Lock site. Work started in August 1922, when Holme Lock was nearly completed. Their distance from Nottingham led to the establishment of barracks for the men to sleep in, although most of the work force travelled out to the work by train. A grievance developed at Hazelford when workmen objected to paying rail fares. Work was even stopped in January 1923. This dispute was not properly resolved, but the workers did restart on the lock-building there. At the same time the number of men employed on dredging work was increased and perhaps some of the protestors were moved into this role.

By April 1923 a small number of men were at work at Gunthorpe Lock and by July that year the men employed on all works totalled 435:²¹

Stoke Bardolph	112 men
Gunthorpe	87 men
Hazelford	153 men
dredging	83 men
Total	435 men

With Stoke Lock finished, the men were shared between dredging and construction at Gunthorpe and Hazelford. By January 1925 work had also started on Gunthorpe and Hazelford Weirs. Four dredgers were now at work on the channel and lock cuts. Plans for official opening of both Gunthorpe and Hazelford were delayed until 25 June 1926 when Neville Chamberlain, by now the Health Minister, attended for the ceremony.²²

Dredging work now occupied the bulk of the workforce that fluctuated between tidying up duties at the locks and the river work. Numbers varied between 190 and 210 on dredging. When all locks were opened the decision to fill in the old Holme Lock chamber came before the committee. It was suggested that the lock might be deepened and adapted for pleasure craft use. This decision was accepted and the old lock modified.

Improvements to the navigation at Gunthorpe were also supplemented with the completion, in 1927, of a new bridge over the Trent. The old Gunthorpe Bridge had been sanctioned by an Act of Parliament in 1870 and constructed between 1873 and 1875. This was an iron toll bridge that united Gunthorpe with East Bridgeford. The foundation stone for this bridge had been laid on 16 May 1873²³ and during the winter of that year the abutments and haling path for the Trent Navigation completed by Mr Smart, contractor. He had obtained stone from old Trent Bridge. Other stone from this bridge had been recycled for restoration of churches. The haling path comprised timber piling, braced and bolted together. Construction of the main structure was delayed through the high price of iron. During the autumn of 1874 the contract for the ironwork was awarded to Handyside & Co. of Derby. The river was at this point was 356 feet wide and the bridge was divided into six spans, five of 50 ft and one of 106 ft for the navigation.²⁴ Nottinghamshire County Council obtained an Act in 1925 to acquire the old Gunthorpe Bridge and build the new bridge further upstream. They allowed the old bridge to remain in use until the new one was opened to traffic. An official opening ceremony for the new Gunthorpe Bridge was

conducted by the Prince of Wales on 17 November 1927. The new bridge was constructed from reinforced concrete and comprised three main spans. The centre span was made 125 ft wide with the other two being 101 ft wide.²⁵ Dredgings from the River Trent were used to build up the approach roads (a distance of 2¼ miles) for the new crossing, and like the river improvements labour was principally derived from the ranks of the unemployed. This scheme made a considerable improvement to the road links between Leicester and Doncaster.

(c) Newark Nether Lock

The Trent Navigation Company rebuilt and enlarged Newark Nether Lock. This was a scheme that was closely controlled by the company engineer, Frank Rayner. He was assisted in this task by Mr Powell, who was appointed resident engineer on 23 February 1924.²⁶ The contract was let in 1924 and tenders from Arnold & Son, Brand & Son, Logan & Hemmingway, Lovatt & Sons and Topham, Jones & Railton were considered and the contract was given to Logan & Hemmingway for £25,923-12-3.²⁷ Construction was already underway by December 1924.²⁸ The job was conducted in a confined space and in close proximity to Quibell Brothers works.

Logan & Hemmingway started with making the north wall of the lock in the now standard procedure of trench digging, shuttering filling sections with concrete. Gradually both lock walls and wing walls were constructed and spoil dug out. Temporary dams were erected to keep water from the work. By April 1926 construction work had proceeded sufficiently to close the existing lock and navigation in order to divert the traffic through the new lock.

The plan was to stop navigation from 4 pm on 24 March, to allow the south-easterly wall of the old lock to be removed and a concrete dam built in readiness for passing traffic through the new lock that was intended to take place on 31 March. Unfortunately the old navigation wall completely collapsed and water swept through and carried away the temporary dam below where the permanent dam had been fixed. The result was the very extensive damage to the wall of and bank in front of Messrs Quibell's works and the southerly pier of the LMS Railway viaduct. This pier was partly built on an old canal wall. The pier wall was seriously undermined and traffic on railway had to be stopped. Repairs were carried out night and day. Close co-operation

between staff of LMS, Logan & Hemmingway and the Trent Navigation ensured that the failure would be rectified as soon as practical. Train movements along the viaduct were gradually restored, first with single line working and normal rail traffic commenced on 11 April. Boat traffic through new lock commenced at 8 am on 12 April 1926.²⁹

(d) Nottingham Trent Bridge

Designed by the borough engineer, M O Tarbotton, the modern Trent Bridge at Nottingham was opened for traffic in July 1871 and included three main arches, each of 100 ft span.³⁰ The material of the large arches was cast iron with wrought iron superstructure and was supplied by Andrew Handyside & Co. of Derby. Benton & Woodiwiss were contractors for the brick and stone work.³¹ In 1924-26 the width of the bridge was doubled to 80 ft at a cost of 125,000.³² The contract for steelwork for the widening was let by Nottingham Corporation to the Cleveland Bridge & Engineering Co. Ltd.

(e) Nottingham Flood Prevention Scheme

The final improvements to navigation were conducted between 1948 and 1954, when the river at Colwick, and downstream of there, was widened as part of the Nottingham Flood Prevention Scheme. This scheme was organised by the Trent River Authority and an important feature of the improvements was a new straight channel for the river parallel to Holme Locks. The flood lock was removed and the river diverted onto the straight course to a gigantic flood barrage of five separate sluices, fitted with steel lifting gates, each 40 ft wide.³³ Holme Sluices were opened by the Duke of Edinburgh on 5 May 1955.³⁴ A section of the old river through to the old weir has been retained and functions now as moorings.

(f) Lady Bay Bridge, Nottingham

British Railways closed the Nottingham-Melton railway in 1968. During the 1980's this bridge was converted for the use of road traffic. A pedestrian footbridge was fitted alongside the bridge parapets on the upstream side of the structure.

(g) *The White Water Course*

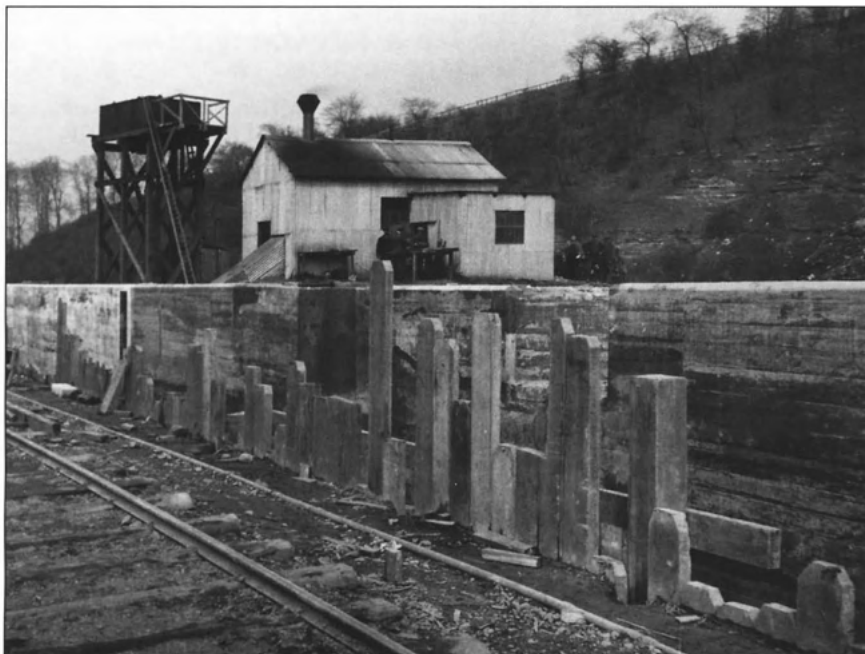
A subsequent leisure scheme was the making of artificial rapids along a course to the south of Holme Lock.

Other proposals for improvement

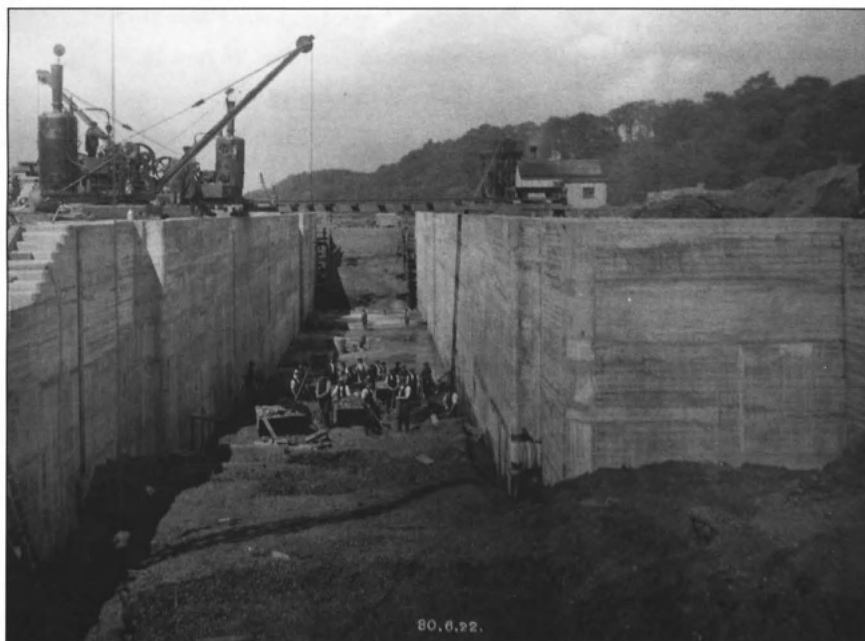
Further improvements were contemplated in 1981 when another study was commissioned by British Waterways to capitalise on the transport of container traffic. Three alternate schemes were drawn up. The most expensive was to build a container port at Nottingham, the second alternative provided for a container port at Newark (and tug towage to Nottingham), whilst the third, and cheapest option, was for tug towage throughout. None of the options were adopted. Major drawbacks included rail and road competition. There was also the issue of finding suitable trade.

Notes and references

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2. Staffordshire Records Office
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5. *Nottinghamshire Guardian*, 20 December 1878
6. The National Archives (TNA), RAIL 879/9, 11 November 1907
7. TNA, RAIL 879/9, 17 November 1910
8. Borough of Nottingham Trent Navigation Committee Minute Book, Ref CA CM 87/1, 16 March 1917
9. Borough of Nottingham Trent Navigation Committee Minute Book, Ref CA CM 87/1, 24 February 1919
10. Borough of Nottingham Trent Navigation Committee Minute Book, Ref CA CM 87/1, 23 December 1918
11. Borough of Nottingham Trent Navigation Committee Minute Book, Ref CA CM 87/1, 12 November 1918 and 24 February 1919
12. Borough of Nottingham Trent Navigation Committee Minute Book, Ref CA CM 87/1, 6 May 1920
13. Borough of Nottingham Trent Navigation Committee Minute Book, Ref CA CM 87/1, 18 June 1920
14. Borough of Nottingham Trent Navigation Committee Minute Book, Ref CA CM 87/1, 18 July 1921
15. Borough of Nottingham Trent Navigation Committee Minute Book, Ref CA CM 87/1, 17 October 1921 records the appointment of P Woodger as resident engineer. Rayner had assisted Corporation since 1919, although his appointment as engineer was later
16. *ibid*
17. *The Engineer*, 26 May 1922
18. Waterways Trust Archives, Gloucester, album of photographs, construction of Stoke Bardolph Locks
19. Borough of Nottingham Trent Navigation Committee Minute Book, Ref CA CM 87/1, 9 January 1922
20. Borough of Nottingham Trent Navigation Committee Minute Book, Ref CA CM 87/1, 3 July 1922
21. Borough of Nottingham Trent Navigation Committee Minute Book, Ref CA CM 87/1, 2 July 1923
22. *Nottingham Evening Post*, 25 June 1926
23. *Nottinghamshire Guardian*, 23 May 1875
24. *Nottinghamshire Guardian*, 25 June 1875
25. *The Times*, 28 October 1927
26. TNA, RAIL 879/12, Trent Navigation Co. minutes, 19 February 1924 and 18 March 1924
27. TNA, RAIL 879/12, Trent Navigation Co. minutes, 18 November 1924
28. TNA, RAIL 879/12, Trent Navigation Co. minutes, 16 December 1924
29. TNA, RAIL 879/12, Trent Navigation Co. minutes, 20 April 1926
30. *Sheffield and Rotherham Independent*, 26 July 1871
31. *Nottinghamshire Guardian*, 11 August 1868
32. *The Times*, 28 January 1924
33. Peter Lord (1968) *Portrait of the River Trent*
34. *The Times*, 6 May 1955



The engine house that housed the Clayton & Shuttleworth pumping engine used to drain excavations as they progressed



By the summer of 1922 the whole chamber had been lined with concrete walls and dug out to the required depth



*In making the concrete walling steam cranes working along the sides
moved materials and excavation spoil.
There were also some hand-propelled waggons on c.2 ft track*



*Narrow boat, barge and dredger at the lock
as the link channels are dredged out*

The Stroudwater Canal 1954: the end and the beginning

Joan Tucker

It is well known how the interest in canals grew after World War II, activated by the publication of *Narrow Boat* and setting up the Inland Waterways Association (IWA). All over the country enthusiasts were beginning to stir, but not in Stroud.

Into this climate of change came the Company of Proprietors of the Stroudwater Navigation with their problem: what to do with 'this stinking ditch of ours'. It was almost derelict, unworkable, and was beginning to be a public nuisance, the bridges on county roads being particularly vulnerable. Some of the public bodies, notably Gloucestershire County Council (GCC), had their eye on it to use it for various projects, but this could only be achieved by obtaining a further Act of Parliament, an Act of abandonment for navigation. This solution was not arrived at without a good deal of consideration, consultation, and advice sought from shareholders and public bodies. It was first mooted on 26 January 1949 at the general half-yearly meeting held at the office of the company at 13 Wallbridge, Stroud, when a resolution was passed thus: 'That in view of the fact that there had for many years past been no traffic over the canal, application should be made to the Ministry of Transport for an Order of Abandonment of the canal', signed by W R Bloxam, Chairman and Percy G Snape, Clerk.

Following that, the help and co-operation of the MP for Stroud and Thornbury, Sir Robert Perkins was obtained, and Messrs. Rees & Freres were engaged as Parliamentary agents. The wheels had now started to turn, and an extraordinary general meeting held on 28 January 1953 confirmed the shareholders' confidence in the directors' plans. Support was solicited and given by Gloucestershire County Council, Severn River Board, British Transport Commission, Gloucester Corporation, Stroud Urban District Council, Stroud Rural District Council, Stroud Water Board, and the Association of Stroud Industries. Also the parish councils of Whitminster, Fretherne with Saul, and Stonehouse were willing to ally themselves to the cause. After Rees & Freres sent in copies of the first draft of the bill in July of that year, all of those bodies were able to comment and supply amendments. The letter which

came from the Ministry of Transport & Civil Aviation included a suggestion that the Stroudwater bill should follow the same lines as the Rochdale Canal Abandonment Bill the year before. Incidentally, the Rochdale was fully restored to navigation in 2002!

Opposition to the bill had not been anticipated, except perhaps from a few local landowners, and the owners of forty boats moored near Saul Junction, but IWA were preparing a petition, as automatically they opposed any canal abandonment. Time was of the essence, and events gained momentum. Rees & Freres advised that another extraordinary general meeting was required by law, and notices and forms of proxy were sent to all shareholders, some of which were returned as undeliverable. The Wharncliffe Meeting as it was called, was to submit to the proprietors the proposed bill entitled 'An Act to authorise the closing for navigation of the Stroudwater Navigation; to provide for the transfer of part of the Navigation to the British Transport Commission; to amend the Acts relating to the Company of Proprietors of the Stroudwater Navigation; and for other purposes'.

The bill was a private one, and was scheduled to be read in the House of Lords first. It was duly presented there on 21 January 1954 and read for the first time, followed by the second reading six days later. After being reported with amendments on 12 May, the third reading was made on 20 May, when it was passed and sent to the House of Commons the same day. No petitions were deposited in the Lords, nor, according to Hansard, did any debates take place. Although the bill was presented and given the first reading in the Commons with no problems, and the second reading ordered, that was deferred at least five times, allegedly by Ben Parkin blocking it, but there is no indication in Hansard of how this was done. Mr Parkin was then MP for Paddington North, and had been Stroud & Thornbury's first Labour MP before that. He was brought up in the Stroud area where his father was a master at Wycliffe College. What more affection could a man have for a canal when he declares to the Commons that it was nearly forty years since he first fell into it and learned to swim there?

However, when the second reading did take place with a debate, on Wednesday 30 June 1954, Ben Parkin opened the debate at 7 pm with a request that it be deferred again for three months. This was to allow time for the opposition to organise alternative ways of keeping the canal open. When Rees & Freres had questioned him a month earlier about his opposition, he answered that his reasons were different from those of IWA. In short, he wanted the local authorities to take over the canal. Despite Rees & Freres explaining that Clause 49 empowers local authorities to make contributions and Clause 7 empowers the Company to enter into agreements with a local authority to take over maintenance of the canal or parts of it, Ben Parkin was not satisfied, and said he was going to press for a debate, which of course he got. The request for a further deferment was disallowed, and the debate continued

Our main objection is that it is wrong to allow a statutory company to divest itself of some of its statutory responsibilities and at the same time retain the right to draw income, make profits, if not to shareholders, at any rate to directors.

The member went on to state that the public was shocked at the way in which the national heritage had been neglected and abandoned, and cited the bill for the Rochdale Canal, one which also traversed some beautiful countryside. It was wrong to take irrevocable steps which would make a later reopening of the waterway impossible. Pressure to get the bill through had come from the GCC Highways Department so it could push bridges down, particularly a hump-backed bridge (in Stonehouse, at Bridgend). It was known locally as a death-trap, but there had never been an accident there. Sir Robert Perkins when he stood up at 7.32 pm also referred to this bridge, pointing out that it was only nine feet wide, with no footpath, and no visibility either side. He said 'Only last Friday I was very nearly hit by a cyclist as I went over it'. The Bridgend estate had recently been built, and a large number of children passed over it on the way to school. Then came a politician's ploy ... 'Surely it is wiser to prevent an accident to a child rather than wait and be wise after the event.' Parkin was able to cap this by declaring that his honourable friend's carelessness at the hump-backed bridge was becoming famous. This was the second time he had almost had an accident there. The first occasion was witnessed by Mrs. Parkin when she was taking a traffic census. Not to be outdone, Sir Robert declared the census figures sent to him were alarming.

Parkin was asked when the canal was last in constant or commercial use. In answer, he stated that there was a falling-off of coal barges in the 1930s. In wartime there was not the opportunity to back up the switch-over from horse to engine power, so the chance was lost to the roads and rail, and weeds grew. He went on to say that commercial traffic was desirable, and the sale of water necessary; neither could be guaranteed, but the possibility of pleasure craft using the canal to any great extent does not seem to have been part of his argument for opposition. Instead he asserted there was an energetic committee ready to form a non-profit-making trust in the public interest, through the IWA, and movements like this should not be disregarded. In contrast a vivid picture of the Company of Proprietors is painted:

While the Company remains silent about its management, assets and activities, it must not complain if the picture presented to the public is that of a dispirited, out of date, and very old small group of people, meeting together in the back office of the local lawyer and sharing out the rents of dilapidated cottages and the money received from selling dirty water and doing nothing else whatever.

The chairman at the time was 85 years old.

Sir Robert Perkins, an old Etonian who had only recently been knighted at the age of 50 and was a mechanical engineer, began his speech by alluding to the 'almost fanatical sincerity of the IWA'. He doubted whether honourable members knew very much about this canal, and proceeded to enlighten them by explaining that it had been deliberately excluded from the Nationalisation Act because at that time it was obviously a liability and BTC did not wish to assume that liability. It must be remembered that the bill did not provide for complete abandonment, only to free the company from the obligation to keep it open for navigation. In other words, the bill would legalise the present position. Therefore the company would remain liable for leakage, aqueducts, towpath, culverts, drains, maintaining canal banks, and supplying water to some factories.

His emotive description of the state of the canal showed it to be completely derelict, except for a short length at the Severn end (the part that was to be taken over by BTC). Lock gates were falling to pieces, sluices would not work, it was badly silted, smothered with weeds and was 'a breeding ground for flies' At this point he was challenged by someone who said he was referring to the Thames & Severn Canal between Stroud and the Thames.

The last barge to use the Stroudwater brought ten tons of coal to the gas works on 27 May 1941. It had taken nearly two days to journey the 6½ miles or so from the Junction. Before that no barge had been through for about three years. Sir Robert then said he had tried to persuade the South-West Gas Board to import coal again by canal. Their reply had been 'it is the Board's intention to close down Stroud's gas production as soon as arrangements can be made for delivery of necessary pipes to integrate Stroud with Gloucester'. This statement must have struck the death-knell for the opposition.

Then Sir Robert came to the main reason for putting forward the bill, the bridges carrying County roads. Immediately the bill was passed Gloucestershire County Council would take them over and modernise them. At present the company did this, and had to maintain them according to the 1775 Act in the condition that was required 160 years ago and therefore they were totally unsuited to modern-day traffic. Two of them were causing great anxiety, Stonehouse Bridge and Walk Bridge at Whitminster. At that time Walk Bridge also had a weight restriction of five tons, and was in such bad condition that buses and lorries were prohibited from crossing it, causing distress to local inhabitants.

It was impossible for the company to modernise the bridges, as the current balance sheet would show, declared Sir Robert. GCC were not prepared to pay the extra cost of supplying hump-backed or swing bridges to allow for navigation. An added responsibility which would fall to the Ministry of Transport would be the provision of a bridge at Whitminster when the Bristol Road was improved as access to the Severn Bridge. That far-seeing structure had been proposed in Perkins' election speech of 1935: 'By passing this Bill we shall remove one of many obstacles in the way of building the Severn Bridge in the future'. (The first Severn Bridge was built in 1961-66).

Some of the alternative suggestions for keeping the canal open by enthusiasts were now dealt with. Firstly, the owners of the forty-odd little boats moored at the Severn end: BTC had said, that unless circumstances changed, this part of the canal would continue to be used for mooring. Secondly, he reminded those people who considered that local authorities should take over the whole canal and turn it into a swimming pool or leisure park, that Stroud already had a first-class pool and park at Stratford Park. Thirdly, the possibility of a trust taking over: if the bill was passed, some such trust might be set up.

Mr. Molson, the Parliamentary Secretary to the Ministry, disclosed that 13 years previously, Frank Pick, the expert on transport matters, who was associated with London Transport, had given the opinion that expenditure on the Stroudwater to maintain it in good order would be quite disproportionate to any use which might be made of it. Therefore his Ministry supported the Bill, and wished it to be sent upstairs to Committee.

In conclusion, Chuter Ede MP reminisced how as a child visiting the upper Thames, he had seen the horse-drawn traffic using the tunnel at Sapperton. It was possible for GCC to obtain their own Bill to deal with the bridges, as had Surrey County Council. 'We should construct the road to the Severn Bridge to allow for future restoration!'

At 8.40 pm business ended with a division. Ayes for the Bill were 144, and noes were 112. Among the ayes were some well-known names ... Julian Amery, Anthony Barber, Major Hicks-Beach, Sir Edward Boyle, Edward Heath, Dr Charles Hill, Miss Pat Hornsby-Smith, E H C Leather, Alan Lennox-Boyd, Angus Maude, Gerald Nabarro, Airey Neave, Charles Orr-Ewing, Enoch Powell, Philips Price (Gloucestershire West), John Profumo and John Tilney. The noes included Sir Richard Acland, Barbara Castle, Richard Crossman, J Chuter Ede, Michael Foot, W W Hamilton, Emrys Hughes, G A Isacs, Jennie Lee, Harold Lever, Ian Mikardo, G R Mitchison, P J Noel-Baker and George Thomas.

The committee stage of the Bill was scheduled to take place on 7 and 8 July 1954. Meanwhile local opposition was gaining momentum. Revd Malcolm Donald of Lower Cam, Dursley was the Honorary Secretary and spokesman for the Stroudwater Canal Restoration Committee which had been set up in the spring. It was formed by representatives of IWA, Council for Preservation of Rural England (CPRE), the boat-owners, and individuals who felt that abandonment was not in the public interest. They felt that the canal, if abandoned, would be even more of a public nuisance. They wanted a non-profit making trust like the Lower Avon Navigation Trust, which was a success. Their statement issued was

This committee wishes to co-operate with the Company in the public interest towards the future of the canal, making it once more an asset to the life of the community and restoring it as a waterway worthy of a prosperous town and as a leading amenity of the neighbourhood.

Mrs Enid Airey of Woodchester was the representative for CPRE and tried to gain control of

the company by buying up shares. The company were secretive about the value of shares, and at first Mrs Airey offered £2 each, later increasing it to £5. Some shareholders agreed to sell (they had not received any dividend since 1922). The company were worried, but in a letter dated 20 July 1954 Rees & Freres informed them that Mrs Airey had not yet gained 50% control and by Section 54 of the 1776 Act, a purchaser of shares was not entitled to vote at any general meeting until he had been a proprietor of such shares for six months before the date of that meeting.

The parliamentary committee was made up of four MPs, three of whom were from north of England constituencies. Mr G R Rougier appeared as counsel for the promoters of the bill, and Mr E W H Christie for the petitioners against it, the IWA. Gloucestershire County Council petitioned against alterations to the bill, with Mr. Hugh Forbes acting for them. After repeating some of the points put forward in the second reading, Mr Rougier gave some facts about the finances of the Company. During the period from the beginning of 1946 to the end of 1952, the company made a loss of £568. Committee members had a sort of travelling allowance of £3 per annum. Total resources of the Company amounted to about £3000.

When asked 'What is to be done with this white elephant of a canal', Rougier quoted the old Acts again, pointing out that under them statutory authority was given to the Company of Proprietors to construct and make and carry on the business of a canal, that is, there was not an obligation placed on the Company to maintain the canal in perpetuity, especially if not commercially successful. About the sale of water, the company was not sure whether it had the necessary powers to do this, and therefore required provision for it in the bill. Also provision should be allowed for local authorities to make agreements about contributions for maintenance. A contingency fund for financial arrangements was to be set up.

Robert Johnston Carruthers-Little, a solicitor with the company's lawyers, Little & Bloxam, was the first witness to give a statement, and be cross-questioned. He declared that he had been a member of the committee since 1921, being vice-chairman at present, under Mr Bloxam, who was also his senior in business. His shareholding in the company was 35. Mr Christie explained that his work for the inquiry on behalf of IWA was to get at the bottom of why the canal fell into disrepair, and this was also the wish of

the House and why it sent the bill to the committee stage. Questions were asked about the Clerk to the Company, and the answers were evasive. The acting clerk, Mr Hepworth, had left the employ of Little & Bloxam within the last week, although he had been present at the second reading. Mr. Carruthers-Little had not read Hansard on the second reading himself. He did not know if Mr Hepworth was still acting clerk to the company, it was difficult to say! Asked about remuneration, witness said that although the acting clerk had been appointed a year ago, after the death of Percy Snape, so far he had not received any payment. What about Mr Snape? His remuneration was £87 10/- p.a. There was some argument about this, when it emerged that the Clerk had received that amount per half year. Mr Snape had had no other source of income, although he lived in the house at Wallbridge rent-free, and was aged 80 when he died, having been a sick man a long time. His estate amounted to £12,000.

Mr Carruthers-Little was cross-questioned about tolls, and Mr. Christie suggested that they were deliberately high to dissuade customers from using the canal. Neither was a satisfactory answer obtained about bridges. Witness did not know why the company had not approached GCC themselves about taking them over. Property had been sold, although by law, statutory authorities had no power to sell. Under this bill the company was seeking those powers, which suggested they were aware of the limitation previously. No attempt had been made to adjust the mooring fees to an economic level. There must have been a shock in the room when Mr Christie insinuated that Little & Bloxam, who had been legal advisors to the Company for over 50 years, had actually been running it for their own benefit! His premise was that the solicitors had

been charging a negligible amount for office expenses, but two recent court cases, one against GCC about water levels, the other started against Ministry of Transport as a preliminary to this bill, had involved legal charges which amounted to more than the loss stated by the Company.

The next witness for the company had an equally difficult time. He was Charles Kenneth Hawell, a senior engineer and partner in William Halcrow, consultant engineers. His examination of the canal had taken three days, and he had found it in an unsatisfactory condition, mainly because of silting and weeds. The banks were reasonably good, and there was little evidence of leakage, although the silting which had now formed a bed would probably be hiding any leaks low down. When cross-

questioned, Mr Hawell admitted he had not advised personally on any other canals. He did not know the national average maintenance figure, and had guessed it. Nor did he know how many cubic feet of silt would need to be dredged out, and how to dispose of it. For a drop of six feet which he thought was the canal depth, the cost of dredging would be fifteen shillings per cubic yard.

Mr Robert Arthur Downs, Deputy Surveyor of GCC was called to give his statement about the bridges. He brought a collection of photographs of them which had been taken in 1948. As a result of that survey, the county had decided not to take over the bridges unless an abandonment of navigation had taken place, because the cost would have been prohibitive. Mr Downs was asked to outline his proposals for each of the bridges.

Mr Cyril Boucher, a chartered civil engineer, stood as witness for IWA. He had a long connection as consultant to waterways, including the Kennet & Avon and Trent & Mersey Canals. His estimate for restoring the Stroudwater, even though it did not include the stretch west of the Gloucester & Sharpness, nor any bridges, was much less than Halcrow's. The chief difficulty would be disposal of dredgings.

Revd Malcolm Donald was called as spokesman for the Restoration Committee, and when asked if his members would be prepared to put up money as a trust, he replied not exactly, his colleagues were intending to raise the amount of money as estimated by Mr. Boucher. However, he explained that they were rather in the dark because they had not been able to have any discussion with the company concerning it. A letter to Mr Bloxam offering to buy the company had resulted in a formal reply from the solicitor's firm. 'Nobody knows who the Company is'. As a newcomer to the district the year before, he had written to Mr Bloxam for permission to navigate the canal, but the reply came back that it was entirely unnavigable.

Mrs Enid Airey must have been somewhat 'thrown' when she was called, and given the name Edith, and fluffed her statement. Her reasons were the beauty of the Stroud valleys, and how that beauty had been enhanced by man from the 18th century onwards by the wonderful architecture, particularly alongside the canal. Mr Rougier used this statement to advantage. 'With this bill the proprietors are trying to put back the canal into a state of what you suggest, a thing of beauty. If they are relieved of their obligation in regard

to bridges, which has been the main part of their expense, they can devote the rest of their income in dealing with the sections between the bridges, the idea being to develop these as amenities'. Witness believed the canal had commercial potential.

Although Reginald John Parkhouse followed Mrs Airey in petitioning against the bill, he did not share her sentiments about the beauty, and certainly did not think the canal could be used for leisure. 'Stroud is such a backend in itself that nobody would want to go there. To be quite honest, Stroud is known as the slums of the Cotswolds'. Mr Parkhouse was actually there to give evidence in his capacity as partner in the woollen manufacturing firm of Marling & Evans, employing 300 people. His mills had obtained their coal by canal, but gave up when it became difficult. He would consider using the canal again if it became economically possible.

After several amendments to the bill were made, the committee stage was completed and it was sent for the third reading. This took place on 26 July, when Ben Parkin stood at 7 pm to give the preliminary speech. 'This Bill is as bad as it was on the day it was born. The only demand for it came from those who want to bring the bridges up to date. I can sympathise with them, but there ought to have been a separate Bill promoted by the GCC. The Bill gives permissive powers, and as there is time for a solution to be found, I am asking honourable friends on this side of the House not to press the matter to a Division.'

The bill was read a third time and passed with amendments. It received Royal Assent on 30 July 1954.

After the Act of Abandonment was passed the Company of Proprietors carried on as before, but with a slightly different constitution. No longer did they have to concern themselves with keeping the channel open, or the safety of the major bridges. Instead they met periodically to consider other matters, encroachment, fly tipping, drains, mains, planning and generally deal with 'this stinking ditch of ours'. Ostensibly they were watched over by the Stroudwater Trustees. Sir Robert Perkins gathered together all the shares he and some of his friends held and formed a Trust. This constituted over half the shares of the company and trustees look after them 'for the benefit of the people of Stroud'. Seeds had been sown, but took nearly twenty years to grow, until in 1972 the Stroudwater Preservation Society was formed.

Canal Boatwomen on the Oxford Canal 1944-45

Mike Constable

Like all governments before or since, the wartime Ministry of War Transport had no idea how important the canal network could be. Initially they allowed boaters to volunteer, with the inevitable result that when they declared it a 'reserved occupation' the Grand Union Canal Carrying Company had far more boats than they had crews for, and many of the smaller carrying concerns were having difficulty recruiting. In January 1941 the MoWT consulted Daphne March who was operating the *Heather Bell* on the Worcester & Birmingham Canal and advertising for crew in *The Times*. Although not all of her crew were female, the Ministry felt that there might be a future in the use of female crew and sought Daphne's advice. In 1942 a Ministry spokesman was saying that many more boats could be brought into use if there were crews for them, just about at the time that two of Daphne's earlier crew were learning to handle a pair of boats before becoming trainers for the Grand Union Canal Carrying Company. Daphne was neither a trainee nor a trainer and she was never issued with an Inland Waterways Badge, but she made several trips on the Oxford and was an extremely important adviser to various canal companies in regard to recruiting canal boatwomen.

Once the Ministry took over all canal operation there was a move away from specific company work and boats of all companies could be sent to wherever there was the greatest need. Daphne and the *Heather Bell* were sent sometimes to the Coventry area to load coal for the various works at the Oxford end of the Oxford Canal. Main carrier to these works then was the Samuel Barlow Coal Company but they were unable to fulfil all the orders and so hired boats and crew from the GUCCC. Although not short of boats, the GUCCC were still short of crew members and so one of the teams of female trainees was asked if they would take on this job. Christian Vlasto and Elizabeth Glayser took the *Hyperion* and *Nebulae* to Longford and loaded coal for Oxford in June 1944. This portrait of Christian was painted just before she teamed up with Elizabeth and is the only 'official' record of the training scheme. An American pilot, Geoffrey Baker, and also Christian's mother occasionally travelled with them and some of the photos they took survive. (Figure 1) After the war, Christian moved to Pakistan remaining there until her death in 2009.

Slightly later on a further pair, *Hercules* and *Cetus* with female crew joined the others and when Christian and Elizabeth retired from boating, Margaret Ford took over the *Hyperion* and ran it with *Cetus*, and usually with two crew carried on until the demand for coal was so reduced that the trainees were laid off. Margaret, better known as Margaret Cornish, worked with a rather flexible crew arrangement as Helen Skyrme, who was one of the older trainees, took leave whenever her husband was not at sea with the Royal Navy. Commander Frank Skyrme MBE, DL had been brought back from the retired list to captain *HMS Campbeltown* in 1940 and early 41. *Campbeltown* was one of the American cast-off destroyers with the steering ability of a house brick and so she was decommissioned before the St Nazaire Raid. Another part-time trainee, Susan Woolfitt, occasionally stood in for her. The other crew member seen here is Virginia Shadbolt, the youngest of the three. Virginia died in 2010 and Margaret 2011 so Elizabeth is the sole survivor of this small group of canal boatwomen on the Oxford Canal.



Figure 1

Canal Reservoirs and the Effects of 20th century Legislation

David Henthorn Brown

Reservoirs present significant risks to those living below their dams. In the 19th century, there were many failures of canal, drinking water and industrial reservoirs with considerable loss of life. Captain Moody, inquiring into the 1852 failure of Bilberry Reservoir near Holmfirth with the loss of 81 lives, said that reservoirs were 'engines of mighty force, strong in the aid of industry ... and terrible in their power to destroy if mismanaged or neglected'. Following the 21 deaths in 1925 resulting from reservoir failures, legislation was introduced in 1930 to protect the public by ensuring good standards of design, surveillance and maintenance. This had significant effects on the UK's canal reservoir stock and on the expenditure of navigation authorities.

Introduction

British Waterways is today responsible for 93 statutory reservoirs, three of them jointly with other parties. Many of them remain in use for supplying water for navigation but others, such as Trench Pool in Telford, no longer serve an operational canal but must still be maintained in a safe condition. There were once more than fifty other reservoirs serving canals. Some, such as the Wilts & Berks Canal reservoirs, Coate and Tockenham, still exist, put to other uses.

Most canal reservoirs were built in the late-18th and early-19th centuries. The oldest remaining in use is Smeaton's Townhead Reservoir of 1773 supplying the Forth & Clyde Navigation. No new reservoirs have been built since 1930, when the Ministry of Transport built two new reservoirs to improve the water resources of the Crinan Canal.

Hazards

The uncontrolled escape of water from a reservoir presents extreme dangers to property and life. The former Pennsylvania Main Line Canal's South Fork Reservoir failed on 31 May 1889 releasing 18.1 million cubic metres of water and killing over 2,200 people and causing US\$17 million of damage. More recently, in 1963, 2,600 people were killed in the Vaiont disaster in Italy.

The greatest loss of life in a UK reservoir incident resulted from the breaching in 1864 of the Dale Dyke dam near Sheffield, when 244 people lost their lives. Reservoir failures are much more hazardous than canal breaches because very large quantities of water can escape in a short space of time and the resulting flood wave will sweep away everything in its path. If reservoirs are well designed and properly managed, however, the likelihood of a failure is very low.

At the time when the canals were built, the understanding of the engineering principles behind reservoir construction was not well advanced. There was little appreciation of the magnitude of floods and the need for adequate overflow weirs and sufficient freeboard to prevent the dam being overtopped. The quality of construction of these early reservoirs was often not very good either. In 1801, John Rooth reported of the Huddersfield Narrow Canal, that 'not one reservoir out of five would hold water, all pipes that had been laid to draw-off the water being broken in the middle of the banks'.

There were numerous failures of canal reservoirs in the late-18th and early-19th centuries, many due to the underestimation of floods.

On the Huddersfield Narrow Canal, Diggle, Tunnel End and Swineshaw Reservoirs were overtopped and breached in 1799 resulting in two fatalities. Swellands (Swillers Moss) Reservoir failed on 29 November 1810 due to erosion caused by seepage through a layer of peat beneath the dam. The resulting 'Black Flood' killed five people.

Glen Clachaig Reservoir (now known as Gleann Loch) on the Crinan Canal was breached in 1811, destroying the summit lock at Cairnbaan. The rebuilt dam was again swept away in 1859, together with four other reservoirs, when Cam Loch Reservoir, higher up the valley, was overtopped.

The worst UK canal reservoir failure in terms of loss of life was on 14 July 1875 at Cwm Carn(e) Reservoir on the Crumlin Arm of the Monmouthshire Canal. The dam crest had sunk and after heavy rain, flood water flowed over the crest. For a few hours, local people put up with the inconvenience of having to wade through the water as they took a shortcut

across the dam but no one raised the alarm. Around 11 pm the dam failed. The water released ponded up against a turnpike road embankment and drowned three people in a cottage. The road embankment then breached, drowning eight people in a large house and an apprentice sleeping in a flannel mill. The failure of the canal's railway owner (the Great Western Railway) to manage and maintain the waterway infrastructure was the main cause of this disaster.

Legislation

The Bilberry incident led to some reservoir safety content in the Waterworks Clauses Act of 1863. No particular duties were placed on reservoir owners but if a member of the public were concerned about the safety of a reservoir, he could approach a Justice of the Peace. In common law, the *Rylands v Fletcher* case (1861–68), relating to the leakage of water from a mill pond into coal workings near Bury in Lancashire, placed a strict duty on reservoir owners to prevent escaping water causing nuisance to others.

Two reservoir failures in 1925 focussed the minds of the legislators. On 18 April, five people were killed due to the overtopping and breach of a small reservoir at Skelmorlie on the Ayrshire coast. On 2 November, the flood wave from an escape of water from Eigau reservoir in the Conwy valley carried away Coedy dam, which supplied the hydroelectric station of an aluminium plant. Sixteen people died in the village of Dolgarrog as a result.

The Reservoirs (Safety Provisions) Act was passed in 1930. The Act applied to all 'large raised reservoirs', defined by the modest storage volume of the Skelmorlie reservoir, five million gallons. Expert panels of 'qualified civil engineers' were established. Statutory inspections by panel engineers were required for all large reservoirs. The inspecting engineers had the powers to instruct that works to be carried out 'in the interests of safety'. Some of the early inspectors were eminent consultants such as Sir William Halcrow and W J E Binnie. Col. J A Saner, the Engineer and Manager of the Weaver Navigation, became a panel engineer and carried out inspections for other navigation companies such as the Leeds & Liverpool Canal Co.

The legislation has been updated by the Reservoirs Act of 1975. In addition to the requirements of the 1930 Act, it became necessary to appoint a Supervising Engineer to be responsible for the safety of each reservoir at all times. The county councils were made responsible for enforcing the legislation

but this role has since transferred to the Environment Agency in England and Wales.

Consequences of statutory inspection

Recommendations 'in the interests of safety' could be works such as increasing spillway capacity, raising or buttressing the dam, addressing leakage and updating inadequate draw off systems. Considerable expenditure can result. By the 1930s, many canals were railway owned and commercial traffic was declining, so there was reluctance in some cases to spend the money.

In 1933, F J Dixon advised that the overflow arrangements at Cofton Reservoir (Worcester & Birmingham Canal) presented 'a very grave danger to the safety of the reservoir'. Nothing had been done before A H S Waters' inspection of 1944. In 1954, B D Richards said 'I do not regard the reservoir as being in a safe and satisfactory condition'. It took until 1964 for a new spillway to be built.

Alternative approaches: abandonment, discontinuance and transfer

The Act gives two alternatives to carrying out the works, 'abandonment' and 'discontinuance'. The former is to render the reservoir incapable of filling with water. The latter involves the demolition of the dam.

Two small Crinan Canal reservoirs, Lochs Lebgei and Lebdgei, were abandoned by the simple expedient of opening the valves and allowing the water to drain away. It took some years, though, before this arrangement was regularised.

Butterley Park Reservoir (Cromford Canal) was inspected for the Midland Railway Company and the need for additional spillway capacity was identified. Instead, the reservoir, which was located adjacent to the eastern end of Butterley Tunnel, was discontinued in 1935 by cutting through the dam and conducting the stream into the summit pound by means of a concrete cascade. Another example of discontinuance was that of Harborne Reservoir, a mill compensation pool constructed by the Worcester & Birmingham Canal Company. The headbank was demolished under the British Transport Commission Act of 1958.

An alternative approach is to transfer the reservoir to another party. After the Grand Union Canal Co. was formed in 1927 by merger of several canal companies, there was no longer a water supply need

for Ruislip or Aldenham Reservoirs. A leisure subsidiary, Grandion, was set up and in 1936 Ruislip Reservoir became Ruislip Lido, a popular attraction. It was sold to Ruislip & Northwood Urban District Council in 1951, after nationalisation. Aldenham Reservoir is now run by Hertfordshire County Council as a country park. The Commission also sold Cannock Chase Reservoir to Brownhills & Aldridge Urban District Council in 1957. They renamed it Chasewater and developed the leisure uses of the water space and the surrounding land, whilst the reservoir continued to supply water to the canal. This arrangement has proved costly for the Urban District Council's successor authorities, which have had to fund subsequent reservoir safety works.

Works — flood related

Many of the works required in the interests of safety have related to the ability of the dam to withstand extreme floods. The independent Inspecting Engineers have identified inadequacies at many reservoirs. At Townhead Reservoir in Kilsyth, a second spillway was added following John Alexander Warren's 1934 inspection. This comprised



Auxiliary spillway built in 1935 over the headbank of Townhead Reservoir, Kilsyth

a stepped concrete cascade over the middle of the headbank. In 1927, Stanley Reservoir (Trent & Mersey Canal) had been overtopped for a short time

after a storm event. Fortunately the dam survived and was not washed away. The crest and downstream slope of the dam were paved with concrete blocks in 1936 to prevent scour in the event of a recurrence. This work was instructed and supervised by Sir William Halcrow.

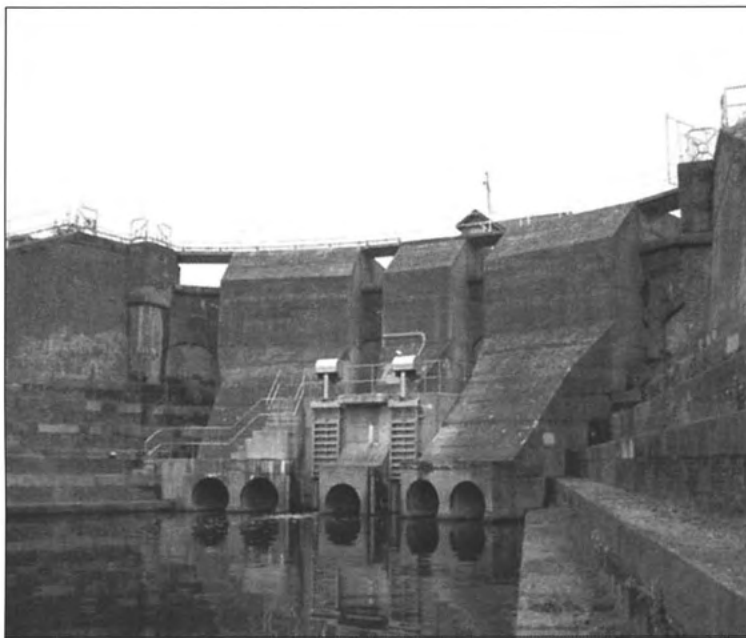
Brent Reservoir is located in a densely populated part of north London. In 1934, at the first statutory inspection, W J E Binnie expressed the view that the spillway arrangement was inadequate and the practice of storing additional volumes of water behind weir gates was not safe arrangement. The gates were removed and five large air regulated self-priming syphons were constructed in 1938 to discharge flood water.

Another approach to addressing flood risk is to raise the level of the crest of the dam. Naseby Reservoir on the Leicester Summit of the Grand Union Canal has had its crest raised on more than one occasion as well as having the length of the weir crest increased. Concrete piling was driven along the water's edge to retain the fill material in the 1937 raising.

Sometimes it has been necessary to build a wavewall along the upstream edge of the crest to prevent wave action damaging the embankment. An example is at Hillend Reservoir, one of the three Monkland Canal reservoirs, which although the canal has long since gone, continue to supply the Forth & Clyde Navigation by means of a pipeline.

An alternative to increasing freeboard by raising the dam was to permanently lower the retained water level. This is undesirable where the reservoir is critical to the canal's water supply. Lower Bittell Reservoir, a Worcester & Birmingham Canal mill compensation reservoir was lowered by nine feet by removing a valve from the overflow shaft. Unusually the canal embankment forms the headbank of this reservoir. Other examples were

Winterset Reservoir (Barnsley Canal) and Codnor Park Reservoir (Cromford Canal).



Brent syphons constructed in 1938

Belvidere Reservoir (Shropshire Union Canal) has leaked since it was built in 1833. The material for the dam was excavated from borrow pits in the land to be submerged. These pits were rather close to the base of the embankment and were sufficiently deep to permit reservoir water to enter the fissured rocks beneath the dam.

It is usually sufficient to monitor leakage and act only if leakage rates increase to a level which causes concern. At Cannock Chase and Lower Bittell Reservoirs, filters have been needed where the leaks emerge, retaining the fine earth particles within the body of the dam.

Sometimes leakage is such that it is necessary to augment or replace a watertight element of the dam. In a well-designed embankment dam, there is usually a central vertical

Works — stability

Canal reservoir headbanks often have much steeper slopes than would now be considered good practice. This is understandable in view of the limited knowledge of earthworks at the time of construction and the fact that no earthmoving machinery was available then.

Many of the Crinan canal reservoirs have needed buttresses adding to improve the stability of the dams.

Works — internal erosion

Internal erosion is an insidious threat to embankment dams. All reservoirs leak to a greater or lesser degree. The passage of water through the dam can wash out fine particles of earth, increasing the rate of seepage. As the time of failure approaches, the leakage rates increase exponentially.

Sir Robert Rawlinson, reporting on the Rochdale Canal reservoirs in 1865 said

Water is ... an unsleeping antagonist, and is ever searching and ready to puncture the weakest point. Time brings decay to material, such as timber and iron, but time does not lessen the power of water, under pressure, in the least degree; the law of gravity endures; but stone, timber, earth, and other solids inevitably crumble and decay.

core of puddled clay. Not all canal reservoir embankments are so constructed, however. Cofton Reservoir, remarkably, is constructed mainly of sand.

Leakage at Loch Clachaig Reservoir (Crinan Canal) was addressed by driving heavy interlocking sheet steel piles for the full length and height of the dam.

Works — draw-off systems

The draw-off systems of canal reservoirs have also been subject to considerable work to upgrade them to modern standards. The simplest type of draw-off is a pipe buried under the embankment with a single valve at the downstream end. This arrangement is fraught with hazards. The pipe is under full reservoir pressure at all times and any leakage will swiftly erode the embankment fill. Being always full of water, the condition of the pipe cannot be assessed. In 1828, the pipe through the dam of Knypersley Reservoir (Trent & Mersey Canal) fractured due to movement of the embankment. The reservoir had to be drained to avoid catastrophe and the pipeline was exposed in a deep excavation for repair. If the valve needs repair, there is no means of doing this without completely emptying the reservoir.

Inspecting Engineers have required many modifications to these unsatisfactory systems,



The preserved box valves at Knypersley Reservoir

including lining of the pipes, additional valves and complete new arrangements. Where possible the old equipment is preserved nowadays. The original Knypersley box valves, with their leather seals, have been preserved on plinths in the adjacent car park and suitably interpreted.

20th century incidents

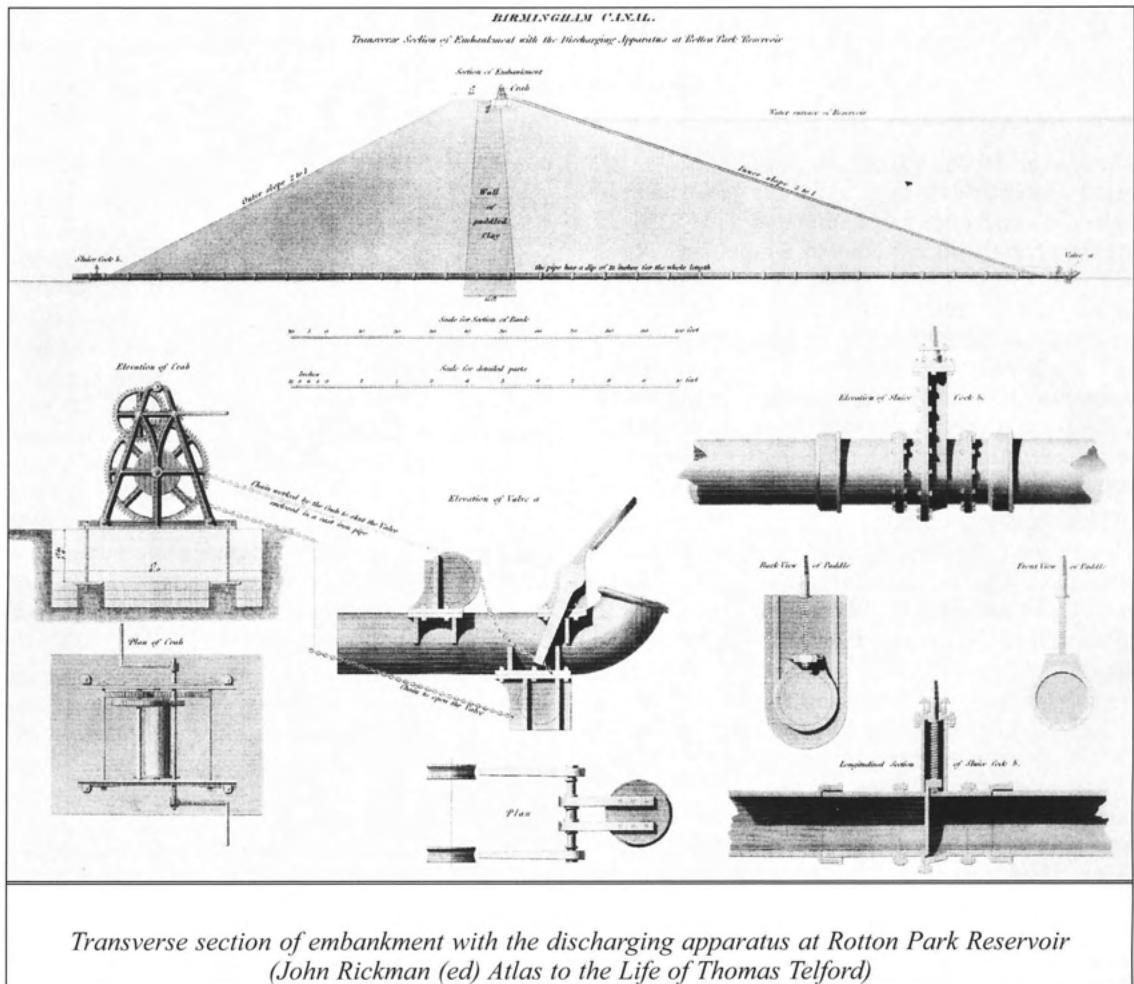
Despite the increased awareness of reservoir safety, incidents still happen from time to time.

In 1965, there was a breach of a low peat embankment at Loch nam Breac Buidhe Reservoir (Crinan Canal). This was not the main dam but a small secondary embankment intended to stop water escaping into another valley. The reservoir is a remote area high in the Knapdale hills and the escaping water passed by mountain streams to the sea without being noticed. The reservoir had been in good condition ten days before the breach was identified.

In January 1976, waves splashing over the crest of the dam of Combs Reservoir (Peak Forest Canal) saturated the embankment leading to a slump of the downstream face. The water level had to be lowered quickly. The embankment was subsequently rebuilt in a more stable configuration.



The headbank at Rotton Park Reservoir, Birmingham today



Reservoir safety today

British Waterways' reservoirs are on average 204 years old, considerably older than the UK average. They have had longer to deteriorate and were not built to today's standards nor with the understanding of engineering which has since been developed. Continual monitoring and surveillance is required to manage the risk by identifying early indications of problems, so that appropriate actions can be taken. All but a few low risk reservoirs have emergency plans. Each reservoir is checked generally weekly. British Waterways has three Supervising Engineers

and retains the services of another for the Caledonian Canal locks. Budgets for safety works must be made available because of the significance to public safety and the statutory duties.

The legislation itself will be updated by the Floods & Water Management Act 2010 in England and Wales and the Reservoirs (Scotland) Act 2011, north of the border. A risk based approach will be adopted, recognising that some reservoirs, which fall under the volume threshold can be more hazardous than larger bodies of water in remote locations.

A Review of Transport and the Law of Deodand

Adrian Gray

The law of deodand and its influence on how the legal system dealt with railways has received episodic coverage in a number of publications, including in the *RCHS Journal* where there was a request for further information some 13 years ago.¹ This article considers how and why the law came to be applied to the early railways, the main cases, and why the law was reformed. The story reflects some interesting themes of how the public viewed large businesses in the days before the law of corporate manslaughter and the power of the railway companies to get the laws changed in the 1840s.

There are many definitions of what a deodand actually was. One legal textbook describes it as 'that instrument which occasions the death of a man, and is forfeited to the king in order to be disposed of in pious uses by the king's almoner.' Originally, its use appears to have been to pay for masses to be said for the dead person's soul. In occasioning the death, it was always understood that a thing had to be moving, but this gave rise to questions as to whether it had to be in direct contact or might include connected items. The same book opined that it was not only the moving part in direct contact 'but all the things which move together with it, and help to make the wound more dangerous, are forfeited also.'² This issue was important, as it affected the value of the deodand award, as with the case of the Hull steamer *Victoria* whose boiler exploded in June 1838; an award of £1400 was made against the steam engine, but the owners appealed on the grounds that it was only the boiler that caused death. They lost this part of their case in November 1839, it being felt that 'the boiler was part of the engine, and the two could not be disconnected.'³ However the inquisition was actually quashed on the grounds of poor wording; 'instantly' might mean any time from within five minutes to a day later.⁴ As will be seen, this understanding was applied inconsistently and a deodand on stationary engines at Wigan and Pontefract were quashed in 1844 on the grounds that they were not 'movable chattels.'

The issue of the 'moving' object is apparent from a case on the Bristol & Gloucester Railway in November 1844; a fireman was killed when his head struck a bridge but, although it was the faulty design of the bridge that was blamed, the deodand of 1s

was levied on the engine since that had been moving.

There came to be some debate as to when a deodand could be levied. It was often said that it could only be raised where a coroner's jury had found a verdict of accidental death, but this was disputed and led to several court cases. Most press reporters seem to have assumed that a criminal verdict and a deodand could not coincide, but when a woman was run over by a cab at Blackfriars in 1831 the jury brought a verdict of manslaughter with a £5 deodand on the wheel of the cab. When the Brentford coach crashed in 1833, the jury found manslaughter against its driver, levied a deodand of £20 and the proprietor was convicted of furious driving. However, after a death on the Thames in 1834 a coroner told the jury that they could opt for either manslaughter or a deodand, but not both.

Deodand was a medieval practice that enjoyed a revival in the early 19th century. One legal historian sees its revival as a deliberate ploy to gain compensation in an age when death by machine started to become more of a risk than death at the hands of another human — who could be prosecuted.⁵ As we shall see, this analysis is not altogether convincing as the most common object on which a deodand was levied was the horse. Cases of a deodand being levied on mill machinery were rare, though a deodand of one shilling was levied on a mill boiler that killed two at Farnley, Yorkshire, in 1830, and one shilling on a boiler tube after an explosion at Pen-y-Darran killed nine and wounded 33 in 1841.⁶ In fact the lack of deodands when people were killed in factories was specifically criticised by *The Times* in December 1840, which saw that deodands were awarded for middle class lives lost in railway accidents but not for the working class mangled in factory machinery — a point it illustrated with some gruesome examples. They might also have added that industrial accidents rarely resulted in large awards; for example, a woman who died after being caught in a mill engine at Bury in 1833 resulted only in the award of 6d on the shaft of the engine — clearly less than its value.⁷

However some juries did see the deodand as a mechanism to punish hardhearted industrialists, and this perhaps influenced the later juries on railway accidents. After two deaths at Low Side Colliery,

Oldham, in 1834, a higher deodand of £5 was levied and it was reported that:

The foreman said that there ought to be a penalty levied in this case, in order to make Mr Wrigley more attentive to the safety of his hands.⁸

Other juries were less generous. Seven died hideous deaths after a foundry boiler exploded at Newton le Willows in September 1838, but a total deodand of 5s was the only compensation.⁹

At the same time the value of compensation could be increased by not restricting the deodand to the wheel that ran someone over but the whole vehicle to which it was attached. This came to have great implications for railway companies, as the buffer which struck a man might be attached to a whole train of carriages, but the interpretation of the rule was inconsistent to say the least — partly because juries tended to be flexible in determining the extent of fault. Some considered that an owner could hand over 'the matter' itself, rather than pay the deodand levied.¹⁰

However the award could also be restricted by the value of what had caused the death. When a blacksmith's shop on the Bristol & Gloucester Railway at Wickwar blew up in 1841 it killed four men, but the coroner commented 'unfortunately there was nothing left to levy a deodand on.'¹¹ In 1842 a case involving the Great Western was successfully appealed on the grounds the deodand award exceeded the value of the item causing death.

The deodand was paid to the Lord of the Manor or the monarch. It was not automatic that it was paid to the deceased's family and, when the *John Bull* steamer on the Thames caused a death in 1835, the jury had to recommend payment to the family. In some cases, such as the Brentwood railway accident of April 1840, the Lord of the Manor publicly declared his intention of using the money to benefit the widows, and this seems to have encouraged higher awards. At Harrow in November 1840 the agent of the Earl of Northwich appeared as representing his master, who was Lord of the Manor; the coroner told him that if he wanted the deodand, he would have to apply to the Court of the Exchequer.

The ruling in the case of *Baker v Bolton* (1808) severely reduced the chances of a family gaining compensation for the death of a loved one. The situation attracted the attention of coroners in an age when the coroner's court involved a jury of local people meeting in public. Dr Thomas Wakley, the renowned Middlesex coroner who also campaigned

against infanticide, became a notable advocate of the use of deodand to win compensation. Under the influence of such men, it has been said that the average value of an award rose to over £500 in the 1840s.¹² This is not borne out by the evidence, and many awards in the mid-1840s were paltry, such as the Eastern Counties derailment at Littlebury in August 1845 which killed a guard; the deodand was 1s on the locomotive and on each carriage.

Deodands could be applied to almost anything, including animals — rams, bulls, a tiger, an elephant¹³ and an antelope were all subject to deodands in the 1820s and 1830s. In 1825 a nominal 1s was levied on an elephant which caused a death at Exeter Exchange in London and in 1841 a one shilling deodand was levied on a large cheese which fell off a man's head and killed a four year old child in Haymarket, London.

Road transport

Whatever the arguments about the use of deodand to compensate people caught up in the machinery of the Industrial Revolution, it was in fact road transport that most often had to pay up — and the horse was the most common object on which deodand was levied.

Typical cases included the boy of 11 run over by the Kentish Town coach in 1824, with a deodand of £5. When two children were run over by a coach in Limehouse in 1823, £5 was awarded on the coach and £2 on the horses although there was clearly no fault by the driver.¹⁴ Generally, though not always, the size of the deodand tended to reflect the jury's view of the owner's culpability, though this was limited by the value of the 'object'. In Cambridge in December 1830, a jury fixed a deodand on a hired horse as high as they could — two guineas — as they considered the livery owner should not have hired out such a dangerous creature.¹⁵ In January 1831 one shilling was raised on a horse that killed a man in City Road, London, but when Lady Caroline Barham was killed by a cab driven by a 15-year-old the jury went for manslaughter and also a £50 deodand in 1832. Two contrasting cases over the winter of 1838-9 included a 1s award when a hay wagon killed a child who ran into the road at Hanwell, but awarded £20 after a drunken 'hit and run' case in Great Marylebone Street, London.

Stage coaches were frequent casualties, and so were their passengers — with deodands frequently applied. In 1827 the Manchester mail coach overturned at Glen near Leicester after the reins broke

and one man was killed; the jury levied a £1 deodand on each horse. Later the same year the *Celerity* caused an accident with the *Defiance* on a hill near Amesbury; the jury found a verdict of manslaughter against its coachman, but also applied a deodand of 49s. However when the Holyhead Mail killed a man at Welford, Northants, in December 1827 only 1s was levied on each horse and the death of two on a coach at Harlow in 1832 was deemed worthy of a mere 6d each.

In October 1828 the *Dart* overturned at Wotton under Edge whilst trying to avoid a wagon left in the road; £10 was levied on the *Dart* but not on the wagon. Such cases began to cause disquiet and this was further stimulated by a £10 levy on the *Standard* coach of Liverpool in April 1830; a letter to *The Times* complained that innocent owners were being fined for genuine accidents.¹⁶ However a much heavier £30 was charged on the *Aurora* after it crashed descending a hill at Severn Stoke near Worcester; it was overloaded and, running late, the driver decided not to put on the drag.¹⁷

A deodand was even awarded in the case of a steam carriage which crashed at Sloane Street, London, on 21 November 1840, killing its engineer Thomas Wadeson who was working for Sir George Cayley. This was the carriage that had worked successfully between Gloucester and Cheltenham 18 months earlier, but it damaged its steering gear when swerving to avoid a child on the run to Hounslow. Wadeson was killed when it crashed into a shop and the jury awarded a £10 deodand, disapproving of 'the use of such carriages on common roads.'¹⁸ When the *Red Rover* coach crashed whilst descending a hill between Ludlow and Bewdley in September 1843, £30 was levied on the coach and the jury complained they could not charge this to the makers of the axle which caused the accident by breaking.

Water transport

The most common incident where a deodand was levied in water transport was where one vessel upset another, with the Thames by far the most common scene of such events. In 1831 the Richmond steamers *Diamond* and *Endeavour* were racing and so caused a boat to be upset and a young woman to drown; a deodand of £30 was raised on each steamer. £60 was levied on the *City of Aberdeen* after an accident in the Thames in 1835. Jurisdiction over the Thames gave rise to some disputes about where the money went to — after the *John Bull* case in 1836, the Court

of Common Council had to resolve whether the money went to the Lord Mayor or the King. In August 1839 coroner C J Carttar heard a case where a boat had been struck by the Gravesend steamer *Falcon* at Woolwich; Carttar told his jury that 'it was his duty ... to tell them that the deodand very rarely fell upon the party who was really to blame' and they took the hint by finding only £5 upon the *Falcon*.¹⁹

The Thames was not the only river to have frequent steamboat services and there were accidents elsewhere, such as on the Tyne in September 1839 when a boiler exploded and scalded to death a stoker on the North Shields to Newcastle steamer. Only 5s was awarded on this occasion. In 1840 the Boston to Lincoln steam packet, *X.L.*, suffered a boiler explosion while men were working on it overnight, killing two; a deodand of £25 'on each body' was levied on the packet itself.

Deodands were occasionally levied following canal incidents. In September 1824 a party went by boat from Tring to Wendover on the Grand Junction Canal, but on the return leg the boat was upset and two women drowned. Having first checked who owned them, the coroner's court levied a deodand of 5s on the boat, 5s on the horse and 1s on the towing rope. This showed an interesting interpretation of the rule that anything connected to the object moving to the death was part of the award. Another canal incident occurred on the Royal Canal in Ireland on 25 November 1845; on this occasion a boat overturned near Clonville Bridge and six people died. As well as awarding a deodand of £100 against the boat *Longford*, the inquest jury also found a charge of manslaughter against a 'free passenger' who had taken the helm.

There were many incidents in rivers. Seven died in a single incident near Acomb, York, in August 1830 and a deodand of £21 was levied on their boat. In December 1833 a party of 11 singers from Stillingfleet near York drowned on the Ouse near Kelfield with a deodand of a mere 1s on their boat.

On occasions the story was repeated that deodands did not apply in salt water, or if someone fell from a ship in salt water,²⁰ but many cases affected shipping at sea. For example, in August 1833 a 'coble' took out passengers to the London-Edinburgh steamer at Scarborough but one passenger was drowned when it lurched; the deodand was £20. A deodand of £100 was awarded on the wreck of the *Forfarshire* after its boilers failed and it drifted onto the Longstone Rocks on 7 September 1838.

Railways

The death of William Huskisson was the first famous railway accident, and might legitimately have given rise to a deodand. That it did not was interesting enough to be worthy of comment in the press:

The Jury returned a verdict of Accidental Death but affixed no deodand to the engine, from which it may be fairly inferred that they acquitted the engineers and the machinery of all blame.²¹

The first known railway deodand was apparently on the Canterbury & Whitstable Railway in 1833 when a girl was run over and killed by a sand wagon; a deodand of 1s was levied on the wagon and 1s on the sand in it, rather less than the value of either, it may be supposed.²² A second case occurred on this railway in 1840, when £1 was awarded after a brakesman was killed by a goods train.

Several railway deodand cases involved lines under construction. In August 1835 a labourer was run over by a tramway wagon on the London & Birmingham Railway works at Kensal Green; 20s was levied on the wagon. A few days later a shaft on the Watford Tunnel works fell in at Russell Wood; gravel ran in from all sides as the boards that held it in place collapsed, and at least nine men at the foot of the shaft died.²³ This caused a legal problem, because the ground could presumably not be held to have 'moved to the death', so a deodand of £5 was levied on the bricks and timber — although these were valued at £200. In August 1837 a boy of 11 was run over by a horse-drawn wagon on the Great Western at Hanwell; £10 was levied for this, the jury incensed that the wagon had no brake.

In February 1836 a woman was crossing the Stockton & Darlington Railway at Alliance Street, Darlington, with her two children when one strayed. Seeing a train approaching, Mrs Lister held one child in her arms and tried to grab hold of the other but all three were run over and killed. A deodand was levied of 1s on each wagon of the train.

A famous case on the Newcastle & Carlisle Railway, December 1836, followed from the deaths of three people. They were killed in an accident at the Earl of Carlisle's coal staithes near Wetheral when the points on the main-line were incorrectly set for the staithes branch and *Samson* and its train ran into the coal wagons there. The staithes collapsed under the engine (but fortunately not the carriages) and two of the deaths were underneath it. A deodand of £15 was levied on the engine and carriages.

Railway companies had the resources to challenge

deodands and soon began to fight back in the face of what they saw as excessive awards. In June 1838 the Grand Junction Railway appealed against a deodand of £150 each on two engines that caused the death of John Hock, awarded on the grounds the company had allowed their improper use; their counsel, Cresswell, argued that it was contradictory to penalise the company when neither the company nor the employees had been found to be at fault, and the rule was granted. Walford records the courts would 'sometimes quash an inquisition on motion for defects' but yet 'the general inclination...is to leave the party contesting it to his remedy by traversing or demurring;' in the GJR case, the court 'refused to quash the inquisition in motion.'²⁴ A few months later the owners of the Hull steamer *Victoria* also successfully challenged an award of £1500 after nine were killed in a boiler explosion off Shadwell on 14 June 1838,²⁵ but the main arguments were technical over wording.

The *Victoria* case was plainly an example of a jury seeking to punish. The jury commented that the steamer's passenger accommodation was 'fitted up with greater splendour and taste' than anything they had seen, but 'they never saw a vessel in the river fitted up with so little regard to the comfort of the engineers and stokers.' They levied £1500 on the boiler and engine, though they considered the boat as a whole to have been worth £14,000.

In November 1838 an elderly man was run over on the Great Western at Hanwell whilst taking supper to his son, who worked on the railway. He was hit by *Lion*, which was running 'off timetable.' Some of the jury wanted £100 deodand, but none was given after the Coroner emphasized that the death was 'purely accidental' — not in itself a reason to avoid a deodand. The same month the boiler of *Patentee* exploded whilst hauling a Liverpool to Manchester luggage train up the Whiston Incline; driver and fireman were killed, but the deodand of 20s was much less than the value of the locomotive as the jury listened to stories that its driver often attached weights to the safety valve and generally abused the margins of safety in order to get a faster ascent. On this occasion the luggage train had 43 wagons, with two engines at the front and two at the rear. *Patentee* was at the front, and after the explosion flew 400 yards along the track.²⁶

A May 1839 case involving the Grand Junction Railway was one of the first railway cases to suggest that deodand rulings could be challenged on technical details with some chance of success. In

this accident an engineer, Thomas Hogg, was thrown off the tender of *Mermaid*²⁷ at Perry Barr after a collision with another train. After a deodand was awarded, there was an appeal on the grounds that the Warwickshire coroner could not hear a case that occurred in Staffordshire and because the jury had also ruled negligence against the GJR or its employees. At court, the GJR counsel dropped the first argument but the court refused to interfere 'as the statement of value was not in itself an award of forfeiture.'²⁸ It was clear that a jury could decide on a sum even though it might not be awarded should a criminal conviction for such as manslaughter later be returned. Lord Denman said that the company could test the case again if a claim was ever actually made.

The early awards against the railways were not proportionate to the value of the object moving to the death, in contrast to some of the awards against steamship companies. There was a significant change with the Stockton & Darlington case of 1839, when £1400 was awarded. In this case a new locomotive, the *Raby Castle*, was travelling at a reported 50mph when it collided on a level crossing near the Rokeby Hotel, Guisborough Lane, with the middle horse of a three horse and one coach conveyance. The carter, Thomas Gregg,²⁹ died and left a widow and six children. The jury made its award on the value of the locomotive but also found manslaughter against its driver, Matthew Appleton.

This created a sensation. 'Such a deodand is, we apprehend, unprecedented in the annals of this country, and a heavy infliction upon a public company for the conduct of one servant....we are left at a loss to conceive how it can be justified....' wrote *The Times*. The S&DR agreed, and launched an appeal, arguing that a deodand could not be awarded if the death was not accidental as the driver was accused of manslaughter, and also that the award exceeded the value of the locomotive. The appeal was granted in November 1839, when Appleton was in York gaol.

The accident at Howden, near Selby, in August 1840 was caused by a poorly secured iron casting on a truck and led to three immediate deaths and two later. One man had refused to get into the carriage behind the casting as it looked insecure. A deodand of £500 was awarded against the engine and carriages, which were the joint property of the Leeds & Selby and Hull & Selby Railways.³⁰ A similar sum was levied on an engine of the Eastern Counties Railway when four were killed at Brentwood in April

1840; although the line was only single track at this time, it was claimed there had been more than a dozen fatal accidents between Romford and Brentwood³¹ and it was rumoured the ECR would refuse to pay.

There was increasing pressure from *The Times* at this time to use the law of deodand to punish railway companies for their failure to protect passengers, much as there was a later clamour for an offence of corporate manslaughter. After £300 was awarded for the accidental death of a woman at 'Vauxhall terminus' in October 1840, the newspaper complained of the railway company's 'most flagrant, most scandalous, and most complicated neglect' and considered the sum 'paltry.'³² The *Thunderer* wished to see accidents caused by 'neglect or mismanagement at headquarters' punished with a deodand; it thought that if railway employees caused accidents, the management shared the responsibility.

In such an atmosphere, awards began to rise. £500 had become almost the minimum on a steam locomotive, but following another accident at Taylor's Junction near Selby in November 1840 the jury 'became very violent with each other' in arguing for an award between £10 and £1080.³³ The inquest lasted until midnight and in the end £500 was levied on the locomotive *Zetland*.³⁴ This award seems to have been quashed later on the basis that the jury had been discharged, and then were re-assembled to decide on the award.³⁵

The Times was pleased with the result of an inquest at Harrow in December 1840 into an accident which caused two deaths on the London & Birmingham Railway on 12 November 1840. This was blamed on a driver, Simpson, who had been retained by the company despite an earlier incident. Wakley, the Middlesex Coroner, was pleased when the jury found a deodand of £2000 against the locomotive and tenders (nos. 15 and 82) and also found that Simpson had murdered the other man as well as committing *felo de se*. Justice Williams then ruled against this, saying that cases could not be deodand and criminal. Wakley was also Coroner when another Middlesex jury brought in a deodand of £1000 on London & Birmingham locomotive no.91 after a collision at Camden in August 1845. Again he blamed the L&BR for poor management of its staff.

As the use of deodands came to an end, *The Times* commented on how juries had used this old law as a mechanism to regulate the businesses of a new age. It noted that juries:

....have within the last few years, since locomotives and trains have frightened them for their propriety,

again resorted to the imposition of heavy deodands even upon small occasions, in order to render their conductors more circumspect....³⁶

The end of deodands

As has been seen, a series of cases in which it was ruled that deodands could not be awarded when a criminal charge was being brought undermined the strength of deodands to deliver compensation to victims. The Grand Junction case was one of the first, but this was followed by an appeal by the owners of the *Manchester* whose captain ran down the bark *Tyrian* in the dark off Gravesend in February 1840, causing six deaths. The deodand of £800 on each death³⁷ against the ship was overturned on the grounds that its captain had been charged with manslaughter by the same Essex jury. Lord Denman stated in May 1841 that a jury had no power to impose a deodand when there had been a verdict of murder, though this was believed to be the first occasion of this combination.³⁸ This in turn contributed grounds to an appeal by the ECR after the Brentwood accident of 1840. In the meantime, the grand jury at Chelmsford 'ignored the bill' against Joseph Polwart,³⁹ the *Manchester's* captain and the deodand was eventually quashed.⁴⁰

However in January 1841 the Attorney General took the view that it was acceptable for an inquest to find a verdict of manslaughter and to bring a deodand, as they had done with the *Tyrian*. In his view, 'where fault was imputed to a party that was of all others the case when a deodand ought to be enforced.'⁴¹ However this view was dismissed by other legal authorities who concluded 'deodands being legal only in cases of death by misadventure.'⁴²

The deodand situation was also undermined by inconsistency in awards. In the Harrow case, the jury found for £2000 when the value of the engine and tender had been given by Bury, the locomotive engineer, at £1380. Yet when three men were killed in a tunnel on the London & Brighton Railway in January 1841, a deodand of only 1s was awarded against the locomotive's chimney which had caught the headings and brought the roof down. When four were killed in an accident at Haywards Heath later the same year, the instability of a four wheel engine was widely blamed — yet only a 1s deodand was awarded. After Wakley's jury awarded a £1000 deodand on the Camden accident in 1845, a correspondent to *The Times* complained of the irrational system which awarded £1,000, £150 and 1s respectively for more or less the same events — and argued strongly for an

Accident Relief Bill.

After the Brentwood accident on the Eastern Counties Railway in 1840 which killed four, the locomotive was conservatively valued at £125 in the first inquest and then similar sums claimed for the other three deaths. This was erroneous since the object could only be forfeited once.⁴³

One of the most famous deodand cases followed the accident at Sonning Cutting on 24 December 1841, when nine died following an earth slip. The Berkshire jury brought in a verdict of £1000 deodand against the engine, tender and carriages of the first eight who died and then a further £100 was raised after an inquest in Reading on a victim who died at the infirmary. *The Times* considered this 'a most proper' verdict. The jury thought the accident could have been prevented by 'efficient management, police or watch in the cutting.' The railway trade press was critical, the *Railway Magazine* complaining that 'a deodand is the most absurd of all things' and such verdicts were usually overturned anyway.

Therefore by January 1842 even *The Times* was starting to agree with the opponents of deodand. It realized the courts were turning against the process although it still stood up for the Sonning award on the grounds that to quash it would be cruel to the victims' families. By the end of January the Great Western had launched an appeal, arguing that the cause of death was unclear and one case had been heard by the wrong coroner. Indeed *R v GWR* found that the Reading borough coroner had no power to hold an inquest when the accident occurred outside the borough, even though one of the victims died inside it.⁴⁴ Unsurprisingly, when Gladstone began the discussions for his Regulation of Railways Bill, Colonel Sibthorp MP proposed a reform of deodand at the same time.

Another concern was that railway companies especially would get away without compensating the victims because it was easy to bring a legal challenge. Other grounds for appeal included the time of death being too vague, also the place not accurately stated, and the death wounds not proven to have been caused by the engine, although the victim was its driver. A common basis for appeal was incorrect citing of the company name — so a deodand on the Hull steamer *Pegasus* was overturned in 1843 because it was incorrectly stated to have been from the Hull & Leith Steam Shipping Company instead of Steam Packet Company.

An example of the farcical position was demonstrated by the aftermath of several deaths at

South Shields on the Brandling Junction Railway in October 1844. The jury awarded only £800 on the locomotive *Leopard*, much less than the value of the engine, because by that stage the company had merged into the Newcastle & Darlington Railway which it did not consider so fully responsible; the company was not at all grateful, overturning the decision on the basis that directors' names were given wrongly and it was not clearly shown how the deceased died.⁴⁵ Almost the opposite occurred after an accident at Beeston, Nottingham, in November 1845; the jury here awarded £1000 against the engine, tender and carriages of the Midland Railway whose management it blamed for making economies after it had taken over from the Midland Counties. It is probable that the £500 awarded after the locomotive *Irk* suffered a boiler explosion at Miles Platting on the Manchester & Leeds on 28 January 1845, killing three, also undervalued the engine.

Wakley would have retorted that most accidents were due to poor management at some point, and would have dismissed the coroner after a case at Defford on the 'Birmingham & Bristol Railway' on 30 August 1845 — who said he could 'not inflict any deodand upon the company for an accident which was entirely beyond their control.'⁴⁶ Locomotive no. 75 hit a truck that had been left on the line. They still awarded £1500 against the engine following a collision in which two had died, but the company appealed successfully on the grounds — amongst others — that the name of the company was wrong.⁴⁷

But juries did not always use deodand to provide compensation. In December 1845 two men were killed on the Norfolk Railway and General Pasley condemned the Robert Stephenson locomotive; three of the jury wanted a deodand of £500 but failed to convince the others. Whereas deodands were often appealed against by those who were expected to pay out, cases of the victims' families appealing against a miserly award have not been identified.

Confusingly, juries also made awards — albeit small — even when the railway company plainly was not at fault. In February 1845 an award of 1s was made against a locomotive of the LSWR after a policeman committed suicide near Winchester and in November 1845 an award of 1s was made after a trespasser was run over between Birmingham and Bristol. People who were run over through their own fault received little, such as the woman who was run over at Rugby in 1844 trying to get into a moving carriage despite being warned — there was a 1s award. Two people run over crossing the line at

Balcombe in 1846 resulted in 1s on the engine — the jury clearly feeling that fault lay with the pedestrians.

Some of the final awards were made against water transport. In April 1846 two died at Hungerford Pier, which was less of a pier and more of 'a collection of worn out barges ... called by courtesy a pier.'⁴⁸ A deodand of £50 was levied on 'a pair of crazy barges and a tumble down platform.' More seriously still, 13 died after the *Rambler* steamboat was in collision with the *Sea Nymph* on the Mersey in June 1846, with £500 awarded on the latter by a Cheshire jury and £200 by a Liverpool jury. An appeal against this at the Bail Court in November 1846 heard that 'old books' said a ship in salt water could not be subject to deodand and indeed the Crown proceeded against both coroners on this basis.

Lord Campbell's Fatal Accidents Bill⁴⁹ was introduced in February 1846 in parallel with a bill to abolish deodands presented by Lord Lyttleton, thus trying to give the impression that the railway companies were not getting the whole victory. 'Clearly the first was intended to ensure the enactment of the second', one historian wrote.⁵⁰

Reaction to the Bill was mixed. Wakley, who was MP for Finsbury, called it 'an extremely crude measure.' He gave an account of the London & Birmingham accident where the jury had awarded £2000 because the man who caused the accident had been kept on by the company despite earlier failings. Wakley said he had taken the best legal advice, yet still the award had been overturned by the Court of Queen's Bench who treated it as 'almost worse than waste paper.'⁵¹ This would appear to refer to the case of *Regina v LBR* of 2 June 1841, overturning the Harrow verdict. Sir George Grey pointed out the bizarre circumstance that compensation could be claimed for someone who was injured, but not if the person died.

At the third reading (of the second Bill) in August 1846, Lord Somerset raised the question of the Queen's opinions as she earned over £800 a year from deodand awards but the government reported she had signalled her acceptance of abolition. It was considered there was a risk that the Lords would so amend legislation that people might get no compensation at all. The Attorney General thought that though a jury 'would occasionally run riot, they were right in the main, and the courts could always remedy a verdict of excessive damages.'⁵² The abolition of deodands received Royal Assent on 18 August 1846 and came into effect from 1 September that year.

During the debate, Wakley worried that the compensation legislation would be ineffective. The Fatal Accidents Act 'provided quite inadequate compensation in most cases and meant that, after the abolition of the deodands, the relatives of victims of railway accidents were left with few rights ...'⁵³

However thoughts of the deodand were not quite dead. In 1868 Mr Greene MP called for its revival to punish colliery owners and in 1877 there were calls to bring it back to combat the carnage on the Metropolis' roads—217 were killed in 1876, including 12 by trams and 17 by omnibuses. In 1937 Lord Newton also suggested a revival of deodand to control road accidents.

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30. *The Times*, 15 August 1840. Freeborn quotes the *York Courant* and an award of £50
31. *The Times*, 31 August 1840
32. *The Times*, 24 October 1840
33. They were dismissed by the coroner and bound over to appear at the assizes
34. *The Observer*, 22 November 1840
35. Walford, p.365
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37. *Manchester Guardian*, 29 March 1840
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46. *The Times*, 19 September 1845
47. There was a Bristol & Gloucester, and a Gloucester & Birmingham, but not a Bristol & Birmingham
48. *The Times*, 17 April 1846
49. As was often the case with legislation, names became confused. This was also known as the Accident Compensation Bill
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A Maglev for Brighton?

Peter Brown

In August 1974 Bhalchandra Jayawant, Professor of Control & Electrical Engineering at the University of Sussex, demonstrated a prototype vehicle using magnetic suspension, claiming that it could be the forerunner of a revolutionary new urban transport system.

At that time, Brighton Borough Council was contemplating replacing the historic Volk's railway. It was suggested that by 1980 it would be necessary to move one million people per year with a peak rate of 7,500 people a day between the Palace Pier Centre and the general area of the then controversial new Black Rock Marina.

Council officials viewed the one-ton four-seat prototype car, and were said to have been impressed by it. For the Brighton sea-front system it was envisaged that cars would be some 3 metres long, 2 metres wide and 2½ metres high, designed to take six seated and up to six standing passengers. The maximum speed would be in the order of 30 mph but the normal operational speed would be between 15 mph and 20 mph. The frequency to cope with the demand experience by Volk's Railway, that is, up to 400 people an hour in each direction would be about 1½ minutes. If demand proved to be double that, the vehicles would be coupled in pairs. It was thought that twelve vehicles would be needed initially.

The 1½ miles of twin tracks, together with the vehicles, was estimated to cost about £2½ million. It was suggested that if Brighton Corporation backed the proposal as a replacement for Volk's Railway, the Government might be persuaded to fund much of the cost as an experimental system, the lessons from which could then be applied elsewhere.

The advantages claimed for such a system were:

- there is no friction between the vehicle and the track, which reduces the propulsion power required by the vehicle, and hence reduces the running costs.
- a magnetic system produces a very good suspension for the vehicle which gives the passengers a smooth ride, even when there are slight deformities in the track, without requiring a secondary suspension system.
- the system would be noiseless.
- small unmanned and centrally-controlled vehicles operating at frequent intervals would cope well

with peak demands yet be economical to run during the slacker periods.

the system should be more reliable than either wheeled vehicles or an air-cushioned 'hover train' alternative.

the absence of electrical contacts between the vehicle and current-carrying conductors would be a particular advantage in the sea-front salt-laden environment where corrosion (and, in winter, icing) could otherwise be a problem.

the relatively light vehicles, weighing between 1½ and 3½ tons depending on the number of passengers carried, would enable the track to be light and unobtrusive.

the novelty of the system would be a special feature for a holiday resort and would therefore attract more people to the town.

because it would be developed in association with the town's university, local people would take a special interest in the project.

Professor Jayawant thought that it would take another two and a half years to complete research and a further two years to bring the scheme to reality — so the noiseless, pollution-free minimal-friction tramway could be a reality by 1980.

He emphasised that it would be an experimental system, but it would give a valuable base for building further systems. Magnetic city trams could run at 100mph, and the system could be adapted for long-distance routes with trains running at more than 300mph.

The context

In the 1960s and 1970s there was much debate about the best technology for very high speed inter-urban passenger transport. One possibility was the Advanced Passenger Train (APT), a tilting train which would use existing railway tracks; alternatively new railway lines could be built specifically designed for high speed travel. But if new lines were to be built, alternatives to wheels on rails could be considered, systems which would give virtually frictionless transport at lower speeds and excellent acceleration and deceleration. (At high speeds, air resistance is the most important factor).

By 1970, the leading rival in Britain was the 'tracked hovercraft', where the train was raised on a cushion of air. Various propulsion methods were considered, the preferred option being the linear induction motor, which provided traction through the interaction of magnetic fields on the vehicle and a fixed external system. A test track was constructed in Cambridgeshire and in February 1973 the first test train reached 104mph, but only a week later the government refused to contribute further funding.

Alternatively, various magnetic systems could be used to raise the train, four of which seemed the most promising: levitation using permanent magnets; levitation using superconducting magnets; levitation using eddy currents induced by mains frequency excitation; and suspension using controlled DC magnets.

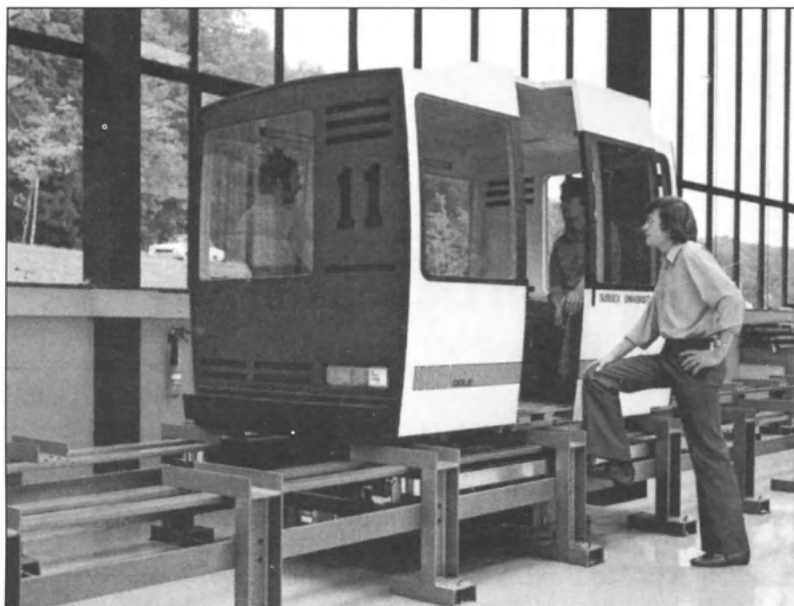


Figure 1

Design principles of the Brighton system

The Brighton car was *not* raised above the T-shaped track by magnetic repulsion, as one might think. Instead, arms descended from the coach on each side and went under the track; these arms contained DC electromagnets which were attracted to the track, raising the car against the force of gravity. The feedback system measured the amount the car

was raised and automatically adjusted the strength of the electromagnets to ensure that the optimum raise was maintained. Relatively little current was used in the lift system, so on-board batteries would be adequate. The vehicles for the Brighton sea-front system were estimated to require some 2kW to 3½kW power for suspension.

One fundamental difference between magnetic suspension and magnetic levitation is that suspension systems are stable even when stationary. Generally levitation requires forward motion to generate lift.

When suspended the vehicle in Figure 1 was frictionless — it could be moved with the lightest touch. However, when a magnet is moved near a conductor, eddy currents are induced: a basic motor/generator principle. So when the vehicle moves the suspension magnets induce eddy currents in the track and there is speed dependant resistance. The faster you go, the greater the drag — and that was the biggest problem. Laminated and iron oxide compound tracks were considered but proved uneconomic.

The car was kept on the track by a similar magnetic arrangement working sideways. Route switching (points) was one of the design difficulties, though Professor Jayawant patented a system which required a second set of electromagnets on the car — effective, but adding to the weight. The propulsion system was another issue. Track-wound linear motors would be very expensive other than for short journeys such as in airports. Most on-board electrically-operated propulsion systems would need some method for power collection, implying a contact system. For very high speed units a jet system might be preferable. For Brighton it was proposed that a 10kW or 15kW linear induction motor would be on board, with batteries being charged at the end stations.

Later developments

Brighton never received its maglev system, of course. Volk's 1883 railway still operates along the sea front.

In the early 1970s a new arrangement of magnets was designed which allowed a single linear motor to produce both lift and forward thrust. This concept was used for the world's first automated maglev system which ran between Birmingham International railway station and the air terminal from 1984 until 1995.

In the late 1900s the University of Sussex featured again in the history of the maglev when a 20 foot long test track was constructed to demonstrate its possible use to launch the space shuttle, a method which it was hoped would be a simpler and greatly cheaper alternative to the lift-off booster rocket.

Notes

This article was prompted by a chance remark by a friend, David Aylwin, who worked on the project when at the University of Sussex. I am grateful for the information he provided and for the loan of his papers.

Professor Jayawant disliked the term 'maglev', considering that those systems which used magnetic attraction forces should be called 'suspension'.

The research was funded in the large part by a grant from the Wolfson Foundation under its scheme of Scientific Research Linked with Industry.

Principal sources:

B V Jayawant, *A New Transport System for Brighton*, privately circulated paper, 1974

Brighton & Hove Gazette: undated cutting (probably August 1974)

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Wolfson Magnetic Suspension Project: undated booklet (probably 1975)

B V Jayawant, *Electromagnetic Levitation and Suspension Techniques*, Edward Arnold, 1981, chapters 1 & 5

Road Transport in Doncaster

Philip Scowcroft

The road transport of Doncaster (which here includes the area of the present Doncaster Metropolitan Borough) may be said to start with the Romans, though there were prehistoric trackways in the area.¹ The earliest known road junction was Roman, between the Lincoln and York road (which passed through present-day Doncaster as the limit of navigation on the Don until the 18th century, and a convenient crossing point of the river between the marshlands to the east and high cliffs to the west) and a branch road to Templeborough. The Roman roads initially had a military purpose, as did Doncaster itself, but trade developed later. In the Middle Ages further roads fed into the town from Barnsley, Penistone and Saltersbrook, bringing salt from Cheshire, from Tickhill to the south and from Thorne to the east, developing the town's trade and markets and bringing, besides salt, charcoal for local iron industries, iron products, Sheffield cutlery, Derbyshire lead and Yorkshire woollens, livestock

and produce to the market. To this day Doncaster stands at the crossing of major north/south and east/west routes. The Roman bridge over the Don was often renewed, importantly (and expensively) in stone in 1248; the roads, even the original Roman ones, were in bad condition by 1500, better perhaps in Doncaster itself, where the borough was responsible for maintenance, than in surrounding areas.²

From the earliest times people travelled on foot or horseback, with private carriages starting to appear in the 16th century. Carts and wagons for goods were known long before as tolls were charged on them when the bridge was rebuilt in 1248. These were 'short haul' in the main; packhorse was the principal means of long distance goods traffic until perhaps 1750.³ Stagecoaches for public passenger travel first appeared in 1658 when a London-York service up the Great North Road took four days in summer, six in winter if one was lucky. By the 1730s there were competing coaches in the London-York corridor and

the London–York timing was down to two days by 1764. Four operators were in the field by 1775, two working daily. Beyond York travellers could reach Newcastle and Edinburgh, and London–Leeds and London–Carlisle coaches often worked through Doncaster. Coaches to Hull, at times competing with steamers from Thorne after 1816, Sheffield, Wakefield and Manchester also developed and a web of connections had been spun by the time of the great age of Doncaster coaching. Connections were as important for a traveller⁴ as times and fares, both of which came down steadily.

Doncaster had the infrastructure to support its road transport industry: inns, at least ten of which were involved as booking offices and watering holes for horses and passengers; coach builders (three in 1837); blacksmiths (nine in 1837); and saddlers, harness makers etc.⁵ Postchaises ran up the Great North Road from 1753 and mail coach services from 1786, two years after the first one on the Bath Road, replacing postboys on horseback. The Angel Inn(s) were strongly associated with the Royal Mail: the ‘old’ Angel from 1749, then, directly opposite in Frenchgate, the ‘new’ Angel (Angel and Royal after Queen Victoria stayed the night in 1851). The former was demolished in 1848, the latter survived as an inn into the 1960s.

The coaching era

The years 1815–35 were Doncaster’s great coaching era. In 1815 the London–York time was just 28 hours; on 1 May that year the Leeds Royal Union Coach ran from London to Doncaster in 16½ hours, covering the 14 miles between the Bell Inn at Barnby Moor and the (new) Angel in the suspiciously precise time of 59 minutes. Fares also came down; London–Doncaster ‘inside’ was 1½ guineas in 1790 and was soon further reduced.

Three factors enabled the higher speeds: improved coach technology; better bred, and fed, horses; and most importantly, improved roads. An Act of 1555, making parishes responsible for road repairs in their areas led to qualitative inconsistency of maintenance. From the late 17th century turnpike trusts were established by statute to collect tolls from travellers on major routes and apply the takings to road maintenance.⁶ Those for roads involving Doncaster were established rather later than the average nationally — Doncaster–Wakefield, Doncaster–Saltersbrook, Doncaster–Boroughbridge, Tinsley–Doncaster, Barlby–Worksop, Doncaster–Bawtry,

Doncaster–Thorne and Doncaster–Selby,⁷ the latter two (1825 and 1832) very late. Travellers not unreasonably resented turnpike tolls, often going to great lengths to avoid payment, by fibbing about their destination at a road junction by the toll house or, in one case at Thorne, bypassing the toll gate by going along the edge of the nearby canal.⁸ It was common for defaulters to be taken to court. Often the later a turnpike trust was established, the earlier it was to be abandoned; Doncaster–Thorne was a case in point.

By 1835 interlocking coach services ran from Doncaster to York, Edinburgh and London, four times a day in each case, to the West Riding towns, to Nottingham, Leicester, Stamford and Manchester, to Bridlington and Scarborough in summer, to Sheffield six times a day, to Hull (direct, or to Thorne and thence by steam packet) and to the resort of Askern Spa, six miles distant to the north. Coaching was now big business, ruthless rather than romantic. Doncaster’s leading coach magnates were Richard Wood, in business for over 40 years, and Thomas Pye, landlord of the New Angel, both canny businessmen. Wood, a master of coach connections, gave the painter J F Herring a job as a coachman,⁹ experience that may have helped him paint St Leger winners and other horses and idiomatic coaching scenes.

Nothing lasts for ever. Railways, quicker and cheaper, spelt doom for many coaches. As early as 1830 a Doncaster–Manchester coach service (the *Railway*) connected with the Liverpool & Manchester Railway. By 1846 only one long-distance coach ran on the Great North Road and that connected with the Eastern Counties Railway at Cambridge. But not all coach services disappeared overnight. Services to Nottingham and Lincoln survived better, as direct railway travel especially to Nottingham was more difficult. Sheffield coaches lasted for some four years after Doncaster–Sheffield trains began in 1849. The railway was late in arriving at Doncaster (1848) but quickly developed. Many Doncaster coach operators, even Richard Wood, had to advertise feeders to steam packets or railway stations, which earned them a living for a time.¹⁰ Interesting services appeared around 1850. One could travel between Sheffield and Hull by train to Doncaster, coach to Thorne (which had no rail connections until 1855) and to Hull by paddle steamer. And before 1848, when the railway reached Doncaster, the town relied on coaches, sometime ‘aquabuses’ to and from Swinton. However coaches were a thing of the past by 1860; a Doncaster–

Rotherham coach of 1875 was a conscious nostalgia (or 'heritage') revival.

Of course road transport did not stop or even decline when the railway arrived. It even increased, quantitatively, aided by Victorian prosperity and population growth and, both for passengers and freight, became short haul in character, with tradesmen's vans increasing hugely. A sedan chair service for local travel, begun in 1800, interestingly as a Doncaster Corporation exercise, predated municipal trams by 102 years. Six uniformed chairmen were employed; the service lasted 20 years.¹¹

Goods traffic

Goods had to be moved from the earliest times. It has been seen that freight long depended on packhorses. Carts and waggons, familiar in Doncaster streets by 1700, had a limited radius of operation. A leading Doncaster carrier, Abraham Pilling, died in 1695; his inventory included 16 packhorses (rather few, maybe, yet around average for a contemporary carrier) and no carts. According to local drawings, packhorses could still be seen until after 1800 though they had been largely superseded by stage waggons, the first being advertised in 1743, a London-York service taking five days in summer, six in winter, carrying goods and, more cheaply than coaches, passengers. It was followed by others which worked to Wakefield, Sheffield, Leeds and Halifax. Many waggons were based in Doncaster, an early terminal being the (still existing) Woolpack Inn in the Market Place. Richard Wood was also involved in the waggon business, whose peak was, as for stage coaches, 1815-35; his waggons left the Reindeer Inn for London, reached in three days, Newcastle, Edinburgh, Carlisle and Manchester.¹² Waggon technology developed; a Doncaster firm, Anderton's, built Johnson's Improved Patent Waggons. This did not help them combat the railways as all had gone by 1852.

The country carriers of which Doncaster — usually its market place — was a focus until the late 1920s, came from dozens of surrounding villages with an average radius of up to 12 miles. These operated generally on Saturdays, as a rule carrying passengers (for small, or perhaps no, sums of money) as well as produce. In 1867 36 Doncaster area villages were served by 43 operators; in 1877 these figures were 39 and 46, in 1889 36 and 41, in 1908 38 (30 of which had no adjacent railway station) and 34.¹³

Local haulage firms were legion, many quite short lived. An exception was Westfields of York Road, coal merchants and removal contractors from 1896 and in business until recently, which began with horse traction, then in 1905 (and unusually, as most steam engines were used by showmen, farmers and those owning road rollers) with steam and finally motors. Horse-drawn transport was slow to disappear and was common until the 1930s and survivors could be seen in the 1950s. The first black maria (1914), with a custom-built body by Wyers, was horse-drawn. The earliest motor fire appliance was delivered in 1914, price £1067 (in 1907 the Great Northern Railway had a steam one, presumably built at the Plant Works). Motor horseboxes appeared only in 1932.¹⁴ Thorne had no motor fire engine until 1933; Steadman & Son retained horse-drawn hearses until 1934. In 1930 17% of the 141 hackney licences granted for Leger Week were for horsed vehicles.

Inter-urban traffic

In the post-1850 era, the longest passenger transport operations were inter-urban horse-bus services: Doncaster-Rotherham and Doncaster-Bawtry. Omnibuses, meaning, in this context, large hackney carriages, and smaller cabs serviced the railway station, some owned by leading town centre hotels. Other cabs were brought in during the September race week to move some of the large crowds, though many walked to the course. Public 'stage-carriage' horse buses began in 1889.¹⁵ Some were operated by the livery stables: Steadman & Son, whose buses operated to Avenue Road, north-west of the town centre, and Hyde Park, to the south, both short distances, little more than a mile, the buses drawn by two or three horses and charging a flat penny (1^d) fare, and C G Steadman, a fierce rival despite (or perhaps because of) the family connection, whose buses ran to Hexthorpe to the west and Pickburn, Brodsworth and Marr, three villages to the north, probably using one vehicle for them all. Both firms hired out horse-drawn vehicles, both ran public excursions to local beauty spots, including Roche Abbey, and to shows, farm sales and sporting events,¹⁶ usually cricket and racing. Local coachbuilders Smith & Son¹⁷ actually ran Doncaster's first publicly advertised excursion in 1880, the Steadman firms following hard on their heels. Others operated local bus services, possibly stage carriage in nature, from nearby Bentley (Stoppani), Mexborough (Biggins), Conisbrough (Williams) and Tickhill (Saxton). Most worked buses

part-time; Williams was an innkeeper, Saxton a general carrier. Others ran market buses to Doncaster, usually on Saturdays. From 1889 the local emporium Hodgson & Hepworth provided a bus link between their town centre premises and various suburbs.¹⁸ The two Steadman firms acquired Dennis motor charabancs in 1908, each gradually replacing the horse-drawn four-in-hands, waggonettes and charabancs. Each claimed to be the first to operate motors; Steadman & Son won, it seems, by a week. When not required for excursions, the Steadman firms worked motors to Brodsworth Colliery in Woodlands, but it is unclear from the evidence whether these and similar services by others and to other pits were stage carriage or contract.¹⁹ Bus provision was patchy, even occasional, up to the Great War but Doncaster's central area and some outer suburbs were served by municipal trams from 1902.

Tramcars²⁰

A Doncaster horse-tram scheme in 1878 was abortive, but powers to operate an electric system under the Light Railways Act 1896 were obtained in 1899. Eight routes, spreading outwards from Station Road (the town centre terminal of the Steadman and Hodgson horse buses) opened in 1902-3. One very short route closed in 1905 and Brodsworth (Woodlands), partly on reserved track, was added in 1916. Initially 25 cars worked the system (47 by 1920), on a basic single-track layout with passing places, though the Racecourse route was double-track almost throughout, so that it could carry the large crowds in the September race week (at a premium fare and using most of the fleet). Trams reduced the numbers — by about half (from 508 to 266 between 1901 and 1906) — of short-term hackney carriage licences for race week and they drove the Steadman and Hodgson buses off the road. The first tram top covers appeared in 1907, on the Racecourse route. The Great War, which saw a twofold increase in passengers, also brought Sunday working, female conductors and extensions to service three new collieries: Brodsworth, Yorkshire Main and Bentley.²¹

But in the 1920s the tramways needed capital investment to renew track, vehicles and adjacent road surfaces. Between 1928 and 1931 the tram routes, except Brodsworth, the most recent, were replaced by trackless trolley vehicles (Brodsworth lasted until 1935 when it was taken over by buses). The Corporation preferred the trolley option, ultimately, although extensive thought was given to the question,²² because the vehicles were then larger,

more reliable and had more life expectancy than buses. Further, until 1948 the Corporation owned its own electricity undertaking. In the change-over, amendments were made. Warmsworth was cut back by over half a mile, other routes were extended to serve new building development and the Hyde Park and Racecourse routes became circulars.

The 'trackless' served Doncaster well for a generation, but by the mid 1950s electricity had become less viable as a fuel and the motor bus was more competitive, more flexible and more reliable. Bentley was the first to change, in 1956, Beckett Road the last (December 1963). In 1985-87 the South Yorkshire Passenger Transport Executive (SYPTe) experimented with a new trolleybus on a track beside the racecourse and obtained powers to run trolleys on four routes, two of them never trolley-operated pre 1963. Bus deregulation ended the experiments. Mexborough & Swinton Traction, serving *inter alia* Mexborough and Conisbrough, had a similar tram-trolleybus-bus progression before Yorkshire Traction took it over.

Motor buses

Pre-1914 motor services were few and it was 1920 before the bus age really dawned in Doncaster. Not until 1922 did the Corporation obtain statutory powers to operate buses. By that time there were nine collieries in the vicinity, each with its adjoining residential development. Four, or strictly three and a half, were already served by Corporation trams; for the remaining five, lengthy and costly tramway extensions would have been required and they did not get beyond feasibility studies. In any event the void was already being filled by buses, mainly run by small operators, including a number of pirate (i.e. unlicensed) operators which although unofficial, not to say illegal, contributed importantly to the area's transport. Later some of these poachers turned gamekeeper.

Eventually the Corporation served seven of the newer colliery settlements, some jointly with other operators. Its first route (1922) was to Skellow (near Bullcroft pit) and during the 1920s routes to Rossington, Hatfield, Edlington (for Yorkshire Main), Stainforth and Armthorpe, all colliery settlements, followed, along with a Sheffield route jointly with Rotherham and Sheffield Corporations.²³ Either side of 1939-45 new routes appeared, to serve large new housing estates in Doncaster's central core and buses eventually took over the former trolley routes.

Double deckers came on the scene in 1925, diesel buses (Dennises, Leylands, Bristols, Daimlers and AEGs) in the 1930s. The system contributed importantly to the war effort in 1939-45 with 16 million extra passengers annually, despite there being fewer buses and petrol and rubber shortages.²⁴ The Corporation system's final days were marked by efficiency and enterprise, including experiments with minibuses ('midibuses'), an attractive new livery with a striking purple stripe, and more bus shelters. In 1974 34 routes, exclusive of works, school, contract and coach services, were handed over to the new SYPTE which operated Sheffield, Rotherham and Doncaster buses for 12 years and whose cheap fares policy expanded public usage until deregulation put a stop to it. Former Corporation routes essentially survived under the post-1986 successors Mainline and, now, First; additional routes cater for new developments, residential, industrial and leisure.

Only between 1902 and 1974 was Doncaster Corporation a transport operator (ignoring the sedan chair venture). But its involvement in road transport has included repair of its central roads and bridges (for eight centuries) and the grant of licences for private hire vehicles and, from mid-Victorian times, hackney carriages. The peak of hackney carriage licences — all horse-drawn — was 1899 (709, only 125 to local operators, the rest for the September race week) but the trams caused their numerical decline. The first motor taxi was licensed in 1907; there were still 24 horse-drawn hackney carriages in Race Week 1930. Private hire motors were available from around 1900 from the local firms Smith & Son, W E Clark and others.

After 1920 there were, and still are, many other operators, major and relatively minor. Buswise Doncaster was and even still is a frontier area with, first, Yorkshire Traction (pre-1929 Barnsley & District Electric Traction) spreading aggressively eastwards from its Barnsley heartland to Doncaster by the 1920s (briefly even further, as it operated a Doncaster to Goole service from 1929 to 1933 and many excursions, to east and west coast resorts by the 1930s). Even in 1914 the 'Tracky' licensed a Doncaster-Goldthorpe route. Competition with the Doncaster Corporation at pressure points like Skellow and Woodlands led to joint working on several routes. Other wide ranging companies worked into Doncaster from different points of the compass: West Riding (now Arriva) from Wakefield; Lincolnshire Road Car from the east; and most importantly, East Midland (formerly T W Underwood) from the south. East Midland and

Yorkshire Traction are now part of the Stagecoach empire. These successor companies retain most of their constituents' routes and influence.

Doncaster was long noted for its wealth of small, homely independent bus operators, especially in the Thorne and Rossington corridors. They emerged in the 1920s and 1930s; several small companies survived to be taken over by the SYPTE in the 1970s and 1980s, before which several worked jointly with the Corporation in both these corridors, which embraced colliery areas. An exception to that coalmining theme was Leon Motors, which from the 1920s served agricultural settlements to the south east and surviving latterly on its excursion portfolio and after 1936 the presence of RAF Finningley (now Robin Hood civil airport, with some varied connecting bus services) and particularly its Air Display between 1945 and 1994.²⁵ Another exception was the coach from Wilfreda Beehive²⁶ which in 2010 still has a few stage carriage services, the only one — as Leon sold out to First a few years ago — of all the independents to survive locally after the 1985 legislation had brought a modest but temporary revival. The entrenched positions of Doncaster Corporation/SYPTE/Mainline/First and Yorkshire Traction/East Midland/Stagecoach survive almost untouched from pre-1974 days.

The variety of bus services available has never been greater, including park-and-ride, airport feeders,²⁷ hospital services²⁸ and much else. Not until 2005 did Doncaster have one central bus terminal, next to the railway station, as it should be; at one time there were eight town centre terminals and for many years three. Road excursions had a longish history even in 1920, which was continued by a variety of operators. Pre-1914 firms like the Steadmans dropped out to concentrate on taxis and, now, funerals. Post-1919 excursion operators included Ed Farmer's Purple Bus Company (Farmer was dubbed 'the Dick Turpin of the Doncaster bus world'), Fisher's, who ran a café-cum-booking office in Waterdale, Doncaster (a monograph could be written on catering and coaching locally), Leon's, Wilfreda, Camelot Coaches, a one-man (and one-woman) firm, Yorkshire Traction and in their earlier days, East Midland. Long-distance coach services exploited Doncaster's prime road position, shrugging off railway opposition.

Manufacture for road transport

Some major firms locally progressed from selling

bicycles (cycling was a craze, especially from around 1880)²⁹ to motor cycles, then cars. Two such were W E Clark,³⁰ who came from Derby in 1880, and J A Bassett,³¹ each produced their own bicycle designs. Many local bicycle dealers thrived in the 1920s. Other firms in the private car business included Smith & Sons, who had long been coachbuilders and went bust in the slump of 1930, A G Wyer³² and E W Jackson & Sons, all prospering by 1914. Jackson's built their own Cheswold cars (named after a river close by), 75-150 examples developing 16 h.p., between 1911 and 1914 including a few ambulances for collieries — quality jobs and hence expensive at £345, three times the costs of the Fords Jackson also sold in 1914. A Cheswold survives in Doncaster Museum.³³ Early on, garages sold cars as a sideline to repairs. A wealth of makes, including by 1930 many foreign ones, were sold locally, and even in the Great War, though 1939-45 was a leaner time. An unusual car dealer was R C Hopkinson, restaurant and provision merchant, who in the 1920s sold cars, even 20-seat buses, at competitive prices. Doncaster's car and other vehicle building did not end with the Cheswold. After 1945 it built Ford cars in numbers and mechanical tractors for International Harvesters (or Case). In 1932 Harold Wilkinson of Carr Garage Works built a petrol tanker body of 2500 gallons capacity for Redline Glico, a juggernaut then. As another example of the town's mechanical enterprise, Corporation employee Mr Farrar built a fire tender for the municipal airport opened in 1934.

The stagecoach kings Pye and Wood, the Steadmans in early excursions, taxis and buses, Jackson's for the quality Cheswold car, Clark and Bassett, various haulage and bus pioneers and, for much of the 20th century, the Corporation all responded to challenges and they served Doncaster (and themselves) well. Doncaster road transport helped develop local industry and leisure, notably the races. Though it was never insignificant, it now carries a larger proportion of goods traffic than at any time.³⁴

Notes and references

This article is based upon occasional papers (RTG OP) published by the RCHS Road Transport Group.

1. RTG OP 285
2. RTG OP 197
3. RTG OP 3
4. RTG OP 211

5. RTG OP 91
6. RTG OP 175
7. For the official opening of the Doncaster to Selby turnpike, see RTG OP 223
8. RTG OP 62, 206
9. RTG OP 56
10. RTG OP 39, 54, 103
11. RTG OP 1, 112
12. RTG OP 3
13. RTG OP 18. The figures come from various Doncaster directories published at the time
14. RTG OP 77, 84
15. RTG OP 37
16. P Scowcroft (1987) *RCHS Journal* vol.XXIX, pp.78-85 and (1991) vol.XXX, pp.198-203
17. RTG OP 225
18. RTG OP 37
19. RTG OP 10
20. RTG OP 4, 65
21. RTG OP 15
22. RTG OP 23
23. RTG OP 17
24. RTG OP 24
25. RTG OP 119
26. RTG OP 119
27. RTG OP 275, 276, 316
28. RTG OP 390
29. RTG OP 137, 237
30. RTG OP 31
31. RTG OP 185
32. RTG OP 378
33. RTG OP 13
34. Several townships within the present Doncaster Metropolitan Borough have a road transport history of their own: Bawtry (see RTG OP96), Mexborough (RTG OP 156), Thorne (P L Scowcroft (1996) 'Nineteenth Century Stagecoaches and Carriers in Thorne', *Thorne Local History Occasional Paper no.21* and P L Scowcroft (2009) 'Transportation and Thorne: a brief history', *Thorne Local History Occasional Paper no.30*, pp3-7) and Tickhill (P L Scowcroft (2010) 'By Road and Rail: a brief history of Tickhill's transport', *Tickhill & District Local History Society Occasional Paper no.8*)

Correspondence

A Terrible Accident

(*RCHS Journal*, March 2011, 23 and July 2011, 55)

I was interested to read Mr Johnson's response to my article 'A Terrible Accident'. He usefully detailed the Cambrian Railways response to the Welshampton accident. May I comment on some points which he raised.

The evidence given by the Lancashire & Yorkshire guard, David Mawson, was in fact included as an addition to the end of Colonel Yorke's published report. This confirms that Mawson's evidence was supplied 'through the Superintendent of the Lancashire & Yorkshire' as he was still off work at the date it was taken. His evidence was received after the completion of the main body of the report on 9 July 1897. The short comment by Colonel Yorke, which includes Mawson's evidence, is dated 23 July 1897. It is thus not true that the Cambrian had not been informed of the content of Mawson's statement, the Cambrian Railways having received a printed copy of the report on 9 August 1897. Denniss' complaints were not justified in that respect at least.

In his statement Mawson is clear that he 'observed that the rear wheels of the second engine tender were off the road' whilst he was 'positive the van was not then off the rails'. Colonel Yorke notes that Mawson's 'account agrees with the conclusions at which I had already arrived'. Although Mawson's evidence was not tested by cross-examination, it only served to confirm Colonel Yorke in his already formed conclusions and was not the crucial evidence on which the report's conclusions were based.

That the Cambrian Railways was reluctant to accept the Inspector's findings is not altogether surprising. The severe criticism of that company reflected badly on its management and Denniss possibly thought that attack was the best form of defence. However, following legal advice that they would be unlikely to succeed in defending the claims against it in court, they did pay out compensation to those affected adversely by the accident. Despite their criticism of the report, it still remains more likely than not that Colonel Yorke

was correct in his assertions that the causes of the accident were the combination of the speed of the train and the poor state of the permanent way. Both clearly the responsibility of the Cambrian Railways.

Frank Shackleton

Mystery House

(*RCHS Journal*, July 2011, 31)

The old picture from the *Strand Magazine* of many years ago reminded me of conversations some years ago about this very subject. We are all used to seeing illustrations of old coach bodies being used for housing, but this was unusual as the old body in this instance had been lifted up to first floor level. Fortunately, although I heard all this from the late Mike Jolly, I was able to check the details recently with Alan Garner, now the Chairman of the Broad Gauge Society.

Not only did Mike find this house, which is still extant, he measured it with the assistance of the owner, and put together a portfolio which is held by the Broad Gauge Society. Alan also saw this house, and reported that it is not so recognisable now as it has been tile hung, a common finish in Hampshire, the house being near Newbury.

Curious though it is to lift a very heavy broad gauge coach this high, this house is not unique as two further examples are known by Alan, one in Gloucestershire, and another in the Wolverhampton area. Should any members wish to follow this up with Alan, he may be found at:

8 Finches Park Road

Lindfield

Haywards Heath

West Sussex

RH16 2DN

The *Strand* article says that only the side panel of the carriage may be seen, but I can confirm from the sources above that the carriage was complete with many original features including doors with their locks and partitions. I understand that a watch is kept on the three examples to attempt to safeguard these rare survivals.

Mike Day

Railway Investment in Manchester in the 1820s
(*RCHS Journal*, July 2011, 38)

Paul Reynolds in his article perhaps tries too hard to find rational explanations for subscriptions made to proposed railway companies in the height of the company boom of 1825, a time of feverish speculation which gave a foretaste of the railway mania twenty years later. 'Never perhaps was speculation more diversified or so insane as in England in the year of grace 1825' wrote L H Grindon in his *History of Manchester Banks and Bankers* (1877, 130).

However that may be, Paul Reynolds does not refer to one important reason why Manchester investors might have chosen to put their money in the CHPR in 1825 rather than the LMR. It was not then evident that the CHPR was not in the same league as the LMR, technologically or financially, as explained in my 'Success and Failure in making the transition to a modern railway: the Liverpool & Manchester and Cromford & High Peak' (*Early Railways* 2, 2003, 52-63). In 1825 the CHPR was seen as providing a much needed link between the East Midlands and Manchester and Cheshire by closing the gap between the Ashton and Peak Forest Canals and the Cromford Canal. There must therefore have been an incentive for those holding shares in those canals to purchase shares in the new linking railway in the expectation that not only would shares in the CHPR itself prove lucrative, but the through traffic to and from the East Midlands and the Manchester and Stockport area made possible by the railway would improve revenues on the Ashton and Peak Forest Canals and enhance their dividends and shares.

J R Ward (*The Finance of Canal Building in Eighteenth-century England* (1974), 57-60) established the place of residence of 91 of the 121 shareholders named in the Act of incorporation of the Ashton. 63 of these lived in Manchester. In the case of the Peak Forest Ward's analysis identified the residences of over 80 per cent of the subscribers of the initial capital. 42 per cent came from Manchester and a further 25 per cent from Stockport. Many of them invested in both canals. Unfortunately no later lists of Ashton or Peak Forest Canal shareholders survive. But of CHPR shareholders resident in Manchester both Edward Loyd and William Henry were members of the PFC Committee in 1825. T B Jervis was chief cashier in

Loyd's bank. John Allen and George Wood were listed as PFC shareholders in 1794. Wood also subscribed to the Ashton. Benjamin Heywood, the Manchester banker, subscribed to the CHPR, and his father Nathaniel and uncle Samuel had subscribed to both the PFC and Ashton. The identification of Thomas Holland, the PFC chairman in 1825, another CHPR, PFC and Ashton subscriber, is uncertain but he too may well have been based in Manchester. Thomas Bateman, like Gisborne, a Derbyshire landowner with business interests in Manchester, had been on the PFC committee. Doubtless others from Manchester who bought CHPR shares in 1825 held PFC and/or Ashton shares by purchase or inheritance during the period from 1794 to 1825.

Although the CHPR proved to be a very poor investment, dividends from the two canals improved markedly in the 1830s after the completion of the railway. Through traffic over the CHPR from canal to canal did not suffice to make the railway prosper but was a useful source of some additional revenue for the canals, and the CHPR opened up new sources of limestone in the area south of Buxton, the carriage of which benefited the PFC and Ashton. **David Hodgkins**

Why do we drive on the left?
(*RCHS Journal*, July 2011, 59)

Further to Peter Brown's letter in *RCHS Journal* July 2011 I had always been led to believe that the answer went as follows. Since most people are right handed, a coachman in charge of a chaise or a coach-and-four would hold his whip in his right hand and a long whip would be in danger of getting itself entangled in overhanging branches if he drove down the right-hand side of any road. Hence the natural alternative.

To suggest that the French chose the other option purely out of bloody-mindedness is probably apocryphal. **Miles Macnair**

In the Correspondence section of the *RCHS Journal* for July 2011 (No 211) Peter Brown asked 'Why do we drive on the left?' He quoted the RAC website 'Up to the late 1700s everybody travelled on the left ...' and an 1813 canal byelaw 'Boatmen ... must drive their horses to the left side ...' and wondered if the practice derived from the byelaws of turnpikes. The first Turnpike Act was passed in 1663 but I cannot remember seeing any relevant reference in early turnpike byelaws to this rule of the road. However, I have read in several places that the keep left principle was first adopted on London Bridge. For example, on page 258 of Gordon Home's definitive *Old London Bridge*, published in 1931, he says

A determined effort to regulate the traffic on the Bridge was made in 1722 during the mayoralty of Sir Gerard Conyers. Up to this year the rule of the road must have been very lightly regarded, for from the wording of the order published by the Court of the Lord Mayor, the Aldermen and the Common Council, several previous orders of a like nature had been made. Without some general recognition of a rule of the road, the traffic in so confined and congested a thoroughfare as London Bridge would have been permanently unmanageable as soon as wheeled transport became considerable. We are therefore compelled to believe that the order to keep to the left was an enforcement of an existing and no doubt old rule very indifferently observed.

Also, as a further point, I have a dim memory of hearing a radio talk 40 or 50 years ago in which the speaker developed the argument that, since armies traditionally drew themselves up in order of battle with their strongest units on the right wing, Napoleon's early success as a tactician was because he countered this by fighting his army in the manner of a southpaw boxer. His Napoleonic Code then perpetuated this 'priorité de la droite' in the rule of the road. This seems to me an early example of continental governance ignoring common sense!

David McFetrich

British Transport Review

(*RCHS Journal*, July 2011, 29)

Andrew Dow provided a valuable and informative article on British Transport Review, though it is by no means as scarce as he suggests as I have sold several complete sets in recent years. At the time of writing I have one complete set in stock, another set lacking one or two copies, and perhaps 100–150 single issues.

Volumes 1–3 appear to be the most common whilst Volume 7, produced under BRB auspices, is distinctly scarce and Volume 7 part 4 is the most difficult to procure. This leads me to believe that the supply of copies to other parts of the BTC empire had by then ceased, thus more or less halving the print run.

It is not surprising that BTR was terminated by the British Railways Board when it was. It would not have been regarded as appropriate for a body concerned solely with rail transport to publish material about all aspects of transport. In any event it is arguable whether a supposedly mind-broadening journal such as BTR, interesting though it might be to the historian, brought any tangible benefits or was just one more distraction from the job of running the railways. Perhaps Mr Dow, with his wider experience of industry, could tell the members whether any other large public or private undertaking produced anything similar to BTR.

A ghost of *British Transport Review* reappeared in the 1980s when the BRB issued a shortlived series (for internal circulation only) on various aspects of railway management. They had red covers but I cannot now recall the exact title.

Robert Humm

'Merlin' Hazledine

Many of your readers will be aware of the name of William Hazledine, the ironmaster who worked with Thomas Telford on many of his most important works. L T C Rolt popularised the idea that Telford nicknamed Hazledine 'Merlin' because of his almost magical skill with iron.¹ If one examines the original quotation, Rolt's suggestion appears most unlikely, but, more interestingly, the incident appears to shed some light on the question of 'who did what' in relation to design of the Pontcysyllte Aqueduct.

The 'Merlin' quote is from a letter written by Telford, who was in London on Ellesmere Canal business in February 1796, to Matthew Davidson at Pontcysyllte.

The moment I was conjuring about a spring for the coffee house door this morning, who should make his appearance but the Arch Conjuror himself Merlin Hazledine. This was one of the most singular instances

I have met with. We have been considering about the arch over the roadway ...²

In early 1796 Hazledine had never made anything in iron for Telford. In my view all that Telford is saying is that Hazledine seemed to appear out of nowhere like Merlin the magician. What is more interesting is the context. Examining the coffee house door 'spring' (perhaps a hinge or a self-closing mechanism?) had given Telford an idea for the ironwork for the aqueducts, and he was trying to conjure this up in his mind's eye. Then Hazledine appears, and Telford uses a play on the word 'conjure' (something that appears from nowhere) to describe the sudden appearance of his friend. The two men doubtless had a good laugh, and then settled down to discuss 'the arch over the roadway', in other words how they were going to construct the aqueducts. In all probability the final plans came from many such conversations.

Support for the idea that Hazledine had a significant hand in the design of the aqueduct is suggested by the way Hazledine's tender for the ironwork was accepted in March 1802. The relevant minute reads

Mr William Hazledine of Shrewsbury having proposed to execute the cast iron work at Pontcysyllte Aqueduct on the following terms (viz.) the castings at £11 per ton, the wrought iron at 8d per pound, and being allowed £30 for cast iron keys to connect the plates of the aqueduct over and above the price of £11 per ton upon the whole weight and to perform the work in every respect **according to the conditions and specifications now produced and signed by the said William Hazledine** [my emphasis] ... this Committee accept of the proposal ...³

The phrase emphasised in the minute can be read two ways. Either the conditions and specifications had been produced by the committee (presumably via Telford) and then signed by Hazledine, or Hazledine himself had produced the conditions and specifications, and he was then signing the contract. I prefer the second interpretation for the following reason. In 1818 Telford was acting as adviser for the building of the Edinburgh & Glasgow Union Canal, where at Slateford in south-west Edinburgh he apparently contemplated building an aqueduct similar to that at Pontcysyllte. Before he could draw detailed designs he wanted to know the exact dimensions of the ironwork at Pontcysyllte, so he dispatched his assistant James Thomson to find out.⁴ From this it is clear that Telford had either forgotten, or, more likely, had never known, these details, which

meant that the detailed design for the ironwork must have been done by Hazledine.

Andrew Pattison

1. L T C Rolt, *Thomas Telford*, Pelican Edition 1979, p.66
2. Ironbridge Gorge Museum Trust, 1981.3587, letter from Thomas Telford to Matthew Davidson, 19 February 1796
3. The National Archives, RAIL 827/2
4. Institution of Civil Engineers, Thomas Telford correspondence, T/EG 310 & 306, 1 May 1818 and 8 May 1818

An inhaled gold coin

On 27 June 1843, a paper entitled '*An Account of a case in which a Foreign Body was lodged in the Right Bronchus*' was read to a meeting of the Royal Medical and Chirurgical Society in London. The author was the President, Sir Benjamin Brodie, Bart, FRS.

The paper described in almost overwhelming detail how the author, with assistance, extracted an accidentally inhaled half sovereign from the lungs of a certain 'Mr. B.' who was not identified. The task was difficult and there were unsuccessful attempts to extract the coin before success. Failure would have led to the death of 'Mr. B.'. Brodie's account of what was done takes up twelve pages of the society's journal. 'Mr. B.' himself designed a vertically rotating table to which he was strapped and then inverted so that gravity would aid the coin recovery process. This device was successful.

Brodie was the leading surgeon of his day and went on to be president of the Royal Society. 'Mr. B.' was I K Brunel. He must be the only railway engineer ever who designed a device which saved his own life. Had he not done so, we would have had no Royal Albert Bridge, no Great Eastern steamship and none of his later railways.

The full story of the inhaled half sovereign, including a reproduction of Brodie's 1843 paper is in *Doctoring History* by Ramoj Ramachandran and J K Aaronson, RSM Press, 2010. The relevant chapter is reproduced as a paper in the *Journal of the Royal Society of Medicine*, 104 – 4, April 2011, pages 149-154.

Martin Barnes

Indexes and indexing

Members privileged to act as reviewers seem to be aware of the need for serious books to cite their sources in a manner traceable by subsequent researchers and the need for thorough indexes (never indices in this context). Few, if any, members seem to be aware that there is a Society of Indexers whose members seek to earn an income through the construction of indexes on almost any subject and awards prizes for excellence. The late George Ottley was extremely upset that the index to his bibliography was not awarded the Society's Wheatley Medal. Many books fail to provide indexes, and some are rather skimmed. The Index to the Society's *Journal* could certainly be improved.

What makes a good index?

There is fairly general agreement amongst professional indexers that alphabetico-classified indexes are not a good idea, although they are used fairly frequently in the literature on railways (as in the manuscript cumulative index to the *Railway Magazine*¹) and especially on locomotive histories. These were employed by Cox in his *Locomotive Panorama*² and the end result cannot really be condemned. There was an index of locomotive types based on the Whyte notation, an index of personalities (which noted who they were) and an inevitable 'miscellaneous' which included such concepts as brakes, coupling rods and the Rugby Testing Plant.

Semantic foundation

A good index should reflect the semantic foundation of the subject which in turn should reflect the author's interpretation of it. The primary interest of the Society is transport and this implies structures for the conveyance of things from one place to another over a period of time. In the case of the vehicles involved the structures become more complex and will involve materials, their basic properties, and their behaviour in service.

Not as simple as ABC

Sadly, there are still some who think that alphabetization is simple and can be accomplished via a simple spreadsheet. This is not so. The variant forms of macintosh, McIntosh, M'Intosh and MacIntosh will not be kept together in a

"machine sort". Depending upon the alphabetization method employed machines and machinery may have to live with the 'McHines'. Names are a particular problem, especially those of aristocrats. Does one file Duke of Sutherland under 'D' or under 'S': if it is a person then 'S' is more helpful; if it is a ship or a locomotive then under 'D'. Cross reference should be made from or to the family name.

One very good index

The index to Malcolm Reed's *London & North Western Railway*³ is, like the rest of the book, excellent. Nevertheless, it is not perfect and it is to be hoped that by reference to it some of the art of good indexing may be illustrated. Both of the synonymous terms 'push-pull trains' and 'motor trains' are used and this is far more helpful than making a cross reference from one to the other. Reed, or Reed's indexer, seems to have decided to make cross references from the abbreviated forms of railway titles to the name of the line: it could be argued that this is safer in terms of accuracy, but it makes for greater effort on the part of the reader, but the entry:

WJR see (1) Whitehaven Junction Rly; (2) Wigan Junction Rly probably resolves any problem.

On the other hand, there is no entry for the Delph branch, only one at Greenfield – Delph branch (which is not strictly correct as the branch began at Delph Junction). Some of the entries have too many page references without any form of sub-division. This afflicts place and personal names. Thus Manchester has 17 unqualified references plus further ones with sub-headings formed by specific stations, e.g. Victoria. Moon has 15 entries: inspection of most of the actual points in the text showed that it would have been difficult to add sub-headings, but if perfection is being sought! The linear character of transport systems demands more than reference from the end points. Reed appears to achieve a high degree of referencing. Thus on the line between Stalybridge and Huddersfield the Standedge tunnels and Saddleworth viaduct have entries. Strangely, Marsden has an entry, but Diggle lacks one. It must be stressed that these are mere musings on a jolly good index. Economics and time are dominating factors.

Books about locomotives are far more difficult to index and it is difficult to avoid a classificatory approach and there are very few really good indexes. H A V Bulleid's *Master Builders of Steam*⁴ was better than the average, but had to employ a partially classified approach which was partly poorly executed. The Whyte notation is a good starting point and vastly superior to the ambiguous 'six-coupled radial tank engine' type which preceded it, but one has to rank the entries and does one start high or low? A 2-10-0 was usually far more important than a 0-4-0ST and is tempting to start with the biggest, and does one place 2-4-0 ahead of 0-4-2? One must be consistent.

To maintain overall indexing consistency it is probably better to limit the classificatory aspect. Thus it is better to have separate entries for safety valves, fireboxes, smokeboxes and so on rather than to subsume them under boilers. On the other hand shells and tubes might make appropriate subdivisions. In view of the eccentricity of the Whyte notation it is probably better to have a separate Whyte index with a note explaining how it was used. Locomotive names and numbers are a further problem. No. 10000 had a special resonance as the number associated with the Yarrow-Gresley water-tube locomotive and with the LMS main line diesel.

The future

To an extent the need for indexes may diminish with the increasing availability of digital text and the associated reading tablets, but as every user of Google will know successful searches are dependent upon both skill in searching and aptitude on the part of the product or service being offered to select appropriate terminology. Thus it is essential for authors to be aware that the ability to trace material in their literature is a key dimension in the writing and editing process: this is one of the great failings of the *Oxford Companion to Railways*⁵ as much of its rich content remains hidden from potential users.

1. J M Campbell, *Index to the Railway Magazine, 1897-1957* [1958]
2. E S Cox, *Locomotive Panorama*, Ian Allan, 1965/6
3. M C Reed, *The London & North Western Railway: a history*, Penryn: Atlantic, 1996
4. H A V Bulleid, *Master Builders of Steam*, Ian Allan, 1963
5. Jack Simmons and Gordon Biddle, *Oxford Companion to British Railway History*, Oxford University Press, 2000

Errata (July 2011)

pp.26 & 28: The Aberdeenshire Canal up to 1810

In the final paragraph of the article, the reference numbers should have been 81 and 82, not 83 and 84.

Reference 80 should have read 'George Marquis, *Report to the Committee on Road Reform, Aberdeenshire, 1863*'.

Reference 81 should have read '*Aberdeen Free Press*, 17 February 1854'

Reference 82 should have read 'Sidney Wood, *The Shaping of 19th century Aberdeenshire, 1985*'

p.39: Railway Investment in Manchester in the 1820s

In table 2, the 2 lime merchants held shares in the C&HPR, not the L&MR, and the figures shown against 'Clerk' should each move one column to the left.

Reviews

Sir Ernest Lemon: a biography — Terry Jenkins

272pp, 235x135mm, 75 photographs & 38 other illustrations, hardback, Railway & Canal Historical Society, RCHS Sales Officer, 4 Broadway, Lincoln LN2 1SH, 2011, ISBN 978 0 901461 58 2, £24.95

The subject of this book, Ernest Lemon, rose from poor agricultural labouring stock to qualify as an engineer, eventually rising through the ranks of the LMSR to become a Vice President. His skills as an organiser were recognised by government and utilised to organise the crash programme of aircraft production before World War Two for which he was knighted.

The book is welcome for a number of reasons of which two are particularly important. The first is that it is assiduously based on archival research some of it from new and important sources — regrettably not always the case particularly with railway books. The second is that its subject is a manager and an engineer. In the US the early managerial revolution has been described as the application of engineering principles to organisation. Lemon is a relatively rare UK example of an engineering career culminating in senior general management who actually fulfilled this criterion. In company with his peers Lemon has been largely ignored. The UK public figure or the entrepreneur gets the biography and the 'technician' who made their career possible gets a footnote.

Terry Jenkins very ably shows that many of the innovations on the LMSR routinely ascribed to Josiah Stamp were instigated, designed and implemented by Lemon including the reorganisation of Carriage and Wagon workshops, the appraisal of the large array of locos inherited from amalgamation and their steady winnowing out, the reorganisation of locomotive maintenance shops and methods. These were huge organisational tasks conducted with great energy. Jenkins is right to hint that Stamp should be

remembered as someone smart enough to recruit very able senior managers to do most of the work. (Jenkins's appraisal of Harold Hartley is also welcome in this respect. I may add that it was Hartley who introduced the concept of budgetary control to the LMS and Stamp who reduced it to a crude set of spending cuts.) At least Lemon's work on aircraft production was rewarded with the public recognition of a knighthood.

Jenkins contributes some revelatory detail on Lemon the man raising questions of social conventions and hidden lives which could, perhaps, have been further explored. He was effectively adopted and detached from his labouring family by a middle class couple who presumably paid for him to become a premium engineering apprentice. His rise would have been impossible otherwise. The story of the desertion of his wife and his subsequent partners is evidenced precisely but any account of the stifling gender politics and fear of scandal of the times is underdeveloped. But this, perhaps, would have been another kind of biography. The book is very detailed and will be useful above all to the transport historian and informed railway and aircraft enthusiast. It does not follow the clichéd story arc of 'great man' biographies and the detail gives a realistic picture of the task-storm and conflicts of managerial life. This lack of 'fictionalisation' however while utterly virtuous will not make it an easy read for the ordinary reader, whoever they might be. As an account of an exceptional engineer/manager, however, this is a fine achievement.

JOHN QUAIL

Great Western Railway: a history — Andrew Roden

306pp, 235x150mm, 45 b&w photos, 1 map, hardback, Aurum Press Limited, 7 Greenland Street, London NW1 0ND, 2010, ISBN 978 1 84513 580 5, £18.99

As the author says, there is already a huge literature on the Great Western, so that in what claims to be a 'history' one naturally looks for something new or at least spliced with different examples to 'illustrate' salient points. Here the reader will be disappointed. The familiar story is told well enough, but the only thing that is new are the author's personal comments. For example, 'Brunel's impulsiveness almost got the

better of him', he had a 'blasé attitude to safety' and was not 'thinking as clearly as normal'.

The 16 page section of monochrome plates trots through the familiar story with small and few new images. Disappointingly there is only one map and that is both misleading — the Barnstaple branch is included presumably because it is 'major' while the far busier Minehead one isn't — and inaccurate. The

GWR line to Winchester is shown as running from Reading, not Newbury.

As to the author's personal comments, many seem biased or naïve. He is particularly hard in his criticisms of the broad gauge. With 25 separate chapters, many little more than an essay, the author's enthusiastic background is increasingly evident until

in the post-nationalisation ones his own experiences and preferences dictate the agenda.

As a formal history it fails. Readers will no doubt differ whether they enjoy the personal comments or are irritated by them. DAVID ST JOHN THOMAS

***Britain's Historic Railway Buildings: a gazetteer of structures and sites* — Gordon Biddle**

800pp, 246x182mm, 555 b&w and 247 colour photographs, hardback, Ian Allan, Riverdene Business Park, Molesey Road, Hersham KT12 4RG, 2011, ISBN 978 07110 3491 4, £60

Gordon Biddle has done more than anyone to educate us about British railway architecture, enabling us to appreciate the richness of our railway heritage and how it relates both to railway history and to public and domestic architecture generally. This is the second edition of the impressive and invaluable standard book of reference that was first published by Oxford University Press in 2003 and reviewed in this *Journal* in March 2004. As the first edition must surely be familiar to all those seriously interested in railway history, if not on their bookshelves, some comments on the changes that have been introduced in the new edition will suffice.

The overall format of the book is unchanged. The chief difference is that the original entries, of which there were some 2,350, have been enhanced by nearly 200 new entries that reflect new statutory listings and new published material during the intervening eight years. A few buildings that have been demol-

ished have been omitted.

The extent of the new material can be illustrated by comparing the Eastern England section in the two editions: three entries are new, seven have been significantly changed, one omitted, and the remaining 78 essentially unaltered. Visually the new edition is rather more handsome, chiefly because a third of the photographs are now in colour, although readers may have mixed views on the changes to a glossy paper and to a less-dense typography, the latter resulting in a 10% reduction in the number of photographs.

For those who don't have the first edition, this new edition is highly recommended. Those who do will have to use their own judgement on whether the high, but not unreasonable, expense is justified. They might be swayed by your reviewer's opinion that this is one of the most pleasurable and rewarding books for prolonged browsing.

GRAHAME BOYES

***The Secret Life of St Neots Station* — John Slack**

160pp, 175x245mm, 117 b&w photographs, 6 maps, hardback, Horizon Editions, The Oaks, Moor Farm Road West, Ashbourne DE6 1HD, 2010, ISBN 978 1 84306 530 2, £14.99

This is a rather different style of railway history, telling the story of a small town railway station in the context of local society and the evolving railway that passed through it. The story is helped by some interesting local connections, such as Arthur Peppercorn's family, and such issues as the connection between local industries and the activities of the town's station yard are well sketched out. One local entrepreneur was closely involved with the development of gas lighting on trains — a chapter of railway history rarely investigated. The text is obviously thoroughly informed by extensive local research in the press and through personal contacts, used extensively for colour and human impact, to which the brief bibliography hardly does justice. Even your reviewer's ancestral family gets a mention, shortly

before their descent into deeper obscurity.

There are some maps showing the early plans for the railway and the book ends with a collection of photos of the variety of trains that passed the station as steam handed over to diesel. The cover picture of the goods yard shows four traction engines, two horses, an impressive early motor car and at least forty people (all men) but not a single item of railway stock; it effectively sets the railway in its local context.

The result is more social history than railway book and touches areas not normally covered, including a diversion to Captain Howey's 15 inch railway at Staughton Manor. Interesting personalities abound, from local merchants to members of the gentry and American servicemen. It is an enjoyable and rather different read. ADRIAN GRAY

***Neither here nor there? The mining and transport of iron ore from the Brendon Hills to South Wales 1825–1925* — M H Jones & J R Hamilton**

Volume I: xiii+598pp, A4, 41 figures, maps & diagrams, Volume II: viii+448pp, A4, 677 photographs, maps & drawings, hardback in slipcase, Exmoor National Park Authority, Exmoor House, Dulverton TA22 9HL www.nationalparks.gov.uk/exshop, 2010, ISBN 978 0 9563674 0 2, £55.00 (plus £5.05 p&p)

***The Brendon Hills Iron Mines and the West Somerset Mineral Railway: a new account* — M H Jones**

416pp, 275x210mm, 400 plates, 150 figures, hardback, Lightmoor Press, Unit 144B, Lydney Trading Estate, Harbour Road, Lydney GL15 5EJ, 2011, ISBN 978 1 899889 53 2, £24.99

The enigmatic title of the magisterial two-volume study of iron mining and its associated railway in west Somerset is rightly challenged in its Foreword. Superficially, extracting less than a million tons of iron ore over three decades in the later 19th century and carrying it by rail to the port of Watchet, whence it could be shipped to South Wales, is hardly deserving of extended study. However it is argued, and amply demonstrated in both books under review, that ‘considered as a single integrated industrial enterprise, the mines and railway are quite other than “neither here nor there”’.

This story was first told in book form by the late Roger Sellick in 1962, from then-fledgling publishers David & Charles. Both Mr Jones and Mr Hamilton contributed to that book, and continued their research over nearly half a century to inform these two vastly-expanded accounts. Welcome support from the Heritage Lottery Fund, and from a legacy for the Lightmoor book, has enabled both publications to be produced to a rare standard and scale — and at very reasonable prices for their contents. Their appearance is the culmination of an enlightened project to investigate, record, conserve and interpret what survives of the railway and the mines, led by the Exmoor National Park Authority with support from local government and an HLF grant. (See also www.westsomersetmineralrailway.org.uk.)

Commercial iron mining began in the 1850s funded by the Ebbw Vale ironworks, aiming to supplement dwindling Welsh deposits. A railway was the obvious means of getting ore to Watchet, but topography demanded the construction of a massive incline down which loaded wagons were lowered almost 250 metres

at a gradient of 1 in 4. The line opened for freight in stages from 1857 to 1864, and the lower section for passengers in 1865.

After initial relative success, the effects of recession and competition from cheap Spanish ore led to the cessation of mining in 1883. The railway struggled on, but closed to all traffic in 1898. Mining and railway working were briefly resumed from 1907 to 1910, while in 1911 a section of the line saw experiments with an early form of automatic train control. Formal abandonment came in 1923.

Much physical evidence has survived on the ground, notably the incline, now a scheduled Ancient Monument. Both books contain many superb record drawings from surveys by Mr Jones and colleagues, together with an abundance of photographs showing both past and present scenes (the most recent are generally in colour). These illustrations complement comprehensive texts, including detailed information expected in good railway histories. The human side is not overlooked: key individuals are profiled; the miner’s settlements are described and illustrated; accidents are recounted; and lengthy lists of miners make clear that here was no trivial industrial undertaking, however briefly it flourished.

There is inevitably some duplication of content in the books, but it is hard to imagine that either will become outdated. It is probably fair to describe the two-volume work as a definitive work of reference, whereas the Lightmoor publication is an informative and generously-illustrated single-volume history. It is a most impressive and attractive railway history book — in terms of both content and production — and outstanding value for money.

MICHAEL BUSSELL

***Birmingham Moor Street Station: A Century of Enterprise* — Ian Baxter & Richard Harper**

194pp, 270x215mm, copious illustrations (many in colour), maps and diagrams, paperback, Kidderminster Railway Museum, Station Approach, Comberton Hill, Kidderminster DY10 1QX, 2010, ISBN 978 0 9534775 9 3, £19.95

Although Moor Street is not in the front rank of notable railway buildings it is a good example of late

Edwardian corporate architecture on the Great Western Railway, well-deserving its Grade II listing.

A small terminus, it was opened in 1909 to serve in effect as bay platforms for the cramped south end of Snow Hill station, at that time being rebuilt. It had the distinction of surviving its parent's closure in 1987 only to be superseded by new platforms on the through lines when Snow Hill was reopened, followed by some years of increasing dereliction before a local initiative undertook restoration, and finally, in 2010, reopening to rail traffic. Meanwhile, even more remarkably, the through platforms were rebuilt in matching GWR style.

The excellently reproduced illustrations include historic and present-day scenes covering the life of both passenger and goods stations. The inner ends of the four platforms were notable for the space-saving electric traversers that enabled engines of arriving trains to detach and run round, while the extensive low-level goods station was served by wagon hoists, traversers and capstans. Part was

beneath the passenger station, which was carried on reinforced concrete columns and beams, then a new form of construction.

The book opens with a brief account of the GWR's expansion through the West Midlands, forming a new route from London to Merseyside in competition with the London & North Western Railway. The near-demise and revival of the North Warwickshire line which accompanied the fortunes of Moor Street are fully covered, as is the station's renaissance as Chiltern Railways' terminus for trains from London Marylebone, an enterprising development that would have astonished its former owners at Paddington.

There is no index — perhaps not really necessary here — although a brief chronology would have been useful. A list of sources has been included. Apart from a few grammatical and spelling lapses, the book is a fine record of a remarkable piece of railway and civic history in Birmingham. GORDON BIDDLE

***The impact of the railways in the East End 1835–2010: Historical archaeology from the London Overground East London line (MOLA Monograph 52)* — Emma Dwyer**

xix+118 pp, A4, hardback, 27 b&w photographs, 61 colour photographs, 21 maps, 22 plans & diagrams, 2011, Museum of London Archaeology, Mortimer Wheeler House, 46 Eagle Wharf Road, London N1 7ED, 2011, ISBN 978 1 901992 98 4, £14

The Museum of London has published a series of monographs on archaeological topics, but this is the first to be devoted to a railway subject. The survey was undertaken while the East London line was being refurbished and extended north to Dalston and Highbury. Fieldwork took place at seven sites, the principal ones being at Bishopsgate.

The book is divided into seven sections, including the Introduction and Conclusions. Section 2 outlines the development of the railways in general, including their effects on the landscape, on society, and on the physical structure of urban areas.

The main findings of the survey appear in Sections 3 and 4, which deal with the original Eastern Counties Railway terminus at Bishopsgate, the later GER goods station, and the Braithwaite viaduct. Selected parts of the remaining infrastructure have been painstakingly examined, and the results are clearly described and illustrated. There are some unusual photographs including one of the foot passage leading to the short-lived low-level station. The devastating impact of railway construction on the earlier street pattern is well brought out, but the study is not confined to structures: it looks more widely at

the way in which life in the adjoining area was affected by the physical presence of the railway. This is well illustrated by reference to material such as census returns, surviving domestic artefacts, and accounts given by one-time occupiers of nearby shops and houses.

Section 5 outlines the history of the East London line, including a short illustrated description of each station south of Bishopsgate. The North London Railway is more briefly dealt with in Section 6. Fieldwork was carried out at Dalston Junction but it is disappointing that the other stations on the NLR's Broad Street extension were not given much attention. However selected buildings close to the railway — a pub, a row of houses, a cinema, a shop — are examined, together with their influence on life in the local community.

The techniques of the archaeologist have not often been applied to railways, but this well-researched and illustrated work does so admirably. The bibliography and index are comprehensive and the book deserves to act as a model for future studies of its kind.

GRAHAM BIRD

***Paddington Station Through Time* — John Christopher**

***Victoria Station Through Time* — John Christopher**

Both 96pp, 235x156mm, 180 illustrations, paperback, Amberley Publishing, Goucester Road, Chalford, Stroud GL6 8PE, 2010 (Paddington) / 2011 (Victoria), ISBN 978 1 84868 962 6 (Paddington) / 978 1 4456 0249 3 (Victoria), £14.99

These two books are the first of an intended series illustrating the changes that have taken place at London's termini from their beginnings up to the present day, and current work-in-progress. Both contain brief histories of the stations and include London Underground lines. The Paddington volume takes the reader out as far as Westbourne Park and the Victoria book to the Grosvenor Bridge. The latter also illustrates other notable buildings in the vicinity, such as Westminster Cathedral, the former Imperial Airways Terminal, Victoria Coach Station and local theatres, imparting something of the flavour of the area around the station.

Many of the monochrome illustrations are from old picture postcards, some of them little-known, but the majority of the pictures are excellent modern colour views, affording an interesting contrast between the past and the present-day scene. In the

case of Victoria a section on train services and the rolling stock used on them carries some particularly striking period views of trains arrivals and departures, especially continental boat trains such as *The Golden Arrow* although, curiously, there is little about the probably even better known *Brighton Belle*. But Paddington's best-known train, *The Cornish Riviera*, does not seem to gain a mention. As would be expected, the work of Brunel features prominently in the latter volume, including his first, temporary station. Old and new pictures of what was Paddington goods station show how redevelopment has rendered the site unrecognisable today.

There are several mis-spellings in the Victoria book and one or two minor errors on Paddington, while neither book mentions sources. Otherwise they provide good illustrated commentaries on two of London's most important stations.

GORDON BIDDLE

The Leicester to Swannington Update 2010: Compendium of recent research, recording and illustration of this historic railway system

CD (PDF format), 645pp, 100s of photographs, maps & diagrams, Leicestershire Industrial History Society, 10 Somerville Road, Leicester LE3 2ET, 2011, no reference number, £15 (plus £2.50 p&p)

Independent for 16 years, the Leicester & Swannington Railway proved a sound investment for its promoters, paying up to 8% dividends and doubling their capital when it became a part of the Midland Railway in 1846. Parts of it are still in use. The compendium contains all the information the Society has obtained about the railway, including the text of Clinker's 1954 monograph, and photographic

surveys of the route. Of interest are the report and photographs relating to the Glenfield tunnel stabilisation project of 2007–8, where the Society maintained a watching brief. The PDF is password protected, which seems perverse, and cannot be printed. It can be searched. There is much to commend this publication but its design and choice of typefaces are poor.

PETER JOHNSON

***The Book of the Great Northern: the Main Line: An Engineering Commentary, Part Two: Welwyn North to Doncaster* — Peter J Coster**

240pp, A4, 259 illustrations, 52 maps & plans, hardback, Irwell Press, 59a High Street, Clophill MK45 4BE, 2011, ISBN 978 1 906919 31 3, £26.95

The first volume of this set, covering Kings Cross to Welwyn, was reviewed in the last *Journal*. That provided in much more detail a survey of the first 22 miles whereas the second volume deals with the next 134 miles plus the Hertford loop in about the same space and therefore less depth. The allocation of space is a little uneven — at least 33 pictures showing

trains passing through Doncaster but several stations and Highdyke are not illustrated at all.

The strengths of the book include the author's personal recollections and some excellent pictures, many very evocative such as the sidings, buffets and tatty station interiors which really do emphasise how unglamorous railways of the past actually were.

However some of the text varies from detailed engineering comments to nostalgic recollections of steam workings from the 1950s, so that the book wavers between being a general survey and being a memoir.

A few minor quibbles do not distract from the main purposes of the book. For example, Ambergate was a place in Derbyshire, not the original canal-side station in Grantham. The sending of traffic from

Grimsby to London via Boston and not Grantham is referred to as 'strange' even though the lack of a connection at Newark is referred to a few pages later, before which going from Grimsby to Grantham would have involved a complex movement at Lincoln. To be true to its title, the book perhaps ought to have extended to Shaftholme Junction, the real end of the Great Northern.

ADRIAN GRAY

***Canal Crimes* — R H Davies**

160pp, 248x172mm, 71 b&w illustrations, 4 maps & plans, paperback, Amberley Publishing, Cirencester Road, Chalfont, Stroud GL6 8PE, 2010, ISBN 978 1 4456 0045 1, £14.99

In recent years books have appeared about true crime on the railways, not least from Amberley, who now turn their attention to (English) canals and crime, basically 19th century, though the final chapter adds general comments on more recent developments, including canal crime in fiction (books and films). The book starts with larcenies from 1826 to 1842, petty to us, though punishments, often transportation for seven or fourteen years, seem harsh. He moves on to cases of violent assault and to manslaughter, some little more than accidental, apart from an appalling 1875 case of child abuse. Two murder cases are discussed: Jane Doley in 1902 in Wolverhampton (the chapter heading gives it wrongly as 1875) which remained unsolved; and in most detail Christina Collins in 1839–40, in which three boatmen were tried for the rape and murder of a Pickford

passenger. All were found guilty of murder, for which they were in effect tried twice, and two were executed. One has to ask questions about the fairness of the trial, even by 1840 standards.

The cases discussed are a fascinating read, based on often verbatim evidence in court. Many misprints suggest proof-reading could have been better, and the book includes some irrelevant material like the note on the hanging of Nazis after 1945 and a whole chapter devoted to a civil dispute between the Birmingham Canal Navigation and the Elwell family (1838–52). There is no index and only brief source information. The illustrations, some contemporary and others modern photographs of scenes described in the text, are well reproduced. Value for money; recommended.

PHILIP SCOWCROFT

Northern Northumberland's Minor Railways: Colliery & Associated Lines, Volume 2

— Roger Jermy

128pp, A5, 83 photographs, 14 maps & plans, paperback, Oakwood Press, PO Box 13, Usk NP15 1YS, 2011, ISBN 978 0 85361 704 4, £10.95

The second part of this four volume work (Volume 1 was reviewed in the last *Journal*) describes twenty collieries and their railways in the Berwick and Alnwick districts. Three helped to create Amble, a town and port which hardly existed until mining began in 1837. The others were in rural areas, including Shilbottle and Whittle which both employed several hundred miners and had pastoral branches to the NER main line. Over the years several collieries have existed, especially in the hinterland of Berwick. The first railways were constructed in the early 19th century, worked by horses and gravity, and were superseded by the NER line. Whittle Colliery was

the last to close, in 1987. Many lines led to landsale depots, some went to ports for export, and some served local industries. Several fed the NBR Rothbury branch, but all these were shortlived. Two routes were aerial ropeways.

The author has undertaken considerable research to locate information about these railways, most of them pretty obscure, and closed long ago. For those lines which had locomotives, details of known residents are given. Boats and harbour improvements enter the story at Amble and Tweedmouth. Details are given of visible remnants of the railways.

ALLAN BRACKENBURY

***The GWR Handbook: The Great Western Railway 1923–1947* — David Wragg**

248pp, 270x200mm, 130 illustrations, 3 diagrams, 3 maps, Haynes Publishing, Sparkford, Yeovil BA22 7JJ, 2010, ISBN 978 08573 3005 5, £27.50

This book is a re-issue of the book first published in 2006 by Sutton Publishing. While basically, it may be termed as a 'coffee table' book, it does form a useful reference to the Great Western Railway, perhaps as a starting point for further study of the various details of the Company. Many of the items covered are quite brief, notably the constituent companies and later acquisitions, although the antecedents and neighbours together with Paddington Station are covered in some detail. Likewise, the chapter on Great Western shipping services covers only four pages, that on associated air services merits only five. There are two chapters

covering the Second World War totalling sixteen pages. The Great Western's foray into bus transport is covered, and there are chapters on the named expresses and publicity. The various General Managers receive brief biographies. There are useful appendices, ranging from Locomotive Headcodes to locomotives absorbed at the grouping of 1923 and all GWR Locomotives are listed, together with Diesel Railcars and Shunting engines. There is a relatively short bibliography and an extensive index. However, the question, which must be asked, is whether this book is worth the high price? RODNEY HARTLEY

***Southern Railway Handbook: The Southern Railway 1923–1947* — David Wragg**

248pp, 270x200mm, hardback, 106 b&w photographs, 6 maps, Haynes Publishing, Sparkford, Yeovil BA22 7JJ, 2010, ISBN 978 0 85733 011 6, £27.50

Originally reviewed in the July 2004 Journal, this volume has now been re-issued by a different publisher. It is a well-balanced account of its subject, with 18 chapters covering topics such as electrification, marketing, accidents, air, shipping and (rather briefly) road services, ending with nationalisation and 'What might have been'. There is also useful coverage of the Southern's London termini, its coastal destinations, and its managers. One perhaps debatable assertion is that the Romney Hythe & Dymchurch Railway acted as a feeder to the SR; given the substantial holiday traffic which the latter brought to this part of Kent, the opposite seems more likely.

Locomotive development occupies nine pages and the various classes are also listed in two Appendices, but these should be treated with caution. There are several errors — for example, the numbering of the Q, U1 and W classes — and omissions, such as the USA 0-6-0Ts; the lists of locomotive names at first appear complete but do not include all pre-grouping types. The eight pages of (steam) headcodes might have been more usefully devoted to tabulated summaries of locomotive dimensions and technical data, and of traffic and revenue statistics.

Overall the book is attractively produced. An index and bibliography (secondary sources only) are included. GRAHAM BIRD

***LNER Handbook: the London & North Eastern Railway 1923–1947* — David Wragg**

256pp, 270x200mm, 146 b&w illustrations, 7 maps, hardback, Haynes Publishing, Sparkford, Yeovil BA22 7JJ, 2011, ISBN 978 1 84425 827 7, £27.50

This is basically a readable reference book, one of four, each covering one of the Big Four, created by the Grouping of 1923. The LNER, the second largest, was the poorest funded and circumstances did not help as it was dependent on goods traffic more than the other three and, especially in the 1920s, labour relations and growing road competition conspired against the LNER particularly. Yet it achieved much.

This book is divided into 22 themed chapters, which inevitably produces some overlapping but does not affect readability. We start with the LNER

constituents, subsidiaries, joint ventures and immediate neighbours, then London terminals and provincial centres. Chapters follow on the company's setting-up and its leading managers, mechanical and administrative (the names Gresley, Wedgwood and Whitelaw show how fortunate the LNER was in its leading servants). Four chapters are devoted to locomotives; electrics and diesels having one to themselves. These lead to a longish and interesting chapter on named trains, almost thirty of them and others on goods traffic (it should have

been longer) and passenger business, with shorter sub-studies on publicity and record-breaking runs. Shipping was important as was road transport, the latter more summarily dealt with, as are accidents — three important ones from 1947 (Doncaster, Gidea Park and Goswick) could have been mentioned. Longer chapters discuss infrastructure (stations, goods depots, workshops) and, divided into two, wartime experience. The two final chapters deal with the years 1945–7 and the onset of nationalisation and pose the question whether the latter could or should have been avoided (on the whole the answer

is in the negative). Five appendices variously list LNER locomotives, a bibliography is short yet surprisingly detailed, and there is an index.

A very recommendable book, both for the student and general reader, and comprehensive, though maybe there should have been a chapter employees' welfare, cultural and sporting activities, perhaps covering the company's own labour relations. The photographs, variable in quality — we must remember they are up to 60 years old — illustrate the text appropriately.

PHILIP SCOWCROFT

***LMS Handbook: The London Midland & Scottish Railway 1923–1947* — David Wragg**

256pp, 270x200mm, 133 illustrations, 5 maps & endpapers, 17 timetables, hardback, Haynes Publishing, Sparkford, Yeovil BA22 7JJ, 2010, ISBN 978 1 84425 828 4, £27.50

The dictionary defines a handbook as a 'manual, a handy compendium of a large subject', and such a volume on the largest of the 1923 Grouping companies would fill a gap on the bookshelf and be very welcome. At first sight this large handsome volume, with a series of thematic chapters — including ancestor companies, managers, locomotives, freight, passenger services, named expresses, publicity, records, Ireland, ships and ports, road services, air services, accidents, WWII and nationalisation — together with five appendices and a very short if dated bibliography, might meet both need and definition.

It fails at the most basic level; a reference work needs to be accessible, and an index that in most cases refers the reader the wrong page and has entries relating to non-existent text (the de Havilland Dove aircraft for instance but then the LMS did not use this plane anyway) is fundamentally flawed.

There are many other problems and is poorly proof read; for example, Leeds finds itself 99.1 miles from

London, Wolverhampton the site of the company's carriage works, and the LMS handling seven billion tons of freight in a year. It is inaccurate with the chapter on air services missing the significant factors such as mail and parcels services and more aircraft errors. The Micheline, no doubt because it had rubber tyres, becomes a road/rail vehicle, and major accidents are the fault of infrastructure even though the preceding chapter makes clear most were human error. It is unbalanced — four pages on Euston, one paragraph on Broad Street; the war ends in 1942 for the LMS. It is also repetitious, with frequent accusations that the company was too large, should not have taken over the LT&SR, and did not electrify enough (and so was nationalised!).

The book is not redeemed by its illustrations; maps too few and too small, timetables too many and it has an unexciting selection of photographs (a third three-quarter locomotive pictures). Given major revision and correction this could be a handsome and useful work but as it stands it cannot be recommended.

WILLIAM FEATHERSTONE

***Lost Railways of South Wales* — Mike Hall**

176pp, 215x150mm, 103 photographs, paperback, Countryside Books, Highfield House, 2 Highfield Avenue, Newbury RG14 5DS, 2009, ISBN 978 1 84674 172 2, £12.99

There are now 34 titles in Countryside Books 'Lost Railways' series, each giving an overview of the closed railways in a particular area of the country. Based on secondary sources, they are intended for the general reader rather than the specialist. South Wales has perhaps a greater proportion of 'lost railways' than any other part of Britain. This book

covers the area south of Aberystwyth, Brecon and Monmouth, giving a brief history of each line, conveying its character, and indicating some of the remains which can be seen. It is an easy read, with plenty of anecdotes. The photographs are well chosen, though their reproduction is rather small and muddy. There is a bibliography and an index.

DAN SINCLAIR

***A History of the Newcastle & Berwick Railway* — John F Addyman (Editor)**

120pp, A4, 160 photographs, maps & line drawings (10 in colour), hardback, North Eastern Railway Association, The Sales Officer, NERA, Fir Tree Cottage, Ulgham, Morpeth, Northumberland NE61 3AW, 2011, ISBN 978 1 873513 75 0, £18.50 (incl p&p)

The railway between Newcastle-upon-Tyne and Berwick-on-Tweed today forms part of the East Coast route. For such a main line, a surprising number of original, and elegant, buildings remain. It is surprising that no book has been published about the Newcastle & Berwick Railway before; however, the present work more than compensates for the wait.

The original Newcastle & Berwick Railway had a very brief existence, being authorised in 1845 and merging with its southern neighbour to form the York, Newcastle & Berwick Railway two years later. Despite the title, this book covers the route (and the branch from Tweedmouth to Kelso but not the later branches about which books have already been published) from the early schemes that failed to materialise up more or less to the present day. The text has been contributed by four authors. About one quarter of it is devoted to the factors that influenced the choice of the line that was built, about half to the construc-

tion and buildings, and the remainder to signalling on the main line and the train services from the earliest days to the present. Six appendices tabulate information about the line, including two very detailed ones on signalling. For some aspects the reader is referred to other books that have already covered the particular topic.

Published in a format established by previous volumes from NERA, the large format and good quality paper allow excellent presentation of the plans and photographs. The plans come from several archives, as well as some specially drawn to aid the text, and the photographs of buildings and trains are varied and admirably clear. References are given to sources of information and the index, while not comprehensive, is adequate. The book maintains the high standards set by NERA and, at £18.50, is exceptional value for money.

PETER CROSS-RUDKIN

***Canal 250: The Story of Britain's Canals* — Anthony Burton**

192pp, 245 x 170mm, profusely illus including 15 pages of colour illus, hardback, History Press, The Mill, Brimscombe Port, Stroud GL5 2QG, 2011, ISBN 978 0 7524 5952 3, £17.99.

The clue to Anthony Burton's new book lies in the subtitle. Published to coincide with the 250th anniversary of the opening of the Duke of Bridgewater's canal in 1761, it tells the story of our canals and how they became a part of the landscape. Waterway holidays led Burton as a young man to read the classic books by Hadfield, Rolt and de Maré then available in the sixties, followed by the specialist David & Charles titles. Now the author himself of many notable books on industrial archaeology, Anthony Burton has used his wide experience and knowledge to produce a narrative account that fills a gap between the sometimes dry scholarship of Hadfield's *British Canals* (1950), mainly based on archival research, and the more personal and practical books by Rolt. Clearly he is not giving us an 'updated Hadfield' for there are no references or sources. Instead we have a straight-forward, concise overview that makes for an easy informative and enjoyable read, with excellent — often unfamiliar — illustrations.

Many little-known facts and details of the lives of the men who built the canals form the basis of Burton's story. William Jessop, who became the leading canal engineer through the canal mania, is

given the recognition he deserves. The canal companies often paid little regard to workers' welfare. Yet at the construction of Pontcysyllte Aqueduct, Telford, with Jessop as consultant, records only one death, and that due to the man's negligence.

Another character rescued from obscurity is Hugh Henshall, trained as a surveyor and taken on by Brindley as an assistant. When Brindley died in 1772 Henshall stepped up to complete the Trent & Mersey. As a sideline he established a boat carrier business. By degrees this became profitable and successful, mainly through influential people in the potteries including Josiah Wedgwood. Then in partnership with Robert Wilkinson he set up his own pottery company. It was a securely family affair. Robert Wilkinson had married Brindley's widow, Anne Henshall.

Subsequent chapters deal with the practical working of canals: the boats used, more about the carriers and their attainment to wealth, the boating community, pleasure and passengers, the 'Idle Women', restoration, the present scene and the future outlook. A masterly summary and a book to treasure.

JOAN TUCKER

The Stroudwater and Thames & Severn Canals From Old Photographs, Volume 2

— Edwin Cuss & Mike Mills

159pp, A5, 270 photographs, one map, paperback, Amberley Publishing, Cirencester Road, Chalford, Gloucestershire GL6 8PE, 2010, ISBN 978 1 84868 787 5, £12.99

This second collection of photographs chronicles the closing years of the Stroudwater and Thames & Severn Canals which linked England's two longest rivers via the Stroud and Golden Valleys, formerly centres for woollen cloth manufacture, and restoration projects of the Cotswold Canals Trust. The book follows a trusted format with numerous photographs from various sources many with expanded captions. First published in 1993, minor text modifications and more recent photographs take into account the ensuing years. The final years of activity in the late 19th and early 20th centuries and the inevitable dereliction are depicted. The water-

ways were responsible for the continued prosperity of the area after the demise of the woollen industry and remained busy at a time when picture post cards became increasingly popular; many appear here. Despite being subject to modern technology, amateur sources and enlargement mean that some images remain indistinct and as with other books of this nature, the rudimentary map makes it difficult for the reader lacking knowledge of the area to assign canal structures to their correct geographical context although they follow in an orderly sequence from west to east. The book is probably best enjoyed in conjunction with Volume 1. JOHN HOWAT

***Waterways Journal, Volume 13* — Cath Turpin (Editor)**

72 pp, 200x210mm, 121 b&w illustrations, 2 maps, paperback, The Boat Museum Society, The National Waterways Museum, South Pier Road, Ellesmere Port CH65 4FW, 2011, ISSN 1466 3732, £6.99 (plus £1.50 p&p)

There may have been few recent well-researched canal history books but this annual publication is always a treat. A consistent feature is the picture research that complements the writings. Unusually, this year's *Journal* would have benefited by more careful proof-reading.

Five authors contribute this time. The main article is Geoff Taylor's 'Two centuries of boatbuilding' that describes in depth his family's several boat-building businesses in England (including Dudley, Birchills on the Bentley Canal and the Dee at Chester) and Canada (Toronto and on Lake Ontario). The accompanying illustrations of boatyards and boats are superb. Tom Foxon examines the canal supply

of foodstuffs to Manchester and Staffordshire but his statement that 'the daily consumption of potatoes in Manchester in 1838 had risen to 5lb per head' is incredible. T J Peters' short piece gives evidence of George III taking a personal interest in canal building in England and France. Graham Major's article on canal policing is of particular interest when he expands his narrative covering Manchester Ship Canal Police and post-nationalisation policing. Mike Clarke's 'Waterways between East and West Europe: a history to 1930', with an excellent accompanying map, is a useful addition to a subject he has made his own. STEPHEN ROWSON

***George Smith of Coalville* — Denis Baker**

22pp, 245x175mm, 19 line drawings, 2 b&w photographs, paperback, Coalville Heritage Society, 7 Hospital Lane, Swannington LE67 8QD, 2011, no ISBN, £3 (plus £1.50 p&p)

This pamphlet has been produced by the Coalville Heritage Society (currently chaired by the author) to commemorate the life and work of George Smith. He is best known for the campaign, partly successful, to regulate families, and especially children, living on canal boats, but his campaigns to reform child labour in brickyards, and later with gypsy children, are also recounted. The account of his life is openly based

on George Smith's own writings, and thus tends to be less critical than other accounts. The section on canal boats, which takes up four sides, repeats Smith's exaggeration of the numbers 'living-in' on canal boats, and his erroneous view that many boatpeople had Romany origins. Nevertheless, this publication has been attractively produced and provides much useful material about its subject. JOSEPH BOUGHEY

Mr Briggs' Hat: a sensational account of Britain's first railway murder — Kate Colquhoun
339pp, 235x155mm, 51 b&w illustrations, hardback, Little Brown, 100 Victoria Embankment, London EC47 0DY,
2011, ISBN 978 1 84744 369 4, £16.99

The first railway murder in Britain took place on 9 July 1864, when banker Thomas Briggs boarded a North London Railway at Fenchurch Street. The first class compartment he entered was found, blood-stained, further up the line at Hackney. Briggs' mortally hurt body was recovered from the track. Suspicion centred on a German immigrant tailor, Franz Müller; he took ship to New York, whither Scotland Yard detectives pursued him in a faster vessel. Extradited, Müller was found guilty at the Old Bailey and hanged.

The story has often been written up, but not in such carefully researched detail as here. Investigations and court proceedings — inquest, extradition hearing and the trial itself — come alive from primary sources. The book, which sets the Müller case in historical context, is beautifully written, a pleasure to read. 1864 London is convincingly evoked, as is the general historical background.

The case has great interest for railway and legal historians, fully explored here though a map of the NLR would have been helpful. Its part in the development of communication between passengers and train crews is fully discussed. In legal history the case stands near a watershed. Capital punishment was not abolished for a hundred years, but at least from 1868 executions took place in private. Court procedures then seem to us less than fair; certainly the evidence left many questions unanswered. Müller, though not lily white, may not have been guilty of murder. The author relates other matters to her narrative including the development of newspaper sensationalism and even the period's sensation fiction.

The book's many virtues include well chosen illustrations, an index, extensive end-notes, a 'select' (but ten page) bibliography, even a list of persons important in the story. Strongly recommended.

PHILIP SCOWCROFT

Colne Valley & Halstead Railway Through Time — Andy T Wallis

96pp, 235x165mm, 185 photographs, 95 in colour, paperback, Amberley Publishing, Cirencester Road, Chalford, Stroud GL6 8PE, 2011, ISBN 978 1 4456 0351 3, £14.99

This book has a very short historical introduction followed by 'then and now' photographs with brief descriptions. The initial 72 pages of mostly post-1923 photographs take the reader along the whole line from the original Haverhill (later South) terminus with illustrations of features and staff via Halstead to the eastern end. The author includes the two junction stations at the eastern end which were used by the Colne Valley but were GER property. Several

of the more official older photographs appeared in a detailed history of the line published by Oakwood Press in 1987. Most black and white views are printed with a sepia tone.

The remaining 20 pages contain 'then and now' photographs (all new to this reviewer) of the remarkable rebuilding from the early 1970s of part of the line as the Colne Valley Railway at Castle Heddingham.

RICHARD TYSON

Beamish: 40 Years On Rails — Roger R Darsley & Paul D Jarman

96pp, 220x180mm, 101 colour and 57 b&w photographs, 8 maps & diagrams, hardback, Middleton Press, Easebourne Lane, Midhurst GU29 9AZ, 2011, ISBN 978 1 906008 94 9, £15.95

This is unusual for a Middleton Press book, as it does not follow the familiar pattern of historical photographs of parts of a transport line. Instead it covers the reconstructed rail, tramway and waggonway lines within the North of England Open Air Museum at Beamish. There is coverage of the historical railway at Beamish (not that on site) and the Rowley Station, closed in 1939, whose building was re-erected at Beamish by 1976, one of the earliest

developments. The later history of the reconstructed station area and locomotives is followed by coverage of the trams and tramway system. The evolution of the 'colliery yard', including chaldron waggons, and the 'Pockerley Waggon Way', is related, with comments on the challenges involved in the conservation of historical vehicles and structures and their presentation and use.

A good range of photographs are included; many

of those in colour are recent views at the museum, with some showing museum vehicles elsewhere. While there is a good range, reproduction is not always entirely clear. The monochrome images include some of the early days of the museum, but mostly feature vehicles and structures prior to their arrival there.

This book provides copious detail about vehicles to be seen at the Museum and their prehistory, with some insights into the development of its transport

exhibits; there is already a long history to unravel, with many detailed points. Further insights into the motivations of those who founded and developed the museum would have been welcome. As one author has worked at Beamish since 2004 and the other has long associations with the project, this might have been possible. Nevertheless, this book should enlarge interest in the exhibits and setting at Beamish and will enhance a visit to the museum.

JOSEPH BOUGHEY

***The Lampeter, Aberayron and New Quay Light Railway* — M R C Price**

104pp, A5, 87 photographs, 6 timetables, 11 maps and station layouts, 4 illustrated tickets, paperback, Oakwood Press, PO Box 13, Usk NP15 1YS, 2011, ISBN 978 0 85361 714 3, £8.95

There were several early schemes to bring the railways to this part of Cardigan Bay but for the whole of the 19th century Aberayron continued looking to the sea for its trade. The Light Railway Act of 1896 finally enabled a viable scheme to be promoted in 1906. Engineered by S W Yockney, it was built by contractors Edward Nuttall & Co and worked by the GWR. Although bus services and shipping were affected as soon as the railway opened, it was really too late to compete with the internal combustion engine. The railway from Lampeter to Aberayron had to be bank-rolled by its local land-owner chairman J C Harford for the whole of its independent life from 1911 to absorption by the GWR in 1922. The branch to New Quay was never built. Passenger

services ceased in 1951 but the opening of a milk processing factory at Green Grove prolonged the truncated line's existence until 1973. Aberayron kept its camping coaches, without a train service, until 1962.

This long out-of-print title has been re-issued with additional photographs to mark the centenary of the opening of the railway to Aberayron in May 2011. It is a very well written account and places the undertaking in the wider context of west Wales railways from start to finish. There are the usual chapters on locomotives and station layouts. So as not to disappoint, amongst the appendices is a description of the temporary New Quay harbour construction tramway of 1836. STEPHEN ROWSON

***Civil Engineering Heritage: Wales* — Keith Thomas**

182pp, 245x185mm, 221 b&w illustrations, maps, paperback, Phillimore, Healey House, Dene Road, Andover SP10 2AA, 2011, ISBN 978 1 86077 638 0, £18.99

This book is one of a series of regional volumes examining the contribution the civil engineer has made to Britain including the impact on transport, maritime structures, utilities and flood defence. The author commences with some preliminary chapters on civil engineering in the Principality before moving on to a gazetteer of North (45 sites), Mid (16 sites) and South Wales (43 sites) examining individual structures in detail. Most of these are familiar such as the London to Holyhead Road and the Barmouth Viaduct but less well known will be the Nant Hir Reservoir, presumably included because the earth fill dam is typical of many built in the late Victorian era. Some of the structures included have been demolished such as the Crumlin Viaduct and others such as the Britannia Bridge have been radically

altered.

The book is illustrated with black and white photographs and includes a useful glossary of technical terms as well as a bibliography (although the inclusion of E F Carter's unreliable *An Historical Geography of the Railways of Great Britain* is surprising). Unfortunately the book is marred by a number of typographical errors, particularly, though not exclusively, affecting the maps. For example, Cardigan is shown as Caragon, Llandrindod Wells is shown in two locations, and the Usk Dam is labelled as the Cefn Coed-y-Cymmer Viaduct. This is nevertheless a useful handbook for the visitor to Wales and although aimed at the general reader the enthusiast is almost certain to find something of interest therein.

RICHARD COULTHURST

***Civil Engineering Heritage: West Midlands* — Roger Cragg**

164pp, 246mm x 185mm, 206 b/w illustrations, 12 maps, paperback, Phillimore, Healey House, Dene Road, Andover SP10 2AA, www.phillimore.co.uk, 2010, ISBN 978 1 86077 572 7, £18.99

This is an informative and well illustrated book which every railway or canal historian interested in the West Midlands will appreciate and enjoy. The first fifty pages comprise comprehensive and perceptive introductions to the five sectors covered – bridges, waterways, railways, roads and public utilities (waterworks, gasworks and power stations). The next 100 pages, the guts of the book, are a gazetteer of 175 detailed entries describing things to see in each of the West Midland counties. Nearly every entry is pictured. Road bridges are the biggest class of entry but railways and canals are fully covered. There are also a categorised index, bibliography and helpful glossary.

The book is wholly readable by both civil engineers and others. Many railway and canal people will also

be intrigued by the entries about roads and public utilities. How many canal people know that the famous Gas Street in Birmingham is named after the first gasworks in the city, the retort house of which is still there?

There are many thousands of pieces of data in this book and it would be unreasonable to expect that there would be no errors. One reader can only comment on the few entries about which they happen to know. For example, the water pipe from Bearley aqueduct replenished the locomotives on the Alcester branch not those on the North Warwickshire line, the Lickey is not the longest adhesion-worked incline in Britain and the date given for design of its 0-10-0 banking engine is 27 years early.

MARTIN BARNES

***Industrial Railways & Locomotives of Lincolnshire & Rutland* — Philip J Ashforth, Ian Bendall & Ken Plant**

384pp, A5, 123 photographs (39 in colour), paperback, Industrial Railway Society, 24, Dulverton Road, Melton Mowbray LE13 0SF, 2010, ISBN 978 1 901556 63 6, £ 21.95 (A hardback edition is also available.)

A series of regional handbooks listing all known locomotives in each area of England and Wales was completed by the Industrial Railway Society in 1966. Since then, as many more facts have been discovered, larger and more detailed volumes have been published. The latest book, covering one of the largest and the smallest county in England, continues the style adopted by the Society. There is an astonishing amount of information packed in here. Much of it is in tabular form, with much use of abbreviations, and readers unfamiliar with the format may need a little patience at first to understand how

to use it. But as well as the lists of locomotives there are brief details of the companies that employed them, including construction contractors working on projects in the area, light railways, electric tramways and preservation sites. A remarkable number of horse-drawn railways are also described briefly. Maps and indexes of locomotive names, locations and owners allow the reader to access the information from different aspects. Presumably of most interest to members of the Society, local historians may also find this book useful.

PETER CROSS-RUDKIN

***Industrial Railways & Locomotives of Essex* — Robin Waywell & Frank Jux**

372pp (inc 35pp of maps and plans and 80pp of photographs), 210x147mm, paperback, Industrial Railway Society, 24 Dulverton Road, Melton Mowbray LE13 0SF, 2011, ISBN 978 1 901556 66 7, £23.95 (A hardback edition also available.)

This long-running series originally set out to catalogue, county-by-county, all the industrial locomotives that have operated in this country. However, the title has now been expanded to recognise that it also provides a unique gazetteer of all the industrial and other private railway systems, large and small, that operated their own locomotives — and also many

that did not. This volume includes brief historical details of 205 of the former and 57 of the latter. In addition there are sections that give details of the county's civil engineering contracts that employed locomotives, its locomotive builders, repairers and dealers, and its preserved and pleasure railways.

GRAHAME BOYES

The Riverside Electric: LSWR Electrification 1912–1922 (South Western Circle Monograph No 5) — Colin Chivers

vi+186pp, 210x148mm, paperback, 148 b&w photographs, 13 line drawings, 1 map, South Western Circle, 2 Eaton Wood, Peatmoor, Swindon SN5 5AT, 2010, ISBN 978 0 9503741 5 6, £7.50 (plus £1 p&p)

During the first decade of the 20th century the LSWR's steam-operated suburban services lost much traffic to the newly-electrified District Railway and to electric tramways, but it was not until 1912 that the Board decided to electrify its principal suburban lines. The project was led by the recently-appointed General Manager, Mr (later Sir) Herbert Walker but the first electric service — that from Waterloo to Wimbledon via East Putney — did not commence, following wartime delays, until October 1915. A new station, Barnes Bridge, was opened as part of the scheme in 1916 but the 'new' electric trains were converted from recently-built steam stock. The work was largely complete by 1917, having been carried out simultaneously with the associated rebuilding of Waterloo station, but the Claygate service reverted to steam in 1919 to alleviate overcrowding elsewhere on the electrified lines. This problem was also addressed by the construction of 24 two-car trailer sets, the last of which was not delivered until 1922.

The book describes the development of the scheme in 13 chapters, ranging from the initial decision to electrify to a survey of the routes concerned, the choice of electrical system, the construction of the

power station at Durnsford Road, Wimbledon, the design of the rolling stock, changes to staffing levels, and the operation of the services in practice. The emphasis is on the reasons behind the electrification, and on the infrastructure, rather than the rolling stock, although plans of the latter are included and one of the two Appendices lists set formations and individual carriage numbers. (The other is a reproduction of a 1903 paper on electrification by J W Jacomb Hood, the company's Chief Engineer). The story ends in 1922, with only passing mention of later developments under the Southern Railway.

A concise, well-illustrated account of a pioneer electrification, this well-illustrated paperback originated from a 1974 article by Ray Tustin in the Circular of the South Western Circle, but has been substantially rewritten and enlarged. Providentially, the only known draft of a missing Board paper by the LSWR's Electrical Engineer, Herbert Jones, was discovered during the course of the author's research, and throws new light on this largely forgotten topic. The book is not being distributed commercially and can only be obtained from the address shown above. It contains a bibliography, but no index.

GRAHAM BIRD

Silent Highways: the forgotten heritage of the Midlands canals — Ray Shill

192pp, 248x170mm, 136 photographs, 22 maps & drawings, paperback, History Press, The Mill, Brimscombe Port, Stroud GL5 2QG, 2011, ISBN 978 0 7524 5842 7, £16.99

The title conceals the fact that the book is a history of the building of navigable waterways in the English Midlands over the past 400 years. The first five chapters relate to the construction of river navigations and canals from the mid 17th century up to the beginning of the 19th century. These early chapters describe the genesis of each canal scheme, the construction phase, how the contractors operated and difficulties experienced due to lack of finance, unexpected ground conditions and poor workmanship. There is a considerable amount of new material relating to the activities and performance of individual surveyors, engineers and contractors who were involved in the construction of these early canals. Subsequent chapters describe later improvements to the waterways, canal building in the railway age, decline of canal carrying, engineering

improvements in the early years of the 20th century, and regeneration and restoration schemes post nationalisation.

The copious photographs, the majority from the author's collection, are accompanied by informative captions, but are mostly undated. Unfortunately there are some errors in the naming and spelling of place names. A comprehensive list of the author's reference sources and bibliography is included at the end of the book. It would have been preferable to identify the relevant source references within the text and list them at the end of each chapter. Setting aside these minor criticisms the book provides much new primary source material and makes an important contribution to our knowledge of navigable waterways.

GERALD LEACH

***Lost Railways of Durham & Teesside* — Robin Jones**

160pp, A5, 91 b&w illustrations, 3 maps, paperback, Countryside Books, Highfield House, 2 Highfield Avenue, Newbury RG14 5DS, 2010, ISBN 978 1 84674 205 7, £10.99

This is a short history of selected closed railways in the Durham and Teesside area, including some material on post-closure history, related preserved lines and museums. It comprises a brief introduction and twelve chapters, based on locales and themes, illustrated mainly with photographs. There is no bibliography, no information on sources, and no index.

This book disappoints and it is difficult to understand the readership at which it is aimed. The history is presented in a disjointed and inconsistent manner likely to bewilder the casual reader and

frustrate the historian, some sections being overburdened with detail and others lacking it. The maps are completely inadequate in aiding an understanding of a complex network; many places and railways mentioned in the text are unmarked or unidentifiable on them. There is a need for a clear historical overview, since the chapter divisions lead to duplication and contradiction. For example, on page 23 it states that the Llanelli & Mynydd Mawr (sic) was the first public railway, but on page 32 the Stockton & Darlington is so described.

TIM EDMONDS

Vintner's Railway Gazetteer: a guide to Britain's old railways that you can walk or cycle

— Jeff Vintner

168pp, 225x120mm, 42 photographs inc 12 colour, 4 maps, paperback, History Press, The Mill, Brimscombe Port, Stroud GL5 2QG, 2011, ISBN 978 0 7524 6011 6, £9.99

The gazetteer lists all known railway paths in the geographical British Isles; that is, disused railway lines on which one may walk, and often cycle, where official permission exists to do so. As a general rule, it excludes short routes of less than two miles and those which have been converted into roads. From the Jersey Railway to the Highland's Fortrose Branch, and from the Great Southern & Western's Fenit Branch to the Southwold Railway, the British Isles are fully covered. The author notes that one of England's larger counties, Hereford & Worcester, is the only county left in England that has 'no railway

paths of any significance'.

Descriptions with OS grid references are given for the access/egress points, plus details, where necessary, of diversions because of demolished structures or, occasionally, land-owners' refusals. The author has written many railway walk books over the past 25 or so years which included histories of each line. Space constraints ensure that this is not possible in this full national gazetteer so it has commensurately less of those details.

This very good value book is heartily recommend.

BRIAN SLATER

***Black Country Canals* — Paul Collins**

128pp, 248x172mm, 209 photographs, 4 maps, paperback, History Press, The Mill, Brimscombe Port, Stroud GL5 2QG, 2011, ISBN 978 0 7509 2031 5, £12.99

The Black Country, the industrial area north-west of Birmingham — contiguous to it but quite different in character — had the densest network of canals in Britain, constructed to serve its collieries, limestone mines and ironworks. Alongside the canals further industries grew up, and the network thrived until into the 20th century.

This book contains a wealth of photographs, many of them taken before the Second World War, which show well the drab but fascinating canal scene and the almost unremitting industrial development. Of particular interest are the old engravings, some

perhaps rather fanciful, of ironworks and factories. The canals are considered in turn in seven chapters, each having a short introduction, but most of the informative detail is given in the captions.

This is claimed to be a revised edition of the book first published by Sutton in 2001. However, the only changes seem to be two extra photographs and a few minor alterations to captions. Unfortunately because the book is printed on silk rather than the previous gloss paper, many of the photographs have less sharp contrast and are consequently less 'atmospheric'.

PETER BROWN

Short reviews

British Railways Atlas 1947: the last days of the Big Four

56pp, 244x180mm, 39 map sections, index of stations, hardback, Ian Allan Publishing, Hersham KT12 4RG 2011, ISBN 978 0 7110 3643 7, £10.99

This is a reprint of a book first published in 1948 under the title *Sectional Maps of the British Railways as at 31st December 1947*. It has been reprinted several times, but this is the first hardback edition. Lines and stations of each grouped railway company are shown in different colours, with joint and ungrouped railways individually coloured and labelled, but there are no enlargements of complex networks and some halts are omitted. Binding and paper quality are improved over previous editions and colour rendition is darker and more readable.

Hail, Salubrious Spot! (How's Your Rupture): memories of a Worcestershire village

— Gavin Bantock

x+361pp, 210x150mm, 226 photographs (109 in colour), 42 paintings, 20 drawings, 6 maps, 14 facsimiles, paperback, Machinami Tsushinsha, 1406, Togane, Togane-Shi, Chiba-Ken, 283-0802, Japan, web.me.com/gavinbantock, 2011, ISBN 978 4 9905452 1 5, £27

This unusual memoir of Barnt Green includes some recollections of the Worcester & Birmingham Canal towpath and reservoirs, the railway station, and the 'Midland Red' bus services, enhanced by some attractive paintings by one of the author's brothers. However, it is really likely to appeal only to those already very familiar with the area, and chiefly to those who grew up there within the author's family and social circle during the 1940s and '50s.

***Austerity Saddle Tank Locomotives* — Cliff Shepherd (editor)**

48pp, 228x165mm, 43 photographs (mainly colour), 1 diagram, 1 map, paperback, Industrial Railway Society, 24 Dulverton Road, Melton Mowbray LE13 0SF, 2010, ISSN 0537 5347, £6.95 (plus £1.05 p&p)

A total of 485 Austerity saddle tank locomotives were built between 1943 and 1964. This booklet, IRS Record 203, contains five articles, including a paper presented to the Institution of Locomotive Engineers in 1948 on their inception and construction, together

with early experiences of their operation. Another lists the 93 locomotives built specifically for the coal and iron industries, together with their modifications and successive locations. Shorter articles describe their work at Waterloo Main Colliery (near Leeds), experiences of their operation, and how some have been drastically modified.

The Rye & Camber Tramway

— Peter A Harding

32pp, A5, 57 b&w photographs, 9 maps and other illustrations, Peter A Harding, Mossiel, Bagshot Road, Knaphill, Woking GU21 2SQ 2011, ISBN 978 0 9552403 6 2, £3.50 (plus 50p p&p).

The Rye & Camber Tramway was one of those English oddities that delight those who enjoy narrow-gauge railways. Peter Harding's little book, first published in 1985, was the first proper account of the line and has now been revised and re-issued. The text has been extended a little but many more photographs have been added, often not published before. The maps have been tweaked and the photographic reproduction improved. Although sources are not given the subject has been properly researched. This modest and unpretentious booklet is well produced and recommended.

***Irish Platform Tickets* — Godfrey Croughton**

68pp, A4, numerous colour illustrations, spiral-bound, Solo Publications, 80 The Street, Kingston, Canterbury CT4 6JQ, 2011, ISBN 978 0 9568528 1 6, £16.50, less 10% for RCHS members (plus £3.25 p&p)

At least 55 Irish stations issued platform tickets, the earliest known example dating from 1909, the latest from 1993. In this booklet, which updates that published by the Transport Ticket Society in 1993, are listed every style of ticket and issuing station known to the author. Of the 171 examples illustrated, both sides are shown of 73. A work like this is never complete: the author welcomes additional information. For example, it is thought likely that platform tickets were issued by the Dublin & South Eastern Railway at Dalkey — does any member have one in his or her collection? For other booklets in this series see the website www.kenelks.co.uk/solopublications/railway.

The following five books: 96pp, about 120 photographs plus maps & tickets etc, hardback, Middleton Press, Easebourne Lane, Midhurst GU29 9AZ, 2011, £15.95

Chester to Rhyl — Vic Mitchell & Keith Smith
ISBN 978 1 906008 93 2

This volume covers part of the North Wales coast line, which is still busy today, and a third of the photographs have been taken in the last 40 years. Thus the numbers of diesel units/locomotives and steam engines are about equal. Inevitably most trains depicted are passenger expresses. The book also includes the Dyserth and Holywell Town branches, and the Saltney Ferry station which was sited by the main line, but only Mold branch trains used it. Signal box dates are featured and some of the tickets displayed are quite unusual.

Aberystwyth to Carmarthen — Vic Mitchell & Keith Smith

ISBN 978 1 906008 90 1

For many years a Great Western route in a thinly populated area, this line originated with two struggling companies — Carmarthen & Cardigan and Manchester & Milford. Neither achieved its territorial aim. Gradient profiles record that more than ten miles was at 1 in 60 or steeper. The book also includes the Aberayron and Newcastle Emlyn branches, making a total of 80 miles with 33 stations and halts. They are given the usual Middleton Press treatment of photographs and maps. Some views are from M&MR days. Brief details are given of the Gwili and Teifi Valley heritage railways.

Shenfield to Ipswich — Vic Mitchell

ISBN 978 1 906008 96 3

The GE Colchester main line has always carried an interesting variety of passenger and freight traffic, well-portrayed in this book, as are the many changes in infrastructure before and after electrification. The major stations (Chelmsford, Witham, Colchester, Manningtree and Ipswich) receive extensive cover-

age; branch lines, other than Ipswich Griffin Wharf, are excluded. The photographs are generally of an acceptable quality, although some lack definition. Captions are descriptive rather than analytical. That to Plate 29, the 'up' side buildings at Chelmsford in 1984, claims that 'little had changed 25 years later' — they were demolished in 1987.

Cardiff to Pontypridd plus other lines to the Taff Vale — Vic Mitchell & Keith Smith

ISBN 978 1 906008 95 6

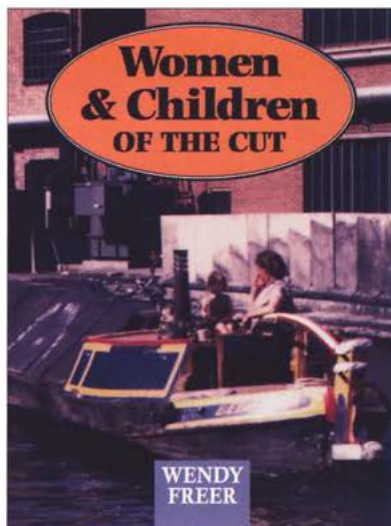
This is an effective survey of railway stations that have served the Taff Valley south of Pontypridd. Not only is the main TVR line from Pontypridd to Cardiff (Bute Road) covered but the Pontypool, Caerleon & Newport Railway from Pontypridd to Caerphilly, the Cardiff Railway from Treforest to Coryton, the TVR from Treforest through Church Village to Llantrisant, the Barry Railway from Pontypridd Graig to Wenvoe and the modern stations from Radyr to Ninian Park on the former TVR route to Penarth Dock. This variety makes for a very satisfying collection.

Branch Lines to Harwich and Hadleigh — Vic Mitchell

ISBN 978 1 908174 02 4

This book of photographs in the standard Middleton format illustrates two contrasting lines, one (Hadleigh) closed long ago and the other (Harwich) hardly a branch but more an active main line with varied short and long-distance trains. Some of the 19 illustrations of the Hadleigh line have been published previously while those about the Harwich line are mostly new to this reviewer. 54 photographs illustrate the railway history of Harwich and Parkeston. The two naval depots served by the line are mentioned with the branch to Mistley Quay and the Manningtree junctions.

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This book describes the everyday life of families who lived wholly or mainly on long-distance narrow boats in England during the 19th and 20th centuries.

Canal-boat work was one of the few occupations employing significant numbers of women and children where no specific legislation was ever enacted to control hours and conditions. Child labour was common far into the twentieth century and children were denied even the most

elementary education. The author considers the reasons for this, what attempts were made to remedy the situation, and why they failed.

With no attempt to 'romanticise' boat people and lifestyle, their experiences and circumstances are set firmly in context and comparisons made with other occupational and social groups.

Wendy Freer is a social historian with a particular interest in canals and the employment of women and children.



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