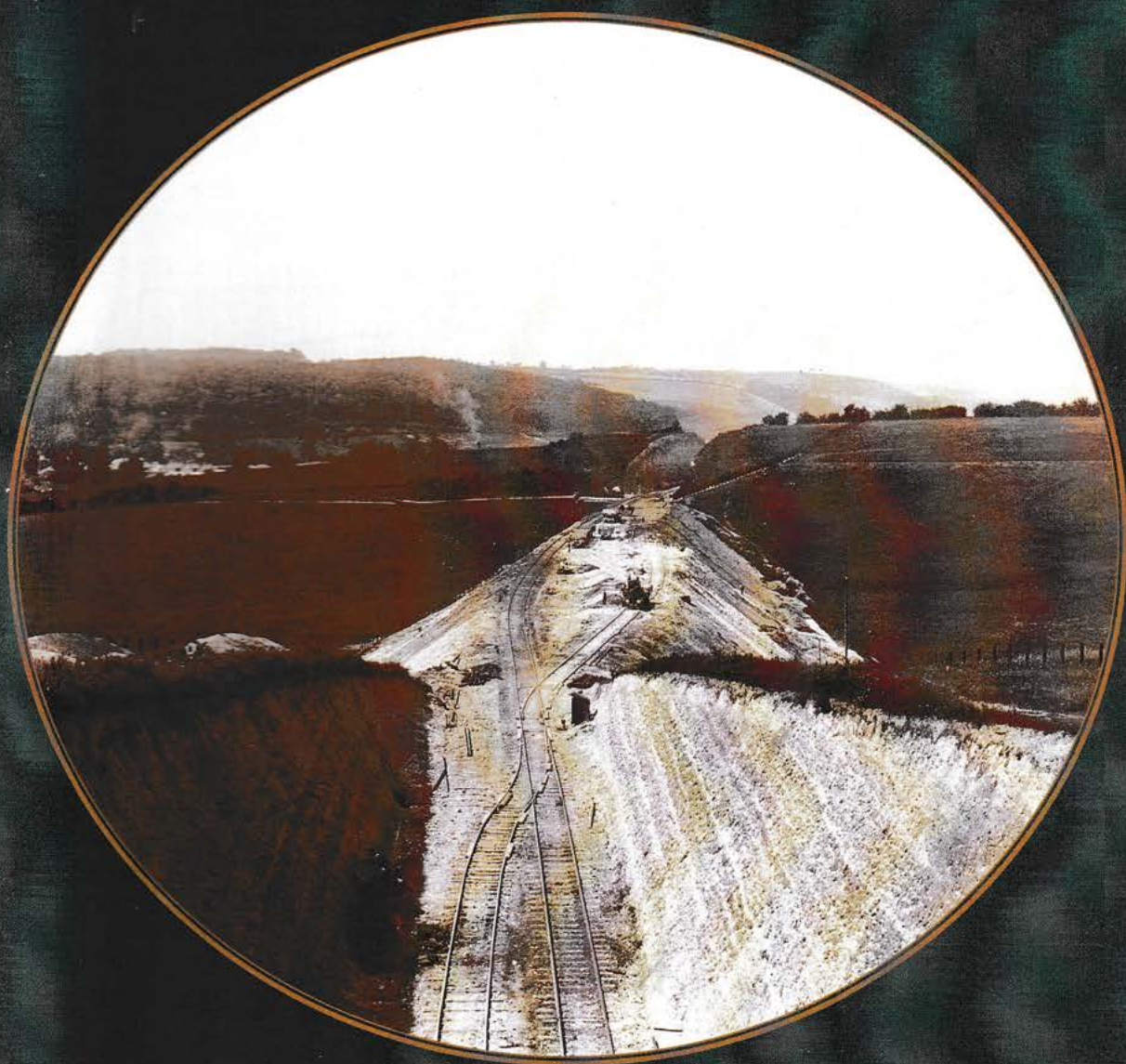




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Back : Two scenes from the construction of the Great Central Railway’s London extension, c1897. *Top* : A Ruston steam navvy at work in the centre of Nottingham.

Below : The interior of a timber navvy mission hut near Calvert.

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Josiah Clowes 1735–1794, ‘a celebrated Engineer’¹

Christopher Lewis and Terence Baddeley

The basis for this article, which relates primarily to Josiah Clowes’s early life, lies in the research by Terence Baddeley of local Staffordshire records. His findings have been used to complement my original entry on the life of Josiah Clowes in the *Biographical Dictionary of Civil Engineers* and an entry in my publication *The Canal Pioneers*.² Baddeley’s historical research into the Clowes and Henshall families, coupled with his local knowledge of geology and mining, gives a far more complete picture of Josiah Clowes’s life and achievements. His findings increase our understanding of Clowes, his early life and training, and further underline his importance as a significant engineer at the beginning of the canal age with particular regard to tunnelling.

This article aims to provide (a) accurate information regarding Clowes’s parentage and upbringing as well as (b) his education and training as a carpenter and mining engineer on the estate of his uncle, Josiah Clowes, at Whitfield, and (c) his varied business interests. This new information places Clowes, like Hugh Henshall, to whom he was related by marriage and who was a great friend, firmly beside James Brindley in his early engineering of the Grand Trunk Canal (the Trent & Mersey Canal). If Henshall was the cartographer who refined, drew and mapped Brindley’s surveys for Parliamentary approval, then Josiah Clowes, with his unique mining experience in north Staffordshire, was the man who must have contributed to the successful construction of the Harecastle tunnel, particularly after James Brindley’s death, before going on to become England’s leading tunnel engineer in the late eighteenth century. It was lucky that James Brindley met with two such able lieutenants.

Josiah Clowes was born, the youngest of four surviving children, to William Clowes and Mary (*née* Whytall) in 1734. He had an older sister, Sarah,³ and two older brothers, William, born 1728, and John, born in 1732. William and Mary Clowes held the tenancy of Stanley Fields in the hamlet of Bemersley in the parish of Norton-in-the-Moors. Josiah’s mother’s family had farmed at Stanley Fields for more than a century and an earlier ancestor, William Whytall, was the Constable of Tunstall Court in 1641.

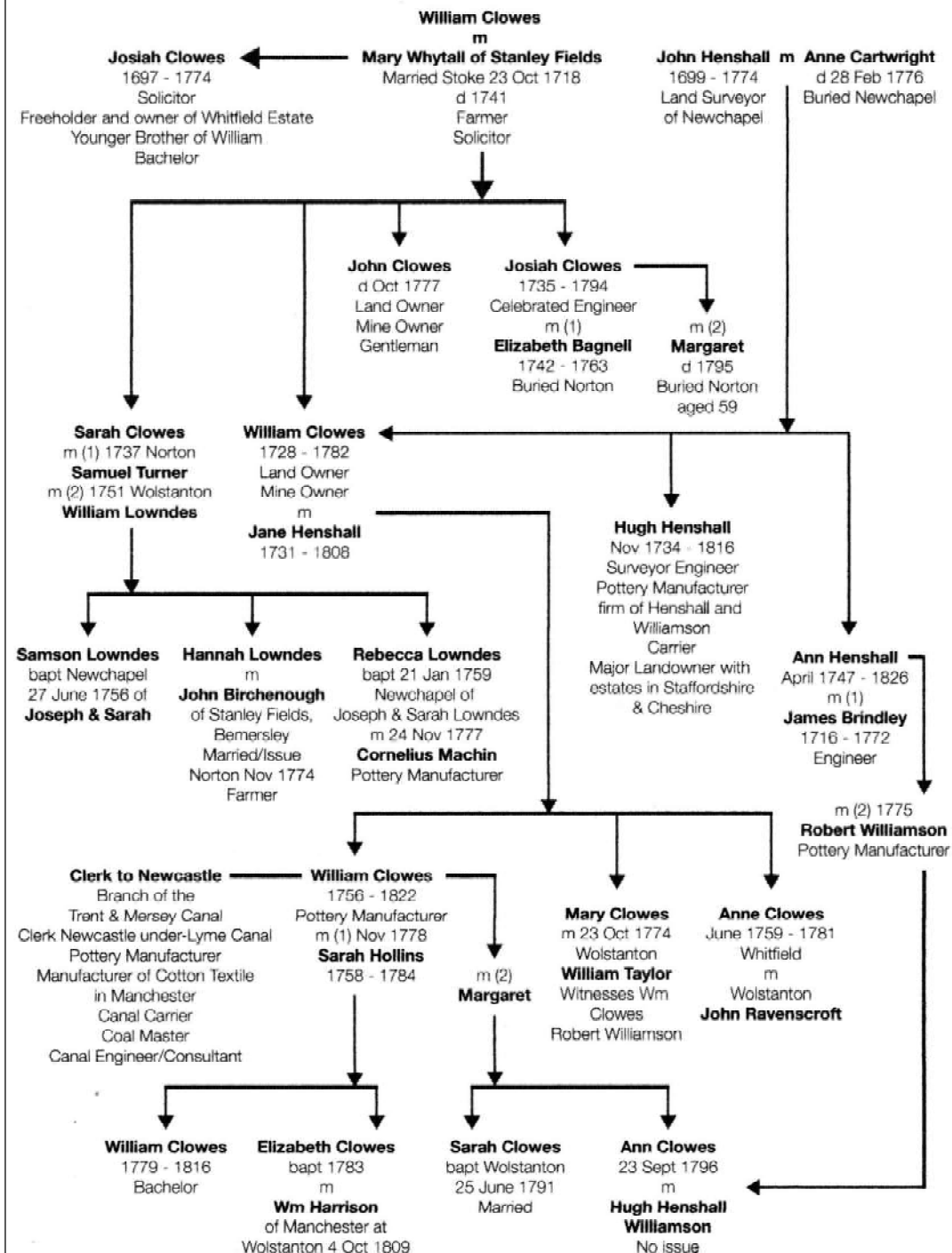
An earlier William Clowes, 1619–1708, was Norton’s Parish Clerk. Josiah’s great-grandfather lived at Church Farm, by the church in Norton Lane, otherwise known as Norton Hall. It was the ancestral home of the Clowes family.

Josiah’s father, William Clowes, was a farmer and solicitor, the latter occupation being extremely pertinent to land ownership and management. Unfortunately, William Clowes died early in May 1741 at Stanley Fields when Josiah was only five or six years old. Fortunately a saviour in the shape of William’s younger brother, also Josiah Clowes, owner of the Whitfield estate and also a solicitor, intervened. Josiah senior lived at Whitfield, remained unmarried, and owned extensive lands and collieries. He appears to have adopted his nephews, William, John and Josiah, after his brother’s early death and ensured that the boys received a good education, possibly at the free grammar school at Newchapel. He then went on to train them in aspects of the work and trade in operation on the sizable Whitfield estate which included four farms as well as mines. After his father’s death the young Josiah went to live on one of his uncle’s farms at Catherine Fields, Chell Heath, which was noted at the time for the early cultivation of flax.

The three Clowes brothers were baptized into the Anglican church when adults, on 9 July 1751 at St Bartholomew’s church, Norton. Whether it was a way to affirm themselves as true establishment figures, with regard to the Test and Corporation Acts, is not known. Baddeley records that the church of St Bartholomew was rebuilt in 1738, three years after Josiah’s birth and that Josiah, John and William celebrated their family group baptism in 1751 by buying a prominent family plot for burial in the new graveyard. One can picture the three brothers on the windy heights at Norton in July, submitting to baptism with their proud uncle looking on.

As a young man, Josiah Clowes started to display talent in differing aspects of engineering, building, mining and carpentry. Friendly with Hugh Henshall through their family’s ownership of land, he became, under his uncle’s guidance, a creative and skilled carpenter on the Whitfield estate. Over the years he

THE CLOWES FAMILY



also emerged as an imaginative and skilled mining engineer. His experience included sinking a vertical shaft, 100 feet deep, through the coal measures. He then tunnelled through strata dipping 20 degrees west to gain access to the Eight Feet Coal otherwise known as the Bellringer Seam. He designed a tunnelling frame, later mentioned at Sapperton tunnel, and in 1772 was a well qualified local engineer who could tunnel at depths of 150 feet through the coal measures almost certainly assisting James Brindley and Hugh Henshall at Harecastle in order to complete the Trent & Mersey Canal.

By 1760, Clowes had designed and built for his uncle a line of wooden slide rods from a water engine, across Engine Meadow, to a pump that lifted water 100 feet to drain Whitfield colliery. This is illustrated in Hugh Henshall's 'Plan of the Manor and Parish of Norton-in-the-Moors belonging to Charles Bowyer Adderley ...' drawn in 1771. John Ward, in his history of Stoke on Trent,⁴ records that James Brindley had demonstrated an identical system for powering a neighbouring mill for grinding calcined flints. This mill belonged to Thomas Baddeley of Newfields, Tunstall, and was on his estate in Chell, 1¼ miles from Clowes's rod engine. The two systems were engineered at approximately the same time and the Tunstall Manor Court Rolls of 1755 show that Thomas Baddeley, who was friends with John Henshall, Hugh's father, had the opportunity to introduce the Henshall family and the Clowes family to James Brindley. By now, Josiah Clowes was demonstrating more skill and enthusiasm for engineering, carpentry and mining than his two brothers and possibly was partly responsible for the rods for the Chell Mill through working for James Brindley. Indeed, Josiah Clowes the elder was so impressed with his young nephew's work, that he left his Whitfield colliery to him in his will.

James Brindley and Josiah Clowes were closely linked by their friendship and by professional work with the Henshall family. William Clowes, Josiah's elder brother, had, prior to his baptism, married Jane Henshall on 1 January 1750 at St Margaret's church, Wolstanton. James Brindley was working regularly with Hugh Henshall and his father John in canal survey work and married Hugh Henshall's younger sister, Anne, in December 1765 in the same church. When, in 1791, Josiah Clowes was examined by a Parliamentary committee, who were investigating the feasibility of engineering the Worcester & Birmingham Canal, Clowes stated to the committee that 'he had been an engineer, upwards of twenty

years employed under the late Mr Brindley'. He was clearly, in the words of Cyril Boucher,⁵ part of a school of engineers and was active in his work with Brindley and Henshall from 1760, or probably as far back as 1756.

By 1762, Josiah Clowes, at the age of 27, was prosperous enough to marry. On 30 December, he married Elizabeth Bagnall at Norton-in-the-Moors church by special licence (Fig 1). The bride was unable to sign the register and her mark was recorded. It was a family affair, Hugh Henshall being a witness and brother John the churchwarden. Indeed, the minister officiating was a Jonathan Clowes, although no relative. Unfortunately, Clowes's happiness was to be short-lived as Elizabeth died at Chell Heath, seven weeks and five days after the marriage. She was buried at Norton on 19 February 1763. This tragedy must have affected Josiah Clowes in the extreme.



Figure 1. St Bartholomew's church, Norton-in-the-Moors. The church of 1737 in which Clowes was married forms the western end only; the chancel and transepts at the east were added in 1915.

Four years later the Staffordshire engineers, Henshall and Clowes, led by Brindley, welcomed a fourth partner in the shape of Robert Whitworth. Whitworth had moved from Yorkshire in 1767 to live at Norton-in-the-Moors. He had worked with Brindley on the Calder & Hebble Navigation in 1763 and moved to Norton to be close to Brindley in Turnhurst Hall which was now the vortex for canal developments across the country. In effect, Robert Whitworth became the equivalent of Hugh Henshall, supporting Brindley, but working further afield on the country's developing canal system, including the Birmingham Canal, the Leeds & Liverpool Canal and

the River Thames. Whitworth did not have the business and estate interests that Hugh Henshall had in the north Midlands. However, Henshall and Whitworth became Brindley's chief cartographers and supporting engineers.

In 1770 Josiah Clowes, aware through initial borings for the tunnel of the mineral wealth buried under Harecastle Hill, encouraged his brother John to take a lease on the land from a Mr Smith Child so they could mine the excellent quality coal there. Three years later, on 16 November 1773, after Brindley's death, the *Leeds Advertiser* reported that the Duke of Bridgewater, accompanied by Hugh Henshall (engineer), Robert Williamson (Anne Brindley's second husband), Josiah Clowes and William Clowes junior had examined the underground works at Harecastle by sailing a measured mile through the partially completed tunnel in a boat. Williamson and the Clowes brothers were referred to as agents of the Company of the Navigation from Trent to Mersey and the tunnel was acclaimed as a marvel of subterranean engineering.⁶

It was in the role of agent and carrier that Clowes continued his work with the Trent & Mersey, moving to Middlewich to facilitate transshipment arrangements when goods were moved from the narrow Grand Trunk barges to the larger craft of the Duke of Bridgewater's Canal. Clowes also worked during this time as an engineer to the Stroudwater Navigation and to the Chester Canal before he was dismissed from the latter for 'not attending the works agreeable to contract'. He bought a property in Dog Lane, Middlewich.⁷ This lane led down to the Trent & Mersey offices below St Michael's church on the canal bank (Fig 2). He had married again, although it is unclear as to when and where. His second wife's name was Margaret.

At this point in his career, Clowes remained largely unknown nationally. He was a man with engineering potential, mining and carpentry skills and experience of canal work, hiring boats on the new Trent & Mersey Canal, undertaking various engineering jobs and making money out of canal and coal business. However, at this period of his life, his attributes as



Figure 2. The derelict Trent and Mersey offices on the canal side of the Trent and Mersey Canal at Middlewich. In the distance is St Michael's Church which lies at the end of Dog Lane where Clowes lived. Clearly, Clowes worked from these offices as an agent of the Company.

an engineer were not fully realised. The year 1783 was to mark a significant change in this.

In that year, Josiah Clowes was appointed 'surveyor, engineer and head carpenter' for one of the major canal projects in England, the project to link the Thames and the Severn. He was to assist Robert Whitworth in this task. However, shortly after his appointment, Robert Whitworth left the Cotswolds to engineer the Forth & Clyde Canal and Clowes became chief engineer to the Thames & Severn project without Whitworth's guidance (Fig 3). The task was a formidable one and the building of the canal with its major engineering problems, notably at Sapperton tunnel, is well chronicled in Humphrey Household's book on the Thames & Severn Canal.⁸ Despite Clowes's difficulties with the impatient canal owners, the variable and unknown geology causing water

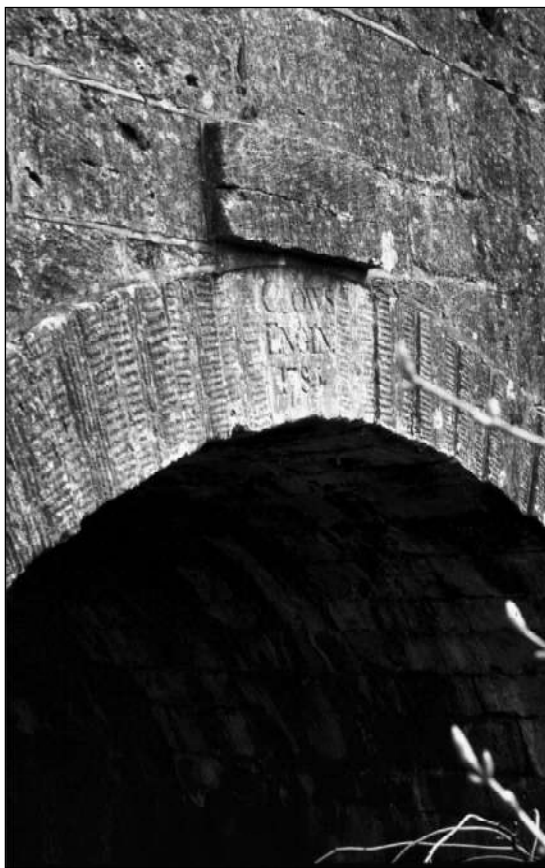


Figure 3. Clowes's name inscribed on the keystone of the bridge on Red Lion lock, Chalford on the Thames & Severn Canal.

leakage, and the all too well known and highly recalcitrant mining force led by the contractor Charles Jones, Clowes left the canal in 1789 with his reputation enhanced. John Smeaton wrote, 'I have heard a good character of him' and *The Times* proclaimed the Sapperton tunnel as 'the grandest object ever attained by inland navigation'.^{9, 10} From now on, during the last six years of his life, Josiah Clowes was sought by canal companies as an experienced consulting engineer. He worked for six future canal projects as well as carrying out improvements to the locks in the Upper Thames. Indeed, he had become like his mentor, James Brindley, travelling the country widely between Worcester, Shrewsbury, Stoke, Birmingham and London, surveying and working on canal construction with particular reference to lock and tunnel building.

By the beginning of the 'canal mania' in 1794, Clowes had been responsible for surveying and engineering the three longest tunnels on the English canal network, Sapperton, Lapal and Dudley. These were exceeded in length in the nineteenth century by Standedge and Strood tunnels. Joseph Priestley asserts that Clowes was consulted over the building of the country's longest canal tunnel at Standedge on the Huddersfield Narrow Canal, 5,456 yards, but no evidence for this exists in the company's minute books. This does not, however, rule out the possibility that his nephew William Clowes was involved in the construction in around 1800, after Benjamin Outram and before John Rooth.

Josiah Clowes died in December 1794 at Middlewich. In that same month his conventional masonry aqueduct on the Shrewsbury Canal was swept away in the violent winter storms and later replaced by Telford's experimental iron trough – an indication, perhaps, of the engineering changes to come. The *Staffordshire Advertiser* reported on 23 January 1795 that Mr. Josiah Clowes, 'a celebrated engineer', had died at Middlewich aged 58. At his own request Clowes's remains were taken from Middlewich and interred at St Bartholomew's church in Norton-in-the-Moors with his short-lived first wife, Elizabeth, on the morning of New Year's Day, 1795. Josiah Clowes is remembered by the simple inscription on his tomb, 'ENGINEER' (Fig 4). There is no portrait of Josiah Clowes and the portrait of Anne Henshall, wife of James Brindley and Robert Williamson, observed by Samuel Smiles, has been lost.¹¹ His second wife, Margaret, died only three



Figure 4. The grave of Josiah Clowes and his short-lived first wife, Elizabeth, in the churchyard of St Bartholomew's church, Norton-in-the-Moors.

months after him, aged 53. She was interred in the same tomb on 22 March 1795.

Josiah Clowes's early life was lived after the Jacobite insurrection of 1745 and he died after the execution of Louis XVI, the French Revolution and the enormous disturbances in Britain caused by the subsequent wars. Not widely mentioned by canal historians in the twentieth century, Clowes's undoubted specialist subterranean engineering skills led to the successful creation to the early English canal system for James Brindley and others. Perhaps, Clowes is a life that needs to be re-valuated.

After Clowes's death, his nephew, William, inherited his uncle's not inconsiderable estate and business interests. In 1777, William had founded the Newhall pottery company in Tunstall with Jacob Warburton, Samuel Hollins and Charles Bagnall. Eventually, William Clowes secured the controlling interest in this company, which produced pure porcelain, as well as founding his own pottery works at Longport in 1781 that he named Unicorn Bank.¹² In 1796 William Clowes also became a partner in the earthenware manufactory of Henshall and Williamson of Longport. This firm took over the

canalside works of John Brindley (brother of James) known as Longport's Top Bridge Bank. Money from his uncle Josiah's will enabled William Clowes to become a textile manufacturer (fustian) in Manchester in the 1790s and a partner in the firm of Gough, Clowes & Lloyd, cotton spinners.¹³

A pleasing postscript to Josiah's life lies in the marriage of Ann Clowes, William Clowes's second daughter, by his second marriage, to Hugh Henshall Williamson, the son of Robert and Anne Williamson, née Brindley.¹⁴ Indirectly the Clowes, Henshall and Brindley families thus cemented their relationship through marriage outside the world of business and canals (see the family tree). The occupations of those listed in the family tree also underline the importance to the development of industry and the economy in the country after the start of the canal building age.

Known works of Josiah Clowes

1770–77 Trent & Mersey Canal, Harecastle tunnel, Agent, tunnelling advice?

1778 Chester Canal, Engineer

1778 Stroudwater Navigation, contract for lock repairs

1783–89 Thames & Severn Canal, Resident Engineer then Chief Engineer
 1789–90 River Thames, Engineer, lock repairs on upper Thames
 1789–92 Dudley Canal and tunnel, Chief Engineer
 1791–94 Herefordshire & Gloucestershire Canal, Chief Engineer
 1791–94 Worcester & Birmingham Canal, Consultant Engineer
 1792–94 Shrewsbury Canal, Chief Engineer
 1792–94 Dudley No 2 Canal, Chief Engineer/consultant
 1792–94 Stratford Canal, Chief Engineer

Acknowledgements

We are grateful to thank Peter Cross-Rudkin and Victoria Owens for their comments on the text and to Kam Young for his work on the production of the family tree and the other illustrations.

Notes and references

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2. Christopher Lewis, 'Clowes, Josiah (1735–1794)' in *A Biographical Dictionary of Civil Engineers in Great Britain and Ireland. Vol 1: 1500–1830*, ed A W Skempton (London : Thomas Telford, 2002), pp 142–4; Christopher Lewis, *The Canal Pioneers : Brindley's school of engineers* (Stroud : History Press, 2011)
3. Josiah Clowes's sister Sarah married Samuel Turner in 1737 by whom she had two sons, John and James. She was described as independent at the time of her father's death in 1741. Second, she married William Lowndes at Wolstanton in June 1751. Her children by him were Hannah and Rebecca. They married John Birchenough and Cornelius Machin respectively. The latter was a pottery manufacturer. Sarah Lowndes was a beneficiary in her younger brother John's will.
4. John Ward, *The Borough of Stoke-upon-Trent...* (London : Lewis, 1843)
5. Cyril T G Boucher, *James Brindley, Engineer, 1716–1772* (Norwich : Goose, 1968)
6. *Leeds Advertiser*, 16 November 1773. I am grateful to Peter Lead for this reference.
7. Dog Lane in Middlewich has been renamed, Queen's Street. Clowes would have had easy access from his home there to the canal workings and the Grand Trunk (Trent & Mersey) offices.
8. Humphrey Household, *The Thames & Severn Canal* (Newton Abbot : David & Charles, 1969)

9. *The Times*, 26 November 1789, p 3

10. Baddeley observes that Josiah Clowes's work at Sapperton, while he was living in Castle Street, Cirencester, must have assisted in the first scientific publication in 1815 on the Jurassic strata of England, by William Smith, canal engineer and 'father of English geology'. According to Baddeley's researches, Clowes appreciated that the shells in the mussel bands of Harecastle belonged to a different era than those fossil shells found in Sapperton tunnel.
11. Samuel Smiles, *Lives of the Engineers*, vol 1 (London : John Murray, 1861), p 467
12. David Holgate, *New Hall and its Imitators* (London : Faber and Faber, 1971)
13. *Pigot and Dean's Manchester & Salford Directory for 1815 ...* (Manchester : R & W Dean, 1815)
14. Ann Clowes was buried at Brown Edge Church with her husband's crest adorning the organ walls. The Clowes symbol on the crest was the three unicorns.

In addition to the sources noted above, the following have been used:

Archival sources

Information on the Clowes family births, marriages and deaths is to be found in Norton-in-the-Moors parish records, Staffordshire Parish Records Society (SPRS), vol 1, 1574–1751 (pub 1924); vol 2 (1754–1837) (pub 1942/3); Stoke-on-Trent parish records, SPRS, vols 1–4, 1629–1812 (pub 1914–27). For Norton-in-the-Moors deaths after 1794 the registers are still held in the church with marriages in a separate volume to baptisms and burials.

Burslem registers of baptisms, marriages and deaths (SPRS), vols 1–3, 1578–1812 (pub 1913)

Wills of Josiah Clowes of Whitfield (1697–1774), proved at Lichfield, 4 April 1774 (Lichfield Record Office, B/C/11); John Clowes, proved at Lichfield, 31 May 1779 (Lichfield Record Office, B/C/11); Josiah Clowes (engineer), proved 1795 (Cheshire Archives, WS1795)

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The financial performance of the Big Four.

Part 1: The overall picture, 1923–1938

Tony Sheward

Introduction

The Big Four¹ railway companies (Great Western Railway (GWR), London, Midland & Scottish Railway (LMSR), London & North Eastern Railway (LNER) and Southern Railway (SR)) formed as a result of the Railways Act 1921 in effect comprised the bulk of the British railway industry from 1 January 1923 until nationalisation in 1948. However, from the point of their takeover by the government under the Defence Regulations in September 1939 their existence as independent commercial companies ceased for most practical purposes. The financial years 1923–38 provide a last look at the financial state of the British railway industry in private hands before nationalisation.

This two-part article takes the Big Four as a proxy for the whole of the British railway industry. The Railway Returns² produced by the Ministry of Transport show a more complete picture, although from 1933 they do not include figures for the railways which became the responsibility of the London Passenger Transport Board (LPTB) on 1 July 1933. The Railway Returns for 1938 also include figures for 59 entities over and above the Big Four. These were very much a mixed bag and can be summarised as:

- Joint Committees involving two or more of the Big Four or one of the Big Four and the LPTB, such as the Somerset & Dorset or the Great Central & Metropolitan
- Light railways, such as the Derwent Valley
- Narrow gauge railways, such as the Talylyn
- Non-working railway companies, such as the Weymouth & Portland

In 1938 these entities comprised 4.4 per cent of the route miles, 2.7 per cent of the gross receipts and 2.6 per cent of the net revenue for the whole industry as shown in the Railway Returns. The treatment of the Joint Committees in the accounts of the Big Four deserves special mention. Only the net revenue derived from the Joint Committees is shown in the consolidated statement of revenue receipts and expenditures (statement 8) of each Big Four

company. However, the gross receipts from which the net receipts are derived are shown in Abstract J.

There are difficulties in reporting the figures for the LPTB railways. Some figures are given for their railways in the LPTB's annual reports,³ but with a different financial year end (to 30 June) and not in a comparable form with either the Big Four's own annual reports or the Railway Returns. In terms of route mileage, the LPTB lines would have added only 1 per cent to the mileage for the whole industry shown in the Railway Returns for 1938.

Part I of this article takes a broad overview the legal and economic framework within which the Big Four had to operate in the period 1923–38 and the financial performance that they managed to achieve. Part II takes an in-depth look at the financial performance of the Big Four in the years 1933–38, their last six years of independence. In addition to the financial results themselves, a selection of statistical returns is examined with particular reference to measures of efficiency, investment and innovation.

In both parts of the article the term 'UK' is used for the political entity which came into existence after the creation of the Irish Free State in 1922, i.e. including Northern Ireland. As regards economic measures quoted there is consistency, but applying this to the Big Four as a proxy for the UK railway industry requires some qualification. The LMSR was the only one of the Big Four to have any significant interests in the railways on the island of Ireland. The bulk of these, particularly the Northern Counties Committee lines, operated in Northern Ireland. However, there were others, such as the County Donegal Railways Joint Committee lines which were operated jointly with the Great Northern Railway (Ireland) and were in the Irish Free State (named as such until 1937). The annual accounts of the LMSR include all of these Irish interests.

The post-World War I situation and the Railways Act 1921

A review of the financial performance of the Big Four from 1923 to 1938 needs to take account of the

circumstances underlying the creation of the Big Four and the problems that they inherited. Although the physical destruction of their assets during World War I had not been extensive, the 140 pre-war railway companies faced the peace with a huge backlog of repairs and maintenance and a shortage of serviceable rolling stock. The government had recognised during the war that it had an outstanding liability to the railway companies for this situation, but government control continued until 1921 and the exact amount of the compensation payable took a similar period to be agreed.

The railway companies also faced the results of adverse movements in charges and costs during the war. By 1921 freight rates were double their 1913 level and passenger fares 75 per cent higher, but staff wages, coal prices and steel prices were around between 125 per cent and 160 per cent up on their 1913 levels.⁴ The legislation of 1888–94, which controlled railway rates, remained in force and, therefore, there was little the railway companies could do to redress the balance prior to the 1921 Act.

Even before World War I, there was some concern about the state of the railway industry and how a number of companies could continue to survive and the Board of Trade had started to consider how the industry could be reformed. The war aborted such work, but the way in which the industry was able to cope so well with wartime conditions under government control produced a willingness to consider nationalisation or wide-scale amalgamations as models for peace time conditions, notably by senior members of Lloyd George's coalition government such as Geddes and Churchill. The parlous state of many of the smaller companies in November 1918 was another spur to some form of rationalisation. The eventual grouping into four large entities was ultimately a compromise, outright nationalisation and grouping into seven units having been considered along the way. Although financial savings and operating efficiencies through economies of scale were hoped for from the grouping process, there was no master plan to achieve these and the Big Four had a free hand to do what they felt was necessary within their organisations. After the event, there was no consistent attempt to quantify what had been achieved. The two largest of the Big Four, the LMSR and the LNER, had a considerable management task in integrating the disparate companies within their groups and this undoubtedly affected their financial performance in the early years.

The 1921 Act did attempt to replace the Victorian legislation on rates and charges and a Railway Rates Tribunal was set up to simplify the existing rates-making machinery and supervise control over rating procedures. New classifications for freight were to be introduced and a scale of charges set up for them. However, the initial charges were set to yield a standard net revenue equivalent to that in 1913. This did not consider how achievable this would be, given economic developments since 1913, particularly the movements in railway costs. The difficult process required to establish the case for a general increase in rates meant that this option was only used once by the Big Four, in 1937 when a 5 per cent increase in most rates was agreed with effect from 1 October 1937. With passenger fares, there was less control, particularly over exceptional fares. However, this situation and the fact that pooling of revenues was agreed for certain routes did impact on the extent to which the Big Four could compete with one another in the parts of the country where their services overlapped. Thomas⁵ makes the point that with price competition limited in scope, competition for long distance passenger services was focused on speed, quality of service and to some extent frequency of service. As will be indicated in the coverage of dieselisation in the second part of this article, there was a public relations element to streamlined trains both for home and overseas consumption.

One feature of the pre-1913 situation regarding railway rates was the proliferation of exceptional rates for both passenger and freight outside the published scales. The rate-setting process established by the 1921 Act attempted to resolve this situation. All exceptional rates of less than 5 per cent were to be cancelled. Those between minus 5 per cent and minus 40 per cent could be continued subject to agreement between the railway companies and the traders. New rates within the same brackets could be negotiated by the railway companies and the traders, but were to be available for examination by the Railway Rates Tribunal. Exceptional rates in excess of minus 40 per cent required Tribunal approval. However, because of the difficulty of obtaining a general increase in freight rates, which involved a formal enquiry and the need to demonstrate how the costs of operation had changed, use of exceptional rates still proliferated.

Despite the attempt to reform the system for establishing freight charges and passenger fares, the underlying philosophy tended to assume that the railways still had a near monopoly of inland transport

and the public had to be protected from practices such as undue preference. As will be seen below, the competitive scene for inland transport was beginning to change.

One factor which was to have a significant effect on the Big Four's costs over the period covered by the second part of this article was the reversal of the 2½ per cent reduction in rates of pay agreed in 1931 because of the depression of 1929–32 (the Great Depression). The first 1¼ per cent was reversed for most staff with effect from 27 July 1936 and the second 1¼ per cent with effect from 16 August 1937. The timing of the second was particularly unfortunate as the UK economy was beginning to slow down in 1937 and the general rates increase in 1937 did not anticipate the falling off of traffic, particularly freight, which was to occur in 1938.

British economic history 1923–38

In addition to the environment established by the Railways Act 1921, the financial performance of the Big Four between 1923 and 1938 needs to be looked at in the context of the economic history of Great Britain in that period. After World War I Great Britain had suffered a major slump in the years 1919–21 and although GDP had started to recover in 1922, the Big Four started life with an economy that had not yet returned to the buoyancy of wartime conditions nor achieved the level of 1913. The years up to 1929 saw a steady recovery, apart from 1926, which was distorted by a lengthy coal strike and a brief general strike. Taking GDP in 1913 as a base line of 100,⁶ Feinstein's figures show that in 1923, the first year of the Big Four's life, GDP was only 91 per cent of the 1913 figure. By 1929 it was nearly 8 per cent higher than in 1913. The Great Depression was longer and deeper than any that Great Britain had experienced within living memory and at its nadir GDP had almost fallen back to 1913 levels. By 1932 some recovery had begun, but GDP was well below the peak achieved in 1929. From 1933 to 1937 the British economy responded to the measures taken to alleviate the depression both at home and abroad and GDP rose steadily until in 1937 it was over 25 per cent higher than in 1913. At that point, the rate of growth slackened off considerably, as the effect of the anti-depressionary measures began to wear off and the threat of war in Europe over Czechoslovakia undermined business confidence.

Thomas,⁷ using an alternative analysis of GDP, makes the point that the slump of 1919–21 was in some ways more intense than the so called Great

Depression. When considering the financial performance of the Big Four, they should be given full credit for overcoming this initial handicap. Thomas also highlights the fact that, unlike the United States (US), the UK did not suffer any bank failures during the Great Depression. This factor probably helped the resilience of the Big Four during this period.

Great Britain's economic performance during the period 1923–38 also needs to be considered in its international context. Even before World War I the predominance that the country had achieved in the Victorian era, as the first country to become industrialised, had begun to be challenged, particularly by Germany and the US. This process gathered momentum after the war and the staple industries which had formed the basis of Great Britain's prosperity, namely coal, iron and steel products, shipbuilding and textiles, began to lose their share of world markets. These industries, of course, were major customers of the Big Four.

Stone and Rowe⁸ have produced figures which show that UK consumer expenditure on transport and communication services at constant 1938 prices made up the following percentages of the total expenditure:

1920–24	5.6%
1925–29	6.6%
1930–34	6.5%
1935–38	7.5%

It can be seen that the overall demand was only slightly affected by the Great Depression. However, Stone and Rowe's analysis by mode of transport, again at constant 1938 prices, shows the changes between 1920 and 1938 (Table 1).

Various trends were at work here. Private motoring expanded rapidly after World War I, albeit from a relatively low base, aided by the reducing capital cost and increasing reliability of cars. By 1938 it had moved beyond the preserve of the wealthiest classes and penetrated further down the social scale. Within the public transport sphere, the railways enjoyed only modest growth of 7 per cent compared with the 52 per cent for road transport. Like private cars, passenger road vehicles also benefited from the favourable trends in the automotive industry. Buses began to compete successfully with trams and trolleybuses for urban and suburban traffic and were able to challenge the railways for short journeys of up to about 50 miles. Some of the traffic they attracted, particularly in rural areas, was from places

Table 1. Mode of transport changes, 1920–38

Sector	1920 £m	1929 £m	% change	1938 £m	% change	% change 1920–38
Private transport	25.8	78.6	+204.7	135.2	+72.0	+424.0
Public transport						
Railways	52.6	53.0	+0.8	56.3	+6.2	+7.0
Road	71.8	89.1	+24.1	109.4	+22.8	+52.4
Sea and air	18.6	15.3	-17.7	13.2	-13.7	-29.0
Total	143.0	157.4	+10.1	178.9	+13.7	+25.1

which the railways had never been able to serve. Growth of long distance coach travel was still hampered by the lack of high speed trunk roads.

The Big Four did, of course, compete directly in passenger road transport with some vehicles of their own, although their biggest investments in that sector were in existing bus and coach companies. The Road Powers Acts of 1928, although they precluded the Big Four from holding controlling interests in bus and coach companies, enabled them to acquire large minority interests in companies such as British Electric Traction, Scottish Motor Traction and Thomas Tilling. Eventually, the Big Four had holdings in 33 bus and coach companies, including most of the well-known names such as Crosville, Eastern National and Midland Red. Ironically the percentage dividends received on these investments in the period 1928–38 were higher than those the Big Four could pay their own shareholders. Semmens⁹ reports that in 1939 the GWR received dividends that represented a 9.9 per cent return on the purchase price of the shares in its associate bus companies.

Use of road vehicles for carrying freight also increased significantly in the period 1923–38. Immediately after World War I a large number of lorries were sold off by the military. Many of these were bought by small companies for carrying their own goods and by small operators for hire and reward. Later the capital cost of new lorries began to decrease and mechanical reliability began to improve, spurring more firms to enter the freight road transport industry. The railways were still able to compete successfully for long hauls, particularly over 100 miles, and for bulky or very heavy loads over shorter distances.

Statistics on the provision of road freight services are not so readily available as those for passengers because the industry was very fragmented with a large number of small players. However, the number of vehicle licences issued for goods vehicles does give some idea of the growth of the industry. From a total of 173,000 issued in 1923, this had climbed by 186 per cent to 495,000 in 1938.

The Big Four attempted to fight competition by the road haulage industry on the basis that there was not a level playing field between the two. Matters of particular concern were:

- The railways were subject to a specific tax, namely railway passenger duty dating back to the 1840s and still levied on first-class tickets.
- The railways, in addition to meeting the cost of their own permanent way also had to contribute to the cost of the roads through the local rates.
- Road haulage companies caused a disproportionate charge for the maintenance of the roads, which was not reflected in the local rates they paid.
- Railways were subjected to a significant amount of government regulation, yet regulation of the road haulage industry was primitive.
- Railway companies were forced to publish their rates and in effect were carriers of last resort, whereas road haulage firms were not and could cherry-pick the business that they wanted.

The Big Four did achieve some limited success in their campaign. Railway passenger duty was abolished in the Finance Act 1929. The Rail and Road Traffic Act of 1933 established a new licensing regime for road haulage vehicles with higher charges for licences. The railway companies were given the

power to object to the granting of new 'A' and 'B' licences, i.e. those involving vehicles for hire and reward. Although the railway companies were still obliged to publish their rates, they were permitted to quote 'agreed charges' whereby they could carry the whole of a trader's traffic for a negotiated flat rate. In addition to these changes in their favour, the Big Four were also involved in road haulage on their own account and in 1933 jointly purchased Hays Wharf Cartage Company, the owner of Pickfords and Carter Paterson. However, as late as 1938 a strong sense of grievance remained, aggravated by worsening economic conditions, and the Railway Companies Association launched their 'Square Deal' campaign in that year.

Canals and coastal shipping struggled to compete with road and rail in the period 1923–38 and the Big Four had direct experience of this as the owners of many canals.

Air transport grew rapidly from a negligible base after World War I, but even in 1938 was not a significant competitor to the Big Four and they had

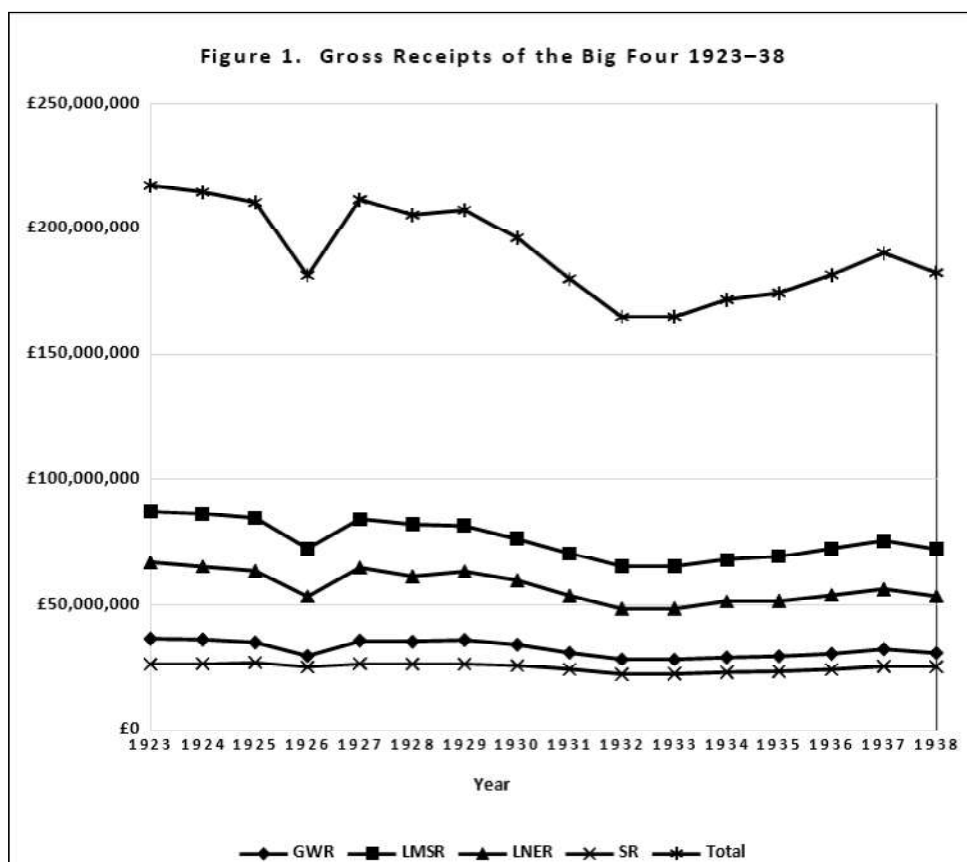
a limited presence in the industry through their holdings in Railway Air Services.

The overall financial results of the Big Four 1923–38

The data set out in this section gives an overview of the financial results of the Big Four in the period from 1923 to 1938 and reflects the influence of the factors described above. Figure 1 charts the gross receipts of the Big Four over the period.

The gross receipts include those for the railway business and all the subsidiary businesses as reported, thus they do not include the gross receipts of the Joint Committees listed in Abstract J. Some minor changes were made to the calculation of gross receipts from 1928 as result of the Railway Companies (Accounts and Returns) Order 1928 (the 1928 Order), but the figures for the years to 1927 have not been adjusted.

The total gross receipts of the Big Four for 1923 were £217.4m and this figure was not exceeded over the period. The figure for 1926, the year of the general strike and a protracted coal strike, fell to



£181.4m, 16.6 per cent lower. After a peak of £211.9m in 1927 2.6 per cent lower than 1923, the figure declined during the Great Depression to a low point of £165.0m in 1932, 24.1 per cent lower than in 1923. There was then a recovery to a high point of £190.5m in 1937, still 12.4 per cent below 1923. Renewed depression in 1938 saw the figure fall to £182.6m, an overall decline of 16.0 per cent on 1923. The figures take no account of inflation, but the Bank of England's inflation calculator indicates that a £1 in 1923 was worth 89.8p in 1938, with inflation averaging 0.7 per cent per annum over the period.

Table 2 shows the gross receipts of the Big Four in pivotal years between 1923 and 1938 and the percentage change from 1923. The year 1929 has been chosen as the post-World War I peak in preference to 1927, as the latter was probably artificially boosted by the industrial troubles in the previous year.

One thing that particularly stands out is the trend of the SR receipts compared with those of the other three companies. The SR had a lesser dependence on freight than the others and had carried out an on-going programme of electrification during the period. Electrification of lines will be examined more fully in the second part of this article. The LNER suffered from a higher concentration of the coal industry in

its area compared with the GWR and the LMSR and also a heavy weighting of the other old Victorian staple industries. The rates increase in October 1937 was not sufficient to offset the adverse factors in 1938.

Figure 2 charts the net revenues of the Big Four over the period. The figures include net revenue from the railway business and all the subsidiary businesses. The calculation of net revenue changed significantly, as a result of the 1928 Order. In particular, debenture and other similar interest payments were no longer deducted. The figures for the years to 1927 have been adjusted accordingly.

The total net revenue of the Big Four for 1923 was £45.8m and this figure was not exceeded over the period. The figures for 1926 indicate how great a shock the industrial unrest in 1926 was to the railway industry and the total was £21.2m, 53.7 per cent lower. This compares with a reduction in gross revenues compared to 1923 of 16.6 per cent, amply illustrating the effect of having a relatively high base of fixed costs. However, the Big Four had largely recovered by 1929 with net revenues of £45.0m, only 1.7 per cent down on 1923. Even the Great Depression did not reduce the net revenues of the Big Four to the level of 1926, although the fall to £26.5m in 1932, a 42.1 per cent reduction, was

Table 2. Gross receipts of the Big Four, 1920–38

Companies	1923 £m	1926 £m	1929 £m	1932 £m	1937 £m	1938 £m
GWR	36.7	29.9	36.2	28.5	32.6	31.0
LMSR	87.3	72.7	81.7	65.5	75.9	72.5
LNER	67.0	53.5	63.3	48.7	56.4	53.6
SR	26.4	25.3	26.5	22.3	25.6	25.5
Total	217.4	181.4	207.7	165.0	190.5	182.6
Increase/(decrease) on 1923		%	%	%	%	%
GWR		(18.5)	(1.2)	(22.3)	(11.1)	(15.5)
LMSR		(16.7)	(6.4)	(25.0)	(13.1)	(17.0)
LNER		(20.1)	(5.5)	(27.3)	(15.8)	(20.0)
SR		(4.2)	0.4	(15.5)	(3.0)	(3.4)
Total		(16.6)	(4.5)	(24.1)	(12.4)	(16.0)

Figure 2. Net revenue of the Big Four, 1923–38

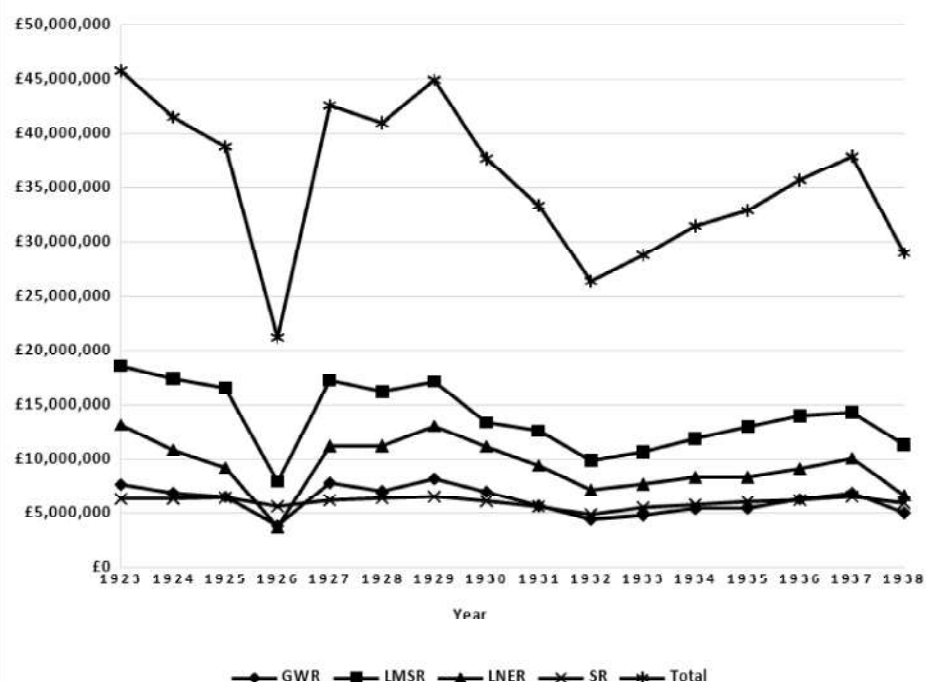


Table 3. Net revenues of the Big Four, 1920–38

Companies	1923 £m	1926 £m	1929 £m	1932 £m	1937 £m	1938 £m
GWR	7.7	3.9	8.2	4.5	6.9	5.0
LMSR	18.6	7.9	17.2	9.9	14.4	11.3
LNER	13.2	3.8	13.1	7.2	10.1	6.7
SR	6.3	5.6	6.5	4.9	6.6	5.9
Total	45.8	21.2	45.0	26.5	38.0	28.9
Increase/(decrease) on 1923		%	%	%	%	%
GWR		(49.4)	6.5	(41.6)	(10.4)	(35.1)
LMSR		(57.5)	(7.5)	(46.8)	(22.6)	(39.2)
LNER		(71.2)	(0.8)	(45.5)	(23.5)	(49.2)
SR		(11.1)	3.2	(22.2)	4.8	(6.3)
Total		(53.7)	(1.7)	(42.1)	(17.0)	(36.9)

serious enough. Although the increase in net revenues to £38.0m in 1937 produced a significant improvement on 1932, the Big Four were unable to match their performance in 1929 let alone 1923, with an aggregate reduction of 17.0 per cent compared to 1923. It should be noted that the pay cuts of 1931 were reversed in 1936 and 1937. The reversal in 1938 was noticeable and the aggregate net revenues fell to £28.9m, a reduction on 1923 of 36.9 per cent, despite the effect of the increase in charging rates.

Table 3 shows the net revenues of the Big Four in the pivotal years between 1923 and 1938 and the percentage change from 1923. Unlike gross receipts, the year 1929 was the peak year for net revenue before the Great Depression. The net revenue is struck after adjusting the aggregate net receipts of the railways and the subsidiary businesses for miscellaneous receipts and charges, such as rents payable and receivable.

Within the overall trend, the variability of the results of individual members of the Big Four in each year is evident. The performance of the SR stands

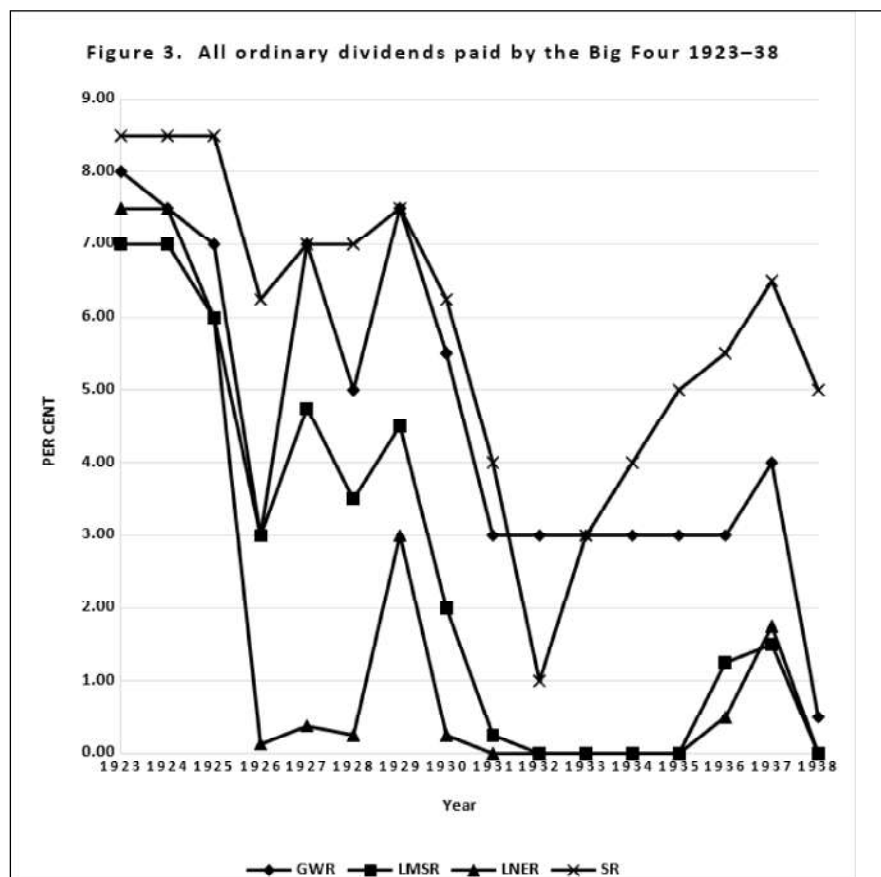
out and their result in 1937 not only bettered 1929, but was 4.8 per cent higher than in 1923. The underlying reasons for this have been indicated under gross receipts above. Although the other three companies were particularly affected by the decline in the former Victorian staple industries, the LNER found its situation the most difficult. Net revenue only gives some indication of the adequacy of the financial return to the investors in the Big Four. Holders of loans, debentures and fixed interest stocks, such as preference shares, needed to be paid their return before any payment to the ordinary shareholders. Figure 3 charts the percentage returns paid to the ordinary shareholders in the Big Four over the period.

In the case of the LNER and the SR, the ordinary shares were split in two categories, preferred ordinary shares, which were entitled to the first 5 per cent of the dividend, and deferred ordinary shares, which were entitled to any surplus. The chart shows the aggregate payment to the two categories.

In the years 1923 and 1924 the level of dividends

paid by the Big Four at around 7 per cent was comparable to the rates paid by the leading companies in 1913. However, in 1925 there was a slight reduction, apart from the SR. The year 1926 was exceptional as regards industrial unrest and saw the dividends paid by the three of the Big Four which served the bulk of the coalfields showing significant reductions. In the case of the GWR and the LMSR ordinary dividends fell to 3 per cent and in the case of the LNER almost eliminated at 0.125 per cent. The SR was still able to pay 6¼ per cent.

The recovery up to 1929 saw both the GWR and the SR



increase their rates almost to those achieved in 1923 and 1924. It proved more of a struggle for the LMSR and the LNER, which only achieved 4½ per cent and 3 per cent respectively in that year. The Great Depression saw ordinary dividends stopped by the LMSR between 1932 and 1935 and by the LNER between 1931 and 1935. The GWR were able to maintain a dividend rate of 3 per cent between 1931 and 1936 with the help of transfers from their reserves in the years 1933–35. Although the SR was able to maintain a dividend payment in each year, the rate fell from 7½ per cent in 1929 to 1 per cent in 1932. All the Big Four were able to improve their payments up to 1937, by which time they were SR 8½ per cent, GWR 4 per cent, LNER 1¾ per cent and LMSR 1½ per cent. The recession of 1938 saw no dividend payments by the LMSR and LNER, only ½ per cent paid by the GWR and the SR falling back to 5 per cent.

An economist looking at the railways as an efficient use of capital would look at the overall return on the total capital invested, that is to say, take the total amount paid in debenture and loan interest, preference share and ordinary share dividends as a percentage of the total receipts on the capital account.

The return on total receipts on capital account by the Big Four in the period 1923–38 are shown in Table 4.

By comparison, the bank rate and the yield on long term government bonds¹⁰ and consumer price inflation¹¹ in those years are shown in Table 5.

Given that the railways were a riskier investment than government bonds, the differential should have been consistently higher throughout the period. However, in most years the return on investment in the railways was just keeping ahead of inflation.

In reality, the Big Four made only limited use of the capital markets over the period 1923–38, with their aggregate total receipts on capital account only rising from £1,037.0m at vesting to £1,092.5m at the end of 1938, by £55.5m some 5.4 per cent. The majority of the new capital was raised in the years up to the end of 1932, by which time the aggregate total receipts had reached £1,088.2m. In practice, there were factors other than the attractiveness of the financial return that were at play such as:

1. The confidence of the Big Four to invest and of the capital markets to take up those investments was a crucial factor. The years between the end of World

Table 4. Return on total receipts on capital account

Companies	1923	1926	1929	1932	1937	1938
	%	%	%	%	%	%
GWR	4.9	3.7	4.9	3.7	4.0	3.1
LMSR	4.5	3.6	4.0	2.3	3.3	2.6
LNER	4.3	3.4	3.8	2.2	3.0	2.0
SR	4.4	4.0	4.3	3.0	4.1	3.8

Table 5. Bank rate, yield on long-term government bonds and consumer price inflation

	1923	1926	1929	1932	1937	1938
	%	%	%	%	%	%
Bank rate	4.0	5.0	5.0	2.0	2.0	2.0
Yield on bonds	4.31	4.55	4.6	3.76	3.28	3.38
CPI	3.05	3.01	2.90	2.63	2.70	2.74

War I and 1923 had seen considerable economic turbulence as the major economies of the world made the transition to peace time conditions. One feature of this period had been over-investment in certain types of capital goods.

2. Both the general strike and the protracted miners' strike of 1926 served to undermine, at least temporarily, any investor confidence which had built up from 1923.

3. Although, as Thomas has pointed out, the Great Depression was less severe in the UK than in some other countries, it was still a great shock to the economy and to investor confidence.

4. Even in the worst years of the Great Depression, the Big Four still generated large amounts of cash and were able to fund some investment from their internal resources. They were also what we would today call conglomerates and able to use cash arising from asset sales in their non-railway businesses to finance investment in their mainstream business.

5. A stable long-term economic prospect was always important for the railway industry, given the long-term nature of the assets subject to most of their investment decisions. Notwithstanding the economic recovery from 1933, the threat of war in Europe began to be talked about from the German re-occupation of the Rhineland in 1936. This disincentive to long term investment gradually built up over the next few years.

6. As part of its economic policy, particularly to alleviate unemployment, the UK government took various measures to encourage investment. Of particular importance, as far as the Big Four were concerned, were the Development (Loan Guarantee and Grants) Act 1929 and the Railways Agreement of 1935 and its equivalent Act for London Electric Transport. The Big Four were naturally keen to avail themselves of the preferential interest rates under these Acts as opposed to raising fresh capital in the markets.

7. As the Big Four's securities were quoted on UK stock exchanges, prices were routinely marked down (theoretically up as well) to reflect their risk and return. Making new issues at a discount was always a possibility, but because the Big Four had a large body of investors who had acquired their securities at or near par, there would have been considerable disquiet about the dilution involved in an issue at a large discount. New debentures or other similar stocks with guaranteed returns could have been issued, but even here there would have been

worries about the cover for interest payments, especially during the years when the LMSR and LNER were not paying any ordinary dividends. The dilution effect of issuing debentures at a large discount would also cause concerns similar to those for issues of shares.

Part 2 of this article will look in more detail at the investment undertaken by the Big Four from 1933 to 1938.

Financial results of railway operations of the Big Four 1923–38

The overall financial results of the Big Four set out above include those of the ancillary businesses, such as canals, road transport etc. This section looks more particularly at the financial measures relating to the mainstream railway activities. Figures 4 and 5 show the trend of passenger train and freight train receipts between 1923 and 1938.

Throughout the period freight train traffic produced more revenue for the Big Four than passenger train traffic, although the differential between the two tended to narrow. In 1923 freight train receipts of the Big Four at £106.5m were 49.0 per cent of gross receipts compared with passenger train receipts at £85.6m (39.4 per cent). In 1938 freight train receipts of the Big Four at £85.3m were 46.7 per cent of gross receipts compared with passenger train receipts at £73.0m (39.9 per cent). From the shape of the two graphs it is apparent how seriously the industrial troubles of 1926 affected freight train traffic, although passenger train traffic was not immune and did not recover so markedly as freight train traffic in the years to 1929.

Both types of receipts fell significantly in the years 1929–32, freight train receipts by 23.8 per cent from £103.5m to £78.9m and passenger train receipts by 16.2 per cent from £77.6m to £65.0m. As in the years following 1926, freight train receipts tended to recover more strongly than passenger train receipts in the years 1933–37. Similarly, freight train receipts were affected more noticeably in the 1938 downturn.

The factors peculiar to the SR have already been referred to under gross receipts above. Figure 4 shows how well its passenger train receipts held up compared to the other three companies and how by 1938 it had almost equalled the LNER. In terms of freight train receipts. Figure 5 shows the low level of the SR's receipts and how what freight business it had was not affected to the same extent by adverse factors as that of the other three companies.

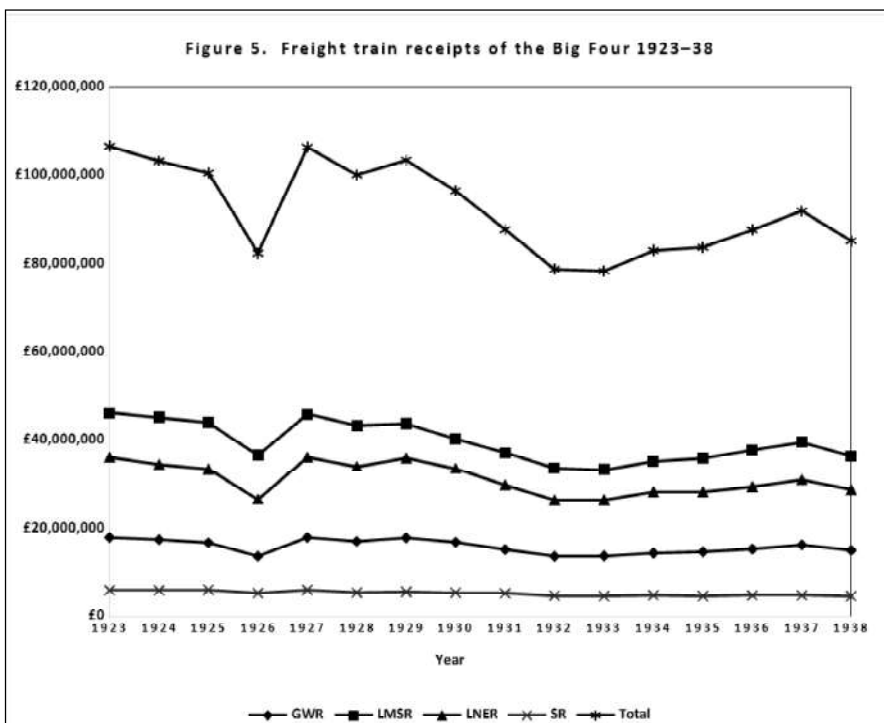
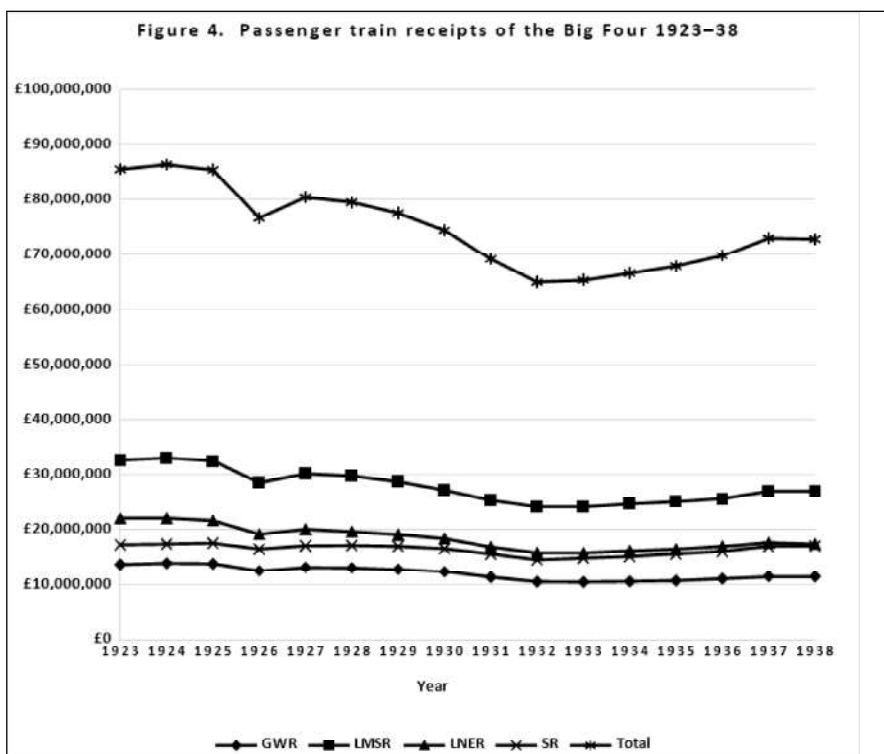


Table 6. Passenger train receipts of the Big Four, 1920–38

Companies	1923 £m	1926 £m	1929 £m	1932 £m	1937 £m	1938 £m
GWR	13.7	12.5	12.8	10.5	11.5	11.5
LMSR	32.6	28.6	28.7	24.2	27.0	27.1
LNER	22.0	19.1	19.1	15.8	17.6	17.4
SR	17.3	16.5	17.0	14.5	16.9	17.0
Total	85.6	76.7	77.6	65.0	73.0	73.0
Increase/(decrease) on 1923		%	%	%	%	%
GWR		(8.8)	(6.6)	(23.4)	(16.1)	(16.1)
LMSR		(12.3)	(12.0)	(25.8)	(17.1)	(16.9)
LNER		(13.2)	(13.2)	(28.2)	(20.0)	(20.1)
SR		(4.6)	(1.7)	(16.2)	(2.3)	(1.7)
Total		(10.4)	(9.3)	(24.1)	(14.7)	(14.7)

Table 7. Freight train receipts of the Big Four, 1920–38

Companies	1923 £m	1926 £m	1929 £m	1932 £m	1937 £m	1938 £m
GWR	18.1	13.8	18.0	13.8	16.4	15.1
LMSR	46.2	36.6	43.8	33.7	39.6	36.5
LNER	36.1	26.7	36.0	26.5	31.1	28.9
SR	6.1	5.4	5.7	4.9	4.9	4.8
Total	106.5	82.5	103.5	78.9	92.0	85.3
Increase/(decrease) on 1923		%	%	%	%	%
GWR		(23.8)	(0.6)	(23.8)	(9.4)	(16.6)
LMSR		(20.8)	(5.2)	(27.1)	(14.3)	(21.0)
LNER		(26.0)	(0.3)	(26.6)	(13.9)	(19.9)
SR		(11.5)	(6.6)	(19.7)	(19.7)	(21.3)
Total		(22.5)	(2.8)	(25.9)	(13.6)	(19.9)

Tables 6 and 7 present passenger train receipts and freight train receipts in the same way as the gross receipts in Table 2.

As might be expected, the figures for passenger and freight train receipts broadly reflect the figures for gross receipts in Table 2. It can be seen that the industrial unrest of 1926 affected freight train receipts considerably more than passenger train receipts, lower than in 1923 by 22.5 per cent and 10.4 per cent respectively, mainly because of the prolonged coal strike. The Great Depression was more general in its effect and the reductions in freight train and passenger train receipts by 1932 were broadly similar, 25.9 per cent lower than 1923 compared with 24.1 per cent. Similarly, the recovery to 1937 reduced the reductions in freight train and passenger train receipts compared to 1923 to 13.6 per cent and 14.7 per cent respectively. The results for 1938 are of interest because of the full year effect of the increase of rates in October 1937. In the case of passenger train receipts, the fares increase was sufficient to counter the adverse economic situation, whereas for freight train receipts it was not and the reduction on 1923 increased to 19.9 per cent.

Neither the annual accounts of the Big Four nor the Railway Returns attempted to apportion railway expenditure between passenger train traffic and freight train traffic, but the operating ratio (railway expenditures as a percentage of railway revenues) is of interest. Table 8 gives the Operating Ratios for the Big Four for the pivotal years.

Although operating ratios fell during the troubled year of 1926, the Big Four companies all saw an improvement in their ratios between 1923 and 1929, which was more than reversed in the depression years to 1932. Throughout the economic upturn between 1933 and 1937 the companies were able to improve their operating ratios to surpass those of 1923. Only the SR was able to improve on its performance in

1929. However, the economic and political problems in 1938 caused all the companies, except the SR, to record higher operating ratios than in 1923, despite the 5 per cent increase in rates agreed in 1937. It is also noticeable that, throughout the period, the two smaller companies, the GWR and the SR, tended to perform better than the other two.

Findings and conclusions

Part 2 of this article will provide a more detailed view of the financial performance of the Big Four in the years 1933–38. Thus, the comments in this section only give part of the picture.

The two sections after the Introduction give the backdrop against which the financial performance of the Big Four should be measured. Although the start date for the Big Four's existence was over four years after the end of World War I, the companies were by no means restored to their condition before the War. The government compensation for wartime neglect of repairs and maintenance was only agreed in 1921 and regarded by the railway companies as niggardly. The post-war economic boom and slump had also adversely affected the financial situation of the pre-vesting companies. The Big Four, therefore had much to do to stabilise the situation as well as deal with the problems of amalgamation.

Despite the best efforts of Lloyd George's coalition government to improve upon the Victorian legislation on railway rates and charges, the system established under the 1921 Act left the Big Four with considerable difficulties in competing effectively with other forms of transport. Of most significance was the link with standard net revenue in 1913 and the inflexibility of the system for changing rates.

As with all UK companies, the Big Four had to operate within the parameters of the UK economy. In general terms the economy showed an improving trend up to 1929, but it needs to be emphasised what

Table 8. Operating ratios of the Big Four, 1920–38

Companies	1923 %	1926 %	1929 %	1932 %	1937 %	1938 %
GWR	82.09	88.90	77.00	83.60	77.50	82.70
LMSR	81.30	91.50	78.10	84.00	79.70	83.10
LNER	82.30	95.20	77.90	83.60	80.60	86.90
SR	81.08	86.10	79.10	81.40	78.00	80.60

a shock the six-month miners' strike and related ten-day general strike caused to the railway industry. The Big Four were hit both as bulk carriers of coal and large users of coal, not to mention the impact of the strikes on their other customers, and of course the ten-day general strike seriously disrupted their business across the board. The Great Depression years 1929–32 saw falling demand on a world-wide basis. The Big Four were particularly affected because the old staple industries of the Victorian period, which were major customers, suffered disproportionately and were slow to recover, if at all.

The years of economic recovery 1933–37 provided opportunities for the Big Four to grow, but the downturn and the threat of war in 1938 presented new problems.

The scale of the competition from road transport both in private and public transport over the years 1923–38 is indicated in the analysis by Stone and Rowe. Whilst this was undoubtedly a serious problem for the Big Four in particular sectors, such as door-to-door transport of non-bulky goods over relatively short distances, the Big Four still in 1938 retained a competitive advantage in several sectors. As the trunk road network was of relatively poor quality, railways were a preferred option for both passengers and freight for journeys over about 100 miles. For heavy and bulky goods, road transport often lacked the equipment to cope. Although the quality of private cars had improved markedly since 1923, there were still limitations, such as the need to decoke the engine of most cars after 1,000 or so miles.

The figures for gross receipts, net revenue and dividends show that for the most part, despite the shock in 1926, the Big Four had maintained their financial performance in the period to 1929. It also needs to be borne in mind that this was the period during which they had made good wartime deprecation and reorganised themselves following the amalgamation. The Great Depression years were undoubtedly difficult for the Big Four, but they remained profitable at the net revenue level, although the LMSR and the LNER had to cease payment of dividends for a few years. By 1937 there had been a reasonable recovery, although not to the level of 1929.

In 1938 the Big Four were still well-regarded members of the London Stock Exchange. The LMSR was in fact one of the giants of the Exchange on a par with the majors in other sectors, such as ICI. They were still organisations generating large amounts of cash and had regularly paid their debenture holders, even if their shareholders had fared less well.

[The second part of this article will appear in the next issue of the Journal.]

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The cast iron girder bridge carrying the Great North Road over Milby Cut, Boroughbridge, Yorkshire

Pat Jones

Introduction

The purpose of this article is to correct the mistaken belief that this 1769 bridge was the first to use cast iron girders. In my 1996 article 'John Smith and England's first iron bridge'¹ I attributed it to John Smith junior. He was the Ure Navigation's engineer and responsible for the original bridge, but the iron girders and handrails were later substitutions for his masonry arch and parapets. The early records of the navigation have been lost, but we can now be confident that Milby Cut Bridge was modified after 1820 and probably before 1826. The primary purpose of the work was to increase headroom beneath the bridge, but the method adopted also usefully widened its roadway. The work must have inconvenienced users of the Great North Road – and possibly users of the Navigation – and is likely to have been the subject of newspaper reports. Unfortunately a 'Note & Query' circulated to members of the RCHS Waterways History Research Group did not result in further details coming to light. This item sets down what is known about the circumstances that led to Milby Cut bridge being modified in the 1820s, strengthened in 1942, and then demolished and rebuilt in 1946.

Building the Ure Navigation

An advertisement appearing in the *York Courant* on 22 September 1767 showed that work had commenced on Milby lock and the cut by which Boroughbridge Mill weir was to be bypassed. Milby Cut was required to pass beneath the Great North Road, at that time a drove road down which innumerable cattle were driven from Scotland and the north to the markets in the south. It has been claimed that at the height of the trade 2,000 cattle passed through Boroughbridge each day. Obviously the traditional narrow stone bridge was inappropriate here, and in John Smeaton's 1766 estimate he allowed £140 for this bridge (which was to include floodgates) as compared with £50 each for bridges of similar span crossing the 'Long Cut' from Ox Close to Ripon. The bridge actually built at Milby

was of ashlar masonry; with a navigation arch about 19 feet wide, wing walls, and a central section with parallel parapets 12 feet long, 15 feet apart. The floodgates were omitted.

Milby lock, cut, and bridge, were completed during October 1769 and an advertisement appearing in the *York Courant* on the last day of that month announced that '[t]he Navigation of the river Ure being completed to Westwick Wath [ford], and a safe and commodious Wharf for landing goods upon erected on the north side of the canal, adjoining the Turnpike road leading from Boroughbridge to Ripon, Catterick and Northallerton. Notice is hereby given, that the same is now opened ...'. On 27 April 1770 Smeaton viewed all the works from Ripon's Bondgate Green to Milby. In his report of the visit John Smith's name does not appear on the list of people attending him, and it may be assumed Smith was no longer concerned with the Ure Navigation, while it is evident from the report's text that William Jessop had become involved.²

When Smeaton surveyed the River Ure in 1766 there was an island in the river at the bend below Westwick, and various shoals at Roecliffe. He was uncertain whether it would be practical to clear the shoals away and made provision for a lock and dam at 'Redbank', now the wood at Roecliffe. It was not until Smeaton's visit on 14 May 1771 that the decision was taken to clear away the shoals and not to build Redbank lock.³ The navigation works at Westwick were undertaken by a contractor, and comprised a dam, lock cut, lock, and a footbridge over the lock to maintain the right of way across the river at Westwick Wath.

By 28 September 1771, when Smeaton again inspected the river, all of its navigation works were complete, but Ox Close, Westwick and Milby cuts were silted up and needed to be cleared. The navigation was required to pass vessels drawing 4 feet of water, and the upper cill of Milby lock had been set to 4 feet below the crest of Boroughbridge Mill dam. Westwick lock had been laid out on the

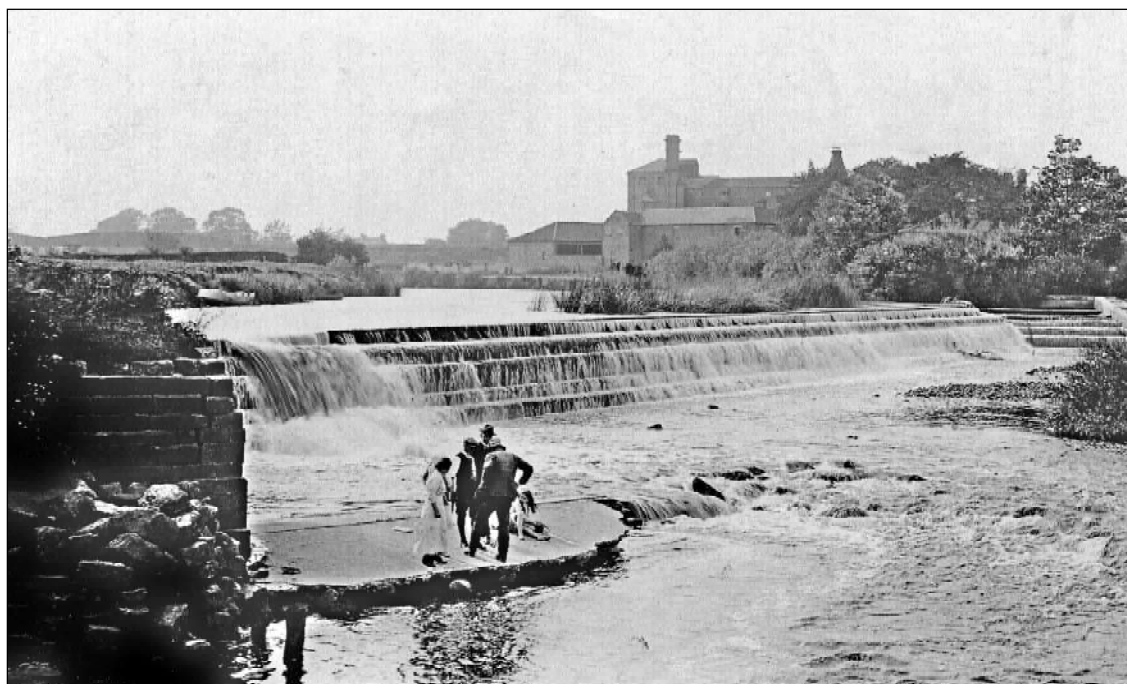


Figure 1. Boroughbridge weir in the early years of the twentieth century, showing four stepped courses of stone above the water, with timber crest boards fixed to the upper course by triangular metal brackets. The boards were originally ‘removable’, and intended to serve the mill, but they enabled larger craft to reach Milby by the 1800s and probably became a fixture as part of the post-1820 works that included the modification of Milby Cut bridge. The weirs associated with the locks at Naburn and Linton were also raised by crest boards 18 inches high around that time. The masonry extending across the riverbed from the group appears to be all that remains of the weir flood-damaged in 1771. [Image courtesy of Mike Tasker, Boroughbridge Historical Society]

assumption that Redbank lock would be built, and Smeaton now discovered that the height of its lower cill was such that ‘when the water is reduced to [Boroughbridge] dam height ... as in times of drought must always be the case ... there will not be more than three feet water over that threshold’.⁴ The Commissioners were faced with the choice of either reversing their decision not to build Redbank lock, or persuading the Duke of Newcastle (who owned Boroughbridge Mill) to allow them to raise the height of his dam by timbers 10 inches high secured to its crest. The successors to those timbers still top the dam (Fig 1).

The date when the first vessel passed through Westwick lock and reached Newby Hall landing is not known, but it should have been possible by October or November 1771. There is no record of when laden barges first reached Ripon either; it is reasonable to suppose it would have been possible

soon afterwards, but a notice that appeared in the *York Courant* on 16 February 1773 implied that Milby Staith had, until recently, been the head of navigation. It seems likely that Boroughbridge Mill dam had been unable to withstand the additional load imposed in high-flow conditions by the crest-boards, and that part of its structure had failed, lowering the river level. Unusually heavy rain had fallen on the night of the 16/17 November, and on 19 November 1771 the *York Courant* carried the following news item:

By the late heavy rains that have fallen to the Northwards of this City, many rivers have swelled to an uncommon height, and the Ouse is now higher than it has been for some time past.

The booklet *Old Boroughbridge and District* published by Aldborough and Boroughbridge Preservation Society (1980) claims that the dam ‘was built by Smeaton’, but there is no mention of this

work in his *Reports*. It was probably *rebuilt* by his assistant, William Jessop.

The Ure Navigation almost certainly opened (or reopened) to Ripon early in 1773 and from the advertisement that appeared in the *York Courant* on 8 June 1773 it seems safe to assume that by that time traffic had begun to flow regularly:

Ure Navigation. To be Lett to the Highest Bidder at Mr. William Astwith's the *Sign of the Royal Oak* in Ripon on Wednesday the 23rd instant between the hours of Ten and Two, subject to such Conditions as shall be then produced, the Tolls to arise upon the said Navigation, for one year from the first day of August next.

Richard Beckwith.

From the beginning the mainstay of the Navigation was coal, although there was a useful trade with a wide range of other commodities. But for the intervention of the American and Napoleonic wars, and the economic difficulties and inflation of the period, it would have probably earned useful dividends for its promoters. In the event the running costs and maintenance of the Navigation swallowed all its revenue, and by 1792 when the architect John

Carr (who was bridgemaster for both the North and West Ridings of Yorkshire) inspected Milby Cut Bridge, it was in a dangerously bad state of repair (Fig 2).

The Ure Navigation in the nineteenth century

It seems that by the nineteenth century the water level above Boroughbridge weir was normally raised by crest-boards, enabling Humber keels drawing up to 6 feet 6 inches to reach Milby Wharf.⁵ The increased depth of water would have reduced the headroom beneath Milby Cut bridge and drowned Westwick Wath. And since the remainder of the Navigation was too shallow to pass these vessels, trans-shipment was necessary. By the second decade of the century its works were in urgent need of investment, but £11,450 was owed to the heirs of the original Commissioners by way of arrears of interest on the £16,400 that had been invested in its construction.⁶ The Commissioners who remained were inquorate, and so the Mayor and Corporation of Ripon sought authority from Parliament to set up a new body to be known as 'The Company of

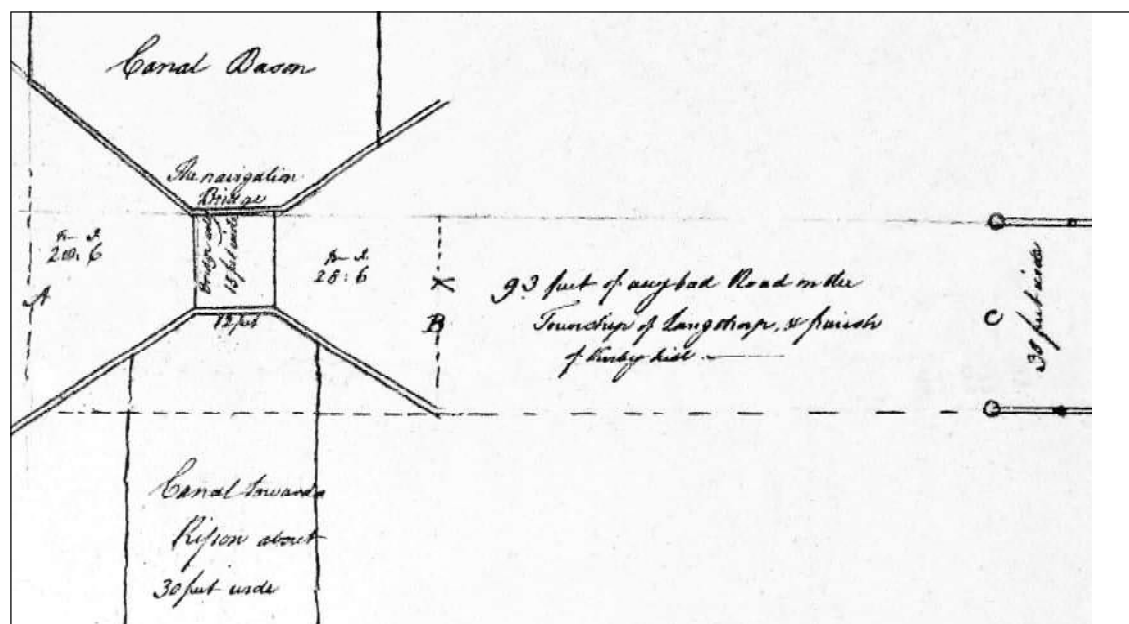


Figure 2. The note between 'B' and 'C' reads: '93 feet of very bad Road in the Township of Langthorpe & parish of Kirby hill'. Another note (cropped off this extract) reads: 'NB. The Road over the Bridge from A to B is in very bad repair as well as the Road from B to C, and the Bridge Battlement is part of it thrown down and the remainder in very bad repair, and the bridge being narrow makes the passage over it very dangerous'. (Signed) John Carr 1792. [Microfilm 3345, frame 4, North Yorkshire Record Office, Northallerton]

Proprietors of the River Ure Navigation to Ripon'.⁷ Their Act received the Royal Assent on 23 June 1820 and *required* the Navigation Company to:

- ... make and maintain all the public road and accommodation bridges over the man-made sections of the Navigation [xc].
- ... ensure that the fence [parapet] each side of the bridge is not less than four feet high [xciv]. [The iron railings beside Milby bridge appear to have complied with this requirement.]
- ... expend at least £3,000 to put all the infrastructure of the Navigation into a good state of repair within five years [cxxx].
- ... maintain the ford at Westwick Wath, or substitute a free ferry [LXXXIX].

The seal of the company portrayed a keel under sail, and its motto translated reads *By divine foresight a harbour*. New capital was injected into the Navigation, and many improvements effected,

including rebuilding Milby Cut bridge (Figs 3,4), rebuilding the works above Boroughbridge to provide a navigable depth of 4 feet 9 inches, and substituting a free ferry at Westwick Wath.

It is possible that another reason for increasing the headroom beneath Milby Cut bridge was to allow the larger craft then trading to Milby wharf direct access to business premises above the bridge. According to the 1909 Ordnance Survey there were three landing places:

- The coal-yard landing stage, on the south side of Milby Cut immediately above Milby Cut bridge.
- Langthorpe's steam corn mill and brewery's mooring posts, on the north bank of the river at its junction with Milby Cut.
- Boroughbridge Mill's mooring posts, on the south bank of the river a small distance above the weir.

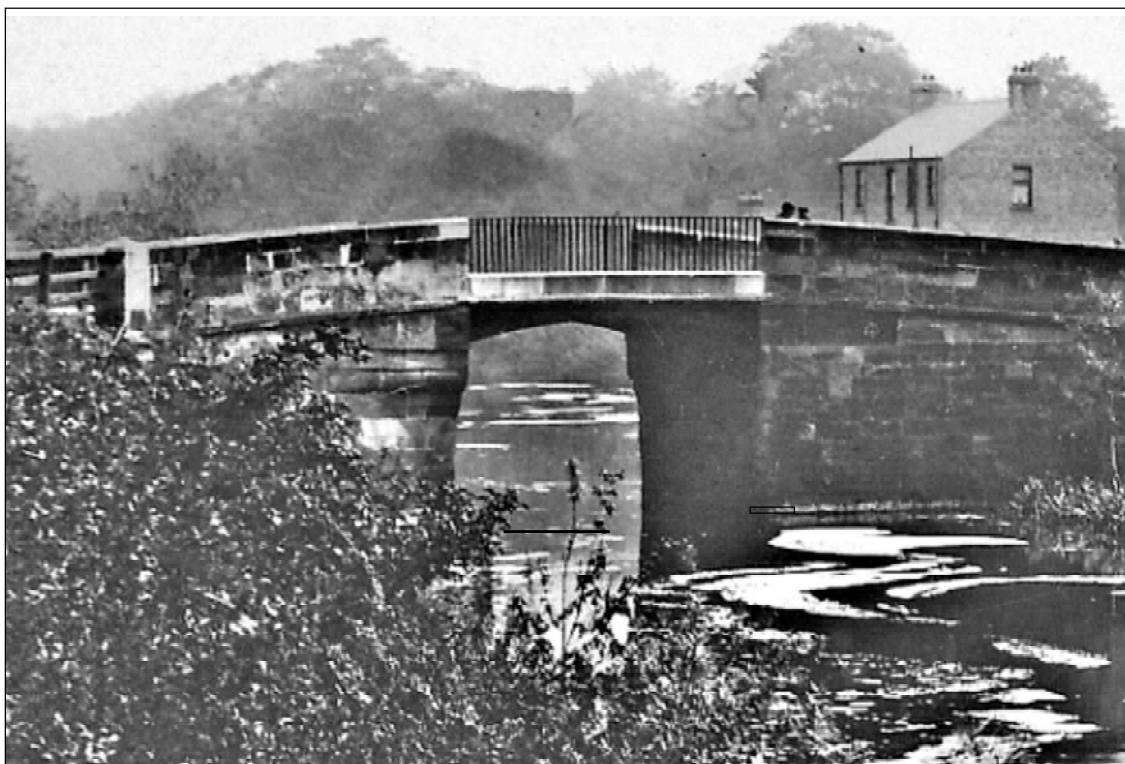


Figure 3. Part of a postcard, 'The Canal Boroughbridge (20)', by W Bramley of The Electric Printing Works, Cross Gates, Leeds, cropped to enlarge the bridge. It was taken from the towpath on the north side of Milby Cut, upstream (west) of the bridge. It clearly shows that the bridge had originally been a conventional arched stone bridge, later modified to increase headroom by the removal of most of the arch, and the substitution of vertical masonry carrying cast-iron girders. [Image courtesy of Mike Tasker, Boroughbridge Historical Society]

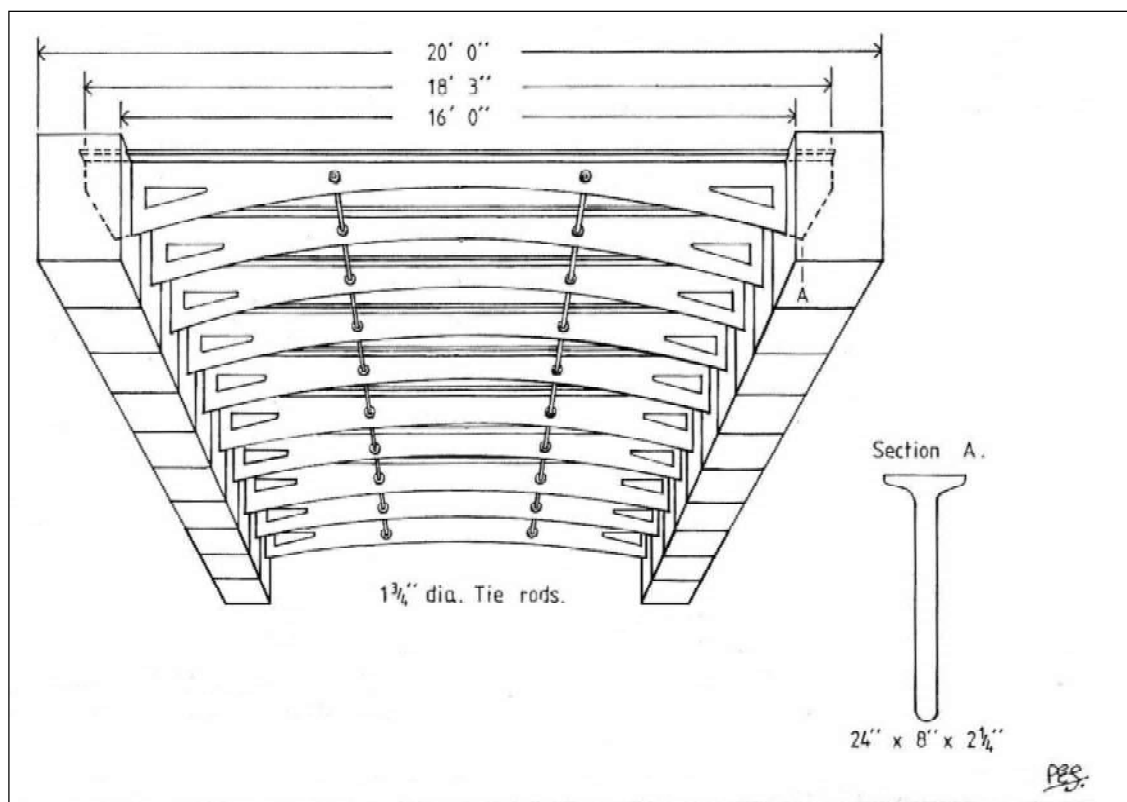


Figure 4. The bridge was 25 feet wide and the cast-iron girders were carried in bearing stones 2 feet 6 inches long. Intermediate joists fabricated from rolled steel were added in 1942, when the tie rods were discarded. Its decking comprised stone slabs stated to have been approximately 6 inches thick; assuming they were dressed sandstone, an area of 25 feet by 18 feet by 0.5 feet would have weighed 32,625 lbs (14.6 tons).

In addition, Green's brick-yard had been established before 1847 a mile up the river at Roecliffe. The date when the coal-yard was established is not known to the writer, but the steam corn-mill and brewery at Langthorpe were opened in about 1834 by the coal-yard's proprietor. Boroughbridge Mill predated the Ure Navigation and is known to have received imported grain from Hull. It is very unlikely that return loads would always have been available above Milby Cut bridge so some vessels would need to return through the bridge unladen, when their air-draught would be greater than that of their predecessors. The river's surface level can rise considerably following rainfall in the hills, which would have made passage through the bridge arch impossible. (On one occasion the writer was unable to pass beneath the present bridges in his 30 ft cruiser.)

World War II and the Diamond T tank transporter

In 1940 the British Purchasing Commission, looking to equip the British Army with a vehicle capable of transporting larger and heavier tanks, approached a number of American truck manufacturers to assess their models. The Diamond T Company of Chicago had a long history of building rugged military vehicles and had recently produced a prototype heavy vehicle for the US Army, which with a few slight modifications met British requirements, and an initial order for 200 was delivered in 1941. The Diamond T 980 was a hard-cab three-axle ten-wheeled truck weighing 45,000 lb (20.1 tons) when loaded. Powered by a Hercules DFXE diesel engine developing 201 hp and geared very low, it could pull a companion

twelve-wheeled trailer of up to 115,000 lbs (51.4 tons) and proved capable of moving the heaviest tanks then in service.⁸

Also in 1941, a Royal Engineers training school for bridging and river crossing had been established beside the River Ure 3.7 miles above Boroughbridge at Bishop Monkton (opposite Newby Hall) ‘and strange amphibious craft appeared on the river and roads, and bridges at various points on river and canal sprang up overnight, to disappear as quickly’.⁹ Meanwhile the Royal Engineers had been surveying the bridges on UK main roads to assess whether they would be capable of supporting vehicles weighing 70 tons. Circular yellow discs bearing the number ‘70’ were affixed to each end of those that passed; those that failed received remedial attention. The stone bridge carrying the Great North Road over the River Ure was one of the former; the cast iron girder bridge carrying it over Milby Cut one of the latter. In order to rectify this, the bridge was strengthened with intermediate rolled steel joists that replicated the design of the original cast-iron joists, and to enable this work to be carried out a temporary bridge was erected alongside.¹⁰

Pickfords quickly appreciated that two Diamond Ts in pull-and-push combination were man enough to haul the heaviest loads of the day and by 1943 they had acquired at least two of them. Moving loads of up to 100 tons in weight from inland towns was not without problems. Modern low-loading trailers manufactured by Cranes (Dereham) Ltd were strong enough but the weight carried on each of their two bogies, which had eight wheels fitted with solid rubber tyres, was anything between 60 and 80 tons. The consequence was that at times they literally sank through the road surface. On 5 July 1945 this lack of strength was shown to be quite frightening. To the crew of the Diamond T pull-push outfit, taking an 80-ton roll housing from Sheffield to Falkirk was a straightforward haul. The heavy load route was followed north and sleepy Boroughbridge encountered as a matter of routine. Crossing the River Ure had been done on countless occasions, but this time work being undertaken on the upstream side of the bridge forced the pull-push outfit onto the downstream side, which had been built in 1562 (the bridge had been widened on the upstream side in 1784) and the trailer sank when halfway across. Wally Scott, the driver of the leading T, told everybody to bale out and run. Hardly had the men scampered to safety when that side of the central arch

collapsed throwing one of the Ts, the new Crane trailer, and the roll housing into the river.¹¹

An army transit camp had been established in 1939 in Boroughbridge Hall, the grounds of which ran down to the river. It could accommodate some 600 soldiers. Some time in 1944 they had built a Bailey bridge over the Ure, very likely as part of the preparation for the D-Day landings. When the Ure bridge collapsed in 1945, for some three months the Great North Road traffic was diverted through the army camp on an alternating one-way system controlled by military police. Within three months another temporary steel bridge was built alongside the collapsed stone bridge on the upstream side. This was wide enough to allow two-way traffic. This bridge was in use for four years until the stone bridge was rebuilt and re-opened in 1949.¹²

Following the end of the war, work started on the reconstruction of Milby Cut bridge; a temporary bridge nearby enabled traffic to continue while this was being carried out. After the work was completed it remained in use as part of a roundabout, until it was replaced with a permanent structure. Ripon Motor Boat Club’s *Yearbook* reported the situation as it was in 1947:

At Boroughbridge the road bridges were much in the news – the main bridge [had] collapsed under an 80-ton load on July 5th [1945], and the other bridge [was] being re-constructed. This was more serious for river users as it resulted on Sept. 1st [1946] in the draining of Boroughbridge Canal (Milby Cut) for the purpose of taking out the foundations of the old bridge and the construction of a new one to complete the new Roundabout, an operation expected to take about six weeks, but in fact the canal was not opened again till well into January 1947.¹³

Presumably the failure in 1945 of the bridge across the River Ure had triggered re-examination of all UK bridges that carried exceptionally heavy loads; Milby Cut bridge was one of those condemned as unsafe, and moreover, beyond economic repair. It would perhaps be appropriate to consider why it had become necessary to completely demolish and reconstruct a bridge that had been partially rebuilt and strengthened in 1942. A clue to the problem identified in 1942 might survive in the National Railway Museum’s yard at York, in the form of a wooden pattern from which more iron girders could have been cast. It carries no markings, but it could date from that time. It suggests that one or more of the bridge girders had been found to be cracked, and that the LNER had the means to



Figure 5. The old bridge stood where the downstream bridge forming part of the roundabout now stands. A news item from The Engineer of 2 August 1946 implied it was being dismantled in July of that year; therefore the temporary bridge that later formed the upstream part of the roundabout must have been in operation by that time. [Photograph by 'Chief Civil Engineer [BR] NER York']

cast replacements. In addition, it seems likely it was initially intended to strengthen the bridge by fitting intermediate girders identical to those existing. Cracked girders could have been recast, but additional girders would have required new material, for which the Ministry of Supply would have not issued a licence (see Appendix). It seems that the

acute shortage of new metal in 1942 had forced the LNER's engineers to use material that was available to them instead of what they would have preferred.

Figure 5 shows one of the intermediate joists fabricated in 1942 being removed. When the image of the joist was enlarged and lightened, it appeared to comprise two lengths of rolled steel angle, each about 18 feet long and 3 inches by 6 inches by $\frac{1}{2}$ inch thick, with the lower length rolled into an arch, and its 6 inch side trimmed down to 2 inches in the centre, where the depth over the flanges, after the two parts had been welded together to form the web, was 9 inches, the same as the cast iron girders. Triangular packing-pieces at each end resulted in the joist being about 18 inches deep at the abutments, unlike the girders, which were 24 inches deep there. (This was necessary to maintain the original headroom, since the navigation was still used commercially.) The presence of holes at the northern abutment (lower) end, suggest that the material used had previously served some other purpose.

Transporting a load such as a tank in military service, a Diamond T rig would have imposed a load of about 70 tons successively on each of the relatively wide spans of a river bridge. But on the short (16 feet) span of Milby Cut bridge only two axles would be above it at any one time, with a maximum total weight of 34 tons. And those two axles carried eight wheels fitted with pneumatic tyres. As used by Pickfords in combination with a Crane trailer carrying an 80-ton load, each of the trailer's eight-wheeled bogies would have imposed a 70-ton load on the bridge. Clearly the strengthening in 1942 was good enough for the purpose for which it was intended, but it seems that by 1945, after the severe damage to the River Ure bridge caused by the Crane trailers used by Pickfords, Milby Cut bridge was considered to be beyond economic repair.



Figure 6. Two of the cast-iron girders on display at the then LNER's Queen Street museum. Note that the bearing stones had been reduced in size, and that the girders were not cast from the same pattern. The ringed holes for tie rods had been omitted from the pattern from which the upper girder was cast. [Photograph courtesy of James Carter, the Science Museum's Freedom of Information Officer]

After the bridge had been dismantled the girders were transferred to the then LNER museum at York (Fig 6):

HISTORIC BRIDGE FOR MUSEUM, – A cast iron bridge, which for nearly 200 years has carried the Great North Road over the Milby Cut, Boroughbridge, Yorkshire, is being dismantled. According to *The Yorkshire Post* the girders and bearing stones are to be placed in the L.N.E.R. Museum at York. It is reported to be the oldest cast iron bridge in England, and came into the possession of the L.N.E.R. when the canal which it crosses was taken over by that railway company.¹⁴

On 27 November 1946 the Labour Government laid their Transport Bill before Parliament, which received the Royal Assent on 6 August 1947 as the Transport Act 1947, and at midnight on the last day of that year, the London & North Eastern Railway Company's responsibility for the Ure Navigation came to an end.

The writer began to use the Great North Road fairly regularly from late 1949; the bridges over the River Ure and Milby Cut had both been rebuilt by then, but Milby roundabout was *not* operational at that time. I recall it opened a few months later, using a newly built upstream bridge, but it is now clear that the roundabout had been in operation earlier (from 1947) using the temporary bridge.

Appendix

Skelton (or Poppleton) railway bridges

George Stephenson's Great North of England Railway between York and Darlington was carried over the River Ouse on a fine three-arched masonry bridge built by J & B Green of Newcastle in 1840. The volume of traffic became such that the East Coast Main Line between Skelton Bridge and Northallerton had to be widened to four tracks, two up and two down. The first phase of this work was completed

in 1930; further widenings took place from 1933 over several stages until the line was fully quadrupled throughout in 1959.

Following the outbreak of war in 1939, the LNER became very concerned about the delays caused by congestion between York and the bridge, due to increased traffic from York's goods yard. They therefore decided to expedite traffic by extending the down slow line to the goods yard. This required a new bridge to be constructed alongside the existing bridge over the River Ouse. The Ministry of War Transport duly approved the proposal, and a five-span steel bridge was designed. The Ministry of Supply would not, however, issue a licence for the steel needed, and so it became necessary to cast around for second-hand material. A suitable, but slightly shorter, redundant bridge was identified in George Hudson's South Docks at Sunderland. The reuse of its spans entailed adjustment to the pier spacing, and since one of the piers would obstruct the towpath the consent of the Ouse Navigation Commissioners had to be obtained. Consent was given and construction commenced with the late Stanley Tyson as engineer. The piers are supported on reinforced concrete piles, some of which had to be extended on site, owing to the great depth of alluvial material beneath the river. The bridge opened on 18 October 1942 and is still in service.

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4. 'The Report of John Smeaton, engineer, upon the state of the navigation of the river Ure from Ripon to Boroughbridge lock' in *Reports of the late John Smeaton ...* (1812), pp 182–4
5. Charles Hadfield, *The Canals of Yorkshire and North East England*, vol 2 (Newton Abbot : David & Charles, 1973), p 345, citing the *Report of the Committee ... on the Proposed Navigation to Knaresboro'* (1800) (Leeds Public Library)
6. 'An Act for maintaining navigable the River Ure, and its collateral cuts ...', 23 June 1820 (1 Geo IV c xxxv), p 934
7. *Journal of the House of Commons*, 10 December 1819, p 52
8. Based on 'M19 Tank Transporter', *Wikipedia*, <https://en.wikipedia.org/wiki/M19_Tank_Transporter> [accessed 20 September 2017]
9. 'Seven years of club notes', Ripon Motor Boat Club, *Yearbook 1946*, p 8
10. R W Rennison (ed), *Civil Engineering Heritage, Northern England*, 2nd ed (London : Thomas Telford, 1996), part 5, 'York and North Yorkshire', item 20. Peter Cross-Rudkin comments: 'The text was almost certainly derived from the first edition of that book, written by Maurice Barbey and published in 1981. He was British Railways' District Civil Engineer at York, and presumably knew about the last days of the Milby Cut Bridge at first hand'.
11. Based on Bob Tuck, *Moving Mountains* (Cambridge : Patrick Stephens, 1983), pp 13–14, 18–19
12. E-mail dated 18 December 2016 from Mike Tasker
13. 'Club affairs' Ripon Motor Boat Club, *Yearbook 1947*, p 7
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Frederick Manning : a notorious Great Western criminal

Michael Quick

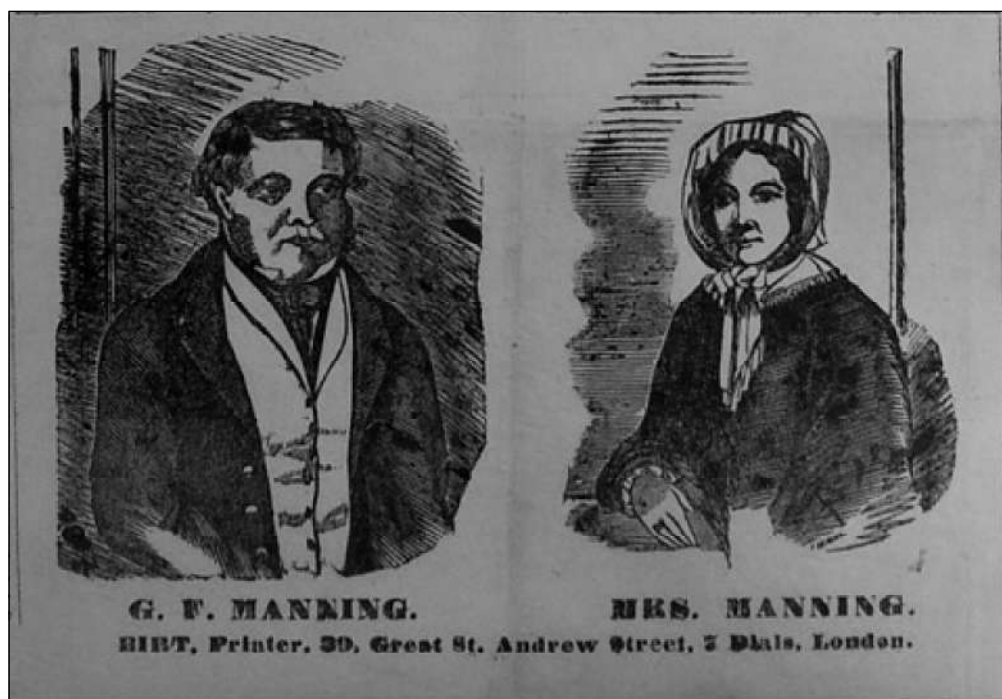
Much has been written about the murder committed by Frederick and Maria Manning in Bermondsey and their execution in 1849 but little has been said about Frederick's earlier life, especially his connection with the Great Western, apart from the occasional fleeting mention of his once being a guard on the line. If those who were in a position to know him well were anywhere near the truth, he had many criminal connections and an ability to escape the fullest consequences of his actions until he overstepped the mark with murder. The evidence mostly comes from various issues of *The Taunton Courier* in 1849. Manning was a son of a sergeant in the Somerset Militia who had become such a successful publican and renter of turnpike tolls in Taunton that he was able to leave about £400 to each of his sons. The father was so highly regarded by the colonel of the regiment, Lord Poulett, that immediately after the father's death (about four or five years previously) he put Frederick on the regiment at 10s 6d a week.¹ He would seem to have dissipated his money in high living.

Manning was born on 20 March 1820 and trained as a coach painter in Taunton.² In the 1840s he became a guard on the Great Western Railway, 'upwards of four years ago'.³ Since the company's minute books only referred to guards by their surnames one cannot be certain that he was the one twice hauled up before the Board in 1847 but it would seem likely that if there were two Mannings acting as guards some way of distinguishing them would have been used. On 10 September 1847 Manning, second guard of the 12 o'clock up train, was reported for leaving at Bristol a horse put under his charge for London; he admitted the charge, was fined 20s and cautioned. A couple of months later Manning, guard of the 8 o'clock up, was reported on suspicion for permitting a passenger to ride in a second-class carriage with a third-class ticket from Bristol to Keynsham. He was called in and questioned but the accusation could not be corroborated.⁴

The Great Western suffered a number of serious robberies in the 1840s. How many there were and how far they were all the work of one group of men

it is impossible to say since the company was not very forthcoming (claiming that it would be easier to catch the culprits if details were not given), but inside knowledge was clearly used in the most serious of them. On 18 November 1847 the Great Western's Secretary told the General Committee that the booking office at Paddington had been broken into; an iron chest containing £825 15s 4d had been carried away, cash drawers forced open and money taken, and two watches stolen.⁵ The Taunton paper claimed that the same gang, which included Manning, was responsible for all. According to it, the gang included Garrett (convicted of multiple luggage thefts in 1845) and Maynard (who disposed of the stolen items) but these two had not confined their activities to the Great Western and the former had referred to 'many' guards in a letter written while he was awaiting transportation.⁶ As will be seen later, they did have connections with London-based criminals.

Manning was dismissed early in 1848, officially for carelessness since there had been several robberies from trains on which he was a guard. Allegedly 'in the short space of a twelvemonth bullion in boxes to the amount of 4,000/ had been stolen from the train[s] on which Manning was a guard. The incident which led to his downfall occurred on 10 January 1848 when a box containing gold (£1,200) and silver (£300) destined for Badcock's Bank in Taunton was placed in an otherwise empty second-class compartment next to that occupied by the other guard (Billing, who four or five years previously had been in the Metropolitan Police, then conductor of an omnibus before joining the Great Western), and the compartment locked. At Bristol the contents were missing: it appeared that passengers had entered the compartment on the other side and cut their way through to their prize. In December Badcock's sued the Great Western for compensation in the Court of Exchequer. The railway company argued that the box had not been properly delivered to them because its value had not been declared and extra insurance had not been paid. The bankers argued that the guard, Billing, must have helped. They claimed that the hole had been made



from his side and that he had soon after become suspiciously rich: in May he had bought the goodwill of an inn for £120 and spent £410 on improvements. The Great Western had dismissed the guards but had not prosecuted Billing because they claimed there was not enough evidence for a criminal conviction. Billing was examined in this court and argued that he had set up in business with £200 borrowed from a relative and could not be shaken under a searching cross-examination. The jury could not agree on a verdict and were discharged.⁷

After leaving the railway Manning became proprietor of the White Hart Hotel⁸ in Taunton and arrived there with his 'wife', Maria de Roux/Ruex, born in Geneva and at one time a maid in service with the Duke of Sutherland's family. She was described as 27 and good-looking but notorious for her coarse language, fiendish violence and savagely disgusting conduct and their relationship seems to have been volatile and tempestuous. They would appear to have been a strangely-matched pair, but one possibility is that they had met in the shady world frequented by thieves, receivers and unemployed servants: Garrett was a valet in erratic employment and both he and Manning had a taste for expensive wines, normally beyond the means of men of their likely honest incomes.

According to *The Taunton Courier* Manning planned to turn the previously respectable White Hart into a thieves' headquarters and almost certainly at least part of the planning of the most daring robbery was done there since Henry Poole, another one-time resident of Taunton, ex-railway guard and apparently prosperous citizen of Exeter associated with Manning there. Furthermore, late in 1848, after a particularly violent argument with Manning, Maria gave a detailed account of their plans to a couple of respectable citizens who passed the warning on to the railway authorities. A policeman was sent from London but nothing was done – presumably authority regarded it as the wild talk of a vengeful termagant.⁹

On Monday evening, 1 January 1849, Poole and another joined the London-bound Mail and entered a first-class compartment near the mail tender; between Bridgwater and Bristol one or both climbed out of the compartment to the mail tender, forced a way in and plundered the registered letters and parcels in the mail-bags. The theft was discovered at Bristol but by then the culprits had gone and the missing items were never recovered; either they had been handed to an accomplice or were hidden to await local collection. In all likelihood they would have escaped capture if they had not been so

arrogantly self-confident and greedy. At Bristol they left the station but soon returned to it, joined the Plymouth-bound mail and repeated the trick. At Bridgwater it was found that the mail had been tampered with. By chance a Great Western Director and senior Plymouth policeman were on the train. The train was sealed and a proper search made at Exeter, where missing items and various articles of disguise were found in the compartment they had been occupying. Poole's companion refused to give his name and was only identified when a detective from London revealed that he was Edward Nightingale, a Hoxton horse-dealer, son of a recently-deceased notorious gambler and one of the 'swell mob'. At Devon Assizes in March they were convicted and sentenced to transportation for fifteen years.¹⁰

Manning and his 'wife' were arrested and questioned after the robbery but no evidence was found and they were released. Local public opinion was so hostile that Manning sold up and moved to London with Maria, whom he married in May; this seemed strange given the way she had behaved prior to the mail train robbery and her relationship with O'Connor (a wealthy customs official to whom she had fled soon after they had gone to London before returning to Manning). The paper later gave two different reasons for the marriage in the same issue. One was that he had done this to prevent her from giving evidence about his past misdeeds. The other was that he hoped to gain an advantage from her previous employers. He had indeed been able to gain a letter of recommendation from one of them which he took personally to the Prime Minister, Lord John Russell, in the hope of gaining a position as a landing waiter (customs official). However when he was asked about his previous employment and replied that he had been a railway guard he was only offered a messenger's post at £80 a year. He rejected this and later was heard to upbraid himself for not lying about his previous job.

The remainder of the story has often been told. Suffice it to say that Manning and his wife murdered O'Connor, burying his body under their kitchen floor and fled in different directions but a loose flagstone

gave them away. They were caught, convicted and hanged in November 1849 on the roof of Horsemonger Lane Gaol. However, the usual version, treating Maria as the main culprit and Manning as a hapless follower would seem to need some amendment in view of the evidence above: in particular, the careful planning of the murder would seem to have much in common with that used in the robberies on the Great Western.

References

Where only a date is given the reference is to *The Taunton Courier* of that date.

1. 5 September 1849.
2. Letter from brother, Edmund Manning, in the *Bristol Times & Mirror* 11 November 1849, copied from *The Times* 6 November 1849. An item in the Taunton paper of 12 September 1849 said that he had left two paintings at the White Hart. Edmund was probably porter Manning at Bridgwater, accused 27 May 1847 of intoxication and dismissed when he failed to appear to answer the charge.
3. 22 August 1849.
4. GW General Committee minutes, The National Archives, RAIL 250/125.
5. Michael Quick, 'The Garrett gang : luggage thefts in the 1840s', *Journal of the Railway & Canal Historical Society*, vol 34, pt 7 (March 2004), pp. 437–445.
6. 22 August 1849, copied from the *Devonshire Chronicle*.
7. 12 January 1848; 20 December 1849.
8. The building still stands; it is now the Caffè Nero, more usually associated with colourful stories about the aftermath of Monmouth's Rebellion.
9. 10 and 17 January 1849. The date for the robberies was presumably chosen because the beginning of the year was when country banks and their London associates balanced their accounts and banknotes presented in other parts of the country were returned to the banks which had issued them.
10. *Exeter Flying Post* 26 March 1849.

Those seeking fuller details of the murder, their trial and execution will find them in *The Times*.

S W A Newton and the building of the Great Central Railway

R F Hartley



Figure 1. S W A Newton in his later years

[This is an updated version of an article that originally appeared in Forward, the journal of the Great Central Railway Society, nos 85–86, January–March 1992. The author was prompted to offer it to the RCHS Journal by the splendid series of articles recently contributed by John Van Laun on J C Bourne's drawings and lithographs of the building of the London & Birmingham Railway.]

It is indicative of how little interest the late Victorians took in the subject of new railways that, while Bourne was able to publish and sell his work, Newton was apparently unable to reap any financial return for ten years of spare-time dedication to the task. As railway historians we are fortunate that Newton's enthusiasm drove him to produce a wonderful artistic record of what he saw, and that he kept his negatives safe for the next sixty years.]

The Newton collection of photographs, depicting the construction of the last 19th-century main line to London and its branches, is of unique importance amongst material of its kind in England. There are indeed epic photo collections from elsewhere, especially the United States, but the great era of railway construction in Britain was over by the time photography was becoming an established profession in the 1850s and 1860s. Some fine collections showing construction work do exist – for example the Midland Railway collection at York, including the remnants of a sequence showing the building of the Settle & Carlisle line, and St Pancras Station in London, but these are prosaic official records.

The importance of Newton's collection lies in two aspects of the work. Firstly, it shows the last of the really grand British railway projects – a line very

closely comparable in scale with Brunel's original London to Bristol Great Western. Secondly, and more importantly, it is an individual vision rather than a corporate record. Newton's passionate interest in the subject, and his acquaintance with all levels of society, make his collection a valuable social document of English life at the end of Queen Victoria's reign.

In 1989 the publishers Alan Sutton asked Leicestershire Museums to supply them with a new set of prints of the photographs in *The Making of a Railway*¹ to enable them to reprint the volume. As the existing filing system did not readily permit the identification of individual images, I was asked by the then Deputy Director of Museums, Tim Schadla-Hall, to try and sort out the photographs which were required. This was a fortuitous circumstance, as I have had a great interest in the Great Central Railway and the Newton collection since my schooldays in the 1970s. I had long been aware of the possibility of improving the documentation of the collection, and I was now given the time required for doing the job. I went through the entire collection of negatives, putting such information as I could deduce from each one onto record sheets devised for the purpose. The result was an index with roughly twice the information previously available, in a form which would allow for easy transfer to computer databases, as they became increasingly available. At the time, the collection of reference prints in the Leicestershire Record Office was very incomplete, but this situation has now been rectified by Mr Robin Jenkins, keeper of photographic archives. High quality prints of almost the whole collection were made and these can be consulted and enjoyed at the Record Office. Many of the images can now also be viewed on line, on the 'Three Centuries of Transport' website.²

Newton's background and early career

In the process of working through the collection, I became intrigued to know more about the photographer himself. I discovered that his son was still living, having retired to Pickering in Yorkshire. I subsequently paid two visits to the younger Sydney Newton, and was entertained with many reminiscences, chiefly concerning railways, about his own life and that of his father. The stories were enlivened by an infectious sense of humour, and a remarkable ability to mimic the sounds of railway engines – a talent which was once put to use in a series of evening classes at the old Vaughan College in Leicester. The text that follows is compiled mainly

from notes made during our conversations, and notes made by his father which I was able to copy. Dates, addresses and other details were confirmed where possible from the collection of Kelly's Directories in the Leicestershire Record Office.

Sydney Walter Alfred Newton was born in 1875 at no 12 Argyle Street, one of the numerous terraced streets leading eastwards off Leicester's Belgrave Road. The house does not survive as the area was redeveloped in the 1960s. His father, Alfred Newton, had recently moved from London to work as a photographer, apprenticed to a firm in the Market Place, which I believe to have been Vice and Company.

To take the story back a little further, Alfred's father, Robert Newton, had come from the Long Sutton area of Lincolnshire to work as a cabinet maker in London. He is said to have been involved in work at Buckingham Palace and in later life was living in Pimlico.

Alfred Newton, having arrived in Leicester, shortly afterwards married Elizabeth Masters, daughter of a grocer from Humberstone Road. The marriage was solemnized in the recently completed church of St Mark's on Belgrave Road on 2 August 1874; bride and groom were both 22 years old.³ Their first son, Sydney, was followed by a second, Robert William, in about 1878.

Alfred Newton appears in the directories in 1877 as a photographer, and in 1878 as a picture framer, but seems to have moved from Argyle Street by 1882. It is possible that the family lived briefly in a house a few blocks south of Argyle Street which was demolished for the construction of Belgrave Road station, as the upheaval caused by the arrival of the new railway, the Great Northern, seems to have left a strong impression on the mind of the young Sydney Newton, who would have been about seven when the station opened in 1883.

The following year Alfred Newton was doing well enough to open 'The Belvoir Photographic Studio' at 19 Belvoir Street. The family lived for some years 'over the shop', surviving a serious fire which caused much damage. Business must have prospered in the early 1890s and the family moved briefly out to Knighton Road by 1896. Four years later they were back in the more modest surroundings of no 4 Ripon Street, off Mayfield Road. In about 1904 they moved to 336 Victoria Park Road, which was to be the family home for the next half century. This move, some way back up the social scale, may have been

connected with the selling-off of the Belvoir Studios about 1902. The business was moved around the corner to a rented shop at 17 King Street.

It would seem that Alfred Newton rose to a fair level of prosperity in business in the 1880s and it is difficult to avoid the supposition that the coming of his two sons to man's estate caused something of a reversal in his fortunes. The younger son, Bob, showed little interest in business, apparently preferring snooker and public houses, while Sydney, undoubtedly hard-working and skilled, put great amounts of energy into his railway interests that might, one suspects, have been more profitably used elsewhere. It is fortunate for us that he did.

We should not, however, make the mistake of assuming that Sydney was not fully involved in the bread-and-butter side of commercial photography. For half a century he was to be one of Leicester's best industrial and landscape photographers. In the latter speciality he worked on commissions for the makers of guide books for many parts of the British Isles. In addition, both he and his father did much photographic work for the Leicester Museum, including photographs for the pioneer Schools Loan Service in the 1920s.

The arrival of the London Extension railway

Let us now return to the 1890s when Sydney and his brother Bob were beginning to cut a bit of a dash as what we would now call adolescents and the railways of Britain were as secure and well-established almost as the landscape itself. In their staid boardrooms only one great maverick figure survived from the days of competitive expansion, and this was Sir Edward Watkin. As a boy at Manchester Grammar School he must have seen the first trains on the Liverpool line, and he began his career in railway management in 1845 when Hudson was still the 'Railway King' and the second mania of railway speculation was building to a crescendo.

Watkin found his way onto the boards of many companies and was notorious for making a stir on most of them. The arrival of Watkin and some of his confrères on the Great Western board, for example, caused the resignation of that company's engineer, Sir Daniel Gooch. The shrewd and principled Sir Daniel (as he later became) simply declined to work for a board who were, as he put it, 'not gentlemen'. Since 1864 Watkin had been Chairman of an important but not particularly prosperous cross-country route called the Manchester, Sheffield &

Lincolnshire Railway. Under his direction it had expanded into Cheshire, south Lancashire, north Wales, the West Riding and Derbyshire, but Watkin had for many years been convinced that only by securing its own route to London would it really reap the rewards from the area it served. Those who wish to follow the moves in Watkin's complicated strategy to achieve this objective will have to allow themselves the pleasure of reading George Dow's three-volume work on the Great Central.⁴

In the event, Watkin's position as Chairman of the Metropolitan Railway, then expanding into Buckinghamshire, led him to project a link – the 'London Extension' between the two systems, from Annesley in Nottinghamshire, through Nottingham, Leicester and Rugby to Quainton Road, just north of Aylesbury. Trains would then continue over the Metropolitan line to West Hampstead before turning off onto a short branch, chiefly in tunnels, to a new passenger and goods station at Marylebone. The Bill for this vast project – nearly 95 miles of new main line – received Royal Assent on 28 March 1893 and construction began officially on 13 November 1894. Before the new route was completed, the Manchester, Sheffield & Lincolnshire changed its name to the Great Central Railway on 1 August 1897.

Newton's photographic project, Annesley to Marylebone

Word of the arrival of a new railway quickened an interest in towns along the route and particularly in the mind of the young Sydney Newton, who would have been 19 or 20 at the time. He wrote later that he had been photographing the progress of the works from the outset. The earliest dated photograph of his that I have found so far shows the contractor's temporary railway over the Trent at Nottingham, with the river frozen solid on 10 February 1895. In June 1896 he photographed the first MS&LR engine to reach Leicester, at the head of an excursion to Belgrave Road (GNR) Station bringing visitors to the Royal Show on the day of the Prince of Wales's visit. A view from August the same year shows the first dumps of soil in the making of the Aylestone embankment.

Many more photographs must have been taken in 1895, especially those showing clearance and demolition in the towns on the route, but it is only from the summer of 1896 that a sequence of documents survives to record Newton's expeditions. This comprises slips of paper listing the exposure of negatives, plate by plate, normally in batches of

twelve per box.⁵ It is impossible to say how many may have been lost or discarded over the years. They show that it had become vital to make records in the field, because Newton's mission was now to create an encyclopaedic record of every aspect of the making of the railway. To read through these lists brings home the magnitude of the task and Newton's dedication to it. Hardly a week went by without at least one expedition.

The following are extracted directly from Newton's own notes:

1896

Sat June 20th Royal Agricultural Show, Leicester
Tue June 23rd Rugby Viaduct
Wed July 15th Brackley
Thu July 16th Quainton Road–Calvert
Mon Aug 3rd Braunston (Northants)–Catesby–Woodford
Sat Oct 3rd Nottingham
Sat Dec 26th Nottingham

1897

Wed Mar 10th London–West Hampstead
Sat Mar 13th Rugby–Caves Inn
Sat Mar 20th Lutterworth–Shawell
Sat Apr 10th Nottingham–Hucknall
Sat Apr 17th Staverton–Flecknoe
Mon Apr 19th Staverton–Catesby Tunnel–Woodford

Wed Apr 21st Morton Pinkney–Woodford–Catesby Tunnel

Sat Apr 24th Nottingham

Sat May 15th Lutterworth–Dunton Bassett

Sat May 22nd Nottingham–Ruddington

Sat Jun 5th Claydon–Finnmere–Twyford

Mon Jun 7th Calvert–Quainton Road–Aylesbury

Sat Jun 12th Cosby–Whetstone

Mon Jun 21st Calvert (Jubilee Day)

Tue Jun 22nd Chetwode–Goddington, Twyford

Sat Jul 24th Bulwell–Hucknall

Sat Jul 31st Helmdon–Brackley

Mon Aug 2nd Buckingham–Brackley, Finnere

Sat Aug 14th Watling Street–Shawell–Newton

Thu Aug 23rd Leicester

Sat Aug 28th Nottingham

Sat Sep 11th Lutterworth–Cotesbach–Brownsover

Sat Sep 18th Rugby

Mon Oct 4th Finnere–Edgcott–Quainton Road

Wed Oct 6th Culworth–Woodford

Sat Oct 9th Claydon–Calvert

Sat Nov 20th Oxford Canal Bridge, Rugby

1898

Sat Feb 26th Basford–Bulwell

Sat Mar 5th Nottingham

Wed Mar 23rd Leicester–Bedehouse Meadows

Sat Apr 2nd Leicester

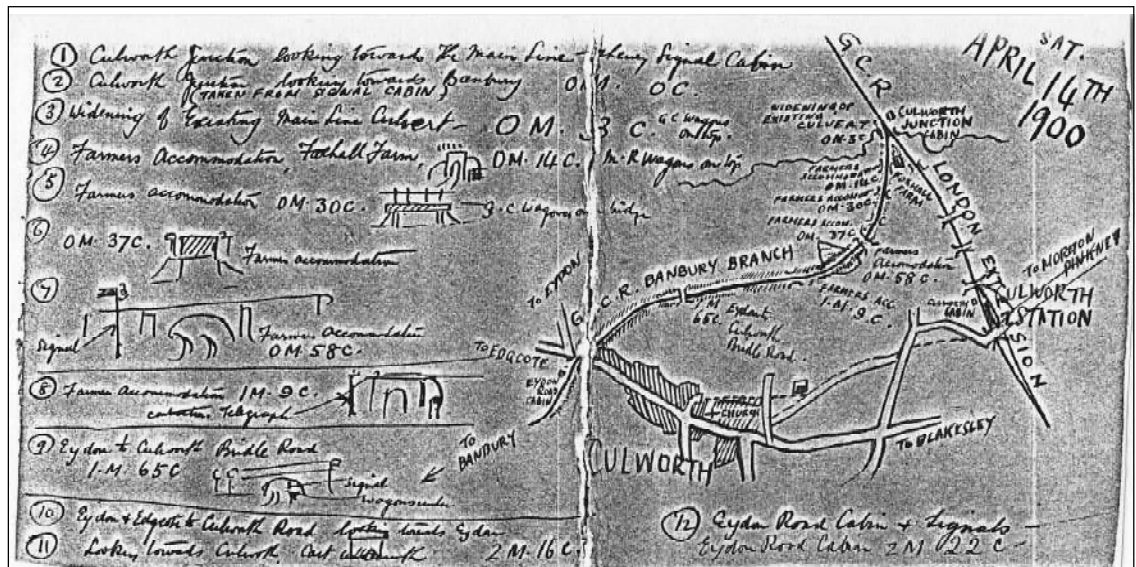


Figure 2. An example of the field notes made by Newton to record the locations of his photographs. This one documents his visit to the Banbury branch, 14 April 1900, and includes a small map.

Sat Apr 23rd Hucknall–Newstead–Annesley
Thu Jun 18th Marylebone–Harrow
Sat Nov 12th Leicester–Aylestone

1899

Sat Jan 28th Leicester, Central Station
Thu Mar 9th Official Opening, London Marylebone
Mon May 22nd Staverton–Catesby–Hellidon
Tue May 23rd Brackley and Turweston
Sat Jun 17th Badby, Fawsley, Preston Capes,
Woodford

There are details of many other visits for which dates are not recorded.

Writing in 1899 Newton reckoned he had by then taken over 3,000 photographs of the building of the railway, in which case it would seem that at least 1,500 were later lost or dispersed. This might explain the origin of a number of unattributed views of the railway works which have turned up elsewhere over the years.

Newton's description of his work

Newton's approach to his subject, in the few written fragments that have come down to us, is that of the compiler of a guide book, and indeed he took photographs over the years for the publishers of such guides in locations like the Lake District, mid Wales and the Isle of Skye. As the railway approached completion in 1899 he clearly hoped to sell an article to a publication of the time, and made rough notes which would presumably have been accompanied by some of his photographs. His written descriptions seldom rise above the banal, for example:

Brackley noted for the Brewery is a picturesque town, very much resembling Stratford on Avon in appearance: Lord Ellesmere has a hunting lodge here.

The notes continue, with equally conventional references to the Washington vault at Sulgrave, Aylesbury ducks, Byron's elm and other Victorian clichés. Only at Wembley Park – 'London's Great Pleasure Ground, and contains a great tower in the course of construction' – does the travelogue evoke much interest for a modern reader. Fortunately however, this celebration of a new railway's potential for picturesque excursions is paralleled by his observation of the railway builders at work, and while the style is somewhat stilted and sketchy, it is worth reproducing in full.

*Notes on the Great Central Railway by S.W.A.
Newton*⁶

The railway itself was commenced on 13

November 1894 and from that time 'till now I have been at work, photographing one day here, another at Rugby, then at London or Nottingham as the work advanced.

I have seen the Great Central extension under all conditions – in rain, wind, hail, storm, lightning, snow over shoe tops, mud without end, especially in London, and also 3 kinds of fires. One, of the burning of houses and other things which were razed to the ground. One, of the Watchman's Huts, and of the locomotives, when on the footplate.

One needs to be a very good walker for this work, and a climber too, for to walk along the whole route from Annesley to Quainton Road, and from West Hampstead to London no fewer than four times, means 500 miles – this is a very small estimate of what has been traversed.

Riding on the locomotives does not help the cameraman much, as you are apt to glide by, unnoticed the works. Considering there were 127 locomotives on the line, working at one time, to photo them all, would mean 127 negatives had to be used, but the writer was only successful enough to photo 72 of them.

There are 435 bridges, these I have, and on some of the largest ones more than 2 plates were used. There were also 42 steam navvies, hundreds of horses, and thousands of men – some trimmers, temporary road gangs, steam navvy gangs, bricklayers, bridge builders, riveters, stone masons, carpenters, watchmen, engine fitters, cleaners, wagon greasers and repairers, drivers, tipping gangs, besides contractors, surveyors, engineers, missionaries etc., etc.

All culverts, bridges over the various roads, rivers, farmers' accommodations, viaducts, tunnels, tunnel shafts and views through the various woods are included in the collection. About 3000 negatives have been exposed altogether, which is on an average of 30 per mile, and as many as 192 have been exposed in one week, necessitating great quantities of developer and chemicals. Besides this, 4 tripod camera stands have been utterly destroyed by the work, being either broken by climbing embankments, or walking down the slopes. Three cameras have been made useless, being thoroughly worn out, warped by the weather and light getting into the body, sand and grit getting in the screws and lenses, and mud and grease which seemed to find its way into every corner.

The most difficult period of work was walking along the overland route before the embankments and cuttings were filled up, falling down the clayey slopes, walking through brooks and streams, through hedges trodden partly down, over sleepers and bricks, were all very lively – and all this for a hobby, to say nothing of the clothing which has been done for.

Staying out at different villages and towns, and the inconvenience of being away from home may also be of interest, though I met with many kindnesses. Most of the people resident on the southern district of the line seemed to live on ham and pop, and pop and ham to vary it on alternate days.

The heat in the various cuttings, especially between the months of July and August, has been very great, not a sound to be heard, not a waft of wind or a blade of grass moving. Many a day 25 miles has been covered without much food (as I found it best to have little food while on the work) obtaining water from the springs which were by the side of the line at intervals.

I have never met with any serious accident during the whole time, although I have had some very narrow escapes. On one occasion I walked 5 miles without meeting anyone, and not even a house to be seen anywhere near. I have seen and come across all classes of people in this work and my collections of letters are very curious: 'Please send me a photo of what you took of a man olding a hammer up at Brackley about a month ago' – some of them are very difficult to read, much more to make out which photos are required. Take the navvies as a whole I found them a good set of men, and their homes or huts as they are called have been very comfortably fitted, considering that theirs was only a short visit.

In the Catesby Tunnel district almost every household has some peculiar shaped stone or fossil on the mantelpiece, in memory of this two-mile long tunnel. It has meant additional work for the postman, clothier, the grocer, the refreshment dealer, the farmer and many other trades, the carter, the carpenter, the painter etc. Like other large works, many deaths of workmen have occurred and of others that have assisted in the work – and how pleased were their relatives that I had been able to take their photograph.

In the different towns, the railway displaced many from their homes, in which they had lived almost a lifetime, and in some cases that was so. This was a sad trouble to some who fell in tears on giving up the key, others took it as a matter of course, others were quite pleased to leave their old house – on one of the doors of a private house at Leicester, the children had written 'I have got a new home'.

Quite a number of curiosities have been found during excavations on the works. The 'Bos Taurus' Head as for example was found at Stanford-on-Soar near Loughboro' during the River Soar diversion. It is now on view at Loughborough Free Library, and is a very fine specimen of a head of the forefather of our cattle. Pieces of Roman pottery have been found, Roman Pavement, Coins, etc.

Taking the works in order of importance. In the London district the work was exceedingly heavy, the heaviest. Almost every few yards were gangs of

a hundred men here, a batch of 50 there, a 100 there again, foundations here, workings there, pulling down here, steam cranes, steam navvies, 8 locomotives flitting to and fro, horses and carts depositing loads of bricks, others assisting in the work of excavating. Numbers of plates were exposed in this district.

It was such a sight that Londoners won't see every day. It may be years before another great railway from the north will enter into London.

The London tunnels are of great magnitude, and were very difficult to photograph; scaling ladders with apparatus is more difficult than it appears.

In Nottingham besides there being many houses and buildings demolished including a workhouse, a Ragged School, and St. Stephen's Church and School, there are three tunnels, one under the Mansfield Road, one under Sherwood Rise and one under Thurland Street. Other heavy works in Nottingham included a new Central Joint Passenger Station with the Gt. Northern Railway Company with that company's connecting line, two viaducts, bridge over the River Trent, Arkwright St. Bridge, and bridge over the Midland railway.

Through the town of Leicester, the line is carried on a viaduct 2 miles long, broken at intervals by steel girder bridges over the main thoroughfares, here a School and Chapel were also demolished for road improvements and approach to the Gt. Central Passenger Station.

Other large works of importance photographed comprise the Annesley Junction, the commencement of the London Extension. This is ten miles north of Nottingham and was the most southern point of the then present M.S.&L. system.

Bulwell viaduct, 400 yards long, and in one place 72 feet high. This spans the River Leen and the M[idland] Railway, Mansfield line.

Junction with the Gt. Northern Railway for Derby, Stafford, the Potteries etc. at Basford (for interchange of traffic). East Leake tunnel, Stanford on Soar viaduct of eleven arches, two viaducts over the Swithland New Reservoir (Leicester Corporation Water Works), Blaby viaduct, Avon viaduct, Rugby Bridge over the London and North Western Railway main lines, Rugby, Rugby big cutting, so called on account of its length, being 2 miles long. Electric light was supplied for the workmen at night in this cutting. Braunstone (Warwickshire) viaduct over the River Leam, Catesby viaduct, Staverton viaduct, Woodford Halse engine sheds and sorting sidings, Woodford Halse double junction, north and south, with the East and West Junction Railway, which will open up a new and independent route from London, the North etc. to Stratford-on-Avon, Shakespeare's birthplace. Helmdon viaduct and rock cutting, Brackley Rock Cutting, Neasden Locomotive Shed and sorting sidings, bridge over the Loudoun Road

Station platforms of the L.&N.W. Railway main line – Great Central London Goods Station, bridge over Regents Canal and diversion, Carlisle Street, London Coal Depot, the Marylebone passenger Terminus and the ‘Hotel Grand Central’, Marylebone Road and many other works too numerous to mention.

All kinds of rooms have been used as darkrooms for changing my plates: farms, outbuildings, dairies, corn sheds, barns, wash houses, etc., obtaining permission from the various farmers close to the line where the last exposure was made. On one occasion I was greatly surprised by a shout from a person through a doorway of a wooden hut ‘Come in and make your miserable life happy’, for it was raining heavily at the time. On going nearer I learned that a cup of tea and some light refreshment was awaiting one. Quite a different shout was to be heard from another cabin on another occasion; it was breakfast time, 8 o’clock am. The crackling of bacon roasting over a fire. This made another nice subject for the photographer; in fact there are many railway subjects which make quite artistic pictures – there is really something nice about a long distance view of the thin steel rails which vanish into the distance. Even blue bricks, and mortar and stone make artistic pictures if properly treated.

In conclusion, although there has been a great amount of work and anxiety to get together the photographs of this long railway, yet there certainly has been a great deal of pleasure intermixed with it – in the way of seeing the beautiful country. The line is now in a very forward state, and before long will be opened for Passenger and Goods traffic, and I trust that readers of this magazine will find every pleasure in travelling to and from London and the North by the new Great Central route. The line passes through a varied and picturesque country – the Chiltern Hills, the Peak of Derbyshire, the Dukeries, Shakespeare’s Country, the picturesque Don Valley being amongst some of the noted places.

It will place Leicester, Nottingham, Sheffield, Manchester, Warrington and Liverpool in one direct line of communication with London, besides serving many other large cities and towns, including the Cathedral cities of Chester, Wakefield and Lincoln. Other advantages will also be brought to us, when the line is opened.

At this point it may be wondered why Newton took on such a costly and laborious task. The notes above confirm his own view that he did it ‘for a hobby’ I have found no evidence that he was an official photographer for the railway company, although clearly his visits to the construction sites were all made with official permission.

Banbury branch, Gotham branch and Great Western & Great Central Joint Lines, 1900–1906

The Great Central main line opened in 1899, but various branches and extensions were made over the next seven years and Newton continued to photograph the construction work. In the summer of 1900 he was recording the progress of the Banbury branch and the branch to Gotham mines in Nottinghamshire. Between 1902 and 1906 he followed the building of the joint line through the Chilterns (Wembley–High Wycombe–Princes Risborough–Grendon Underwood Junction).

Most of these later photographs were taken on a half-plate camera, with a corresponding improvement in quality. He also revisited friends and acquaintances along the original main line, and took many photographs of picturesque villages, prints of which were sold by local post offices.

A small amount of dating evidence accompanied these later photographs, giving us more information about some of Newton’s photographic expeditions:

1900

Sat April 14th Banbury Branch, Culworth Jun to Culworth

Mon April 16th Banbury Branch, Culworth to Banbury GWR

May 5th, Gotham Branch

May 12th Finmere to Bicester

Thurs Aug 9th Princes Risborough, Marylebone

1902

April 1st High Wycombe, West Wycombe

May 21st Northolt to Neasden

1903

July 16th High Wycombe

July 17th Longwick, Princes Risborough, (Steam Navy)

1904

April 2nd Calvert to Haddenham

Sept 17th Finmere Stn, Chetwode – Preston Bissett

The contractors’ albums

As the GW&GC Lines approached completion Newton certainly prepared albums of photographs for sale to the contracting companies and, apparently retrospectively, those of the original London extension. The following notes, tabulated in Table 1, which appear to have been made all at the same time (so presumably c1906), show the albums he intended to make and sell.

Table 1

Contract No. 1 (Annesley–East Leake) (This album was produced)⁷	233 photos	No price quoted
Contract No. 2 (East Leake–Aylestone) (This album was produced)⁸	either 226 photo and 2 plans or 136 photos and 2 maps	£5 0s 0d £3 15s 0d
Contract No. 3 (Aylestone–Rugby) (This album was produced)	159 photos for 4 guineas	£4 4s 0d
Contract No. 4 (Rugby–Woodford)	197 photos	No price quoted
Contract No. 5 (Woodford–Mixbury) (This album was in the possession of Mr Newton (jnr) in 1990)	144 photos	No price quoted
Contract No. 6 (Mixbury–Quainton Road) (This album was in the possession of Mr Newton (jnr) in 1990)	136 photos	No price quoted
Contract No. 7 (London) (This album in collections at Abbey Pumping Station Museum, Leicester, in 1997)	68 photos and 2 maps	£2 10s 0d
Banbury Branch (1897–1900)	33 photos	No price quoted
Neasden–Northolt line (1902–1906)	84 photos (41 quarter plate, 43 half plate)	£3 10s 0d
Princes Risborough–Grendon Underwood (1902–1906)	78 quarter plates, 60 half plates	£4 4s 0d
High Wycombe–Risborough (1902–1906)	74 half plates, 73 quarter plates	£5 0s 0d
Northolt, High Wycombe and Uxbridge branch (1902–1906)	97 half plate, 130 quarter plate photos	£6 6s 0d

I have seen three of these albums, and copies of three more. It would be interesting to know whether the others remained merely as proposals, or were made and sold. The existing albums are beautifully hand-lettered, with coloured maps and leather bindings. The photographs are grouped four to a page.

A mathematician might be able to make sense of Newton's scale of charges which seems to be between 4d and 8d per photograph. If all the albums had been sold, he stood to make a little under £50 for twelve years' work. This is disregarding the cost of travel and materials, with half-plate cameras retailing at £6 and quarter-plate ones at about £3.

It is apparent that many commissions came from people Newton met on the railway works and in the towns and villages. What a fascinating cast they are! A cross-section of English society in the last years of the Victorian era. Unlike many contemporary

photographers, for whom the workers were merely part of the scene, Newton frequently involved the navvies and railwaymen in his work. Because of the slow speed of photographic chemicals, most of the groups must have posed, but they did so in a way that looks remarkably natural. The archive of photographs now in the Leicestershire Record Office contains about 2,220 negatives of which 1,340 were taken on the Great Central main line between 1894 and 1899. About 380 were taken on the Great Central and Great Western joint lines in Buckinghamshire and about 500 are not directly related to the railway, being rural scenes and portraits taken in villages and towns along the route.

Newton photographs in the National Monuments Record

The National Buildings Record (NBR) was set up in 1941, and from its early years, Mr Newton was commissioned to take photographs for the Record.

At the same time that he donated his railway photographs to Leicester Museums (and hence to the Leicestershire Record Office), he gave an even larger number of negatives to the NBR. These depict people and buildings in many parts of England. There are some 3,300 negatives and they were catalogued in 1996 by Jonathan Smith. The influence of the Great Central Railway is clear, in that nearly half of the photographs were taken in the counties of Northamptonshire, Warwickshire and Buckinghamshire, mainly in a corridor about five miles wide following the route of the GCR lines to London, reflecting how the railway allowed Mr Newton to travel easily to these areas. This collection also has fragmentary documentation revealing how Newton took photographs of and for people he met on his railway project and how he took others for sale in local shops.

Newton photographs on the 'Three Centuries of Transport' website

In 2001 the Leicestershire Record Office submitted a bid for New Opportunities Fund support for an internet-based, multi-media educational project, using the Newton photographs. This was successful, subject to the bid being combined with two similar bids, one from the City of Salford, looking at the Bridgewater Canal and the Manchester Ship Canal, and another, from South Gloucestershire Council, showcasing the area's aviation heritage. Most of the Newton photographs in the Leicestershire collection can now be viewed online, and can easily be sorted by subject or location for example.

Newton's later career

The end of the phase of railway construction related to the Great Central main line also marked the end of a phase of Newton's life – his youthful adventure which had provided a rich store of friendships and memories. In 1915 he married Winifred Edith Hodges, daughter of a Devon family from Long Bredy. The wedding took place at 8.00 am at St John the Baptist's Church, Leicester. Apparently they had a train to catch!

A few years later their son was born, also named Sydney Walter Alfred, just to confuse matters. With the new arrival, the house on Victoria Park Road, Leicester was becoming rather crowded, so old Alfred and the younger brother Bob took lodgings at 47 Narborough Road.

Sydney Newton continued to work long hours and use traditional methods at the King Street premises through the Second World War. His son recalled

that he never used a typewriter or telephone, preferring to conduct business face to face. The shop was closed in about 1950, and Mr Syd Newton recalled that his father was meticulous in parcelling up negatives and sending them to the individuals and businesses who had commissioned them. For this reason the two public collections of Newton's photographs can be seen to be only peripheral to the totality of his work, as they are largely the photographs he took for his own interest.

There is a persistent rumour that the glass plates now in the museum's collection were found in the cellar by a subsequent occupant, but this is denied both by Newton's son and by the recollection of John Daniell, who brought the negatives in to Leicester Museum. It seems likely they had always been stored in a bedroom or study at Victoria Park Road and Newton took them with him when he moved to Branting Hill, Groby in the mid-1950s.

It was his impending move to Beverley in Yorkshire, to be near his son that caused Newton to walk into the Newarke Houses Museum in Leicester one day and offer his photograph collection to the Museums Service. It is fortunate that the Assistant Curator, John Daniell, recognised the value of the collection he was being offered. After all, at the time, the railway was still in business, and most of its buildings had hardly changed since the opening day. Shortly afterwards, in 1960, Mr Newton died at Beverley, aged 84. In the same year, British Railways withdrew the Manchester to London expresses from the former Great Central main line. Ten years later the whole line had been closed to passenger trains and much of it was soon dismantled. Time has shown that Mr Newton was right to secure a future in the public domain for his treasured hoard of images, taken when his world was young, and men with picks and shovels were still building railways across England.

Acknowledgments

All photos are reproduced by kind permission of the Record Office for Leicester, Leicestershire & Rutland.

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5. Now held at Leicestershire Record Office
6. Original manuscript seen in the possession of Mr S W A Newton (jnr). Typed copy in Leicestershire Record Office
7. Copy in Leicestershire Record Office, DE6479
8. Copy in Leicestershire Record Office, DE6479

In addition to the titles listed above, use has been made of the following:

Gary Boyd-Hope and Andrew Sargent, *Railways and Rural Life : S W A Newton and the Great Central Railway* (Swindon : English Heritage; Leicester : Leicestershire Record Office, 2007)

David Hodgkins, *The Second Railway King : the life and times of Sir Edward Watkin, 1819–1901* (Cardiff : Merton Priory Press, 2002)



Figure 3. *In the cutting at Cowley, near Twyford, Bucks, S W A Newton photographed this gleaming Manning, Wardle saddle tank J.R.Wright (MW1228 of 1895) which belonged to the contracting company Walter Scott & Co.*

It is June 1897 and the engine has been decorated, apparently with a garland of flowers in front of the chimney, to mark Queen Victoria's Diamond Jubilee on the 22nd. The fireman and driver stand in front of the loco cab and the figure on the right is one of the navy missionaries appointed to look after the spiritual welfare of the workers in this rural location. The man on the footplate, holding a large wooden sprag, is surely one of the tipping gang. The roles of the other three men are not known.



Figure 4. *One of the photographs Newton planned to use in his article on the London extension. It shows workmen on the embankment between Rothley and Quorn, on a section of the line now preserved by the present Great Central Railway.*

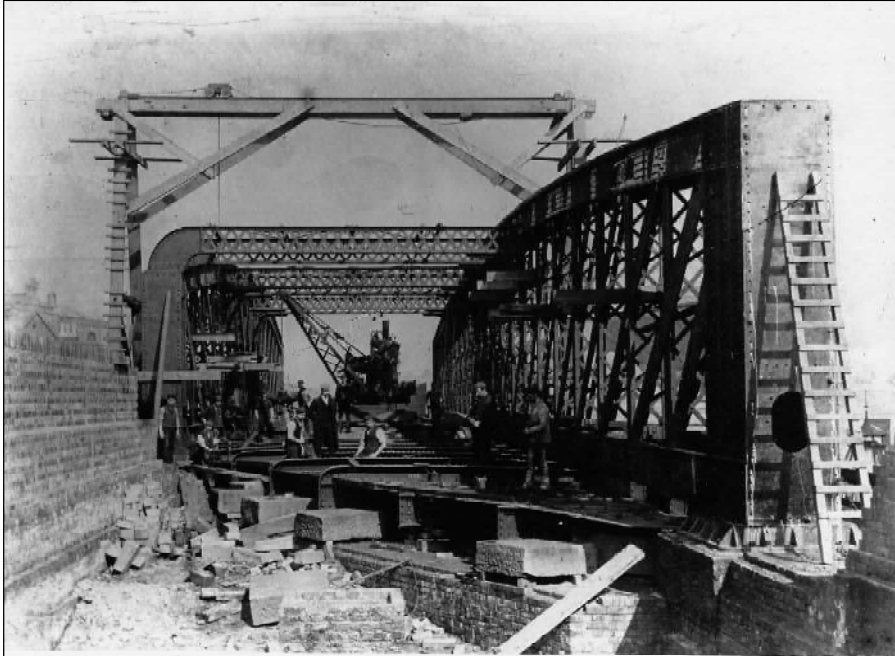


Figure 5. *Riveters at work on the impressive girder bridge over Duns Lane (Braunstone Gate), Leicester. This bridge survived into the present century, latterly as a cycleway, but despite a vociferous campaign to preserve it, it was demolished at the end of 2009.*



Figure 6. Brackley viaduct in July 1896. Details shown in the contractor's yard below include a stone crusher and clay pans.



Figure 7. A massive arch of timber centring stands ready to support the brickwork of the bridge over the River Swift at Lutterworth.



Figure 8. On the GW&GC Joint line between Wotton Underwood and Haddenham, Newton took several photos of this excavator and the young lad with his horse and tipping wagon. By now (c1903) he was using a half-plate camera, giving a much more detailed image.



Figure 9. The freshly completed brickwork of Denham viaduct, c1903. The locomotive is Cefn (Hunslet Engine Co, no 256, 1881) of contractors Pauling & Co.

The Great Central in the 1930s

[An extract from A G Macdonell, *England, their England* (Macmillan, 1933), pp. 219–222]

Two days later he was at Marylebone Station, quietest and most dignified of stations, where the porters go on tiptoe, where the barrows are rubber-tyred and the trains sidle mysteriously in and out with only the faintest of toots upon their whistles so as not to disturb the signalmen, and there he bought a ticket to Aylesbury from a man who whispered that the cost was nine-and-six, and that a train would probably start from Number 5 platform as soon as the engine-driver had come back from the pictures, and the guard had been to see his old mother in Baker Street.

Sure enough a train marked Aylesbury was standing at Number 5 platform. According to the timetable it was due to start in ten minutes, but the platform was deserted and there were no passengers in the carriages. The station was silent. The newspaper boy was asleep. A horse, waiting all harnessed beside a loaded van, lay down and yawned. The dust filtered slowly down through the winter sunbeams, gradually obliterating a label upon a wooden crate which said 'Urgent. Perishable.'

Donald took a seat in a third-class smoker and waited. An engine-driver came stealthily up the platform. A stoker, walking like a cat, followed him. After a few minutes a guard appeared at the door of the carriage and seemed rather surprised at seeing Donald.

'Do you wish to travel, sir?' he asked gently, and when Donald had said that he was desirous of going as far as Aylesbury, the guard touched his hat and said in a most respectful manner, 'If you wish it, sir.' He reminded Donald of the immortal butler, Jeeves. Donald fancied, but he was not quite sure, that he heard the guard whisper to the engine-driver, 'I think we might make a start now, Gerald,' and he rather thinks the engine-driver replied in the same undertone, 'Just as you wish, Horace.'

Anyway, a moment or two later the train slipped out of the station and gathered speed in the direction of Aylesbury.

The railway which begins, or ends, according to the way in which you look at it, from or at Marylebone, used to be called the Great Central Railway, but is now merged with lots of other railways into one large concern called the London, Midland and South Coast or some such name. The reason for the merger was that dividends might be raised, or lowered, or something. Anyway, the line used to be called the Great Central and it is like no other of the north-bound lines. For it runs through lovely, magical rural England. It goes to places that you have never heard of before, but when you have heard of them you want to live in them – Great Missenden and Wendover and High Wycombe and Princes Risborough and Quainton Road, and Akeman Street and Blackthorn. It goes to places that do not need a railway, that never use a railway, that probably do not yet know that they have got a railway. It goes to way-side halts where the only passengers are milk-churns. It visits lonely platforms where the only tickets are bought by geese and ducks. It stops in the middle of buttercup meadows to pick up eggs and flowers. It glides past the great pile of willow branches that are maturing to make England's cricket-bats. It is a dreamer among railways, a poet, kindly and absurd and lovely.

You can sit at your carriage window in a Great Central train and gallop your horse from Amersham to Aylesbury without a check for a factory or a detour for a field of corn or a break for a slum. Pasture and hedge, and pasture and hedge, and pasture and hedge, mile after mile after mile, grey-green and brown and russet, and silver where the little rivers tangle themselves among reeds and trodden watering-pools.

There are no mountains or ravines or noisy tunnels or dizzy viaducts. The Great Central is like that old stream of Asia Minor. It meanders and meanders until at last it reaches, loveliest of English names, the Vale of Aylesbury.

Railway war service badges of World War I

Reg Harman



One day a very long time ago, as a British Rail management trainee in Scotland, I helped to clear out an old railway office in Glasgow, prior to transfer of all administration to brave new offices. A colleague found four metal badges jammed behind a drawer, where they appeared to have been for a very long time, and asked if I would be interested in having them. As the alternative was their being binned, I duly accepted them, took them home and put them carefully in an envelope for safe keeping. Safe it was, as they didn't re-emerge until my wife found this envelope in the course of a recent spring clean!

Examples of the front and rear of these badges are shown above (with thanks to George Garbutt for the photograph). They are circular enamelled badges made of bronze with a lapel fixing. A dark blue ring round the outer edge has GLASGOW & SOUTH WESTERN RAILWAY incised on it while the white centre has RAILWAY SERVICE in white under a red and bronze crown. On the back is embossed the name of the maker, J.A. WYLIE & CO LONDON, together with a letter W and a number, both stamped into the metal. The number is different for each badge.

These war service badges had a distinct position in the history of the First World War. Until the end of 1915 service in the armed forces was voluntary, although many groups of men were keen to take part

from the start in what was deemed a patriotic and potentially successful conflict. Reflecting this, there emerged growing public antipathy and direct criticism of men who did not join up even though their age and health fitted them for combat. Some groups of young ladies went round handing out white feathers to any man they thought was shirking his responsibilities.

Of course many men were working as skilled employees in industries that made a significant contribution to the war effort. In the era before road transport became dominant, the railway system was fundamental to transport of goods and people, including large amounts of military equipment and supplies, and also military personnel. It was also vital to keeping the home nation supplied with food and household essentials, as well as supporting industry and commerce. So it was essential that railwaymen remained in their jobs, especially as most of those concerned with the actual transport – drivers and firemen, signalmen and control staff, maintenance fitters – were skilled tradesmen, not quickly replaced.

In work railwaymen wore overalls or uniforms. Problems arose when they changed into civvies to meet their pals in the pub in the evenings or accompany their wives on Sunday to church or on

a walk in the park. To offset this, the railway companies together devised the numbered badges, which were issued to all staff in essential functions. Worn in the lapel of the jacket, which was normal wear for all men outside the home, they removed the risk of public criticism or a white feather.

The railway badges were similar to those issued by other industrial groups, such as manufacturers and port workers. They were modelled on the standard munitions workers' badges issued by the War Office. These were effectively official Government Issue whereas the railway service badges, and those for other key industry workers, were officially regarded as private schemes.

The stamped numbers on the badges were central to their use, each badge being recorded by the railway on a register against its holder. The use and issue of badges was overseen by the War Office's Committee on War Service Badges. The practice and principles went through various changes, especially after conscription came in at the start of 1916. Holders of these badges were required to hand them in on leaving the service. Misuse of a badge, such as passing one on to someone else, was a crime, serious enough to warrant the death penalty in principle for certain abuses (never actually implemented).

Full information about such badges can be found on the Imperial War Museum internet site:

<http://www.iwm.org.uk/history/first-world-war-on-war-service-badges>

and in two very informative private sites:

http://www.tomtulloch-marshall.co.uk/On_War_Service_Badges.html

<http://www.sallysbadges.com/shop.php>

All such war service badges are now collectors' pieces, including those issued by railway companies. A study of internet sales sites shows that the prices for World War I badges vary from around £40 to £80 or more, depending on the company – some are rarer than others – and of course condition. Obviously my own have a particularly interesting history. Presumably they were either issued and returned or simply not issued by the G&SWR. So some time during the war, or perhaps just after it, a busy clerk concerned with more immediate matters dropped them into the nearest drawer for attention later. Subsequently they got stuck in the back, leading to a century out of sight except for when they were dug out in the 1960s and I promptly returned them to hiding!

Correspondence

LMS School of Transport, Derby

(*RCHS Journal*, no 230 (November 2017), pp 156–161)

For a few years in the mid 1960s I was a member of the staff of the school. It is my belief that all of us recognised our occupancy of an exceptional building. Consequently I find it a great pleasure to salute the work of Maxwell Craven in putting on record his architectural description of the building and the work of Graham Wild in organising successful opposition to the planning application for demolition. The planning committee was astounded to receive a vast number of formal objections from throughout the country.

May I make a few points in amplification of the article? In my time the Principal and the tutorial staff occupied offices above the games room. These were architecturally similar to the remainder in

respect of windows and door furniture; this suggests that the plan on p 158 is not 'as built'.

The murals in the round hall were nearly lost in about 1968 when they were in poor condition. Our esteemed Principal Leslie James proposed at a staff meeting that they be eliminated. The protest, mainly by ex-LMS personnel, resulted in the proposal being withdrawn in about 30 seconds.

A small framed preliminary sketch for the large mural in the dining room was mounted on the wall of the Hall of Transport. The mural differed from the sketch at least by the two London Transport buses depicted being later models. The sketch appears to be still in situ between the blue pillars left in the lower picture on back cover of the *Journal*.

Pat McCarthy

Dudley Docker and the railways

(*RCHS Journal*, no 230 (November 2017), pp 176–186)

I was interested to read the article about Dudley Docker in *RCHS Journal* 230 of November 2017, but perhaps I may be permitted to offer a small correction in respect of the location of the first business premises occupied by DD and his brother.

The railway arches in Allcock Street, Deritend, Birmingham are not situated on the link between the Great Western's Birmingham & Oxford line at Bordesley South and the Midland Railway through Camp Hill: indeed there are no viaduct arches on that connecting line which is only 21 chains in length. The arches in question lie on the line which had been intended to connect the Great Western to the London & North Western at Curzon Street. The formation, entirely on a viaduct some 50 chains in length, was built but never opened. Remarkably, much of the viaduct, including the arches once occupied by the Dockers, survives to this day.

The Birmingham and Oxford line was planned in the 1840s when Curzon Street was the LNWR's passenger station in Birmingham. In their submission to the parliamentary Select Committee considering the B&O's Bill, the LNW required that a narrow gauge connection should be provided in Birmingham. But soon afterwards the LNWR started work on extending their line to New Street station, completed in 1854. The GWR therefore proposed a new line to join the LNWR nearer to New Street but the LNWR objected and insisted (out of spite?) that the original line must be built, notwithstanding that it would cross the LNWR almost at right-angles. It was patently evident that a connection was not feasible and thus, although the formation was completed by the GWR, no junction of the lines was ever made. It seems rails were laid over much of the viaduct and the 6 inch OS map of 1889 shows track at the GWR end as far as Allcock Street plus a curious isolated length near the Curzon Street end although that had vanished by the time of the 1905 map. The 1946 6 inch map still shows track as far as Allcock Street: this was used well into the 1950s for storing wagons which had brought cattle to the pens at Bordesley, en route to the Birmingham markets.

A more detailed account of the lines at Bordesley can be found in volume 1 of E T MacDermot's *History of the Great Western Railway*.

Robert Darlaston

Robert Humm comments: Local knowledge is invaluable in these matters. I also notice I made two mistakes in the final paragraph. Line 4 should read 'for which there was then no known cure'. More seriously I got the date of death wrong – it should be 6 July 1944, not August.

Transport and travel in the world of Arnold Bennett

(*RCHS Journal*, no 230 (November 2017), pp, pp 130–142)

It was a great delight to read the article about Arnold Bennett in the November *Journal*. However both the author and Ian Carter, whom he cites, have missed one of Bennett's most interesting uses of railways in his fiction. This was in the novel, *The Ghost*, published in 1907, which Carter had trouble in locating since at the time he was writing there were only three copies in New Zealand.

In the novel, a train crash near Dover forms a pivotal moment in the story with the narrator surviving only because he changed carriage at Sittingbourne to avoid a frightening fellow passenger. The crash takes place because of a derailed wagon on the line and the driver ignoring the signals. An official tells the narrator that 'the driver of the express ran right into it, although the signal was against him'. The 'stoker' reports that 'Bill, 'e was all dazed like – 'e was all dazed like. I told him the signal wasn't off. I shouted to him. But 'e was all dazed like'. The narrator's original carriage, and its worrying occupant, was 'smashed out of resemblance to a coach'.

This element of a driver transfixed on the footplate seems to match some of the reports about the Grantham rail disaster, which took place only the year before. Perhaps Bennett was influenced by it, but I doubt the SECR officials were pleased about him relocating it to their network!

Adrian Gray

Reviews

***A Most Deliberate Swindle: how Edwardian fraudsters pulled the plug on the electric bus and left our cities gasping for breath* — Mick Hamer**

301pp, 215x140mm, 18 illustrations, softback, RedDoor Publishing Ltd, 277 London Road, Burgess Hill RH15 9QU, 2017, ISBN 978 1 910453 42 1, £10.99 post free from <www.reddoorpublishing.com>

Edwardian London saw a contest between petrol, steam and electric powered buses to replace the horse-drawn vehicles that had dominated the streets. Petrol buses were disliked for their noise, smell and frequent breakdowns, so quieter and less polluting steam and electric vehicles offered attractive alternatives. This was the background to the London Electrobus Company (LEC), which demonstrated a battery-powered vehicle in July 1906 and began public services between Victoria and Liverpool Street the following year. Its vehicles were well-engineered and technically advanced, with a slick battery-changing system to avoid them being off the road for recharging. In 1908 electrobuses were sold to the United company in Brighton and began operating between Brighton and Hove.

A successful electrobus could have transformed city road transport in the early twentieth century, yet by January 1910 manufacture had ceased and the LEC had gone into liquidation. Some of its vehicles were sold to the Brighton company, which continued to use them until lack of spare parts forced their abandonment in 1917.

This book examines why the electrobus failed. The author is a transport journalist who has approached his subject as an exercise in historical investigative journalism. In a gripping tale of financial skulduggery, so remarkable that it almost reads like a work of fiction, we are introduced to the characters involved, whose prime concern was fraud. They systematically siphoned money from shareholders, suppliers and anyone else they could, using false names and a network of companies set up for the purpose. Prominent was Dr Edward Lehwess, a German lawyer, but there are many others, with backgrounds worthy of villains in a Sherlock Holmes story. There is a brief consideration of what might have been, and the book ends with a look at the recent resurgence of interest in electric vehicles. The book is based on extensive and fully-referenced research using published and archive sources. There is a bibliography and an index; illustrations are sparse, but relevant.

This is a well-written, fascinating exposé which takes an original approach to an aspect of transport history. It is an excellent and illuminating read and is highly recommended.

TIM EDMONDS

***The Pride of Bucks: a history of the Amersham & District Motor Bus Company* — Neil Lamond with assistance from John Hutchinson**

96pp, 231x176mm, 129 illustrations (17 colour and 4 sketches), softback, Hawkes Design and Publishing, Chesham (obtainable from the author <neillamond@outlook.com>), 2017, ISBN 978 09554707 9 0, £14.99

The author was drawn to investigate the short history of the Amersham & District Motor Bus Company when his interest was aroused by an accident that had occurred in his now home village of Ley Hill, Buckinghamshire. This, his first book, is based on considerable investigation of the company's operation between its formation in 1919 and its being subsumed into London Transport in 1933. He was fortunate to locate company records in a London and, by advertising, relatives of personnel involved in the

management and operation of the bus fleet, who related details of their relatives and supplied many of the photographs. While providing much detail of the vehicles and routes operated, the attention given to the local and social history related to the operation of the mainly rural network provides an enjoyable read.

BRIAN A L JAMES

***George Carr Glyn: railway man and banker* — David Hodgkins**

xii, 486pp, 242x170mm, 60 illustration on 32 plates, 7 maps, softback, Wolfe Press (available from internet booksellers), 2017, ISBN 978 1 5272 0949 7, £25

Glyn, as ennobled as Lord Wolverton, received a fulsome obituary from an unexpected source, namely Edward Watkin. The following brief extract comes from near the end of this lengthy tome: 'When the history of railways comes to be written the name of Lord Wolverton will stand out as conspicuously on the page as, or more so, than that of Stephenson or any of the other pioneers of our noble industry. Lord Wolverton brought to bear upon its initiation and progress that which Stephenson never could have accomplished.'

Glyn was a private banker throughout his life and, like most such individuals, was the product of a banking family whose roots were in the Welsh aristocracy, but by George Carr's time were mainly in London. For a time he took an interest in London docks, notably in St Katharine's, then in the London & Birmingham Railway which of course was a huge undertaking. This interest dominated his thinking and led him to adopt a monopolist policy: intriguingly Cassen's work on counterfactual railways is cited in defence of the subject's attitudes, most notably to establish a link with Peterborough. The 'battles' with other companies, especially the Great Western, and the significance of rapid access to Dublin are recorded at length. Glyn's also financed other railways, many of which, but not all became part of the LNWR.

This is a book of very considerable scholarship, manifested in the extensive bibliography and in the multitude of footnote references, but its structure makes assimilation difficult. Thus most of the bank's overseas activities, notably those in Canada, are

treated together towards the end of the book, but they had emerged far earlier, indeed prior to the L&BR. Thus there is some repetition and the prime subject's basic humanity fails to materialise. Understandably abbreviations are sometimes used, but TVR for the Trent Valley Railway causes one to pause and think Taff Vale. Chapter sub-headings would have greatly eased the reader's task. It lacks the clarity of the late Peter Braine's *The Railway Moon* which received a very warm welcome in this journal from Terry Gourvish. In fact Braine states very clearly that Glyn 'had early appreciated the importance of railways and took the lead in backing railway development'.

The financing of the London & Birmingham Railway by a private bank must have been awesome: perhaps we should envisage the Branson or O'Leary HS2 to get some feel of the scale and risk. It is also strange that Glyn's had not ventured into financing canals but only London docks, although the risk was offset to a great extent by the infusion of Liverpool capital where railways were truly born. It should also be noted that Glyn established the style of management, especially during his period as Chairman of the London & Birmingham, which led to the formation of the LNWR. Another notable innovation was the creation of the Railway Clearing House.

An Appendix records Glyn's liabilities and assets. There is an extensive bibliography plus footnote references on most pages and a better than average index.

KEVIN JONES

***The Early Railways of Manchester* — Anthony Dawson**

96pp, 234x165mm, 58 photographs (40 colour), 20 illustrations and maps, paperback, Amberley Publishing, The Hill, Merrywalks, Stroud GL5 4EP, 2017, ISBN 978 1 44566518 4, £14.99

The opening chapter describes how in the late eighteenth century the growth and expansion of the local cotton industry led Manchester to develop and become a large industrial town. It already had the advantage of a transport infrastructure that contained a network of short and long distance canals and following the opening of the Liverpool & Manchester Railway in September 1830 industrial growth accelerated, which eventually resulted in Manchester

becoming Britain's first industrial city. The immediate success of the Liverpool & Manchester Railway acted as a catalyst for investors and businessmen to promote other railways that would link Manchester with Leeds, Birmingham, Sheffield and eventually London. Subsequent chapters provide a history of three other early railways that were centred on Manchester, namely the Manchester, Bolton & Bury in 1838, the Manchester & Leeds in

1840 and the Manchester & Birmingham in 1842. A line map for each is included. The narrative history of each company records the building and opening of their lines, descriptions of terminal stations, early locomotives and passenger rolling stock. The final chapter summarizes how Manchester's early railways quickly amalgamated with their local competitors, eventually leading to major consolidations when they were subsumed within the Lancashire & Yorkshire Railway in 1847 or the London & North Western Railway in 1846. The history has been well researched mainly from archive material lodged in Manchester's Museum of Science and Technology

and extracts taken from contemporary newspapers of the time. The generous selection of illustrations and old postcards are from the author's collection and together with the photographs, mainly taken by the author, all combine to provide a good pictorial content which is unique, interesting and informative. A bibliography is included. There is no index and no lists of source references, except for those referring to the newspaper extracts contained within the text. This compact book provides an interesting and easy read and is useful for the railway historian in providing some new information relating to Manchester's early railways.

GERALD LEACH

***The Edinburgh Horse Tram* — Alan W Brothie**

182pp, 274x210mm, 212 illustrations (56 in colour), 21 maps, drawings and diagrams, hardback, 2017, Stenlake Publishing Ltd, 54–58 Mill Square, Catrine, Mauchline KA5 6RD, ISBN 978 1 84033 779 2, £40

Horse-drawn tramways were a significant mode of urban transport during the last quarter of the nineteenth century. Alan Brothie, the author of a number of shorter books on Scottish transport, has produced a detailed history of the Edinburgh system. The work is divided into three parts, dealing respectively with the growth, development and eventual decline of the system; details of the rolling stock; and the restoration of a surviving horse-drawn car.

The first route was opened in November 1871 and extended from Haymarket to the centre of Leith. In due course the network expanded to a length of just over 18 miles, although about a third of this was situated in neighbouring burghs including Leith. The system was in operation for more than 30 years, but some of Edinburgh's gradients presented difficulties for horses; before long other means of propulsion were being tried and at different times experiments were carried out with steam, battery, electric and cable traction.

The horse-drawn fleet eventually totalled about 100 trams, although some of these were soon replaced. Many of the rolling-stock records have been lost and much renumbering is known to have taken place, particularly in the later years, but providentially a detailed document – the 'Thomson

notebook' – has survived; this, together with a contemporary licence book, has allowed a surprisingly complete history of the fleet to be reconstructed. The book is rounded off by an account of the restoration of horse car 23, thought to have been withdrawn from service in 1900; this was originally intended to be a stand-alone publication.

This work offers a well-written and illustrated account of its subject and although little is known about working conditions or horse management, the author is to be congratulated on one of the few major histories of a British horse tram system. Considering that more than a century has passed since the closure of the last route (to Portobello, in August 1907), the amount of detailed information that it has been possible to discover is remarkable.

Tables list details of the rolling stock and of the remarkably complex colour-coding system used to assist those who were unable to read destination boards. However, two shortcomings should be noticed: the maps fail to identify many of the streets referred to in the text, and although there is an index, it is insufficiently detailed for a work of this nature.

GRAHAM BIRD

***The Port Road: Dumfries to Stranraer, Portpatrick, Kirkcudbright and Whithorn* — Andrew F Swan**

320pp, 280x220mm, many photographs (few colour), 56 maps and plans, gradient tables, timetables, diagrams, modellers' coloured drawings of buildings, locomotives and carriages, hardback, Lightmoor Press, Unit 144b, Lydney Industrial Estate, Harbour Road, Lydney GL15 4EJ in conjunction with Caledonian Railway Association and Glasgow & South Western Railway Association, 2017, ISBN 978 1 911038 21 4, £30

This book covers not just the railwaymen's 'Port Road' (Dumfries to Stranraer) but the whole of the Portpatrick and Wigtownshire Joint Railways, the Cairnryan Military Railway, which ran off it for a few years during and after the Second World War, and the Kirkcudbright branch of the Glasgow & South Western Railway.

The book starts with a historical overview, covering the background, route selection, building, legal changes and subsequent almost complete closure by 1965. Three chapters then describe the creation of the various routes. Further chapters take the reader to important structures along the lines, such as sidings and viaducts; and to stations, which come with a sketch of the rail layout at each (an earlier book on the Portpatrick and Wigtownshire had more informative Ordnance Survey versions, perhaps excluded now by the fees currently demanded for reproducing 100-year old maps). Historical details are threaded in, such as those relating to steamship services from the coast across to Northern Ireland. Post-closure decline and the current state of structures are described. Further chapters cover train services; architectural details of buildings; and

locomotives, rolling stock and signalling. Appendices list full details of the opening and closing of stations, sample train formations, and proposed but unbuilt railways in the area.

The bibliography contains some remarkable omissions, although it also lists as source material both a published book and the research notes for it, held by one of the publishers. This is an interesting approach which perhaps should be encouraged, not least by authors depositing their research papers appropriately. The text flows nicely, and reads well as a comprehensive story for both the general reader and those with a technical interest. Unfortunately, use for reference or for further investigation is severely restricted. There is a totally inadequate index, which could be easily remedied and would have been especially useful because historical details are often split between the 'route' chapters and the 'structures' chapters. Worst of all, inexplicably there is a complete lack of any references. If these omissions could be rectified, this book would rate highly.

DAVID PEDLEY

***Railway Guns of World War I* — Marc Romanych and Greg Heuer**

48pp, 185x245mm, 65 illustrations (18 colour), softback, Osprey Publishing, PO Box 883, Oxford OX1 9PL, 2017, ISBN 978 1 4728 1639 9, £10.99

The Great War was the golden age of the railway gun. It had figured in the American Civil War and been used by the British in Egypt (1882) and in South Africa (1899–1902) but none of the great powers possessed any in 1914 (Germany not until late 1916, behind France and Britain). At first railway guns supplemented artillery in trench warfare; later the main powers concentrated on longer-range guns capable of shelling targets deep behind enemy lines. The guns came from coastal defences, fortresses or

obsolete ships. Other nations experimented with them – Italy, the United States and, briefly, Russia. One wonders if the effort put into them was repaid in military value. This volume contains many previously unpublished photographs and artwork in colour (by Steve Noon) and covers the subject (excluding the guns used in armoured trains) comprehensively, with a brief bibliography and index.

PHILIP L SCOWCROFT

***The Railway Preservation Revolution: a history of Britain's heritage railways* — Jonathan Brown**

301pp, 248x171mm, 124 photographs (116 colour), map, 5 tables, hardback, Pen & Sword Books, 47 Church Street, Barnsley S70 2AS, ISBN 978 1 47389 1173, £30

Between the years 1951, when L T C Rolt formed a society to save the Talylllyn Railway, and 2011, Jonathan Brown estimates that no fewer than 108 railways were preserved in Britain. Including both independent narrow-gauge concerns and suburban branch lines for which British Rail saw no future, each had a distinctive history and character. In this book, he tells their story and sketches an overview of the current heritage rail scene. Few preservation schemes, Mr Brown suggests, achieved their objective with ease. Raising funds to purchase and re-open a redundant line was only the start. British Rail did not always view preservation projects kindly. Even when it was willing to negotiate terms, preservationists faced competition from councils seeking to build on the former trackbed and a Ministry of Transport which viewed abandoned railways as potential new roads. Once open, preserved railways have had to adapt to the leisure industry's demands where retention of original locomotive numbers and liveries counts for less than

the availability of cafes, gift-shops and accessible toilets. Exploring present-day challenges, he investigates reasons for recurrent shortages of operational steam locomotives; dissects the sources of tension between paid staff and volunteers, and surveys the apparently insurmountable difficulty of running viable community services, which he terms 'preserved railways' 'biggest area of failure.'

Occasionally his methodology feels rather wayward. Although, for example, he makes several references to Light Railway Orders, he does not describe the powers they grant and limitations they impose until his penultimate chapter where he notes that Transport and Works Orders have superseded them. Since, in this context, he repeatedly mentions Colonel Stephens, some sketch of Holman Fred Stephens' career might be welcome.

Carping aside, it is an enterprising, ambitious book, superbly produced and illustrated. Assiduously referenced, it has a useful bibliography and index.

VICTORIA OWENS

***Barges & Bread: canals & grain to bread & baking* — Di Murrell**

240pp, 216x138mm, 18 illustrations, 2 maps, 31 recipes, paperback, Prospect Books, 26 Parke Road, London SW13 9NG, 2017, ISBN 978 1 909248 51 9, £15

Yes: 31 recipes! This multifaceted book is firstly a history of English bread-making, with examples from pre-historic times through to the wartime National Loaf ('Hitler's secret weapon'). It even includes the Chorleywood Bread Process, developed in 1961, which now accounts for 80% of the bread manufactured in Britain, though there the advice is 'Don't try to bake this bread at home!'

Its second theme is how through the ages London has been supplied with grain and flour by water, both down the Thames and by coastal craft from Kent and Essex. This complex story is lucidly explained. The population of London increased vastly and tastes changed as prosperity increased, affecting the grains grown, milled and transported. The location of mills was until the nineteenth century dependent on the power source: principally tide mills in the London area and water mills up-river. The building of coal-powered mills revolutionised the size and location of mills, with implications for transport. Later in the century cheaper and better wheat principally from

North America altered the technology, roller milling replacing traditional stone milling; it also reversed much of the traffic in grain on the Thames, with imported grain being boated up to inland mills.

The growing demand for the transport of grain or flour had profound implications for the Thames, being a major factor in the demand for replacing flash locks by pound locks and increasing the depth of water. The author also explains how the size, shape and rigging of boats, both inland and estuarial, changed as needs changed.

The book ends with a personal chapter, describing how for two years in the 1970s the author and her husband operated two motor barges carrying grain from Tilbury to Coxes Mill on the River Wey.

The title is misleading, in that there is little mention of canals. Unfortunately the well-chosen illustrations are poorly reproduced. On the other hand, this unusual and interesting book is referenced, has an extensive bibliography and an index.

PETER BROWN

***Schoolboy, Servant, GWR Apprentice: the memoirs of Alfred Plumley 1880–1892* — edited by David Wilkins**

160pp, 235x157mm, 30 photographs, 2 maps, paperback, The History Press, The Mill, Brimscombe Port, Stroud GL5 2QG, 2017, ISBN 978 0 7509 6993 2, £12.99, also available in ebook formats.

The basis of this book is a typescript memoir of the early life of a Somerset man, purchased at a Dorset auction in 2014. Written anonymously, almost all of the people mentioned, and many of the places, were given aliases. Extensive research by the purchaser identified the writer, Alfred Plumley, and most of the people and places involved. The text has been edited for publication to include this information directly in the text, or through explanatory notes in appropriate places. There are endnote references to sources, an index, and a selection of photographs that relate directly or closely to the text.

The book is divided into three sections, reflecting memories of three stages of life: education, early employment in domestic service, and the start of a 45-year career with the Great Western Railway. There are incidental details of rural transport in the Mendips, including the village carrier and an early bus service. A notable local activity was the gathering of teasels which were transported in large quantities by cart to West Yorkshire for use in the wool industry. Visits to Bristol include notes on the harbour, traffic

and trams.

Plumley's first posting as a GWR apprentice was to Worle station, on the Weston loop, where he describes the range of duties expected of a lad porter, including maintaining signal lamps and learning to use the telegraph. A temporary transfer to busy Bristol was less welcome for a country boy, but his next posting was to rural Nailsea. The period 1890–92 covered by this section is notable in that it includes the end of the broad gauge. He is well aware of the significance of this and for his first period of leave (just three days) he and a colleague decide to experience broad-gauge expresses while they can. On successive days they travel from Worle to Paddington, Paddington to Plymouth and Plymouth to Worle.

This is a delightful and engaging book, giving an illuminating insight into rural life in late nineteenth century Somerset. It is recommended to those with an interest in the social, economic and transport history of the area and the era.

TIM EDMONDS

***Junctions at Banbury: a town and its railways since 1850* — Barrie Trinder**

x, 266pp, 255x182mm, 110 photographs, hardback, 2017, Banbury Historical Society, c/o Banbury Museum, Spiceball Park Road, Banbury OX16 2PG in association with Lamplight Publications, 260 Colwell Drive, Witney OX28 5LW, ISBN 978 0 900129 34 6 (BHS) 978 1 899246 61 1 (Lamplight), £19.95

Almost uniquely for a book concerned with the railways of a particular town, this volume has little detailed coverage of the infrastructure, but is concentrated on the services passing through. A secondary theme is the social impact of the railways on the town, with particular reference to the slow but eventually significant growth in railway employment in the town region between 1850 and 1914.

The author emphasises that this is a work of synthesis, but this considerably underplays the depth of research which has gone into it: the extensive bibliography and footnotes show that no secondary source of significance has been ignored; and much detail has been extracted from census returns and enthusiast magazines. Although published as volume 35 in the Banbury Historical Society's Record Series

and in the first instance apparently aimed at that organisation's readership, the detail and significance of locomotive workings, as presented in both text and photographs, suggest it will really appeal more to the enthusiast market; the maps will be inadequate for most readers.

This study could stand as representative of many places across the country, although the diversity of traffic at Banbury – particularly after the coming of the Great Central connection – comes over as unusually broad and fascinating. The story is brought down to the present – the town still sees plenty of cross-country traffic – but the days of such exotica as a through Manchester–Lymington (for Isle of Wight) coach or of dead rabbit traffic from Helston to Sheffield are of the past.

MATTHEW SEARLE

***Great Northern Railway Branches from Stamford* — Peter Paye**

176pp, 280x220mm, 155 photographs (some colour), 110 diagrams, timetable reproductions and drawings, hardback, Lightmoor Press, Unit 144b, Lydney Industrial Estate, Harbour Road, Lydney GL15 4EJ, 2017, ISBN 978 1 911038 24 5, £25

Stamford, an ancient market town and staging point on the Great North Road, was by-passed by the Great Northern Railway due to opposition by local landowners. The Marquis of Exeter, of nearby Burghley House was, perhaps unfairly, blamed and in defence promoted the Stamford & Essendine Railway which opened to the GNR main line in 1856. In 1867 a second line was opened to Wansford on the LNWR's Northampton to Peterborough line to provide a southerly connection. This competed poorly with the Midland Railway's Leicester to Peterborough line which had run through the town from 1846 as part of George Hudson's attempt to thwart the east coast line.

The GNR operated the Stamford branches until 1864, when the S&ER briefly exerted its independence, then resumed seven years later and leased them from 1894. Traffic, particularly goods, continued to grow at Stamford, but abysmal results on the Wansford line brought complete closure in 1929. At nationalisation duplication with the ex-MR

route to Peterborough led to total closure in 1959, when Essendine and all Peterborough to Grantham intermediate stations were also closed to ease traffic flow on the main line. Goods traffic continued in and around the Stamford terminus but closure followed during 1963–67.

Perhaps notable only for the architecture of its Burghley-inspired Stamford terminal building, the history of these minor branches illuminate the local aspirations and politics that provide a backdrop to much of Britain's railway system. Peter Paye, a long-time chronicler of minor lines, particularly in the east, skilfully guides the reader through traffic patterns and accident reports giving insights into operations. Full line diagrams and descriptions and rolling stock drawings are given, including distinctive locomotive allocations and Patrick Stirling engines specially designed for the lines.

Highly recommended for those with an interest in byways of railway history.

BRIAN JANES

***The Fovant Military Railway* — Peter A Harding**

24pp, 145x205mm, 37 photographs, maps & plans, softback, Peter A Harding, Mossgiel, Bagshot Road, Knaphill, Woking GU21 2SG, 2017, ISBN 978 0 955 2403 9 3, £4.50 (incl p&p)

Fovant is a Wiltshire village in the heart of one-time military camp country. Fovant Camp was a comparatively short-lived Great War example, being operational from 1915 to 1920. Unusually, it was nearly completed when the decision was taken to connect it by railway to Dinton station on the London & South Western Railway's Salisbury–Yeovil line. The line was of standard gauge, 2½ miles in length with a ruling gradient of 1 in 70, and was quickly built, being completed by 13 October 1915. An improvement on the poor roads of the time, it was kept busy with thousands of troops arriving and departing from the camp and its adjacent military hospital, both during the war and the later demobilisation which was completed by late 1920 when the line appears to have closed, the track being lifted by 1926. Motive power included saddle tanks

from other military railways and one from the Isle of Wight with two of William Adams' '415' class 4–2Ts from the L&SWR. Coaching stock was elderly six-wheel L&SWR carriages. About nine or ten trains ran in each direction daily (two on Sundays). During the Second World War the Air Ministry opened a similar 2 ft gauge line of 1½ miles from Dinton to RAF Chilmark worked by diesel locomotives and closing in the 1990s.

The photographs in this booklet are in general decently reproduced; the illustrations also include a drawing by C Hamilton Ellis who knew the Fovant line in his youth. All told, this, one of a substantial series written and published by Mr Harding on branch lines in the south of England, is a useful reminder of a nearly-forgotten and short-lived line.

PHILIP L SCOWCROFT

***South Wales Valleys. Railways and Industry in the Western Valley: Aberbeeg to Brynmawr and Ebbw Vale* — John Hodge**

200pp, 280x220mm, 241 photographs and 4 maps and plans, hardback, Pen & Sword Transport, 47 Church Street, Barnsley S70 2AS, 2017, ISBN: 978 1 4738 3808 6, £25

John Hodge has put together an interesting collection of photographs to illustrate train movements and railway layouts on the Ebbw Fawr and Ebbw Fach lines north from Aberbeeg. This is a continuation in the same style and using the same main sources as in his previous book (reviewed in the November 2016 *Journal*; the promised additional treatment of Hall's Road has been left, perhaps for another time). Aberbeeg, which the author calls the fulcrum of the Western Valley, is given special treatment with its yard and large motive power depot that, among other requirements, provided banking engines for the iron ore trains to Ebbw Vale and even long trains of empty coal wagons returning from Newport; locomotive allocations over the years are analysed. Hodge argues that the south-bound sale coal traffic from pits around Abertillery demanded doubling of the line before that of the line to the iron and tinplate works at Victoria and Ebbw Vale. Such statements are drawn from

inspecting Tony Cooke's published GWR and BR track plans (no 40) and readers may get more from this book by having Cooke's by their side. Using track plans alone to understand topography and produce photograph captions of unfamiliar places is fraught with danger and Hodge shows he is on the edge of his comfort zone when he is unable to adequately explain images of Nantyglo and Beaufort and uses a photograph of Aberbargoed (off *piste*, deep in the Rhymney valley), thinking it is the windswept small quarrying village at Trevil and that Bargoed colliery tip is the spoil heap of the limestone quarry. The strength of this book is undoubtedly visual – the photographs selected to depict the variety of freight traffic on these lines. For track layouts and signalling, some of the best photographs in both books are those by Garth Tilt who surveyed the lines in the 1960s.

STEPHEN ROWSON

***The Canal Belongs to me: the life of a towpath tractor driver* — Tony Byfield**

48pp, 150x210mm, 25 photographs and map, softback, London Canal Museum, 12–13 New Wharf Road, London N1 9RT, 2017, ISBN: 978 1 78808 623 3, £5.00 (plus £1.50 p&p via publisher)

Tony Byfield was something of a free spirit when, in 1957, the Regents Canal was moving over from horses to tractors for drawing barges and he found his ideal occupation as a tractor driver. Resulting from the 1963 freeze the job was broadened to be tractor driver/lock keeper; then in 1969 he left traffic and was a canal lengthsman until retirement in 2002. In eight pithy chapters we are treated to a first person employee's account of his work in these differing jobs. Tony shares his methods, techniques, tricks of the trade and the peculiarities of certain places and cargoes together with coping when things went wrong.

There were two tractor bases, either side of Islington Tunnel – at Kentish Town (two tractors) and at Old Ford near the Hertford Union Canal junction (about twelve tractors). Tony was based at the former but he was available to go down to Limehouse when necessary so he covers the whole route. Tugboats were used for haulage through the tunnel and tugboats also took over to take barges westward from Maida Vale Tunnel. The 7ft 6in long tractors needed to be manoeuvrable, including

turning round at any point along the 8ft wide towpath; drivers were given a six week training course. There were never problems of tractors passing each other; the ropes sank once they were water-logged so one driver would drop his tow and the other boat would glide over the top of the sunken rope.

Occasionally a tractor had to be retrieved from the canal and the author describes one incident caused when five inebriated drivers were travelling along the towpath on one tractor after a not-uncommon lunchtime drinking session. Another aspect of the job was finding bodies in the cut and the suggestion that (whether true or the questionable stuff of oral history) if a body was found at Camden he would let it float down to Kentish Town where, under a different coroner, he would get an extra half a crown for its retrieval!

There is more detail here than might be in a book five times the size. Photographs and map are reproduced large enough to illustrate the subject well. We could do with more booklets like this.

STEPHEN ROWSON

***Fairlie Locomotives of North Wales* — David Payling**

318pp, 280x218mm, 260 illustrations (126 colour), 28 drawings plus 18 fold-out side elevations, 24 tables, hardback, 2017, Ffestiniog & Welsh Highland Railways, Harbour Station, Porthmadog LL49 9NF, ISBN 978 0 901848 4 7, £39.95

Those determined to maintain a library of books on the Welsh narrow gauge now need bookshelves of broad gauge proportions. This latest blockbuster covers the double and single Fairlies, past and present, used over the Festiniog and Welsh Highland systems and their predecessors. Straightforwardly presented, Parts I and II give summary and chronological histories for each locomotive operating

in the pre- and post-revival eras respectively, with additional essays on modern-day engineering and operation. From the historian's point of view, probably the most interesting sections are Part III and the appendices which include some valuable statistics on the slate traffic which was the Festiniog double-engines' original *raison d'être*.

MATTHEW SEARLE

***Lyn Returns* — edited by Tony Nicholson**

48pp, A4, 56 illustrations, 2 facsimiles, softback, The 762 Club, no ISBN, £9.95 (plus £2.50 p&p from www.lynton-rail.co.uk/shop)

In 2017 a new 2–4–2T numbered 762 was delivered to the revived Lynton & Barnstaple Railway, where it was named *Lyn*. Although externally similar to the original line's locomotive with this identity, it is not a replica but has been built to take advantage of modern technology. This attractive and well-produced book has been published by The 762 Club, which was set up to build the engine, and covers the design and building of both the original and the modern examples.

The first *Lyn* was built in the United States by Baldwin. Reasons for the order, choice of builder and details of the design are described, with facsimiles of the builder's specification and drawings. History of operation is illustrated with an excellent selection of contemporary photographs, well reproduced. The story of the new *Lyn* is illustrated with drawings and photographs and includes a table of the modern features and their benefits.

TIM EDMONDS

***Festiniog Railway: from slate railway to heritage operation 1921–2014* — Peter Johnson**

352pp, 225x290mm, 424 photographs (293 colour), 18 maps/diagrams, 21 miscellaneous illustrations and tables, hardback, Pen and Sword Books Ltd, 47, Church Street, Barnsley S70 2AS, 2017, ISBN 978 1 47389 625 3, £40 (also available as e-book)

Keenly anticipated and speedily following on the heels of the initial volume, which covered the years 1830–1920 (reviewed in the last issue of the *Journal*), this sequel is considerably longer and takes up the narrative where the first book finished. It is an inseparable companion for it brings the story via abandonment, restoration, the building of a substantial deviation to replace lost track bed and the eventual reopening to Blaenau Ffestiniog in 1982, to the present day. The leasing in the 1930s of the Welsh Highland Railway and its subsequent restoration and reconnection to the Festiniog in 2009 is also recounted. Numerous different personae feature in the recent history of the line and their contributions are meticulously recorded; it would seem that progress was not always amicable and smooth.

As in the previous volume, the photographs and illustrations are a tour de force; the period monochrome shots are powerfully evocative. Unsurprisingly colour predominates when the more recent decades are reached and some of the latter views are perhaps a bit dark and murky whereas others are little faded, possibly reflecting the age of the originals. The dust wrappers of both volumes are confusingly similar. Nonetheless, these are minor quibbles and by no means detract from the book. There is a clear map on the end papers and comprehensive appendices cover various plans and light railway orders, financial matters, passenger numbers, directors and trustees. It is completed by a bibliography and an index. The two books should be seen as one and together they are a truly commendable effort.

JOHN HOWAT

***Forgotten Railway Infrastructure: photographs from the Edward Wallis collection* — compiled by Kevin Robertson**

96pp, 273x215mm, 153 photos, softback, Crécy Publishing Ltd, 1A Ringway Trading Estate, Shadowmoss Road, Manchester M22 5LH, 2017, ISBN 978 1 90932 872 3, £16.50

Edward Wallis was a Southern Railway signal engineer from 1923 until his death in 1934. During this time he took many photographs of railway track, signals and stations, but relatively few of locomotives and trains. This volume is the fourth (and last) in a series which opens up his images to a wider public. Earlier volumes concentrated on the Southern and Great Western Railways, but this one covers a wider area including the English midlands, together with some Welsh narrow-gauge scenes. The quality of the images is generally good.

A number of rarely photographed stations appear, such as Lucas Terrace Halt on the Southern's Turnchapel branch. Other views include signalling oddities such as red distant arms on the South Eastern Railway. The Stratford-upon-Avon & Midland Junction Railway 0-6-0 no 7, originally London, Brighton & South Coast Railway no 428, also features, but a 15in-gauge 4-4-2, despite its number 4832, has surprisingly proved unidentifiable. There is an index of locations but not of subjects.

GRAHAM BIRD

***Beachley and the First World War: the story of a shipyard, a railway and the transformation of a rural parish* — Carol & Richard Clammer**

192pp, 280x220mm, 272 photographs and maps, laminated hardback, Lightmoor Press & Tidenham Historical Group, Unit 144b, Lydney Industrial Estate, Harbour Road, Lydney GL15 4EJ, 2017, ISBN 978 1 911038 26 9, £25

On 3 September 1917 the 26 households that comprised Beachley village received an eviction order under the Defence of the Realm Act. The 106 people affected had just eleven days to quit their residences to enable construction of National Shipyard no 2 on this south-western extremity of Gloucestershire where the River Wye enters the Severn. British shipping losses in the war with Germany had become unsustainable as shipyards tasked with maintaining the merchant fleet numbers found themselves competing for steel with Admiralty shipyards. Consequently, in May 1917 responsibility for construction or purchase of all British shipping was vested in the Admiralty under Sir Eric Geddes, former Director General of Military Railways. To create additional shipbuilding capacity Geddes and his deputy, Major-General A S Collard, Director General of Inland Waterways and Docks, decided on the creation of three National Shipyards situated in the Bristol Channel at Chepstow, Beachley and Portbury (to be close to supplies of steel from south Wales).

This book is the result of meticulous research of records much wider than the albums of construction photographs preserved in The National Archives and Chepstow Museum. Opening chapters capture the

pre-war 'rural idyll' of the local community, its farms, salmon fishery and relationship with the gentry represented by the Marling family of Sedbury Park. Details of the evacuation are followed by a chapter devoted to building the 3½ mile access railway from the GWR main line at Snipe Hill near Tidenham. The line was constructed by the Royal Engineers but the shipyard and associated workers' housing was constructed by prisoners of war who have their own chapter. The war finished earlier than was expected and by 1919, before any ship had been constructed, the issues of abandonment and disposal were being tackled. The authors give weight to these topics, the wrangles of compensation and what has become of the site, in what is a well-rounded model of local history. The story of this shipyard and railway may not contribute significantly to transport history but the events had a long-term impact on the people who lived in Beachley which alone justifies its publication. For those who find these things important, an appendix gives the history of each locomotive known to have worked on the access railway and there is a section on the 64 ex-GWR ROD 2-8-0 locomotives that were stored on the line between 1922 and 1924.

STEPHEN ROWSON

***The Stratford-upon-Avon & Midland Junction Railway. Volume 1: The years before the S&MJR, 1866 to 1909 – The constituent companies* — Barry Taylor**

208pp, 210x274mm, 225 photos, 41 maps, hardback, Lightmoor Press, Unit 144b, Lydney Industrial Estate, Harbour Road, Lydney GL15 4EJ, 2017, ISBN 978 1 911028 25 2, £25

The subject of this book is the lines from Blisworth to Banbury and from Towcester to Stratford-upon-Avon and then on to the Midland line south of Evesham. Apart from Towcester, the lines did not serve any significant places that were not otherwise served but the cross-country route was designed to provide a shorter route between the iron ore deposits in Northamptonshire and south Wales. From the start the lines were beset with financial problems, a drop in the demand for Northamptonshire ironstone in south Wales and the difficulties of living with powerful neighbours.

This book deals with the construction of the lines, including the link from Towcester to the Midland at Ravenstone Wood on the Bedford to Northampton line. Four companies were involved in building and operating the line and they managed to spend much time bickering between themselves until the formation of united company in 1909. This volume deals with the tortuous history of these companies using as wide a range of sources as could be found. Sadly these do not include minute books which have been lost. And what a complex history it is!

As was often the case the lines, particularly the East & West Junction Railway which built the line from Towcester to Stratford-upon-Avon, were under-capitalised. The E&WJ ran out of money in 1877 and the line closed to passengers for eight years. Locomotives were a hotch-potch, some new, some second-hand. The 0-6-6-0 double Fairlie is well-known; it ran for about a year on the line.

The book is essentially in two parts, one dealing with the Northampton & Banbury Junction railway from Blisworth to Banbury and the other with the remaining three companies. It is hard to see how this fragmentation could have been avoided but it does mean that the reader has to keep the two stories in mind.

There have been books before about the SMJ but this is a much more substantial work, reflecting the amount of information now available both in public archives and on-line newspapers. I keenly look forward to volume 2 which will continue the story until the demise of the various lines.

KEITH FENWICK

15 Years of Wunderland: 15 years of stories, amusing details and hidden secrets

368pp, 280x230mm, numerous colour photographs, hardback, Miniatur Wunderland, Kehrvieler 2, 20457 Hamburg, Germany, 2017, ISBN 978 3 9817111 4 1, €20 (if collected)

The statistics are impressive: over 15km of track, equivalent to some 1,300km when scaled up from HO (1:87); more than 1,000 trains; 40 aircraft which take off, land and taxi; and thousands of road vehicles, many of which move independently. But Miniatur Wunderland is much more than the world's largest model railway – the superb scenery and buildings are populated by more than a quarter of a million people, with a tremendous attention to detail and a surprising amount of subtle humour.

This book is an assembly of short articles about the development and construction of the nine national or regional layouts. A few obvious questions remain unanswered – for example, how do they keep everything clean and dust-free? – but this is a minor criticism, as the true glory of the book is its photographs. The page size enables these to be reproduced large enough for the reader to appreciate both the scale and the detail of the scenes depicted.

PETER BROWN

***Network North West: images of a changing railway* — Martyn Hilbert**

128pp, 235x165mm, paperback, 182 colour photographs, Fonthill Media Ltd, Stroud House, Russell Street, Stroud GL5 3AN, 2017, ISBN 978 1 78155 611 5, £14.99

This is a photographic exploration of the changes to the railways in the northwest of England over the last forty years although a high proportion of the images are from 2016 and there are very few from the first decade of the present century. It is to be expected that many of the locations are familiar but a few less well-known places make are featured. There are seven sections examining different geographic areas of the northwest but there is nothing

north of the southern Lake District. There is a short introduction and the photographs get detailed informative captions. On the whole the photographs have reproduced well but a few are rather dark and have an unusual bluish cast. There is no map or index and the bibliography consists of just three titles.

RICHARD COULTHURST

***The Manchester to Bury ‘Lecky’ line and the Class 504 EMUs: a tribute to a unique railway* — Simon Thomas & Andrew Coward**

172pp, 297x210mm, 272 photographs (206 colour), 10 maps, softback, Andy Coward, 5 Brambling Drive, Bacup OL13 9QJ, 2017, ISBN 978 0 9576126 6 2, £18.50

The Manchester to Bury line has two claims to fame in the history of electric traction: firstly as pioneering electric railway and secondly as an early conversion to light rapid transit. This book, however, concentrates on the interim period from 1959 to 1991 when it was an unremarkable suburban service operated by almost-standard electric multiple units. Under threat of closure for part of the period, run-down and plagued by graffiti towards the end, and probably not much loved, this is the sort of period that it is often convenient for the railway historian to overlook; yet the authors have here succeeded in

producing a most attractive volume which captures the spirit of the line through this time. It might have been supposed that the availability of illustrations would be limited, but again a very good collection of photographs, mostly in colour, has been assembled. The emphasis of the text is on the rolling stock mentioned in the title, but other features such as signalling and the innovative 1969 Besses o’ th’ Barn bridge are well covered. Another good reason for buying this book is that profits are donated to conserving the sole surviving unit.

MATTHEW SEARLE

***Plymouth’s Hidden Railways* — Paul Burkhalter**

168pp, 250x170mm, photographs, maps, softback, Twelveheads Press, 2 Woodside Cottages, Chacewater, Truro TR4 8LP, 2017, ISBN 978 0 906294 92 5, £16.00

Mr Burkhalter is the author of the standard history of the Devonport Dockyard Railway from the same publisher; in this volume he extends his brief to cover every industrial line in Plymouth and its hinterland east of the Tamar. Although this topic has been explored in print before, nothing else matches the comprehensiveness of this volume. Each location gets, where possible or appropriate, a brief history, a detailed map, rare photographs, a locomotive list and source notes. As might be expected, installations connected with the defence of the realm feature

extensively, but the author covers over eighty locations, including such remarkable features as a munitions storage line in the former Plymouth & Dartmoor Railway’s Leigham tunnel and a wharfside line relaid in mixed gauge in 1961. Production is up to Twelveheads’ usual high standards. This will appeal mostly to those who know the area and to industrial railway enthusiasts.

MATTHEW SEARLE

Brief Notes

***Southern Steam Swansong: the final years 1964–67* — Paul Cooper**

176pp, 257x255mm, 251 photos (187 colour), hardback, Crécy Publishing, 1a Ringway Trading Estate, Shadowmoss Road, Manchester M22 5LH, 2017, ISBN 978 1 90932867 9, £27.50

Among a number of books, bookazines and articles marking the fiftieth anniversary of 1967's last summer of steam on the Waterloo–Weymouth line, this primarily pictorial volume is distinguished by evocative photographs in colour and monochrome by the author, Ken Vernon and others with captions giving full details of the workings depicted. It will be of greatest interest to those who shared in watching and chasing these trains but communicates the feel of the times to those who missed them.

***Surrey Railway Stations through time* — Douglas d'Enno**

96pp, 244x165mm, 178 photos (89 colour), softback, Amberley Publishing, The Hill, Stroud GL5 4EP, 2017, ISBN 978 1 4456 5569 7, £14.99

Following an earlier volume on Sussex, this book covers 96 stations within the 1889–1965 boundaries of Surrey, matching old (generally pre-grouping) views with present-day colour photographs taken from identical positions, accompanied by potted

histories in the captions. In some cases, chiefly in the metropolitan area, the vista has changed utterly; in others, things remain remarkably unspoiled. This is an attractive and useful reference, particularly for those interested in railway architecture, of which the county possesses good examples.

***The London, Tilbury & Southend Railway: a history of the company and line. Volume 6: The Gravesend ferry* — Peter Kay**

pp427–506, A4, 140 photos, 40 maps & plans, 11 drawings, 11 facsimiles, softback, Peter Kay, 6c Park Road, Wivenhoe CO7 9NB, 2017, ISBN 978 1 899890 50 7, £11.95

This self-contained volume covers the railway's link from Tilbury to the Kentish shore, down to the end of railway association with the service. Its later years were notable for the amount of time devoted to managing decline without producing much change on the water. Unusually for a ferry history, but typically of the series as a whole, as much space is devoted to the shore infrastructure as to the vessels.

The following 'Middleton' books: 96pp, 236x166mm, 120 photographs plus maps, timetables, tickets etc, hardback, Middleton Press, Easebourne Lane, Midhurst GU29 9AZ, 2017, £18.95 (post free)

***Drem to Edinburgh including the Gullane, Haddington, Tranent, Musselburgh and Fisherrow branches* — Roger Darsley & Dennis Lovett**

ISBN 978 1 910356 06 7

This volume explores the north end of the East Coast Main Line as it approaches Edinburgh including some little-known branch lines which from the passenger service point of view were early casualties of bus competition. Enthusiasts for early railways will find the book of interest as Scotland's first waggonway was opened from Tranent to Cockenzie in 1722 using wooden rails and horse power. Part of this line was later converted to a standard gauge railway.

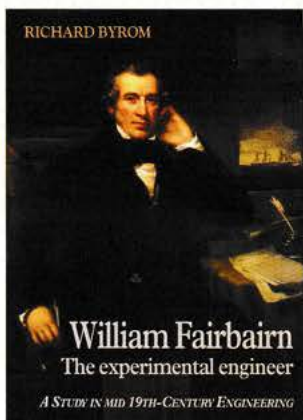
***Nuneaton to Loughborough and Ashby-de-la-Zouch to Derby* — Vic Mitchell and Keith Smith**

ISBN 978 1 910356 08 1

This volume brings together a number of little known lines that would not warrant their own book. Stations on these closed over eighty years ago, so this is a welcome collection of rare images following the established Middleton Press format. Understandably there are fewer photographs and more maps than usual but not all maps are readily interpreted, and one wonders why there is an index and contents when none of the pages are numbered.

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- Building early iron steamships, including the *Iron Duke* – the first to cross the Atlantic.

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Rails in the Dales

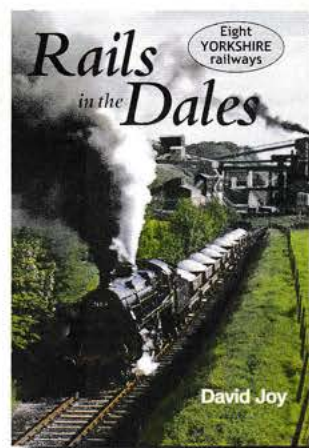
by David Joy

Covers railways in the magnificent setting of the main Yorkshire dales – Wharfedale, Ribblesdale, Swaledale, Wensleydale and Nidderdale. For the first time there is an overall chronological account, which shows how a diverse range of lines evolved and the affect they had on the communities they served.

The Settle–Carlisle receives due attention but its cult status does not dominate these pages. The aim is an overall picture, ranging from such highlights as arguably Britain's finest branch line terminus at Richmond through to the remarkable Nidd Valley Light Railway built to help solve a water crisis in distant Bradford.

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