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RAILWAY RETURNS.

RETURNS OF THE CAPITAL, TRAFFIC, RECEIPTS,

AND

WORKING EXPENDITURE, ETC.,

OF THE

RAILWAY COMPANIES

OF THE

UNITED KINGDOM

For the Year 1913

(Pursuant to the Acts 34 & 35 Vict. cap. 78, 51 & 52 Vict. cap. 25,
and 1 & 2 Geo. 5 cap. 34),

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Editor:

Paul Reynolds
87 Gabalfa Road, Sketty
Swansea SA2 8ND
email: journal@rchs.org.uk

Reviews Editor:

Peter Brown
34 Waterside Drive,
Market Drayton,
Shropshire TF9 1HU
email: reviews@rchs.org.uk

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Oxford OX2 8LP. email: secretary@rchs.org.uk

Hon. Treasurer: R O Welton, Wynch House, Ashton-under-Hill,

Evesham WR11 7SW. email: treasurer@rchs.org.uk

Membership Secretary: Roger J Taylor, 16 Priory Court,

Berkhamsted HP4 2DP. email: roger.taylor1004@talktalk.net

Local Group Secretaries:

East Midlands: R Sladen, 25 Linden Grove, Beeston,
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London: M Thomson, Flat 5, 28 Blakesley Avenue,
London W5 2DW

North East: D B Slater, 8 Granger Avenue, Acomb,
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West Midlands: E H Cheers, 7 Wealden Hatch, Bushbury,
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Newcastle NE15 7DE

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(centre) Répudre aqueduct on the Canal du Midi, commune de Paraza;
(lower) The flight of eight locks on the Canal du Midi near Béziers (all from Wikimedia Commons) (see pp. 440–450)

The financial state of Britain's railways in 1913

Tony Sheward

Introduction

It is generally agreed that Britain's railways reached their zenith in the years immediately before World War I. Coincidentally, the financial and statistical reporting by the railway companies changed significantly as a result of the passing of the Railway Companies (Accounts and Returns) Act 1911. The year 1913 was the first year when the reporting provisions of that Act came into effect and indeed was the only year in which a full suite of reports was produced by the railway companies for some considerable time as a result of World War I and the period of uncertainty which preceded Grouping in 1923. The 1911 Act also introduced reporting by calendar year as opposed to the half-yearly reporting under earlier legislation. The year 1913 is, therefore, an ideal year to take stock of the financial state of Britain's railways.

For the years up to 1912 the Railway Returns produced by Board of Trade, which consolidated the returns submitted by the railway companies, were able to provide an overview of the financial health of the industry. Railway Returns were published for 1913, the first to be based on 1911 Act formats, but not until August 1915, and even then some of the information was incomplete, because the declaration of war in August 1914 had interfered with the assimilation of the new formats. It was not possible to produce trend information which harmonised the old and new reporting formats. The Railway Returns for 1919 were the next full length set to be published.

In the period immediately before World War I Britain's railway industry was made up of over 140 companies both large and small and included those throughout the island of Ireland until the creation of the Free State in 1922. Whilst it would be an unmanageable task to examine the 1913 reports of all of those companies, it is considered that examination of the reports of 20 of the leading companies in Great Britain (i.e. the present UK, excluding Northern Ireland) should give a good indication of the financial state of the railway industry at that time.¹ The companies – 'the 20 companies' – examined are as follows:

Caledonian Railway (CalR)
Cambrian Railways (CamR)
Furness Railway (FR)
Glasgow & South Western Railway (GSWR)
Great Central Railway (GCR)
Great Eastern Railway (GER)
Great Northern Railway (GNR)
Great North of Scotland Railway (GNSR)
Great Western Railway (GWR)
Highland Railway (HR)
Lancashire & Yorkshire Railway (LYR)
London Brighton & South Coast Railway (LBSCR)
London & North Western Railway (LNWR)
London & South Western Railway (LSWR)
Midland Railway (MR)
North British Railway (NBR)
North Eastern Railway (NER)
North Staffordshire Railway (NSR)
South Eastern & Chatham Railway Companies Managing Committee (SECR)
Taff Vale Railway (TVR)

The SECR was run by a Joint Committee of the two constituent railways, the South Eastern Railway and the London, Chatham & Dover Railway. However, to present a coherent picture figures have been extracted from the financial statements of all three entities. Most of the other companies had interests in joint committees with one or more other companies. The Railway Returns for 1913 and the reports of the individual companies include joint committee financial results and statistics as part of the results of each individual company. Each owning company reported only its percentage interest share of the results of the joint committee. Abstract J in the financial schedules details the revenue and expenditure for all the joint committees, in which a company was a participant.

The overall situation and trends

Before looking at the 20 companies in detail, it is appropriate to look at overall position of the railway

industry in 1913 and the trends in financial results in the preceding five years. The figures for 1913 are taken from the Railway Returns for 1913² and the figures for 1908–13 from the Railway Returns for 1912³. From the mass of available data, four measures are used to illustrate the situation: total receipts on capital account, track mileage, gross receipts and net income (net receipts pre 1913).

The terms gross receipts and net income may be unfamiliar to users of modern day financial statements. Gross receipts equate broadly to what would be called turnover today. The nearest modern equivalent to net income would be operating profit, namely the profit struck after deducting the operating expenses, but before adding interest and rents and deducting interest and dividends. This general scenario was, however, complicated by changes made by the 1911 Act.

One major change was highlighted in the report at the beginning of the 1913 Railway Returns which stated:

The total net income is not properly comparable with the total net receipts shown in previous issues of these Returns, as the latter did not include certain miscellaneous net receipts (chiefly interest and dividends from investments in other companies and general interest) which are in the total net income now shown.

The miscellaneous net receipts referred to in the above quotation had the effect of increasing the former net income by about £3.0m.

Another change related to the treatment of the financial results of interests in joint committees. Prior to 1913, these results were included in the net revenue account rather than as part of the net receipts in the revenue account. Similarly, the track mileage associated with the revenue account did not include the percentage of miles attributable to joint lines. This change added about £3.1m to gross receipts, £1.1m to net income and 3,000 miles to track mileage.

Use of the various terms in 1913 and previously can be summarised as follows:

Pre-1913

Revenue Account

Gross receipts: revenues from owned, leased and worked lines and non-railway operations

Net receipts: revenues less expenditures of owned, leased and worked lines and non-railway operations

Associated track mileage

Owned, leased and worked lines only

Net Revenue Account

Revenues and expenditures of joint lines

Miscellaneous net receipts

Interest, rentals and other fixed charges

Dividends on guaranteed and preference stocks

Amount available for ordinary dividends

1913

Revenue Account

Gross receipts: revenues from owned, leased and worked lines, including the percentage of joint lines, and non-railway operations

Net receipts: revenues less expenditures of owned, leased and worked lines, including the percentage of joint lines, and non-railway operations

Net income: net receipts plus miscellaneous net receipts

Associated track mileage

Owned, leased and worked lines including percentage of joint lines

Appropriation Account

Interest, rentals and other fixed charges

Dividends on guaranteed and preference stocks

Amount available for ordinary dividends

Monetary figures in this article are as originally reported. The Bank of England's inflation calculator indicates that price levels (2015) have increased by over 103 per cent since 1913: thus adding two noughts to the figures below gives a rough approximation of the figures at current prices.

The figures for these four measures are as shown in Table 1

It is clear that the railway industry in the five years before World War I no longer had the need to raise large amounts of new capital either for its mainstream railway business or for its other interests. The percentage increase in track mileage closely reflects the growth of capital receipts.

Apart from the distortion arising from the above changes, gross receipts showed fairly modest but steady growth in the five years to 1913, as one might expect from a mature industry. Net income showed

Table 1. Overall position of the railway industry in 1913

Total Receipts on Capital Account	1908	1909	1910	1911	1912	1913
	£m	£m	£m	£m	£m	£m
Gt Britain excl N Ireland	1,069.3	1,072.7	1,076.3	1,081.2	1,091.4	1,101.0
Year on Year Increase		0.3%	0.3%	0.5%	0.9%	0.9%
Total Track Mileage	1908	1909	1910	1911	1912	1913
	miles	miles	miles	miles	miles	miles
Gt Britain excl N Ireland	49,113	49,385	49,709	49,985	50,300	51,278
Year on Year Increase		0.6%	0.7%	0.6%	0.6%	1.9%
Gross Receipts	1908	1909	1910	1911	1912	1913
	£m	£m	£m	£m	£m	£m
Gt Britain excl N Ireland	115.6	115.8	119.5	122.7	124.0	130.9
Year on Year Increase		0.2%	3.1%	2.7%	1.1%	5.6%
Net income	1908	1909	1910	1911	1912	1913
	£m	£m	£m	£m	£m	£m
Gt Britain excl N Ireland	41.9	43.5	45.6	46.9	45.6	46.6
Year on Year Increase		3.8%	4.9%	2.8%	(2.7%)	2.2%

The mileage above is expressed in terms of track mileage irrespective of the number of tracks and includes sidings, on the basis that many of these were important arteries connecting with commercial and industrial sites and their internal rail networks. The Railway Returns for 1913 did not give trend figures for route mileage which included 1913. Elsewhere in the Returns, the 1913 route mileage for Great Britain excluding Northern Ireland can be extrapolated from first track mileage as 20,499, although small corrections were made in the 1919 Railway Returns, mainly for joint lines.

the same modest but steady growth as gross receipts, albeit with slightly more variability. A major coal strike took place in 1912 which both reduced revenues and increased costs.

Capital invested in the twenty companies

The total capital raised by the 20 companies and made available for capital spending from inception to the end of 1913 is shown in Table 2.

It is clear from the table that the companies fall into three main groups relating to their geographical coverage: the three largest companies with operations in several economic regions of the country (MR, LNWR and GWR), a group of geographically

more compact companies operating in only two or three economic regions (NER through to GSWR) and a group of companies operating within just one economic region (NSR through to GNSR). In the case of the NER, it could be argued that it was virtually a multi-regional operator. The largest company had raised twenty times more capital than the smallest.

Gearing represents the proportion of the capital raised by loans and debenture stocks as a proportion of that raised by shares and stock, and thus the risk to the shareholders of smaller dividends if profits were to fall. The average gearing of 27.5 per cent seems comparatively low by modern standards and

Table 2. Capital raised from inception to the end of 1913

Ranking	Company	Amount	Gearing
		£m	%
1	MR	126.3	24.3
2	LNWR	116.2	26.4
3	GWR	111.1	23.7
4	NER	80.3	23.7
5	LYR	61.3	27.2
6	SECR	56.5	33.2
7	CalR	54.1	24.3
8	GCR	53.7	44.4
9	GNR	53.1	23.8
10	GER	52.3	34.5
11	NBR	49.0	29.5
12	LSWR	48.6	26.4
13	LBSCR	32.1	24.6
14	GSWR	18.7	26.6
15	NSR	9.1	22.9
16	HR	7.1	33.2
17	FR	6.9	26.5
18	CamR	6.5	47.8
19	TVR	6.1	21.6
20	GNSR	5.9	30.1
Total		954.9	27.5

The above capital receipts were split; shares and stock £687.2m, loans and debenture stock £262.6m, and other items such as government grants £5.1m.

probably reflects both the way in which railway company capital structures were set up by Acts of Parliament and the fact that many were passed after the booms that took place in the early days of the railways and the worries about financial prudence that resulted. It was not necessarily the largest companies that were ones with the lowest gearing – for example, the TVR with 21.6 per cent and the NSR with 22.9 per cent stand out. The two companies with the highest gearing, the CamR with 47.8 per cent and the GCR with 44.4 per cent, had both experienced financial difficulties necessitating more reliance on borrowings.

In addition to capital raised directly by the 20 companies, in some instances capital was raised jointly with other companies or by a company which was guaranteed a fixed dividend on the capital it had raised by one of the 20 companies, either on its own or jointly with another company. The amount of this

other capital raised by the 20 companies was £38.9m. The majority of companies had made such arrangements.

As might be expected, the bulk of the capital raised by the 20 companies was spent on the infrastructure and rolling stock of the railways and their associated assets, such as engineering and carriage works, some £880.1m or 89.1 per cent. The other main activities in which the companies had invested were:

Road vehicles (goods and passengers)

Steamboats

Canals

Docks, harbours and wharves

Hotels, refreshment rooms, cars etc

Docks, harbours and wharves were the largest area with £30.5m or 3.1 per cent. These included some huge operations, such as those of the LSWR at Southampton or the NER at Hull. Land and property holdings not currently used as part of the railway, such as housing for various grades of staff, properties let to third parties and land holdings for strategic purposes, had taken up £32.3m or 3.3 per cent of capital.

There were some non-railway investments, such as the GWR's holding of annuities issued by the Swindon Water Board, which reflected the need for a reliable source of water for its Swindon works.

Compared with the cumulative capital raised of £954.9m in Table 2, the rate of capital spending by the 20 companies in the year 1913 was fairly modest at £6.3m, of which railway assets comprised £5.1m, some 81.5 per cent.

The 20 companies still had expenditure commitments for railway and other assets at 31 December 1913 amounting to £20.7m, of which railway assets comprised some £16.5m, some 79.7 per cent. Major non-railway commitments were for the LNWR's Stonebridge Park power station and a related advance to London Electric Railway, for the GCR's Immingham Dock development, and for the LSWR's Wimbledon power station.

The ability of the 20 companies to complete their capital programmes successfully depended on whether they had overspent on their cumulative programmes to date and how much new capital they could raise from capital powers authorised but not yet utilised. As a last resort they would have to seek new powers from Parliament to make up the difference. Overall the 20 companies had capital powers authorised by Parliament, which they had yet to use, to raise funds of £69.3m. If they exercised these powers, the first call on the funds raised would be to eliminate the capital deficits of £31.5m that had arisen to date. If these capital deficits were eliminated, there would be £17.1m left to meet the outstanding capital commitments of £20.7m.

With the exception of the NSR, all the companies had spent more on capital account than they had

raised from their capital powers. This was possible because for the most part the railways were profitable businesses and able to make up any deficiency out of their revenue surplus. Whilst using capital funds to generate a revenue surplus, as George Hudson did in the Victorian era, was illegal, the Board of Trade appears to have adopted a relaxed attitude towards the use of revenue surpluses to make up shortfalls in capital funds. The capital powers still to be utilised were sufficient for 14 of the companies to cover all their capital liabilities. The deficits of the remainder ranged from the GNSR's £31k to the LBSCR's £0.8m and almost certainly could be covered by seeking new capital powers.

The two categories *shares and stock* and *loans and debenture stock* were not homogeneous and consisted of different issues to shareholders made

Table 3. Range of percentage rates on rent, guaranteed and preference stocks and on loans and debenture stocks

Rent, guaranteed and preference stocks				Loans and debenture stocks			
Ranking	Company	Lowest %	Highest %	Ranking	Company	Lowest %	Highest %
1	MR	2.5	2.5	1	MR	2.5	2.5
2	GSWR	3.0	4.0	2	GWR	2.5	5.0
3	NSR	3.0	5.0	3	FR	3.0	3.0
4	SECR	3.0	5.0	4	GNR	3.0	3.0
5	GNR	3.0	6.0	5	LYR	3.0	3.0
6	LYR	3.0	6.0	6	LNWR	3.0	3.0
7	NBR	3.0	6.0	7	LSWR	3.0	3.0
8	LSWR	3.5	4.0	8	NER	3.0	3.0
9	GER	3.5	5.0	9	NSR	3.0	3.0
10	HR	3.5	6.0	10	TVR	3.0	3.0
11	CamR	4.0	4.0	11	NBR	3.0	4.0
12	FR	4.0	4.0	12	SECR	3.0	5.0
13	GNSR	4.0	4.0	13	GCR	3.5	4.0
14	LNWR	4.0	4.0	14	GNSR	3.5	4.0
15	NER	4.0	4.0	15	HR	3.5	4.25
16	TVR	4.0	4.0	16	CalR	4.0	4.0
17	CalR	4.0	5.0	17	CamR	4.0	4.0
18	GCR	4.0	6.0	18	GSWR	4.0	4.0
19	GWR	5.0	5.0	19	LBSCR	4.0	4.5
20	LBSCR	5.0	5.0	20	GCR	4.0	5.0

When one company worked the lines of another company, a 'rent' was paid to the proprietors of those lines. If the worked company was later amalgamated, the stock issued to the former proprietors to give them an equivalent income was commonly called a *rent stock*, but was essentially a form of preference stock.

at various times. Over and above that, Acts of Parliament from time to time enabled railway companies to consolidate previous issues into new consolidated stock. Within the *shares and stock* category over half the amount raised related to stock which had a prior claim on profits before dividends were paid to the ordinary shareholders. These were variously called *rent stock*, *guaranteed stock* and *preference stock*. The remainder was not all straightforward ordinary stock. Some companies had split their ordinary stock into two elements, the first element having priority for the first specified percentage points of any dividend and the second entitled to any dividends in excess of that. There were also straightforward deferred shares only entitled to a dividend after a specified return to the ordinary shareholders.

Within the *loans and debenture stock* category only £2.0m related to loans. Debenture stock was generally favoured, as the railways had plenty of assets on which it could be secured. However, as debenture stocks were issued frequently during each company's history, most companies had several tranches at varying rates, dependent on their circumstances at the date of issue. As with shares and stock, older issues were consolidated from time to time.

For rent, guaranteed and preference stocks and loans and debenture stocks, the range of percentage rates for the 20 companies are shown in Table 3.

Because profitability and financial stability are important in determining the rates on rent, guaranteed and preference stocks, companies both large and

small were able to issue stocks at favourable rates. The MR stands out with the 2½ per cent rate on all its stocks compared with the LNWR with 4 per cent and the GWR with 5 per cent. Five companies (GNR, LYR, NBR, HR and GCR) had needed to issue tranches at 6 per cent at some stage. Overall, there was a general clustering of rates around 4 per cent.

As regards the rates on loans and debenture stock, again the MR stands out as having all its borrowings rated at 2½ per cent although the GWR also had some borrowings at that rate. The GCR's low position in both parts of table is also noticeable. Overall, there was a general clustering in the range 3 per cent to 4 per cent. In addition to the above borrowings, which were for capital purposes, there were also some short term loans used for working capital purposes

**Table 4. Track mileage open for traffic at 31 December 1913
owned, leased or worked solely or jointly**

Ranking	Company	Total track mileage miles
1	GWR	6,645
2	MR	5,973
3	LNWR	5,770
4	NER	4,886
5	GNR	3,064
6	CalR	2,833
7	NBR	2,703
8	GER	2,616
9	GCR	2,570
10	LSWR	2,367
11	LYR	2,224
12	SECR	1,622
13	LBSCR	1,255
14	GSWR	1,123
15	HR	659
16	NSR	525
17	GNSR	519
18	FR	428
19	TVR	401
20	CamR	396
	Total	48,579

Table 5. Steam locomotives as at 31 December 1913

Ranking	Company	Total steam locomotives no
1	LNWR	3,084
2	GWR	3,070
3	MR	3,019
4	NER	1,998
5	LYR	1,577
6	GCR	1,352
7	GNR	1,345
8	GER	1,274
9	NBR	1,058
10	CalR	997
11	LSWR	937
12	SECR	719
13	LBSCR	600
14	GSWR	521
15	TVR	251
16	NSR	245
17	HR	152
18	FR	132
19	GNSR	117
20	CamR	100
	Total	22,548

in the companies' balance sheets amounting to £2.1m, which had higher rates than the above. The GCR accounted for £1.0m of the total.

Assets acquired

The track mileage of lines open for traffic operated by the 20 companies as at 31 December 1913, whether owned, leased or worked solely by the company or jointly with another company, is shown in Table 4.

Care should be taken regarding the jointly owned, leased or worked lines. Although the figures above include the 20 companies' share of such lines, the overall total for the table does not include the reciprocal share, in the case of companies outside the 20, for instance, the Hull & Barnsley Railway's share of the joint committee line with the GCR and the MR. Similarly, lines worked would be reported as owned by another company, which might be outside the 20. Lines in the sole ownership of the company accounted for 43,206 miles of the above, jointly owned lines 3,106 miles and leased or worked lines 2,267 miles.

As might be expected, the grouping of companies by operations in geographical regions is similar to the capital raised in Table 2 above.

The motive power of the 20 companies as at 31 December 1913 was predominantly provided by steam and the total of tender and tank engines owned by them is shown in Table 5

The split between tender engines and tank engines was 13,816 and 8,732 respectively. The total of tank engines includes 242 classified by the NER as shunting engines. The companies reported a total of 14,019 tenders. A comparison of Tables 4 and 5 shows how companies in the industrialised areas of the country tended to have more steam locomotives per mile of track than in the rural areas. A particular example is the comparison between the TVR and the CamR, both having a similar track mileage, but with the TVR having two and half times more locomotives. Similarly the LYR had slightly less track than the LSWR, but over 50 per cent more locomotives.

Although steam was the predominant method of traction, some progress was being made with electric traction for commuter traffic around both London and other urban areas such as Merseyside and Tyneside, and there was also some use of rail motor vehicles. Seven of the companies had a total of 619 powered and non powered carriages formed into electric trains. Four companies had over 100 coaches each in electric trains, the LYR, the LBSCR, the MR and the NER. The NER also owned two electric locomotives. Fourteen of the companies reported a total of 199 rail motor vehicles. The GWR had made the most progress with rail motor vehicles, accounting for 101 of the total.

The coaching stock and goods and other vehicles not used on passenger trains owned by the 20 companies as at 31 December 1913 were made up as shown in Table 6.

Passenger coaches, both single-class and composites, made up 48,847 of the total for coaching stock and there were also 481 restaurant cars and 122 sleeping cars. As might be expected, the restaurant cars were owned by the companies with trunk lines and the sleeping cars by the companies

**Table 6. Coaching stock and goods and other vehicles not used in passenger trains
as at 31 December 1913**

Ranking	Company	Total coaching stock no	Ranking	Company	Total goods and other vehicles no
1	LNWR	9,502	1	MR	125,700
2	GWR	8,652	2	NER	121,809
3	MR	6,729	3	GWR	83,654
4	GER	5,817	4	LNWR	82,080
5	NER	4,764	5	NBR	63,636
6	LSWR	4,673	6	CalR	53,994
7	LYR	4,510	7	GNR	41,469
8	SECR	4,259	8	GCR	37,112
9	NBR	3,826	9	LYR	37,055
10	GNR	3,516	10	GER	29,860
11	LBSCR	3,030	11	GSWR	20,276
12	GCR	2,654	12	LSWR	15,179
13	CalR	2,242	13	SECR	12,411
14	GSWR	1,587	14	LBSCR	10,466
15	HR	810	15	FR	7,872
16	GNSR	783	16	NSR	6,515
17	NSR	525	17	GNSR	3,766
18	TVR	396	18	TVR	2,755
19	FR	355	19	HR	2,649
20	CamR	340	20	CamR	2,483
Total		68,970	Total		760,741

with Anglo-Scottish and south-west services. The remainder of the coaching vehicles not used by passengers were 216 post office vans, 6,174 luggage, parcel and brake vans and 13,130 of other types, such as carriage vehicles and horse boxes.

Of the total of goods and other vehicles not used in passenger trains, 44,686 were railway service vehicles not involved in revenue earning activities. These comprised the many and varied vehicles used in the maintenance of the railways, such as breakdown vans, mess and tool vans, ballast wagons, gas tanks and cranes. There were also 12,969 brake vans used on goods and railway service trains. The revenue earning vehicles consisted of 383,170 open wagons, 80,165 covered wagons, 183,685 mineral wagons, 17,683 cattle trucks and 38,383 special types of wagon used for other types of merchandise such as timber trucks and those

requiring special dimensions, particularly twin bogies. It also needs to be remembered that the total in Table 6 does not include the many thousands of freight vehicles owned by private owners which were hauled by the companies' locomotives.

A comparison of two categories in Table 6 gives some indication of each company's reliance on passenger and goods traffic. This is particularly the case at the top of each table, where the MR and the NER have considerably more goods vehicles than the LNWR and the GWR, whereas in numbers of passenger vehicles the position is reversed. Lower down the tables, the NBR and the CalR also have more goods vehicles than the comparable companies operating in two or three geographical regions, yet fewer passenger vehicles.

In addition to the main railway transport assets described above, the 20 companies also owned

significant numbers of road vehicles for goods, parcels and passengers, as well as numerous horses which provided the bulk of the traction for these vehicles. Other horses were also used in shunting operations. The bulk of the 33,219 road vehicles owned by the companies were for carriage of goods and parcels, some 32,765. The passenger road vehicles numbered 454. There were 26,019 horses used for the road vehicles and a further 1,496 used for shunting. In addition to the road vehicles operated by the railways themselves, there were also those of independent firms contracted to work with the railways or in partnership with them.

A consideration of the assets that the 20 companies had accumulated up to 31 December 1913 would not be complete without mentioning the non-railway businesses that they had acquired. These comprised 218 steamboats, 37 canals, 122 docks, harbours and wharves and 89 hotels. There was also a limestone

quarry owned by the NSR. Each of these business sectors contained a variety of operations of different sizes. For example, not all the hotels were on a par with the Midland Grand at St Pancras and not all docks were as large and extensive as the LSWR's Southampton docks.

In addition to the above non-railway businesses, the 20 companies had large holdings of land and property not forming part of the railway or stations. There were 14,810 acres of agricultural land and 7,473 acres of urban and suburban land. Although the companies' reports and accounts do not make clear the reasons for these land holdings, it can be assumed that the companies usually held the freehold of the houses they owned whilst other parcels of land may have been bought for their own future railway expansion, to frustrate their rivals or to avoid claims for pollution from their engine sheds etc.

Table 7. Gross receipts and net receipts in 1913

Ranking	Company	Total gross receipts £m	Ranking	Company	Total net receipts £m
1	LNWR	17.2	1	LNWR	5.9
2	GWR	16.0	2	MR	5.8
3	MR	16.0	3	GWR	5.6
4	NER	12.2	4	NER	4.3
5	LYR	7.2	5	LYR	2.4
6	GNR	6.9	6	NBR	2.3
7	GER	6.7	7	GNR	2.2
8	GCR	6.6	8	CalR	2.2
9	LSWR	6.1	9	GCR	2.1
10	NBR	5.6	10	GER	2.1
11	SECR	5.5	11	LSWR	2.0
12	CalR	5.5	12	SECR	2.0
13	LBSCR	3.7	13	LBSCR	1.4
14	GSWR	2.2	14	GSWR	0.8
15	NSR	1.1	15	TVR	0.4
16	TVR	1.1	16	NSR	0.4
17	FR	0.7	17	FR	0.3
18	HR	0.6	18	GNSR	0.3
19	GNSR	0.6	19	HR	0.3
20	CamR	0.4	20	CamR	0.1
Total		121.9	Total		42.9

The houses owned by the 20 companies totalled 49,117. The vast majority of the houses were used for accommodating railway staff, particularly those, such as station masters at wayside stations and crossing keepers, who needed to live on the job and be available to be called on in an emergency. It was also the custom, when new railway communities were established, to provide accommodation for the work force as the local supply of rented housing was often very limited. Well known examples of this are the engineering works at Crewe, Swindon and Wolverton.

Overall turnover and profitability

The gross and net receipts of the 20 companies in 1913 are shown in Table 7.

The bulk of the revenue not unnaturally came from railway operations, including collection and delivery of both passenger-rated items carried on passenger

trains and consignments carried on goods trains, £113.8m or 93.3 per cent of the total. The next three largest business sectors were hotels, refreshment rooms and cars with £3.1m (2.6 per cent), steamboats with £2.5m (2.1 per cent) and docks, harbours and wharves with £2.1m (1.7 per cent). For some companies the receipts from other businesses were an important source of revenue. The NER derived £0.7m, some 5.9 per cent of the total, from its docks, harbours and wharves at Hull and on the Tyne and Tees. Similarly, the LYR derived £0.5m, some 6.6 per cent of the total, from its steamships operating out of Liverpool and the Humber.

Railway operations provided £41.6m or 96.9 per cent of net receipts compared with 93.3 per cent of revenue receipts. Although in aggregate the companies produced net receipts from their non-railway businesses, a variety of companies had net

Table 8. Balance available for ordinary dividends and rate of ordinary dividends

Ranking	Company	Balance available for ordinary dividends	Rate of ordinary dividend
		£m	%
1	LNWR	3.1	7.0
2	MR	2.8	6.75
3	GWR	2.4	6.25
4	NER	2.4	7.0
5	GNR	0.9	4.0
6	LSWR	0.9	5.875
7	LYR	0.9	4.5
8	CaIR	0.7	3.5
9	LBSCR	0.6	5.25
10	GER	0.6	2.5
11	NBR	0.5	3.0
12	SECR	0.3	4.0
13	GSWR	0.3	5.125
14	TVR	0.2	4.0
15	NSR	0.2	5.0
16	HR	0.1	2.5
17	FR	0.1	2.5
18	GNSR	0.1	3.0
19	GCR	0.0	-
20	CamR	0.0	-
Total		16.9	

deficits for the latter, particularly omnibuses and other passenger road vehicles, steamboats, and canals. All the companies with hotels, refreshment rooms and cars produced positive figures. Three examples of deficits among the larger companies were the MR's deficit of £30k for its docks, harbours and wharves, the GWR's £28k for its steamboats and the LNWR's £25k for its steamboats.

As was the case for gross receipts, some companies derived a significant part of their net receipts from other businesses. The LSWR's docks, harbours and wharves produced net receipts of £122k, 6.0 per cent of the total, and the NER's docks, harbours and wharves produced net receipts of £203k, 4.7 per cent of the total. Among the smaller companies, the TVR's docks, harbours and wharves produced net receipts of £51k, 11.6 per cent of the total, reflecting its extensive coal loading operations at Cardiff and other docks. The NSR had the distinction of having the highest net receipts from canals, £24k, 5.6 per cent of its total. It was the railway company owning the largest mileage of canals, some 130 miles, including the Trent & Mersey.

As mentioned above, under 'Overall situation and trends', the 20 companies also had receipts in the form of dividends, interest and rents, which made up their net income before interest and other fixed charges and dividends. These other items added a further £3.1m to produce a net income of £46.0m. Net income has no modern equivalent. Currently companies strike a balance at profit after tax before the payment of equity dividends. Financing costs, including non-equity preference dividends, are deducted in arriving at profit before tax. Also, corporation tax did not exist in 1913. Addition of this other income does not make a material difference to the rankings in Table 7.

The balance available for payment of ordinary dividends, after deduction of fixed charges and other adjustments, plus the rate of dividend on the ordinary shares paid by the 20 Companies in 1913 is shown in Table 8.

By comparing Tables 7 and 8 it can be seen that fixed charges, guaranteed and fixed dividends, and transfers to reserve took nearly two-thirds of the net income. In the case of the GCR and the CamR, the small amount left over was not sufficient to pay a dividend to the ordinary shareholders. Both the LNWR and the NER were able to pay a dividend of 7 per cent and the MR was not far behind with 6¾ per cent. At the other end of the scale, the FR, the GER

and HR were only able to afford 2½ per cent. Transfers to reserve at £0.9m were relatively modest and, in fact, only half of the companies made such transfers, with the bulk of the transfers being made by four of the larger companies, the NER with £0.3m, the GWR with £0.2m, the MR with £0.2m and the LNWR with £0.1m. The CamR was unusual amongst the smaller companies in that it put £15k to reserve to cover repairs to the Barmouth bridge.

It should be noted that the modern day measure of relative profitability and efficient use of capital, return on capital employed, did not figure in the proformas introduced by the 1911 Act. Some academic work in this area has been attempted recently and this is referred to in the findings and conclusions below.

Receipts and expenditures of railway working

As indicated in connection with Table 7, railway working, including the collection and delivery of parcels and consignments of goods, produced the bulk of gross and net receipts. Gross receipts from railway working were £113.8m out of £121.9m and net receipts £41.6m out of £42.9m. Of this £113.8m of revenue receipts £109.6m came from the direct traffic receipts of the companies, made up of £49.5m (45.2 per cent) from passenger traffic and £60.1m (54.8 per cent) from goods traffic. The remaining £4.2m came from joint line receipts, mileage, demurrage and wagon hire, and miscellaneous receipts such as the hire of travelling rugs.

The gross receipts from passenger and goods traffic made by the 20 companies in 1913 are shown in Table 9.

As can be seen, goods traffic was the more important element of the companies' railway working in 1913, at a time when road transport using the internal combustion engine was in its early stages. The £60.1m in Table 9 was almost certainly larger when the goods element of the non-traffic items such as joint line receipts is considered. As might be expected, the dependence on goods traffic varied from company to company dependent on nature of the commerce and industry in the areas that they served and the routes that they had. As compared with the average proportion of goods traffic of 54.8 per cent, three of the smaller companies serving particular pockets of industry were in the top four with the highest proportion of goods traffic, the TVR with 74.7 per cent, the FR with 71.8 per cent and the NSR 71.2 per cent. The other company in the top

four, with 73.3 per cent, was the GCR which, despite its pretensions to being a trunk passenger carrier after the opening of its London extension, was still heavily dependent on its roots in the industrialised areas around Manchester, Sheffield and the Humber basin. Of the larger companies, the NER with 65.9 per cent and the MR with 65.0 per cent stand out. By contrast, both the GWR and the LNWR were nearer the average.

As compared with the average proportion of passenger traffic of 45.2 per cent, the three companies with the highest proportion of passenger traffic were the SECR with 75.8 per cent, the LBSCR with 75.4 per cent and the LSWR with 67.7 per cent, all with numerous commuter routes serving the area to the south of London. Three interesting examples of smaller companies with a relatively high proportion of passenger traffic are the HR with 62.5 per cent, the CamR with 56.0 per cent and the GNSR with 52.6 per cent, all of which served sparsely populated rural areas and had tried to develop tourist traffic.

Three companies accounted for the bulk of the receipts from joint lines, the GCR with £1.0m, the MR

with £0.9m and the GNR with £0.7m.

Of the total gross receipts from passenger traffic of £49.5m, ticket sales made up £40.5m, 81.9 per cent. The remaining £9.0m (18.1 per cent) was derived from parcels and excess baggage £5.6m (11.2 per cent), other merchandise carried on passenger trains, net of the cost of collection and delivery, £2.3m (4.7 per cent) and mails £1.1m (2.2 per cent).

Ticket sales were made up of ordinary tickets (£35.1m), season tickets (£4.2m) and workmen's tickets (£1.2m). Ordinary tickets thus produced 71.0 per cent of passenger receipts and this was fairly consistent across the companies, ranging from 64.4 per cent on the HR to 75.3 per cent on the CamR. Third class tickets accounted 62.3 of the 71.0 percentage points, first class 6.9 per cent and second class 1.8 per cent. Second class tickets had been phased out by a majority of the companies, only being retained by:

GER
GNR
LBSCR

Table 9. Gross receipts from passengers and goods

Ranking	Company	Gross receipts from passenger traffic £m	Ranking	Company	Gross receipts from goods traffic £m
1	GWR	7.3	1	MR	9.1
2	LNWR	7.2	2	LNWR	8.9
3	MR	4.9	3	GWR	7.9
4	NER	3.8	4	NER	7.4
5	SECR	3.7	5	LYR	3.6
6	LSWR	3.6	6	GCR	3.6
8	GER	3.2	8	GNR	3.4
7	LYR	2.9	7	NBR	3.2
9	LBSCR	2.6	9	CalR	3.0
10	GNR	2.5	10	GER	2.7
11	CalR	2.1	11	LSWR	1.7
12	NBR	2.0	12	SECR	1.2
13	GCR	1.3	13	GSWR	1.1
14	GSWR	0.9	14	LBSCR	0.9
15	HR	0.4	15	NSR	0.7
16	NSR	0.3	16	TVR	0.7
17	GNSR	0.3	17	FR	0.4
18	TVR	0.2	18	GNSR	0.2
19	CamR	0.2	19	HR	0.2
20	FR	0.2	20	CamR	0.2
Total		49.5			60.1

LNWR
LSWR
SECR
TVR

Although the average amount of passenger receipts produced by season tickets was 8.5 per cent, the percentage varied from 1.8 per cent on the CamR to 14.6 per cent on the GER. Other companies with 10 per cent or above were the LBSCR with 13.3 per cent, the LYR with 12.9 per cent, the SECR with 11.1 per cent and the GNR with 10.0 per cent. The companies with the highest percentages all served the commuter belts in London, Lancashire and Yorkshire.

There was also a fair degree of variability around the average 2.4 per cent of passenger receipts produced by workmen's tickets. On the CamR the percentage was only 0.2 per cent, whereas on the GER it was 5.4 per cent. Several of the smaller companies serving industrial areas had higher percentages, the FR with 4.5 per cent, the NSR with 3.9 per cent and the TVR with 3.5 per cent.

Mails, parcels and other commercial traffic carried by passenger trains accounted for 18.1 per cent of total passenger receipts. Here also there was a fair amount of variation from the LYR with 10.3 per cent to the HR with 33.5 per cent.

Of the total gross receipts from goods traffic of £60.1m, merchandise, net of the costs of collection and delivery, made up £29.6m (49.3 per cent), coal, coke and patent fuel £20.7m (34.5 per cent), other minerals £8.5m (14.2 per cent) and live stock £1.3m (2.0 per cent).

Although merchandise produced nearly half of goods receipts, this varied considerably between companies. At one end of the scale, the TVR with its heavy dependence on coal and other minerals derived only 13.1 per cent of its goods receipts from merchandise, while at the other end of the scale the GNSR produced 68.3 per cent from such merchandise, including fish and whisky. The other most important source of goods receipts was coal, coke and other patent fuel, making up just over a third of the total. As might be expected, the companies serving the coal and other mining areas tended to have higher percentages. The TVR with 82.4 per cent was a particular example, but the GCR with 50.4 per cent and the NER with 40.1 per cent and the MR with 39.7 per cent also stand out.

The overall percentage of goods receipts produced

by other minerals was 14.2 per cent, but in the case of the FR the percentage was 40.1 per cent, reflecting the importance of iron ore in its area. Other companies with more than 20 per cent were the CamR with 25.6 per cent, the NSR with 22.7 per cent and the NER with 20.2 per cent.

For most of the companies, receipts from transport of live stock were a relatively unimportant component of the total, with an average of 2.1 per cent. However, in the case of the HR 11.9 per cent came from that source in what was a predominantly agricultural area. Two other companies were in a similar position, the CamR with 9.9 per cent and the GNSR with 7.5 per cent.

The net receipts from railway working of the 20 companies in 1913 of £41.6m, as referred to in the discussion of Table 7, were achieved after deducting expenditures of £72.2m from the total revenues of £113.8m, also referred to in the discussion of Table 7. Of these £72.2m of expenditures, £69.3m were regarded as traffic expenditures and excluded joint line expenses and miscellaneous charges. This £69.3m was regarded as directly related to the traffic revenues of £109.6m (£49.5m plus £60.1m) in Table 9. Expenditures as a percentage of traffic receipts, later to be refined as operating ratio, was considered to be an important measure of profitability in 1913. Percentages for the 20 companies in 1913 are shown in Table 10.

Calculation of this percentage has its imperfections, particularly in respect of joint line revenues and expenditures. These were not shown within the analysis of traffic revenues or expenditures in the 1911 Act proforma for railway working, but as a single bulk item in each, thus possibly affecting companies like the GCR, the GNR and the MR involved in a relatively large number of joint committees. The following companies had no joint line expenses:

CamR
FR
GNSR
HR
LBSCR
NBR
SECR
TVR

Running power net expenditures/revenues also distort matters, as the extent to which a company had running powers over other companies' lines or

Table 10. Traffic expenditures as a percentage of traffic receipts

Ranking	Company	Expenditures percentage %	Gross receipts from traffic £m	Amount of traffic expenditures £m
1	GNSR	54.0	0.5	0.3
2	NBR	57.1	5.2	3.0
3	HR	57.5	0.6	0.3
4	FR	57.7	0.6	0.3
5	TVR	58.8	1.0	0.6
6	CalR	59.2	5.1	3.0
7	CamR	60.1	0.3	0.2
8	LBSCR	61.3	3.5	2.1
9	GSWR	61.6	2.0	1.2
10	MR	61.7	14.0	8.7
11	SECR	62.0	4.9	3.0
12	NSR	63.3	1.0	0.7
13	GWR	63.4	15.2	9.6
14	LSWR	63.6	5.2	3.3
15	NER	63.9	11.2	7.2
16	LNWR	64.2	16.1	10.3
17	LYR	64.5	6.5	4.2
18	GNR	66.6	5.9	4.0
19	GCR	67.1	4.9	3.3
20	GER	67.8	5.9	4.0
	Total	63.2	109.6	69.3

had allowed such powers on its own lines varied considerably between companies. As regards running power net expenditures/revenues, ten companies had net revenues, seven had net expenditures and the remaining three, the FR, the GNSR and the HR, had no involvement in running powers. The three companies with the largest net revenues from running powers were the GNR with £173k, the MR with £59k and the LNWR with £49k.

However, using this measure of the efficiency of railway working, it can be seen that the larger companies with the highest net receipts in monetary terms were not necessarily the most efficient. The GWR, the LNWR, the MR and the NER are all clustered around the average, while a number of the smaller companies are at the top of the table. Of course, it needs to be remembered that the ultimate return to the ordinary shareholders did not depend

solely on this percentage. Past financial difficulties may well have left a company with high fixed charges in terms of interest, guaranteed and preference share dividends. For example, the CamR, which does relatively well in the above table, was unable to pay a dividend to its ordinary shareholders in 1913.

Four main categories of expenditure made up the bulk of the £69.3m: traffic expenses £22.0m (31.7 per cent); locomotive running £15.8m (22.8 per cent); maintenance and renewal of rolling stock £12.7m (18.3 per cent) and maintenance and renewal of way and works £11.0m (15.9 per cent). The remaining £7.8m (11.3 per cent) covered general charges, compensation, rates, taxes and government duty, and running powers (net). All the categories included the wages and salaries of the staff employed in those activities, with the cost of the directors and top management in general charges. Traffic expenses in

this context covered the running costs of stations, goods depots, signal boxes and crossings such as salaries and wages of the staff, clothing, utility charges, tickets, stationery and maintenance of equipment.

Rates, taxes and government duty also require some explanation. As stated above, there was no equivalent of the modern corporation tax in 1913 and at that time these items were treated as part of operating costs. By far and away the largest item was local authority rates, which accounted for £4.4m of the total of £4.6m, with the bulk of the remainder accounted for by rail passenger duty, a levy on passenger tickets introduced by the Railway Passenger Duty Act 1842, but by this time restricted to fares of 1d or more per mile.

Taking into account the above distortions, the variation between the highest and lowest proportions of the four main expenditure categories were as follows:

Traffic expenses (average 31.7 per cent)

LYR 37.4 per cent FR 24.4 per cent

Locomotive running (average 22.8 per cent)

HR 31.9 per cent NSR 18.8 per cent

Maintenance and renewal of rolling stock

(average 18.3 per cent)

NER 26.0 per cent CamR 13.7 per cent

Maintenance and renewal of way and works

(average 15.9 per cent)

CamR 22.7 per cent GCR 12.9 per cent

Statistical information on passengers and freight

The 1911 Act, in addition to increasing the number of financial schedules that the railway companies were required to produce for their shareholders, brought about an even greater increase in the number of statistical schedules. While these did not go so far as introducing calculations of revenue and expenditure per passenger mile or per ton mile, which began to be common after World War I, there was additional analysis of both traffic and receipts for passengers and freight, as well as analysis of engine miles. Logistical matters, such as the resources used in the maintenance and renewal of the way and works and of rolling stock, were also covered. In the Railways Act 1921, which brought about the grouping of the railway companies into four major companies, the government required additional statistical schedules to be produced for the Ministry of

Transport, but not for shareholders, which included freight receipts analysed by ton mile.

Analysis of the information contained in the additional statistical schedules would require a further article in itself.

General balance sheets

The general balance sheets of the 20 companies as at 31 December 1913 were most unlike modern company balance sheets in that they contained neither the amount of the fixed assets and investments purchased on capital account nor the shareholders' funds, which financed them, only the outstanding balance on the capital account. Thus, they mainly consisted of current assets (cash, debtors and stock) and current liabilities (short term loans and creditors of various sorts).

Adopting the modern form of balance sheet presentation, the net assets and shareholders' funds of the 20 companies as at 31 December 1913 would have been approximately £978.1m after adjusting the gross amount of assets and investments (£986.4m) for depreciation provided and the net balance of current liabilities over current assets.

However, it should be stressed that there were significant differences in the railway companies approach to balance sheets in 1913 compared to today. Probably one of the most significant relates to depreciation. The 1911 Act included provision for separate reporting of depreciation funds and general reserve funds for the first time. Whereas current day practice is to build up a depreciation provision equal to the cost of the asset over its working life by regular charges to profit and loss and thereby contribute to its replacement, prior to 1913 the railway companies did not consistently charge depreciation in respect of their assets. By contrast, the railway companies in 1913 would ordinarily charge only the betterment element of any capital item to capital account, with the remaining renewal element charged to revenue. The cost of the renewal element was often spread over several years by means of special reserve account. Therefore, in comparison with the historic spend on capital items of £986.4m above, the total depreciation provided by the companies of £10.6m looks extremely modest and certainly there was no attempt to make retrospective depreciation charges in 1913 and cover any cumulative shortfall.

Another area of difference was in relation to general reserve funds. The modern practice of setting aside some of the year's profits to meet unforeseen

contingencies in the future had not been universally adopted by railway companies prior to 1913. Thus the reserve funds of £3.1m do not look to be a very large cushion against adverse circumstances in comparison with the 1913 net income of £46.0m. Three companies do not appear to have set up general reserve funds, the GCR, the GWR and the NSR.

A further area of difference related to creditors. Over a quarter of the creditors comprised savings bank, superannuation and provident fund creditors. On the eve of World War I railway companies tended to be paternalistic towards their employers, and the initiatives that the railway companies took to provide for the welfare of their employees were not set up as stand-alone entities with trustees, as would normally be the case today, but were merely a call on the general resources of the companies, although some companies had investments earmarked for such purposes.

Findings and conclusions

The UK's gross domestic product in 1913 was £2,529m⁴. By comparison, the total net income of the railway industry in Table 4 was £46.6m or just under 2 per cent. Whilst this seems relatively small, it must be remembered that there was a myriad of other sectors contributing to the UK economy and therefore the railways were in fact one of the major sectors of the economy in 1913. The market value of government debt at the end of 1913 was £641.5m⁵ compared with accumulated total capital receipts of the railway industry in Table 1 of £1,101.0m. Railway company stock and debt was still a major element in the trading on UK stock exchanges.

The railway industry in 1913 would certainly need to be classified as a mature industry. Its days of heady expansion were now well over and its network of 51,278 track miles, including sidings, in Table 1 stretched widely over most parts of the UK, often with duplication of routes, for example the CalR and the GSWR each had its own route from Glasgow to Ardrossan Harbour, a distance of barely 30 miles, as well as separate piers for their steamers. In some instances agreements to pool revenues had been made to avoid the worst effects of uncontrolled competition, for example the tripartite agreement between the LNWR, LYR and the MR made in 1909. Yet, the railway industry was by no means static in the years leading up to 1913 and capital investment was taking place in both the railways themselves and the associated businesses. Suburban electrification was proceeding around London and

other conurbations with a variety of companies involved; for example, the MR was working with the District Railway on the line from Bow to Upminster as well as experimenting with its own scheme in the Morecambe area. The LSWR had opened its new White Star Dock in Southampton in 1907.

On the whole, the railway industry was still managing to increase its gross receipts and net income, albeit at a moderate pace, as shown in Table 1. Inflation rates in the years 1908–13 were mostly less than 1 per cent⁶ so the railways were still holding their own in real terms. Average dividend rates on ordinary shares for the English and Welsh railway companies rose from 3.24 per cent in 1908 to 4.05 per cent in 1913 and those for the Scottish companies from 1.59 per cent to 2.01 per cent. The author of the Railway Returns for 1913, with the trend in dividend payments in mind, struck a positive note in stating:

It is clear, however, from the statistics available, that in 1913 the railway companies enjoyed a considerable measure of prosperity.

Notwithstanding the above, as noted in connection with Table 8, the railway companies were in fact a very mixed bag. The MR, of course, stands out for being able to borrow money at 2½ per cent and to pay a dividend of 6¾ per cent, with the GWR, the LNWR and the NBR not far behind. At the other end of the scale the CamR, which for the majority of its existence had had to struggle financially, was experiencing particular problems in 1913 with the considerable expense of refurbishing its Barmouth bridge and was unable to pay a dividend on its ordinary shares in that year. The same was the case with the GCR which had found that its trunk line to Marylebone was not a great commercial success in competition with the neighbouring trunk lines to Euston, Paddington and St Pancras.

Although the upheaval to be caused by World War I was to play a major part in shaping the future of the railway industry, there were some signs of challenges to its success by 1913. The development of electric trams in urban centres from 1885 onwards had already produced effective competition with the railways affecting traffic from stations nearest to the urban termini. The introduction of trolleybuses from 1911 was to have a similar effect. As yet, road transport powered by the internal combustion engine was only a minor threat, although the railways themselves had already started to use a few motorised vehicles by 1913, as mentioned in connection with Table 5. On the financial side, the railways were finding that the Board of Trade's use of its powers to

control rates and to settle labour disputes was tending to squeeze their margins. The Liberal government's social security legislation from 1908 onwards also added to the railways' employer payroll costs.

Mitchell, Chambers and Crafts⁷ have calculated estimates of return on capital employed for most of the 20 companies for the period 1870–1912 and have concluded that the falls in return on capital employed after 1870 meant that from 1897 investors made little or no money in real terms thereafter. By 1910, they estimated that the task of restoring returns to cover the cost of capital would have been extremely difficult. Applying portfolio analysis, only a very modest exposure to UK railway equities would have been justified at that time.

Of course in 1913 the degree of financial analysis generally available to shareholders was not anything like as sophisticated as in the above article and most would probably have agreed with the author of the 1913 Railway Returns. It should also be remembered that the Trustee Investment Act 1893 allowed trustees to include certain railway stocks within the wider range part of their portfolio. The onset of World War I and the upheaval it was to cause to the condition of

the UK's railways and their financial position helped to reinforce the idea that the railways had reached their zenith immediately before 1914, whereas it may have been at least a decade earlier.

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Waterways history research: an alternative view

Philip Riden

Joseph Boughey's invitation to discuss his recent article in this *Journal*¹ is too tempting to resist. My aim in this response is threefold: to review how work on waterways history (and to some extent transport history generally) has developed since the society and the only specialist journal in the field, the *Journal of Transport History*, were founded within a year of each other in the early 1950s; to discuss some of the points Boughey makes about future research, especially where I differ from him; and to suggest how the sort of work which RCHS members have traditionally done might usefully be combined with that of university historians with similar interests to produce an updated version of Charles Hadfield's lasting monument, the regional history of the canals of the British Isles.

On parallel lines?

Boughey's latest article is not his first foray into this field. Indeed, as he says, it is nearly twenty years since he first set out his views on what members of the RCHS interested in waterways history should be doing.² I am tempted to suggest that over such a long period he might have concluded that trying to persuade the RCHS as a body, or any particular group of its members, to change their ways and 'do' transport history differently from the way they have always done it makes herding cats look straightforward. Others have tried and failed on various occasions since the society was established in 1954. Throughout the intervening sixty years, as a survey of the writing published in this *Journal* and other work by members would quickly show, the ethos of the RCHS and its approach to both railway and

canal history have barely changed. Collectively and severally the society, as it has occasionally been told to no discernible effect, has doggedly pursued a course that has regrettably little connection with the way in which professional historians and geographers look at transport history and has taken little account of changes in the historiography of the subject since the 1950s.³

It need not have been thus. The year before the RCHS was founded by a group interested in promoting the serious study of railway history by amateur enthusiasts who were persuaded by Charles Hadfield to include canals within the scope of the new society,⁴ the *Journal of Transport History* was launched under the joint editorship of Jack Simmons, professor of history at University College, Leicester, and Michael Robbins, a school friend of his who had gone into railway management but was also well known as a writer on railway history.⁵ In the first issue the editors explained why they felt there was a need for a new journal in this area, which was expanding as the records of the railway, canal and other companies vested in the British Transport Commission were becoming available, alongside other archival sources, central and local, and the study of economic history in universities was beginning to expand.⁶ The launching of *JTH* also fitted in with Simmons's policy, expounded in his inaugural lecture at Leicester in 1948, of finding specialist branches of history in which a small provincial department could make its mark against larger and longer established schools of history.⁷ The same editorial stressed that the new journal would 'offer common ground to historians both in the academic world and in the actual world of transport', who would in turn be writing for both kinds of reader. The two editors each represented one of those strands and suggested that 'Both parties should gain valuable advantage: practical knowledge and understanding by the one, the discipline of academic standards by the other'. As Robbins explained after Simmons's death, 'The extramural idea was my contribution to the debates we held on editorial policy; Jack accepted the idea immediately'.⁸

Although it cannot be claimed that many other senior railway managers apart from Robbins did write for *JTH* (and as far as I am aware no British Waterways manager ever did),⁹ the journal in its early years provided an outlet for both university historians and those with an amateur interest in transport history (or at least railways and occasionally canals or road transport). Both tended to write detailed,

empirical pieces based on archival research, rather than more speculative or interpretative articles of the sort which the editors occasionally called for. In other words, there was no great divide between the sort of transport history written by the two types of author.

To help writers of all kinds, the journal included a number of 'guides to sources'.¹⁰ Some of these were written by the custodians of the records in question but one was by Charles Hadfield.¹¹ This was wider ranging and, alongside a review of the source material which he was beginning to use, included some general observations about transport history and canals in particular. As he said, transport historians, like other historians, tended to divide into those who chose to work in detail on a local topic, with little or no attempt to set their subject in a wider context, and those who wrote more broadly, drawing on the work of local historians and relying on them to achieve accuracy. Hadfield placed himself in the second category;¹² most RCHS members would no doubt put themselves in the first. Canal history, he suggested, could (and should) be studied from five standpoints. First, there was the birth, growth and decline of a particular waterway, but there was also its position in the national network, its place in the economic history of the region through which it passed, the economic history of the nation, and finally its role as part of the world scene. It can hardly be claimed that the last of these would apply to many British waterways, and most small undertakings probably had little or no impact on the national economy, but the first three clearly applied to all canals, great and small.

These more discursive comments could have formed the basis of a different sort of article, doing for waterways history what Michael Robbins tried to do a year later in his seminal essay, 'What kind of railway history do we want?',¹³ which retains wide relevance today (and not just for transport history, much less railway history). This important paper, written it should be noted by the 'lay' half of the duumvirate then editing *JTH*, originated as a lecture to none other than the Railway & Canal History Society, where it was received, according to Theo Barker, in 'polite silence'.¹⁴ Its suggestions, it is fair to say, have been completely ignored by RCHS members interested in railway history, whose published work (probably as a result) has contributed even less to the academic study of the subject than that of their colleagues writing on waterways.

As Robbins said, in a passage that echoes advice given for decades to new graduate students, and

more recently to third-year undergraduates about to tackle a dissertation, the work of any kind of historian divides into four parts. He (or she) must first decide what questions should be asked and answered; then seek out and assemble facts to throw light on those questions; next select the facts which provide the answers; and finally arrange and present them in such a way as to secure the greatest possible measure of acceptance. Historians must ask what happened and when, how did it become possible, why did it happen, who caused it, and what were its effects and consequences. The answers should then be put together in a book (or article) 'to be read by the normally intelligent, educated reader who starts with an interest in the subject indicated by the title', and useful also for reference.¹⁵ Robbins went on to discuss how to answer those questions in the context of railway history and concluded with a plea for 'clearer writing, not least by academics', avoiding too much qualification (or, as he added, quoting H A L Fisher, 'history in the subjunctive mood'). His final peroration – 'We want railway history that can both be read with satisfaction and be consulted with confidence ... The kind of railway history I want is accurate, comprehensive and readable. That is all.' – could hardly be improved upon. It certainly did not deserve to be ignored in the way in which it was by his original audience and has been by their successors. Moreover, by replacing the word 'railway' with 'canal' or 'waterway', and combining his advice with that given by Hadfield a year before, members of the RCHS had a sound template from which to work.

I have no idea whether Simmons (or Robbins) asked Hadfield to write a companion piece on 'What kind of waterways history do we want?', or (if either did) whether he felt that he had said everything in the earlier article. It is also possible that Hadfield, who (as everyone who knew him or had dealings with him has testified) was always generous and encouraging to those who sought his help, rather than prescriptive,¹⁶ was disinclined to lay down the law, however sensible his advice might have been.¹⁷

So what kind of waterways history did we get? Above all, we got Charles Hadfield's series of regional histories which formed a sound basis for more analytical work, as Gerard Turnbull stressed in 1987, in a balanced and informed tribute published a few years before Hadfield died in 1996.¹⁸ Michael Robbins said much the same a couple of years later: 'Knowledge of the facts about canal construction, finance and operation in the British Isles has been

greatly widened, largely owing to the fruitful researches of Charles Hadfield'.¹⁹ Hadfield never claimed to have written an 'economic history of the canals', for which he was not equipped (although he did contribute two articles to the war-time *Economic History Review*, which then still published work by lay historians)²⁰ and the time was arguably too soon. Instead he did the groundwork, pursuing, as he put it in his own article on 'sources', the rise and fall of each canal or river navigation, even if he did not say much about their position in the regional, much less national, economy. He worked tirelessly on minute books and accounts at the British Transport Commission record office; paid others to read files of local newspapers; made under-acknowledged use of T S Willan's work on river navigations before 1750; and occasionally found local secondary sources which he could use. He did not generally draw on material in county record offices, much less company records still in the hands of the remaining private undertakings, most commonly those in eastern England which were not vested in the BTC because they were principally concerned with drainage.²¹

Most important, Hadfield got on with writing up his findings and did not delegate a great deal, except in Scotland and Ireland.²² Thus the series was finished, like Pevsner's 'Buildings of England' and unlike numerous similar initiatives, where a general editor doles out contracts, sits back and then does little as finished manuscripts fail to materialise until eventually the publisher has to abandon the series.²³ Corners were certainly cut where references were concerned;²⁴ some of the smaller companies with few internal records received rather short shrift; and Hadfield explicitly excluded anything but a brief outline of events since 1947, on the not unreasonable grounds that it was too recent, the public records were still closed, and he had been too closely involved himself to write in a detached way.

The end result was, and remains, a magnificent achievement. Critics might say that the account of their favourite canal is too brief, but that is rather like complaining that the 'Buildings of England' series does not go into as much detail as the county inventories of the Royal Commission on Ancient Monuments. It is easy to spot the difference: the first was finished, largely by one man, in a remarkably short time (24 years between 1951 and 1974, completing a county roughly every six months);²⁵ the second progressed so slowly from its foundation in 1908 that the concept had eventually to be abandoned, largely incomplete and for most counties

unstarted.²⁶ With any series there has to be a framework, preferably designed so that the project can be finished before all concerned are dead. More fundamentally, 'Canals of the British Isles' broke a substantial amount of new ground, whereas the parallel series on railways was little more than a scissors-and-paste compilation from published sources, with no references.²⁷ The result is of no academic value (except perhaps as a quick means of checking the date on which a particular line was opened or closed) and is so unreadable as to be of little general interest. Among Charles Hadfield's many qualities was that he wrote in an easy style and put over solid, original research in an attractive way. But above all the project was completed, so that today there is a single series one can turn to for basic details of virtually every waterway in the United Kingdom and the Republic of Ireland. No other country has anything similar, as a major work on French waterways lamented in 1986.²⁸

The regional series (including his original *British Canals*, first published in 1950, which became the introductory volume to the set)²⁹ was by no means Hadfield's only contribution to waterways history. As well as attempting, towards the end of his career, to interest English readers in overseas canals,³⁰ earlier on, while writing the regional series (and through his membership of the RCHS), Hadfield met a number of amateur enthusiasts interested in a particular canal. Apart from being generally supportive to all who shared his passion for waterways history, Hadfield persuaded some of this circle to have a go at writing about their chosen canal, no doubt lending material from his own notes that was too detailed to go in the regional volumes. Thus emerged the books on individual canals (and a few rivers), also published by David & Charles, the firm which Hadfield helped to found and which published most of his work.³¹ These books were an eclectic mix, whose authors varied in their ability to make an often rather tedious story readable. They were generally built around the company minute books to form a simple chronological narrative, in which important and unimportant pieces of information followed each other indiscriminately on the same page. Where there were no minutes, the end result was an even more shapeless morass.³² Most authors tried to make use of some of the other sources listed by Hadfield in his guide, but few took any notice of his five desirable features of a canal history, other than the first. One who did was Peter Stevenson in his study of the short Nutbrook Canal which served part of the

Erewash Valley coalfield in Derbyshire.³³ As well as making a genuine attempt to analyse traffic on the canal, reflecting Stevenson's professional training as an accountant, the book also set the canal in its local and to some extent regional context, thanks to the author's wide knowledge of the area through which it passed.³⁴

Although Hadfield presumably exercised a benevolent oversight of the series, there is little sign of overall planning: David & Charles simply published the books that were offered.³⁵ As a result, and in contrast to the regional series which covered the British Isles in a well worked out way that avoided either duplication or gaps, the monographs were not seen as a means of investigating themes in canal history through more detailed work on major undertakings than could be included in Hadfield's initial survey. Had this been the aim, the obvious starting point would have been to compile a list of the twenty or so largest companies, eliminate those with poor records, and draw up another list of questions to be asked about those that remained.³⁶ Authors could then have been found, perhaps by suggesting that such studies were suitable for doctoral theses. Only two of the David & Charles books appear to be based on higher degree dissertations, those by Dorothy Summers on *The Great Ouse* (1973) and Humphrey Household on *The Thames & Severn Canal* (1969), and Baron Duckham, who wrote on *The Yorkshire Ouse* (1967), was the only author who went on to a university teaching career.³⁷ When the series was abandoned in the late 1970s, the history of most of the larger companies remained untouched (notably the two other big north-eastern undertakings, the Aire & Calder Navigation and Sheffield & South Yorkshire Navigation) and questions that might have been asked about the industry as a whole remained unanswered.

These shortcomings were commented on by John Butt in a review of writing on transport history in the 1970s, which also included ideas for future work.³⁸ Both his criticisms and his suggestions seem to have passed unnoticed by members of the RCHS. Butt considered that the two volumes in the regional waterways series on northwest England said little about traffic and the impact of the undertakings on the regional economy, although my own view is that these later books, and those on northeast England, are better in this respect than earlier work in the series. He also pointed out (with greater justification) that Philip Stevens's book on two of the Leicestershire canals³⁹ said nothing about how improved transport

assisted economic growth in an inland county with no navigable river before the 1770s, whilst Alan Faulkner's study of the Grand Junction Canal⁴⁰ was largely devoted to its planning and construction and made no attempt to consider how one of the biggest private companies in early nineteenth-century England was actually run. Most of the other titles in the series adopted the same narrow approach,⁴¹ and, as Butt pointed out, the only major work to appear on canals in the entire decade was Ward's study (based on his Oxford DPhil thesis) of how they were financed.⁴² For the future he suggested more studies of capital formation, more on engineers and contractors, and on canals and regional economic development.⁴³ Some of these desiderata were partly met by work completed over the following decade or later.⁴⁴

Meanwhile the *Journal of Transport History*, which remained the only specialist journal in its field, continued to evolve. Simmons and Robbins, reflecting on its first decade, appealed in 1963 for more international articles and an end to the 'absurd' neglect of road transport history, noting that (as they had expected) the journal had been dominated by railways and the nineteenth century. They hoped that in the next ten years 'studies of transport history ... will view its subjects with a wider scope, by tackling new themes, preferably in a comparative way, rather than redoubling antiquarian investigations in fields already gleaned'.⁴⁵

The journal went through something of a crisis a few years later. Simmons retired as editor in 1973 and in 1980 there was a fresh start with a new publisher and new editors, Terry Gourvish and Gerard Turnbull, the latter of whom wrote several important articles (either alone or in conjunction with his Leeds colleague, John Chartres) on eighteenth- and early nineteenth-century road transport and canals,⁴⁶ as well as a history of Pickfords.⁴⁷ All remain fixtures on undergraduate reading lists but generally failed to encourage local case-studies by RCHS members (or anyone else), for example of other carrying companies or the role the canals played in the development of the coal industry (and vice versa), which might have tested Turnbull's tentative general conclusions.⁴⁸ Gourvish and Turnbull handed over the reins after ten years to John Armstrong, well known as the only university historian of his generation to specialise in the history of coastal shipping.⁴⁹ He continued to lament the lack of articles on roads and road transport⁵⁰ and in 1992 welcomed one by Wendy Freer, summarising the conclusions of her path-

breaking Nottingham PhD thesis on canal boat families,⁵¹ with a note that, judging by the flow of articles to *JTH*, the study of waterway history was suffering neglect.⁵² This was confirmed by an analysis of the contents of the journal over its first fifty years which showed that the proportion devoted to inland navigation fell from about 20 per cent in the 1950s to half that by 2003. Railways, mainly in Britain, then remained dominant.⁵³

In 1991 Michael Robbins published a second survey, similar to Butt's but ranging over a longer period, less critical in tone and with more ideas for future work. He did not discuss to what extent his advice of 1957 to the RCHS had been heeded; indeed, he did not mention the society at all. He did, however, acknowledge that 'It would be foolish and ungenerous to deny that important contributions have been made by writers who are not professional historians. In this respect transport is rivalled only by local history, though hardly surpassed by it', adding that 'The amateurs, and the antiquarians of transport objects, may not clearly perceive the shape of the wood because the trees are their prime interest; but the serious student should not ignore them – they may provide much serious factual groundwork'.⁵⁴ The comparison with local history (which is entirely apt) probably owed something to his original audience. The article was based on a lecture given (as part of a series) to mark the publication of the 200th volume of the Victoria County History, the only long-term research project in English local history (founded in 1899), which in recent years has worked more closely with amateur enthusiasts than it used to.⁵⁵

Nor did Robbins revisit his article of 1957 to consider 'What kind of railway history did we get?'. That was left to Terry Gourvish as one of the contributors to a special number of *JTH* in 1993 who each looked back over forty years of progress (or not) in different branches of transport history. The article on canals, by Gerald Crompton, in fact tried to look forward rather than back, agreeing with Turnbull that Hadfield had established a basic chronology and arguing that it should be possible to move on to 'a proper understanding of the contribution of canals to the industrial revolution'.⁵⁶ Neither Gourvish nor Crompton suggested that the RCHS had contributed anything to the study of railways or canals, nor did either cite any articles from its *Journal*, although ironically in the next volume of *JTH* the society (apparently for the first and last time) took a full-page advertisement listing the benefits of

membership.⁵⁷ By this date nearly all the articles in the journal were written by university historians or their postgraduate students.

This was even more the case by the time the journal next indulged in navel-gazing, when it reached its golden jubilee in 2003. By then the academic study of transport history in Britain had to some extent moved away from the empirical approach of the early years of *JTH* (to which the competent amateur could more easily make a contribution), with a new interest in 'mobility' as an historical concept, as well as themes such as the relationship between transport history and gender history⁵⁸ or other aspects of cultural history⁵⁹ which are unlikely to hold much appeal for most RCHS members. The deputy editor of *JTH* in 2003, a Dutch scholar interested in automotive history and the impact of the car on twentieth-century society, nevertheless felt that the journal (and by implication the study of transport history in Britain generally) was falling behind the latest ideas being developed in Europe and should adopt a more theoretical approach.⁶⁰ He was particularly critical of historians of inland navigation, whom he felt 'had the most difficulty of escaping the trap of local history', citing Szostak's work on Britain and France as one of the few attempts to approach the subject on a broader basis.⁶¹ He did not explain why he felt local history was a 'trap' for transport historians. Two years later Gijs Mom became the first overseas editor of the journal, a development welcomed by his predecessor, Peter Lyth, as consolidating a trend towards a more international outlook (the journal has not in fact been edited from Britain since 2005). Mom was also president of the International Association for the History of Transport, Traffic and Mobility (T²M), praised by Lyth for its 'broad and inclusive approach to "transport history"'.⁶² Since then *JTH* has become more explicitly international, and has included more articles on theoretical or conceptual approaches to the history of transport and mobility, rather than particular modes of transport.

What of the future?

So does this mean that there is now an unbridgeable gulf between what is done in the name of transport history in universities and what RCHS members think the phrase means? If so, does it matter? After all, the RCHS is a voluntary association of individuals with a recreational interest in transport history: how they pursue their hobby is a matter for them. On the other hand, transport history is one of several branches of historical scholarship in which traditionally there has

been a useful input from those with a lay interest in the subject and it would be a pity to lose that. It is also one in which professional experience of modern practice can usefully be brought to bear on studies of the recent past, as both Robbins and Bonavia showed. Lastly, most people who pursue a hobby seriously wish to do so reasonably competently, and so might welcome some guidance of the sort which Robbins and Hadfield tried to offer many years ago, as long as they do not feel they are being patronised or asked to become unpaid research assistants.⁶³ Boughey's article makes some suggestions as to how waterways history research of the sort done by RCHS members (to whom his remarks are, I assume, implicitly addressed; they certainly have no bearing on university work) might develop. I have reservations about some of his points, and at the same time would like to suggest a different course the RCHS might consider taking.

First, it is important not to exaggerate the gulf, without denying its existence. The *Journal of Transport History* does still publish articles based on empirical research with a local (or at least regional) focus, although in recent years there have been few on British waterways.⁶⁴ A former editor of *JTH* also made a genuine and constructive attempt in 2005 to reach out to RCHS members and encourage them to submit work to the journal,⁶⁵ although this appears to have been an isolated outbreak of bridge-building. Some of the more empirical articles in *JTH* have been summaries of PhD or MA dissertations, or occasionally third-year undergraduate work. As Boughey suggests, one way of encouraging younger people to take an interest in transport history is for more dissertation work to be done.⁶⁶ One way of achieving that might be for the RCHS to sponsor an annual prize for an essay on any aspect of the subject. There are several prizes of this sort of which university history departments are sent details each year, with an invitation to submit outstanding work in the area in question for adjudication by the sponsoring body. If there was a prize for transport history, supervisors might steer more students in that direction, when they are looking for topics. The importance of these prizes is not so much the cash (£150 would probably arouse a reasonable amount of interest) but the fact that they give the winner something else to show a prospective employer (or research supervisor) beyond the first-class degree that a quarter of undergraduates now achieve. An added incentive would be for the RCHS to publish the winning essay in its *Journal*, revised as necessary in the light of the judges' comments.

Second, Boughey suggests that a new journal is needed in the field of transport history. This I consider a thoroughly bad idea. Apart from the considerable financial implications, I see no need. At the moment *JTH* and the *RCHS Journal* provide, in their different ways, quite adequately for articles whose authors wish to place them in specialist outlets. There was briefly a third journal, *Transport History*, published by David & Charles for a few years (1968–74), when there was far more interest, professional and amateur, in the subject than there is today. It was also launched at a time when *JTH* had suspended publication and some thought it might not survive.⁶⁷ *Transport History* probably drained support away from both *JTH* and the *RCHS Journal*, and any new venture is likely to do the same. There are in any case other outlets for work by both lay and professional writers, which Boughey does not mention, including the *Waterways Journal* published by the Boat Museum Society of Ellesmere Port, which is now in its seventeenth year. In addition, much of the work of RCHS members is local in character and perfectly suitable for a county journal; larger-scale studies can be submitted to one of the regional journals (*Northern History*, *Midland History* and *Southern History*) or the *Welsh History Review*. Perhaps most surprisingly, Boughey takes no account of *Mariner's Mirror*, which since 1911 has been publishing work on all aspects of ships and the sea, including occasionally inland (or at least estuarial) navigation, and has remained a journal with a wide range of contributors. Articles by academics and research students appear alongside those by retired Royal Navy officers or master mariners, or simply amateur enthusiasts with a love of the sea and its history. It is a better journal for this mixture of approaches and different kinds of expertise.⁶⁸

Nor could any fair-minded critic suggest that there is anything seriously wrong with the *RCHS Journal* that warrants a new publication, or any major changes. Although most authors do not work professionally as historians, it is sufficiently highly regarded for its main contents to be included in the *Economic History Review's* annual list of publications (in which there is a separate heading for 'Transport and communications') and in the Royal Historical Society's online Bibliography of British and Irish History.⁶⁹ This gives the articles some visibility, although it does not guarantee that they will be widely cited elsewhere. For example, the bibliography in the only recent academic monograph on waterways history in Britain, Peter Maw's book

on Manchester, lists one *RCHS Journal* article, whereas there are a number from the (admittedly long established and very high quality) county journal that serves Lancashire and Cheshire.⁷⁰

One change that might encourage more contributions from universities would be the introduction of an explicit rule that all submissions are refereed. This would be in the interests of all parties: contributors would be assured that their work has been fairly assessed and could say (where they need to) that their article has been published in a refereed journal; the editor would be protected against the sort of criticism to which editors who make decisions single-handed lay themselves open; and readers would know that at least three people had considered the article before it was accepted or rejected. It would still be possible for less formal contributions to be circulated, without delay, as at present, through the online discussion group run by the Waterways History Research Group of the society.

It is unlikely, under present circumstances, that many more university libraries than at present could be persuaded to subscribe to the society's *Journal*. An alternative way forward would be for the whole of its content to be made available to libraries electronically, which is a less expensive alternative to the purchase and retention of the published volumes.

In addition to the high quality of the *Journal*, I can see nothing to criticise and much to praise about the society's series of Waterways History Conferences, beyond suggesting that there might be a keynote lecture at each meeting by an academic interested in transport history, while the annual bibliography is another great credit to the society.

Third, Boughey considers how the opportunities for waterways history research by RCHS members and others outside higher education have widened or narrowed in recent years. He is right to draw attention to the opportunities offered by online record office catalogues and digitised newspapers, and might also have mentioned the ever-increasing quantity of genealogical material available on the web, which makes prosopographical studies much easier than they used to be. Boughey does not particularly discuss whether archival sources for transport history, now much quicker to locate, have also become easier to consult. I would suggest that in general things have improved in the last twenty or thirty years. There seems to have been little

reduction recently in local record office opening hours (if anything, local studies libraries have suffered more); both cameras and laptop computers can now be used in all but the most backward;⁷¹ and most are in better premises than they were a generation ago. The National Archives, in particular, is vastly more welcoming than it once was.

Arguably, the least satisfactory aspect of record keeping for waterways history (perverse though this may seem) is the decision of the Canal and River Trust to maintain its own repository at Ellesmere Port. Apart from its inaccessible location, the office appears to be under-resourced and to rely heavily on volunteer helpers. It is not clear what proportion of its collections have been catalogued, but it is certainly nowhere near all of them. More fundamentally, its holdings are at least semi-artificial and not, strictly speaking, an archive. I see no reason why those relating to a particular canal or river undertaking could not be transferred to an approved repository in the county in which the company had its headquarters, on the same principle as that adopted for railway company records not accepted by the National Archives or the National Railway Museum. For most users it would be much more convenient for the material to be in a local office. The same is true of the large accumulation of documents from the Leeds office of British Waterways deposited in the Wakefield branch of the West Yorkshire Archive Service,⁷² much of which does not relate to the West Riding and could be judiciously thinned out by transfers to more appropriate locations. The records of British Waterways and its predecessors back to 1947, which have also passed to the C&RT, could most sensibly be moved (assuming The National Archives will not take them) to the London School of Economics, which has a large collection of modern transport material, and also Hadfield's notes on his British research.⁷³ The C&RT seems to have ended up with a record office by accident, as a legacy of its descent from a public corporation. Keeping historical records is not a core function of a body charged with maintaining a network of canals and rivers, and no PLC of similar size would consider doing so. All the C&RT need do (and in my view all it should do) is institute a proper management system for its own records.

Boughey suggests that the Canal and River Trust might support research into waterways history (by non-university historians, he tacitly assumes).⁷⁴ I am not sure it should, since that might also be seen as a non-core activity. If it does venture in this

direction, it might usefully commission a history of its predecessors since 1947, on the same lines as Terry Gourvish's work on British Railways.⁷⁵ That would fill a gap (admittedly a small one) in studies of the managed economy of the post-war years and of the transport industries.⁷⁶ Ideally this should be done while some of those who ran British Waterways are still around to provide oral evidence.

Fourth, turning to the use of libraries for research into waterways history, Boughey regrets that it is impossible for outside readers to make full use of university facilities, at a time when those are expanding through the growth of electronic resources.⁷⁷ There is, as he says, no obvious solution to this problem, which results from the terms on which universities are licensed to use these resources. Gone are the days when a sympathetic lecturer (or more commonly extramural tutor) could, without much formality, get an external reader's ticket (perhaps with modest borrowing rights) for a friend wishing to use books and journals only available in his local university library. Members of the public have always had the right to read in university libraries and few would try to exclude them today, but it is simply not possible to give outside readers access to the full range of information now available. One way round this problem for those living in Scotland or Wales is to obtain a reader's ticket for the National Libraries in Edinburgh or Aberystwyth, which brings with it access to a reasonable range of electronic material.⁷⁸

Lastly, Boughey suggests that a solution to this problem is to establish a Waterways Research Centre, or in fact two, one electronic and the other physical, which would support the work of those without access to a university library.⁷⁹ Like the idea of a new journal, I also feel this is misconceived. All his suggested activities for an electronic 'centre' are either already provided by the Waterways Historical Research Group of the RCHS or could be by extending its scope; if those who run the group do not wish to widen its activities, the Waterways Museum at Ellesmere Port might take it on.

As regards a physical centre, who would fund it and where would it be located? The precedent he mentions, the Institute of Railway Studies at York, is not encouraging;⁸⁰ and the history of the Institute of Industrial Archaeology at Ironbridge is another cautionary tale.⁸¹ So many of these 'centres' or 'institutes' which universities have spawned over the years have been the initiative of one member of staff, or a small group. They are founded on an upswing of enthusiasm and some initial funding from

the university, a research council or a private benefactor. The original begetters retire or leave, enthusiasm wanes, the university is reluctant to find more money. More fundamentally, any activity in a university (even a large, rich and research-intensive Russell Group university) which does not teach undergraduates is always vulnerable when economies are needed. There is only a finite number of people who want to pay large sums of money (usually their own, occasionally their employers') to take a non-vocational MA in a fairly obscure subject, much less register over a longer period for a PhD, and they simply do not bring in enough cash. Even if a centre for waterways history could be launched, it would be unlikely to survive for more than a few years, however much effort is put into it by its promoters. Although I accept that it is much harder to do any kind of research if one does not have the good fortune to be a member of a major university, it is still possible, as the work of many RCHS members shows. For those who do feel they need university resources, and are prepared to make the commitment, there is always the option of registering part-time for a higher degree.

A possible way forward?

Anxious not to finish on a negative note, I would like to conclude with a suggestion that as far as I know has not been made before (if it has, my apologies to those who are one step ahead of me). It is, quite simply, that RCHS members should collaborate in preparing a new edition of Charles Hadfield's regional series. The books are all out of print and, to a greater or lesser extent, out of date. Even the technology by which they were produced, with letterpress printing and black and white plates on sections of art paper, is obsolete and must seem very old fashioned to any reader under 50. This does not mean that they are no longer valuable or, to be more precise, that the overall concept is not still valuable. The parallel with the 'Buildings of England' is entirely appropriate and, just as that series continues to be updated, while retaining all the essential qualities of Pevsner's original creation, so it should be possible, and in my view is eminently desirable, for a new 'Canals of the British Isles' series to be produced, faithful to Hadfield's original concept (which has stood the test of time) but reflecting modern scholarship and book design. The same regional divisions (which I have never seen criticised) could be retained, and the same straightforward arrangement of the text as a series of discrete sections

on each waterway within each region, divided into chapters arranged partly geographically and partly chronologically. The main innovation I would suggest is that each volume should be prefaced by an analytical introduction, discussing the impact of the canals included in it on the regional and national economy and drawing out themes in the waterways history of the region. The text should be more carefully annotated than Hadfield's original books and there should still be a statistical appendix summarising the main facts about each waterway. The books could also be more fully illustrated with both halftones and maps, both in colour.

To take account of the detailed work that has been published on many waterways since Hadfield was writing, a new regional series would need to be longer than the original books. This, of course, has happened to the 'Buildings of England'. But a new series should not be allowed to become too long, or it will never be finished. Here the task is made much easier because the job has already been done once. It would be reasonable to allow the coverage to expand from, say, one volume of about 300 pages on the West Midlands or the East Midlands to two in each case, and for the two sets of twins on the North West and the North East to become triplets. Within each region there is a good case for keeping to the same proportions as those Hadfield adopted, again because no-one has found much wrong with them. It would also avoid arguments between those who felt that 'their' canal deserved more space. For example, Hadfield dealt with the Trent Navigation Company in about 16 pages out of 250 in the East Midlands volume (including an unusually detailed account of its recent history). If, in a new series, this region was to be covered in two books of, say, 320 pages each, of which 600 pages would be available for the main text, the aim should be to summarise the history of the TNC in no more than 40 pages. This approach would maintain balance and avoid the risk of giving too much space to a particular canal simply because of a lot of new research has been published on it. It would also keep the books to a manageable length.

Who would write these books? Under present circumstances the series would not be the work of an individual, nor is it likely that an author would be found to take on the whole of one volume. On the contrary, the project seems to me an ideal opportunity for RCHS members. A basic scheme already exists, within which it would be possible to break down the work into sections small enough to be tackled by an

amateur historian working part time. The RCHS has always had members who are particularly interested in one waterway: that it is how the monograph series came about. The Waterways History Research Group, as Boughey points out, has encouraged greater cooperation between members, rather than the hoarding of 'secret' information, traditionally the bane of so much amateur research. A new regional series would enable members, working individually on a canal of their choice, to collaborate on a project of genuine importance. If the chance to contribute to this series was offered, some members might discover that they were also interested in an adjoining canal, or pick a canal from a list whose history they would like to take on from scratch. It would perhaps reinvigorate this aspect of the society's work and give it a fresh focus.

Clearly there would have to be some overall editorial oversight, and an editor for each region, who would be able to write an introduction of the sort which the original series was criticised for not including. He (or she) would probably also have to write the history of one or two unloved (and probably not very important) canals in the region which no one had offered to do, or at least update Hadfield's account. A more invidious task would be persuading a disparate group of authors to produce (on time) histories of the right length in the right format to suit the series: perhaps we are back to herding cats after all. But here again Charles Hadfield rides to the rescue. As well as retaining his original structure (since no-one has thought of a better way of doing it), it would simplest (and best) to stick to his way of arranging the material on each canal. All that is needed is a plain, unvarnished tale of the origins, rise and fall of each undertaking. This, as we have seen, is all that Hadfield set out to do, and all (or almost all) that is needed for a new version. It is what RCHS members have traditionally done when they have written waterways history and can do very well.

Another thing the RCHS has come to do successfully in recent years is to publish well designed, well illustrated monographs at a reasonable price. The thorny question of who would publish such a series can therefore be answered very simply: the RCHS would do it itself. There would, I assume, be no problem securing a release of the rights from the previous publisher or from Charles Hadfield's estate. The former presumably has no interest in undertaking a new edition and the latter would, I hope, welcome the idea. Because the books have always been seen as basic reference material, there

would be an assured sale to public as well as university libraries (derived partly from the reputation of the original series), along with sales to RCHS members and other individuals. Because the books form a series, libraries would buy them all, even if other sales would vary between regions.

Although the RCHS could provide much of the expertise for such a project, the need for a broader academic approach would provide an excellent opportunity for the society to build bridges with university historians. Along with some editorial input from that quarter might come some money. Boughey refers briefly to the current interest of the research councils in funding work which brings together universities and what the councils rather unfortunately call 'community historians'.⁸² I have myself been involved with a project funded in this way which has worked successfully on the modern history of the Trent Navigation to the benefit of all concerned. If RCHS members were prepared to swallow their pride, submit to being called community historians, and agree to work with one or more universities on a project like this, it might be possible to secure funds for research expenses. The other potential benefit is that this might also be a means of involving graduate students, who could undertake some of the work through linked PhD awards and might remain supporters of the RCHS afterwards. This would bring in more younger members, which the society appears badly to need, and members working in higher education, which it currently lacks. From all points of view, I feel that a project on these lines would offer a great deal to everyone who wished to take part.

Notes and references

1. J Boughey, 'Waterways history research: progress, prospects, problems and limits', *Journal of the Railway & Canal Historical Society*, no 233 (July 2015), pp. 296–305. Throughout this article I have abbreviated the title of the society's journal as *JRCHS* and the *Journal of Transport History* as *JTH*.
2. Boughey (2015) in which he refers to his paper to the Waterways History Conference held in 1997 and another issued the following year by the recently established Waterways History Research Group of the RCHS; a little later Boughey published *Charles Hadfield: canal man and more* (Stroud: Sutton, 1998), in which (mainly in chapter 7) he also made some general observations, as he did in 'Charles Hadfield and the writing of waterways history: past and future', *JRCHS*, 33 (1) (1999), pp. 126–35, and 'Encounters with waterways history: Willan, Hadfield and Rolt', *JRCHS*, 36 (9) (2010), pp. 144–56. For Willan see

- also a short obituary by T C Barker in *JTH*, 3rd series 16 (1) (1995), p. iii, and the introduction and bibliography in W H Chaloner and B M Ratcliffe (eds.), *Trade and Transport: essays in economic history in honour of T.S. Willan* (Manchester: Manchester University Press, 1977), pp. vii–x.
3. cf T Barker, 'The Transport Revolution from 1770 in retrospect', in C Wrigley and J Shepherd (eds.), *On the Move: essays in labour and transport history presented to Philip Bagwell* (London: Hambledon, 1991), p. 2. Theo Barker is in fact one of the few university historians to have been actively involved with the RCHS, of which he was president in 1986–88. It is perhaps significant, in the context of the 'parallel universe' approach to transport history discussed here, that this aspect of his career is not mentioned in M Dauntton, 'Theo Barker: an appreciation', *JTH*, 12 (2) (1998), pp. 93–100, nor are his articles in *JRCHS* included in 'Theo Barker: a bibliography of his publications on transport history', *ibid.*, pp. 101–2, although a later obituary (M Robbins, 'T.C. Barker and transport history', *JTH*, 3rd series 23 (2), pp. 178–9) does mention his presidency. The only geographer to have taken an interest seems to be H P White (1920–94), professor at Salford, who was president in 1978–80 and *Journal* editor in 1990–94 (editorial note and obituary in *JRCHS*, 3 (6) (1994), pp. 290–3). G Mom, 'What kind of transport history did we get? Half a century of *JTH* and the future of the field', *JTH*, 3rd series 24 (2003), p. 122 is wrong to say that the RCHS 'became a meeting point for both professional and amateur historians'. This was not what its founders envisaged and in general is not what has happened.
 4. J Searson, 'The founding of the society', *JRCHS*, 31 (6) (1994), pp. 295–6; see also a postscript by Gordon Biddle on p. 346 of part 7, and his much more entertaining piece, 'In the beginning', *JRCHS*, 34 (8) (2004), pp. 503–7. For the society's subsequent progress (as viewed by its own officers) see R A Cook, 'The society: the first twenty-five years', *JRCHS*, 25 (1979), p. 43; G Boyes, 'The society, 1979–94', *ibid.*, 31 (6) (1994) pp. 296–305; G Gwatkin, 'The society, 1995–2004', *ibid.*, 34 (8) (2004), pp. 503–13. None touches on possible approaches to transport history other than that favoured by members of the RCHS.
 5. Barker (1991), p. 2; M Robbins, 'Jack Simmons, 1915–2000', *JTH*, 3rd series 22 (1) (2001), pp. 1–5; J Armstrong and T Gourvish, 'Michael Robbins, 1915–2002', *JTH*, 3rd series 23 (2) (2002), pp. 178–9.
 6. 'Editorial', *JTH*, 1 (1953–4), pp. 1–2
 7. J Simmons, 'Local, national, and imperial history', in his *Parish and Empire: studies and sketches* (London: Collins, 1952), pp. 15–35; his comments about developing the study of history in a small college appear on pp. 19–20 and on transport history on pp. 22–3.
 8. Robbins (2001) p. 4
 9. Robbins himself later recalled that in some years 'there was a modest admixture of pieces written by authors active in the transport industry' (M Robbins 'The progress of transport history', *JTH*, 3rd series 12 (1991), p. 80). One such figure, who did not contribute much to either *JTH* or *JRCHS*, was Michael Bonavia, for whom see R Hardy and T Gourvish, 'Michael R. Bonavia, 1909–99: an appreciation', *JTH*, 3rd series 21 (1) (2000), pp. 1–5.
 10. e.g. L C Johnson, 'Historical records of the British Transport Commission', *JTH*, 1 (1953–4), pp. 82–108; J A B Hibbs, 'Road transport history in *Notes & Proceedings*', *ibid.*, pp. 250–3; C E Lee, 'Sources for bus history', *ibid.*, 2 (1955–6), pp. 152–7; D B Wardle, 'Sources for the history of railways at the Public Record Office', *ibid.*, pp. 214–34; R C Jarvis, 'Sources for the history of ports', *ibid.*, 3 (1957–8), pp. 76–93 and 'Sources for the history of ships and shipping', pp. 212–34; J Simmons, 'The Scottish records of the British Transport Commission', *ibid.*, pp. 158–84; M Bond, 'Materials for transport history amongst the records of Parliament', *ibid.*, 4 (1959–60), pp. 37–52; L C Johnson, 'British Transport Commission archives: work since 1953', *ibid.*, 5 (1961–2), pp. 159–81; E H Fowkes, 'The records of the Railway Clearing House', *ibid.*, 7 (1965–6), pp. 141–8; J Hibbs, 'A history of the motor bus industry: a bibliographical survey', *ibid.*, new series 2 (1973–4), pp. 41–64. Later articles tended to be shorter and more specialised, describing particular archives: D Jenkins, 'Sources for transport history in the CBI predecessor archive', *ibid.*, 3rd series 4 (1983), pp. 77–80; R Storey, 'Sources for the National Busworkers' Association', *ibid.*, pp. 81–3; N Baldwin, 'The International Transport Workers' Federation archive', *ibid.*, 3rd series 7 (1) (1986), pp. 61–6.
 11. C Hadfield, 'Sources for the history of British canals', *JTH*, 2 (1955–6), pp. 80–100
 12. Hadfield (1955–6), p. 80
 13. M Robbins, 'What kind of railway history do we want', *JTH*, 3 (1957–8), pp. 65–75
 14. Barker (1991), p. 2. Strictly speaking, Barker was mistaken in saying that the paper later appeared only in *JTH*, rather than *JRCHS*: an earlier version (which reads as though it is the lecture as delivered) was published in *JRCHS*, 3 (1957), pp. 10–15 and 22–8. Barker himself, whose earliest work was on waterways in the North West, tried to steer RCHS members in the right direction in 'Too much over-specialization?', *JRCHS*, 6 (1960), pp. 96–7, with the usual lack of success.
 15. Robbins (1957–8), p. 70
 16. See *JRCHS*, 32 (7) (1998), much of which was a memorial to Hadfield, including 'Editorial: E C R Hadfield (1909–1986)' (p. 490) and 'Obituary: Ellis

- Charles Raymond Hadfield (1909–1986)', both by Joseph Boughey (pp. 491–3); an anonymous piece, 'Publishing, books and engineers: excerpts from an interview with Charles Hadfield, 1992', pp. 494–7; J Lindsay, 'Fondest memories: a brief appreciation of Charles Hadfield', pp. 506–7; and G Biddle, 'Charles Hadfield: a personal appreciation', pp. 507–8. A letter from John Hibbs, expressing similar sentiments, was published in the next number (*JRCHS*, 32 (8) (1998), p. 627). See also an affectionate note by David St John Thomas, 'Charles Hadfield: a 75th birthday tribute', *JRCHS*, 28 (1984), pp. 53–4.
17. Hadfield tried to impart such advice in two talks to the RCHS, later published as 'An approach to canal history', *JRCHS*, 1 (1957), pp. 23–6, and 'Writing railway and canal history', *ibid.* 8 (1962), pp. 91–5. The two were merged, and combined with the substance of another talk, in 'Researching and writing canal history', *JRCHS*, 32 (7) (1998), pp. 516–22, published in the memorial issue referred to in the previous note. They reappeared again in 'An approach to canal research', *JRCHS*, 34 (8) (2004), pp. 542–5. For Hadfield and the RCHS see Boughey (1998), pp. 34–8, 50–2.
 18. G Turnbull, 'From Thames to Titicaca: an appreciation of Charles Hadfield', *JTH*, 3rd series 8 (1987), pp. 98–102. See also M Baldwin, 'Charles Hadfield: a biographical introduction' and 'Bibliography of Charles Hadfield's published work', in M Baldwin and A Burton (eds.), *Canals: a new look. Studies in Honour of Charles Hadfield* (Chichester: Phillimore, 1984), pp. 1–8, of which the former is brief but authoritative and the latter very full and accurate. *JTH* did not publish an obituary of Hadfield.
 19. Robbins (1991), p. 81
 20. E C R Hadfield, 'Canals between the English and Bristol Channels', *Economic History Review*, 12 (1–2) (1942), pp. 59–67; 'The Thames Navigation and the canals, 1770–1830', *ibid.* 14 (2) (1944), pp. 172–9
 21. J Boyes and R Russell, *The Canals of Eastern England* (Newton Abbot: David & Charles, 1977) did use material of this sort, most of which appears now to be in record offices in the region.
 22. The only volume for England and Wales that Hadfield did not write himself or jointly was the one on eastern England cited in the previous note.
 23. An obvious example is the 'Making of the English Landscape' series, which W G Hoskins developed from his well known general book, *The Making of the English Landscape* (London: Hodder & Stoughton, 1955), in which few of the promised county volumes ever appeared.
 24. This is particularly noticeable in the case of traffic figures, which Hadfield occasionally tabulated but never gives a reference, whereas most statements based on minute books do have footnotes.
 25. S Bradley and B Cherry (eds.), *The Buildings of England: a celebration* (London: Penguin Collectors Society, 2001).
 26. A Sargent, "'RCHME" 1908–1998: a history of the Royal Commission on the Historical Monuments of England', *Transactions of the Ancient Monuments Society*, 45 (2001), pp. 57–80
 27. Originally entitled 'A Regional History of the Railways of Great Britain', modified to 'A Regional History of Railways' when a volume on Ireland was added. The books were published between 1960 and 1995. Cf. the comments of G R Hawke, *Railways and Economic Growth in England and Wales 1840–1870* (Oxford: Clarendon Press, 1970), pp. 1–3.
 28. P Picard (ed.), *Un Canal ... des Canaux* (Paris: Caisse Nationale des Monuments Historiques et des Sites, 1986), p. 392. The deficiency has not been rectified since, although France has been much better served by academic monographs, notably (for the pre-Freycinet Plan period): É Sulzman, *La navigation intérieure sous l'Ancien Régime: naissance d'une politique publique* (Rennes: Presses universitaires de Rennes, 2014), and R G Geiger, *Planning the French Canals: bureaucracy, politics, and enterprise under the Restoration* (Newark NJ: University of Delaware Press, 1994). See generally M Merger, 'Transport history in France: a bibliographical review', *JTH*, 3rd series 8 (1987), pp. 179–201.
 29. C Hadfield, *British Canals: an illustrated history* (London: Phoenix House, 1950). The most recent version, revised by Joseph Boughey, was published by Tempus in 2008 as the ninth edition.
 30. C Hadfield, *World Canals: inland navigation past and present* (Newton Abbot: David & Charles, 1986)
 31. For Hadfield's role in the company see Boughey (1998), pp. 52–7, 81–91; for a rather different view see *Good Books Come from Devon: the David & Charles twenty first birthday book* (Newton Abbot: David & Charles, 1981).
 32. J Lindsay, *The Trent & Mersey Canal* (Newton Abbot: David & Charles, 1979) suffers particularly from this problem, since almost all the company's records were destroyed by a later owner.
 33. P Stevenson, *The Nutbrook Canal (Derbyshire)* (Newton Abbot: David & Charles, 1970)
 34. It is noticeable that a scholarly study of canal and railway geography in the East Midlands was able to draw on Stevenson's book in a way that it did not use other amateur work on the canals of the region (D Turnock, 'The historical geographer's approach to railway history: the relations between railways and canals', in R W Ambler (ed.), *The History and Practice of Britain's Railways: a new research agenda* (Aldershot: Ashgate, 1999), pp. 37–60).

35. Boughey (1998), p. 88 refers to a plan for three authors (Philip Stevens, Peter Stevenson and Alan Faulkner) to divide the line from the East Midlands to London between them, but little came of it.
36. As an example of this approach see A J Arnold and S McCartney, "'Veritable gold mines before the arrival of railway competition': but did dividends signal rates of return in the English canal industry?", *Economic History Review*, 64 (2011), pp. 214–36.
37. Summers, in her acknowledgements, refers to her work originating in a London MA dissertation supervised by Willan, and Hadfield's foreword to Household's book mentions his 'great thesis' in Bristol University library (i.e. H G W Household, 'Thames & Severn: birth and death of a canal' (unpublished Bristol University MA dissertation, 1958)). Both Summers's book and Duckham's (which was not part of the 'Inland Waterways Histories' series, but was in the same genre) are subtitled 'the history of a river navigation'.
38. J Butt, 'Achievement and prospect: transport history in the 1970s and 1980s', *JTH*, 3rd series 2 (1981), pp. 1–24; see also B F Duckham, 'Canals and river navigations', in D H Aldcroft and M J Freeman (eds.), *Transport in the Industrial Revolution* (Manchester: Manchester University Press, 1983), pp. 100–41.
39. P A Stevens, *The Leicester Line: a history of the Old Union and Grand Union canals* (Newton Abbot: David & Charles, 1972). His posthumously published *The Leicester and Melton Mowbray Navigations* (Stroud: Alan Sutton, 1992), suffers from the same fault.
40. A H Faulkner, *The Grand Junction Canal* (Newton Abbot: David & Charles, 1972)
41. I would exempt Duckham's *Yorkshire Ouse* from this criticism.
42. J R Ward, *The Finance of Canal-building in Eighteenth-century England* (Oxford: Clarendon Press, 1974); Butt (1981), pp. 7–9
43. Butt (1981), p 19
44. C Hadfield and W A Skempton, *William Jessop, Engineer* (Newton Abbot: David & Charles, 1979) in fact appeared before Butt's article was published, as had (by several years) J E Ginarlis, 'Capital formation in road and canal transport', in J P P Higgins and S Pollard (eds.), *Aspects of Capital Formation in Great Britain, 1750–1850* (London: Methuen, 1971). Among later work see R B Schofield, *Benjamin Outram, 1764–1805: an engineering biography* (Cardiff: Merton Priory Press, 2000), and C Richardson, *James Brindley: canal pioneer* (Burton upon Trent: Waterways World, 2004) on particular engineers; on canals and regional development see G L Turnbull, 'Canals, coal, and regional growth during the Industrial Revolution', *Economic History Review*, 2nd series 40 (1987), pp. 537–60, and more recently P Maw, *Transport and the Industrial City: Manchester and the canal age, 1750–1850* (Manchester: Manchester University Press, 2013). R Szostak, *The Role of Transportation in the Industrial Revolution: a comparison of England and France* (Montreal & Kingston: McGill-Queen's University Presses, 1991), attempted to consider the importance of transport more widely, in my view not very successfully; cf. the comments of S Ville, 'Transport and the Industrial Revolution', *JTH*, 3rd series 13 (2) (1992), pp. 180–5, and J Armstrong, 'Transport history, 1945–95: the rise of a topic to maturity', *JTH*, 3rd series 19 (2) (1998), p. 115.
45. 'Ten years of transport history', *JTH*, 6 (1963–4), pp. 1–2
46. G L Turnbull, 'Provincial road carrying in England in the eighteenth century', *JTH*, new series 4 (1977–8), pp. 17–39; 'Canals, coal, and regional growth during the Industrial Revolution', *Economic History Review*, 2nd series, 40 (1987), pp. 537–60; and J Chartres and G L Turnbull, 'Road transport' in Aldcroft and Freemans (eds.), *Transport in the Industrial Revolution*, pp. 64–99. Cf. the comment by John Armstrong (1998), p. 113.
47. *Traffic and Transport: an economic history of Pickfords* (London: Allen & Unwin, 1979); see also an earlier article, 'The railway revolution and the carriers' response: Messrs Pickford & Co., 1830–50', *Transport History*, 2 (1969), pp. 48–71.
48. The exceptions are G Boyes, 'German Wheatcroft and the Wheatcroft family of canal carriers', *JRCHS*, 36 (9) (2009), pp. 130–43, and P Thorn, 'Crowley & Co., canal carriers 1811–73', *JRCHS*, 33 (2) (1999), pp. 82–91. Neither discusses any of Turnbull's general points about the carrying industry.
49. J Armstrong, *The Vital Spark: the British coastal trade, 1700–1930* (St John's, Newfoundland: International Maritime Economic History Association, 2009) brings together his main publications on the subject.
50. Editorial note in *JTH*, 3rd series 11 (1990), the first volume Armstrong edited
51. W Freer, 'Standards of living among canal boat people, 1840–1939', *JTH*, 3rd series 13 (1992), pp. 43–58. Her thesis itself was adapted to become *Women & Children of the Cut* (RCHS, 1995).
52. Editorial note in *JTH*, 3rd series 13 (1992)
53. Mom (2003), pp. 127–30
54. M Robbins, 'The progress of transport history', *JTH*, 3rd series 12 (1991), pp. 74–87; the quotations are from p. 83.
55. Robbins (1991), p. 87. For VCH see R B Pugh, 'The Victoria History: its origin and progress', in *VCH General Introduction* (1970), pp. 1–27; 'The Victoria

- County History 1970–90’, in *VCH General Introduction: Supplement 1970–90* (1990), pp. 1–8; and J Beckett et al., *The Victoria County History 1899–2012: a diamond jubilee celebration* (London: VCH, 2012). I have myself been a VCH county editor since 1996 and am therefore familiar with its work since then.
56. T R Gourvish, ‘What kind of railway history did we get? Forty years of research’, *JTH* 3rd series 14 (2) (1993), pp. 111–25; G W Crompton, ‘Canals and the Industrial Revolution’, *ibid.*, pp. 93–110. The quotation, which appears on p. 93 of Crompton’s article, is from Turnbull’s appreciation of Hadfield cited in n. 18.
 57. *JTH*, 3rd series 15 (1994), facing the contents page of part 2
 58. *JTH*, 3rd series 21 (1) (2002) was a special issue on this topic, edited by Margaret Walsh, who wrote an introductory piece on ‘Gendering transport history: retrospect and prospect’, pp. 1–8.
 59. *JTH*, 3rd series 29 (1) (2008) was a special issue on the ‘cultural turn’; see also M Freeman, ‘The railway as cultural metaphor: “What kind of railway history” revisited’, *JTH*, 3rd series 20 (2) (1999), pp. 160–6.
 60. Mom (2003), pp. 131–4; and see also Peter Lyth’s editorial (‘The *JTH* at fifty and the shape of things to come ...’) on pp. [v–vi] of the same issue.
 61. Mom (2003), p. 99 (n. 10)
 62. ‘Editorial’, *JTH*, 3rd series 26 (2) (2005), p. vii (the inverted commas around ‘transport history’ appear in the original).
 63. See the very pertinent comments by Michael Lewis on pp. 93–5 of a paper on industrial railways, quintessentially the province of the amateur enthusiast: M J T Lewis, ‘The railway in industry’, in Ambler (ed.), *History and Practice*, pp. 77–95.
 64. The most recent is P Maw et al., ‘Water transport in the industrial age: commodities and carriers on the Rochdale Canal, 1804–1855’, *JTH*, 3rd series 30 (2009), pp. 200–28.
 65. J Armstrong, ‘Writing for an academic journal’, *JRCHS*, 35 (3) (2005), pp. 150–3. *JTH* is not named but it is fairly clear which journal Armstrong had in mind. His piece was part of a useful series on different approaches to publishing transport history commissioned by the then editor, Peter Brown. It is less clear whether Brown’s own article, ‘Writing for magazines’, *JRCHS*, 36 (4) (2006), pp. 399–402, was intended to help potential contributors to his own journal; certainly Armstrong appears not to have been thinking of *JRCHS*.
 66. Boughey (2015), p. 298
 67. Armstrong (1998), p. 109, who also mentions the Transport History Group that flourished between about 1975 and 1984 as a section of the Economic History Society (*ibid.*, p. 112).
 68. Mom (2003), p. 123, also ignores *Mariner’s Mirror* and its publisher, the Society for Nautical Research, suggesting that maritime history only emerged as a specialist field of study in the 1960s or 1970s. There was plenty of activity in this area well before the *International Journal of Maritime History* began publication in 1989.
 69. In August 2015 there were 1,148 citations from *JRCHS* in BBIH.
 70. P Maw, *Transport and the Industrial City: Manchester and the canal age, 1750–1850* (Manchester: Manchester University Press, 2013). With the same two collaborators in each case, Terry Wyke and Alan Kidd, Maw has also published three articles arising from the same research: ‘Canals, rivers, and the industrial city: Manchester’s industrial waterfront, 1790–1850’, *Economic History Review*, 65 (2012), pp. 1495–1523; ‘Warehouses, wharves and transport infrastructure in Manchester during the Industrial Revolution: the Rochdale Canal Company’s Piccadilly basin, pp. 1792–1856’, *Industrial Archaeology Review*, 31 (2009), pp. 20–33; and ‘Water transport in the industrial age’.
 71. The North East Lincolnshire Record Office in the basement of Grimsby Town Hall should be avoided by owners of laptops with limited battery life. There is an ageing notice in the search room forbidding readers from connecting their laptop to the mains electricity supply; none of the present staff seem to know when it was first displayed, or why.
 72. Under the reference C299
 73. ‘Research in transport history: deposit of Charles Hadfield’s waterway history papers’, *JTH*, 3rd series (2) (1981), pp. 73–4; ‘A home for transport documents’, *JTH*, *ibid.* 9 (1988), p. 214. Hadfield’s notes for *World Canals* are at Ellesmere Port (Boughey (1999), p. 130), which strikes me as a pointless division of a single archive.
 74. Boughey (2015), pp. 303–4
 75. T R Gourvish, *British Railways 1948–73: a business history* (Cambridge: Cambridge University Press, 1986); and a sequel, *British Rail, 1974–97: from integration to privatisation* (Oxford: Oxford University Press, 2002).
 76. It is noticeable that there are only passing reference to waterways in D N Chester, *The Nationalisation of British Industry, 1945–51* (London: HMSO, 1975); even at that date the canals were seen as unimportant. The same picture emerges from C I Savage, *Inland Transport* (History of the Second World War, UK Civil Series) (London: HMSO, 1957) for the period immediately before the BTC was set up. A detailed

student text, A W J Thompson and L C Hunter, *The Nationalized Transport Industries* (London: Heinemann, 1973), makes no reference at all to either British Waterways or British Transport Docks.

77. Boughey (2015), p. 300

78. I owe this point to Paul Reynolds. Access of this sort is not possible for ticket holders with addresses outside Scotland (in the case of the NLS) or Wales (in the case of the NLW).

79. Boughey (2015), pp. 301–4

80. When last consulted in August 2015 the Institute's website included phrases like 'Providing for robust

sustainability', 'Rationalising and re-launching academic programmes', and 'Extracting greater value and impact from the NRM's considerable collections'. Anyone used to reading between the lines of university committee papers will probably spot the threat implicit in some of those words.

81. This has now lost its original identity and become the Ironbridge International Institute for Cultural Heritage, while retaining its connection with Birmingham University.

82. Boughey (2015) p. 298

Francis Egerton's visit to the Canal du Midi in 1754 and its extraordinary aftermath

Nicholas Hammond

What was it that so impressed Francis Egerton, as a result of visiting the Canal du Midi in the south-west of France in 1754, that when he became Duke of Bridgewater, he spearheaded the English canal-building frenzy that gave so much impetus to the Industrial Revolution?

The Canal du Midi, built between 1665 and 1684, was a prestige project *par excellence* but it did not respond to any economic objective.¹ There is evidence that the Jesuits wanted the achievement of this canal to belittle the building of the Briare Canal (1605–1642) in which Huguenots (reformed Christians) were involved. The prejudices, bitterness and hatred that caused the religious civil wars were still not fully exhausted.

Professor Skempton said that the Canal du Midi was the greatest civil engineering project in Europe since Roman times and remained unsurpassed until the nineteenth century.² It has never failed to impress visitors. It is so big and so long³ that monarchs, princes and aristocrats came from all over the civilised world to see this marvel of late Renaissance engineering. It became fashionable to speculate as to how it was possible for such an engineering feat to be built in the latter part of the seventeenth century. To underline this I have listed some well documented visits in chronological order:

In September 1692 the Prince of Denmark made a voyage through the canal and two postal barges were made available for his use.

In July 1695 Phelipeaux, Duke of Orléans, travelled through the canal on a barge normally used by the canal proprietors who had it carpeted magnificently for the occasion. This barge was followed by six others for his retinue and the domestics.

In 1701 some princes went through the canal, the Duke of Bourbon and the Duke of Anjou (who later went to take possession of the crown of Spain).

Welcome and unwelcome English visitors: on 25 July 1711 the town of Cette was captured by the English; they remained there until 30 July when they were chased off by French troops. In October 1711 Queen Anne passed through the canal.

In November 1714 the Queen of Spain arrived at Béziers in the evening by torchlight. She was not allowed to see anybody during the day and had not the curiosity to see the canal, but the principal persons of her court, went to see the Fonserannes staircase locks and Malpas tunnel in a barge particularly prepared for them.⁴

The Ottoman Ambassador during the Regency 1715–1723 was Mehmed Effendi. He was overwhelmingly impressed and he wrote a book about the canal entitled *The Paradise of Infidels*. What

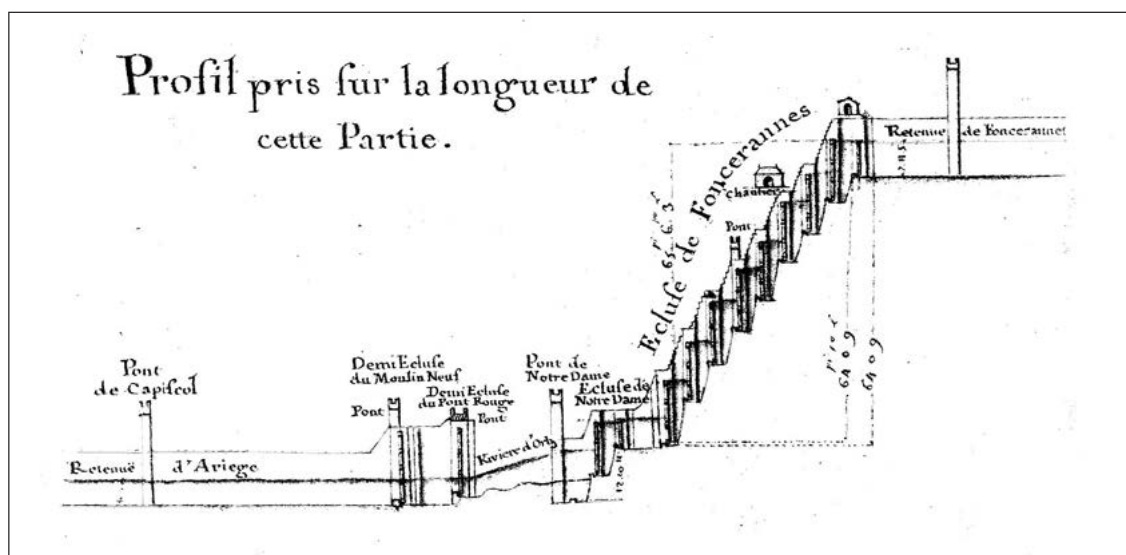


Fig. 1. Thomas Jefferson's sketch diagram of the Fonserannes staircase locks

fascinated him were the aqueducts carrying the canal over rivers. He said the canal 'merits being placed among other marvels of the world, one has to see it first before visiting or talking about it'.⁵

In May 1754 Francis Egerton who later became the Duke of Bridgewater visited the canal. He was the most significant visitor, and he will be discussed in more detail below.⁶

In about 1765 Adam Smith travelled on a barge through the canal.⁷

Lost opportunity: it was also in the 1760s that Louis XV, on hearing of James Brindley's canal engineering fame, sent him an invitation to view the Canal du Midi. Brindley's reply to the French king was that he would make no journeys to other countries unless he could be employed on work that would surpass what had already been achieved in those countries.⁸

On 13 May 1787 Thomas Jefferson, who later became the third President of the United States of America, travelled along the canal describing his journey in beautiful French prose. He was a keen observer of architecture and engineering and did water colour paintings with an eye for detail. The eight-chamber Fonserannes staircase was depicted diagrammatically, with the flow gradient of the River Orb greatly exaggerated (Fig. 1).⁹

Bernard Le Sueur in his book *Le Canal du Midi* claims that at the beginning of the nineteenth century Thomas Telford visited the canal. I have never heard of this visit, and I think it is unlikely. However, Telford

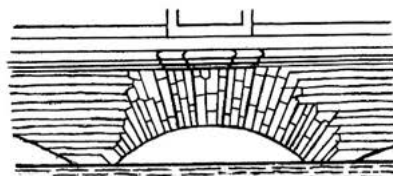
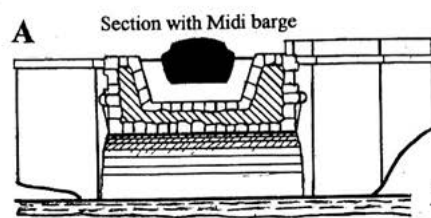
did collect many French books on canal engineering, notably *Architecture Hydraulique*.¹⁰

Industrial espionage. At this period of intense industrial rivalry the leading European nations were secretly training young men to be industrial spies. They were taught languages and then learnt how machines or industrial processes worked in rival countries.

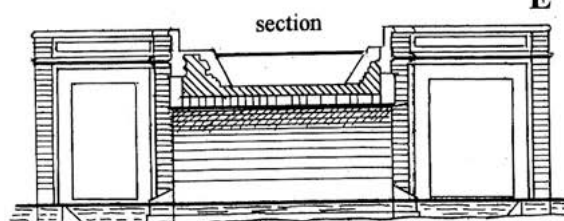
I would like to show how the ideas, designs and all aspects of the *working* Canal du Midi might have appeared to young Francis Egerton and how the English engineers interpreted and adapted these ideas and designs. This approach works with bridges and locks etc. but becomes impossible with aqueducts because of the one-off nature of each structure. However I thought we would start with four aqueducts, two French and two English.

Francis Egerton's visit to see the Canal du Midi. On his way to see the Canal du Midi Francis stopped off at Montpellier to visit the Duke of Richelieu, who was assembling the Estates of the Provinces. The duke, great-great-nephew of Cardinal Richelieu, was newly committed to the Beaucaire and Aigues-Mortes Canal project. At this time in France so many aristocrats and leading churchmen were enthusiastically promoting canal projects.

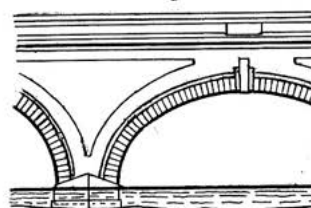
In May 1754 Francis began his tour of the canal in earnest, taking a fortnight to go by horse-drawn coach from Sète, through Béziers, Castelnau and Toulouse to Bordeaux. Unfortunately Francis never left any 'travelogue'.



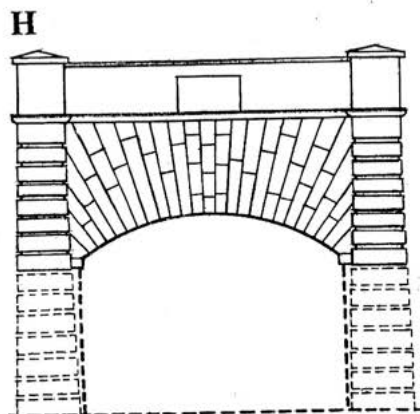
C detail of arch crown
(after photo by L.T.C. Rolt)



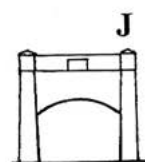
River Cesse Aqueduct 1681



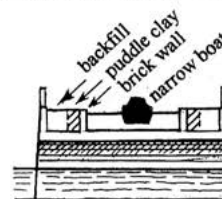
figs E & F and plan G are from "Canal Royal de Languedoc- LePartage des eaux" L...



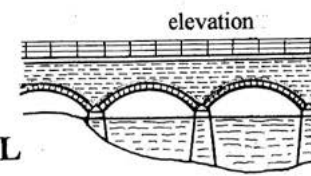
Barton Lane Aqueduct 1761



*Barton Lane Aqueduct
at standard scale,
see top right*



section over crown



Brindley Bank Aqueduct, a

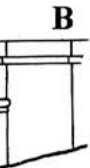
Fig. 2. Early French

Early French and English AQUEDUCTS

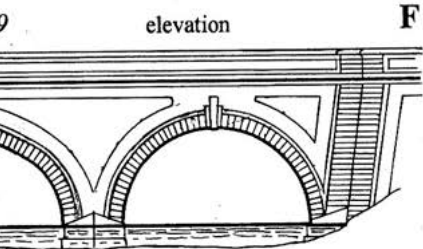
10 0 30 metres

10 0 60 120 feet

this scale applies to figs A B D E F J K & L



du Midi



elevation

F

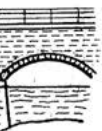
pouzzolana
(hydraulic mortar)



puddled clay

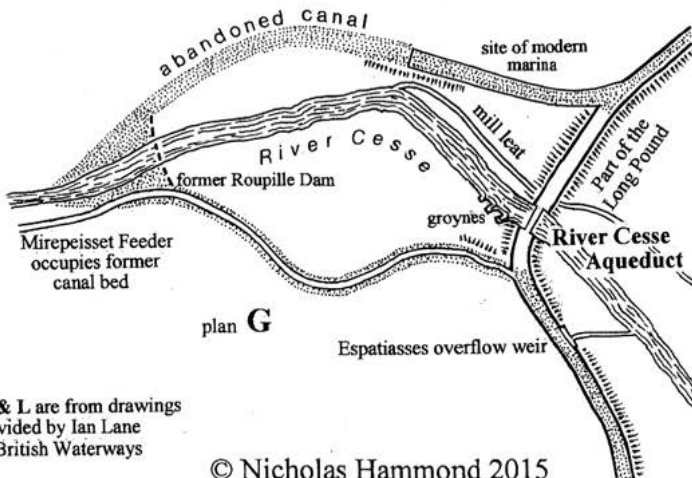


ubatières 1992



bout 1770

figs K & L are from drawings
provided by Ian Lane
of British Waterways



plan G

© Nicholas Hammond 2015

and English aqueducts

Three aqueducts at first, then 49 built later. When the Canal du Midi was originally planned it was assumed that water draining the valley sides could be trapped into the canal and drained off further down through waste-weirs, similar to a Fen catchwater. Then the surplus water would run into the valley bottom into, say, the River Aude.¹¹

What few engineers of the seventeenth century understood is that flowing water can suspend solids. Torrential water can move rocks, and slow-flowing water can only carry fine silt. As soon as the current stops the water drops its load and becomes *stilled* water, which is why canals are fed by reservoirs.

The Répudre aqueduct. Shown on the top left of Fig. 2 is the Répudre aqueduct (A, B, C and D), the earliest of the first three aqueducts to be built before the canal first opened in 1681. Because the silt problem blighted the newly opened canal where rivers entered it, Sébastien Le Prestre Vauban (Louis XIV's Commissaire Général des Fortifications) recognised the problem and recommended the building of 49 more aqueducts, including the River Cesse (or Truillas) aqueduct (Fig. 2, E and F). This will be described in greater detail below. Répudre aqueduct can be reached along a towpath walk of about one kilometre, to the north-east of Paraza, a village served only by side roads. It is tucked away in a ravine through which the torrent de Répudre flows. This aqueduct was not the first to be built, though it is the earliest to have survived. (The earliest aqueduct in the world was built on the Martesana Canal near Milan in 1460, but it was replaced with a concrete one.) The Répudre aqueduct, built in 1676, is notable for the way it was built: the foundations go down 4 metres below water level because of ground conditions. L T C Rolt assumed that puddled clay was used to waterproof the navigable channel,¹² but this was not so. Pierre-Paul Riquet, who directed the Canal du Midi project, used *pouzzolana*, otherwise known as hydraulic mortar, which can set under water, because it swells up when wet in the void, so making a waterproof seal. It is made from volcanic ash sand by mixing it with cement mortar, a technique that was supposed to have been lost after the fall of the Roman Empire. (Its use was revived in the eighteenth century.) Riquet imported the volcanic ash from Civitavecchia in Italy.

The elevation of the Répudre aqueduct (Fig. 2, B and C) has a French military appearance with the heavy keystone and heavy rounded string course. The battered facade of curved freestone is surprisingly like English canal structures of 130 years

later. The roughly hewn voussoir 'fingers' (Fig. 2, C) radiate with jagged joints into the horizontal courses. Coincidentally this first surviving aqueduct shares this feature with one of the first English aqueducts (Fig. 2, H and J) at Barton Lane where the splays fitted much more neatly into the spandrel. The inscription on the plaque boasts that the Répudre aqueduct was the first one invented by P-P Riquet and is dated 1676, but like later aqueducts on this canal a subcontractor built it. In this instance the subcontractor was Immanuel d'Estan and his collaborator was André Boyer; their efforts were plagued with problems. It was not clear how to design a bridge to carry such a heavy load. The central arch rested on several rows of pilings, so the superstructure had a wide base anchored carefully to the arch.

The River Cesse (or Truillas) aqueduct (Fig. 2, E and F and site plan G). Six and a quarter kilometres (3.88 miles) towards the Mediterranean Sea is the aqueduct over the River Cesse which has its source at the Col de Ceirières in the Black Mountain; at the village of Minerve it passes through a gorge crossed by an impressive bridge. When the canal was originally built it contoured into the Cesse valley and the Roupille dam, shaped like an arch on its side, trapped the Cesse water (Fig. 2, site plan G) and formed a triangular lake. Riquet, like Brindley a century later, built canals along the contour. He would never have dared make a short cut on an embankment further down the valley; building a canal on an embankment in the 1680s was very risky. Between the Quarante culvert and Capestang bridge the canal was 9 kilometres long; now over the embankment, which includes the aqueduct, the direct distance is 4.5 kilometres. The Roupille dam was originally constructed in masonry on a foundation of piles, but it became obvious, after many floods, that the base of the masonry was being eroded by turbulent water undermining the structure and causing the collapse of a large part of the dam. After it had been rebuilt it collapsed again. Part of the abandoned canal is included in the Mirpeisset feeder, and at the other end is a marina called Port-la-Robine.

The Cesse aqueduct has a French appearance and has been admired by numerous celebrated voyagers who liked the panelled spandrels and small neat voussoirs.¹³ It was designed by Vauban, though construction was supervised by Jean Goudet, a master mason of Béziers. It was built between 1689 and 1690 and *pouzzolana* was used by Vauban for waterproofing the channel. The bridge was badly

sited so river-training groynes had to be erected to deflect the current from the impost of the south-westerly side arch.¹⁴ Below the aqueduct the River Cesse runs into the Aude and then to the Mediterranean.

The origin of the French soldier-navvy. Planning and surveying the routes for the early French canals in the seventeenth century were often the peacetime occupation of several prominent military men such as Vauban. A parallel relationship developed at the other end of the social scale. When the navvies started encroaching on private land, and were perhaps violently repulsed, the king could order soldiers to be sent in; they were given picks and shovels and the navvies were given firearms. This is the origin of the French soldier-navvy. Often the project engineer was given a title, perhaps higher in the aristocratic pecking order than the most illustrious bigwig along the projected canal route.

Roman classical engineering methods were not lost. According to Chandra Mukerji,¹⁵ local native people living in the Pyrenees had kept Roman engineering methods alive. Riquet employed them in building the Canal du Midi which became the most sophisticated example of hydraulic engineering in seventeenth-century France. The Pyrenean village women knew how to divert water for laundries and bathing pools and for washing and drinking. Their knowledge of Roman building methods became useful for constructing the canal. This method of

building walls consisted of erecting two parallel facings of ashlar with transverse partitions at intervals, creating a series of box-shaped voids. Liquid concrete, a kind of grout, consisting of a mixture of calcium oxide, sand, water and rubble was poured into each rectangular 'box'. When the back-fill of a lock wall was re-excavated, the 'buried' wall appeared to be well-dressed stone (as at Agde Round lock in the 1970s). Extensive normal puddling was used in lining the Canal.

Barton Lane aqueduct, in England (Fig. 2, H and J). This was an original Bridgewater Canal structure, completed in 1761, about the same time as the three-arch aqueduct over the River Irwell 80 metres (87 yards) to the south-east. It was demolished in 1883 to allow Barton Lane to be widened, but the façade, from the springing upwards, was rebuilt into the retaining wall which forms part of the approach embankment in which both Barton aqueducts are placed.

Figure 3 shows the bigger aqueduct over the River Irwell. One is immediately struck by the architectural contrast of the two structures which is very puzzling. Barton Lane Aqueduct (Fig. 2, H) is a neat eighteenth-century design with moulded string courses, pilasters of v-jointed blocks and voussoirs splayed over the crown into the spandrels. Note the triple-engaged 'keystone' indicated by the joints over the crown.

It is interesting to speculate as to how the architecture of Barton Lane aqueduct originated.

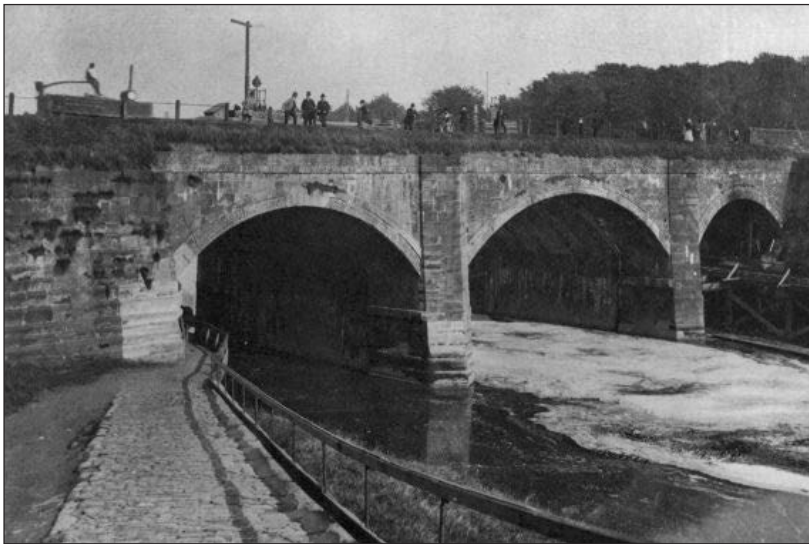


Fig. 3. The original Barton (River Irwell) aqueduct, demolished in about 1890 (canalscape.net)

When James Brindley and John Gilbert visited Westminster to give evidence to the parliamentary committee considering the bill to build the Bridgewater Canal, they may have been impressed by Westminster Bridge, nearby on the River Thames. This was engineered by Charles Labelye and completed in 1750, just eleven years earlier than Barton Lane aqueduct. This bridge also has wedge-shaped voussoirs splaying from the soffit into the spandrels. Labelye was a young Swiss Huguenot architect who trained in France. The reason for choosing this foreigner was that France, in the eighteenth century, was regarded as the most advanced country in the world for building bridges and canals, a view probably shared by the Duke of Bridgewater after his visit to France. This architectural feature of radiating voussoirs is rare on English canal structures but appears on the elevation of Store Street aqueduct in Manchester and the eastern entrance to Islington tunnel (which was built in 1820).

The original Barton (River Irwell) aqueduct, demolished in about 1890 (Fig. 3). When the Irwell aqueduct was originally proposed, engineers at that time were sceptical as to whether it could be built. It would have been about the same length as the Cesse aqueduct (60 metres), which suggests that Francis Egerton could have viewed it and become convinced that such a big aqueduct was practicable and safe. All that remains of the Irwell aqueduct now is an abutment on site, and a photograph on page 35 of Charles Hadfield's book *The Canal Age*.¹⁶

Considering that this aqueduct was the first large structure of the nascent English canal network, one would expect a design more in the style of Barton Lane Aqueduct and generally in keeping with mid eighteenth-century fashion. One can only assume that James Brindley would have been impatient with fashion because he had to concentrate on more serious civil engineering matters such as the stability and weight of masonry, the watertightness of the puddled clay and so on, and the result was a typically functional Brindley design. The Barton (Irwell) aqueduct had three segmental arches springing off the piers at 45 degrees, with the middle arch having a span of 19.2 metres (63 feet). The piers between the arches formed cutwaters below springing level which turned into pilasters between the arches. Above these three arches, going the length of the bridge, was a very slight string course. This was overtopped by a grassed-over embankment and a fence against the towing path, which was not much protection for towing path users.

The Brindley Bank aqueduct (Fig. 2, K and L). This is an example of an early aqueduct on the English canals engineered by James Brindley and it was probably built about 1770, slightly less than a century after Riquet's Répudre aqueduct, completed in 1676. It carried the Trent and Mersey Canal across the River Trent.¹⁷ The water level in the canal is less than 4 metres (13 feet) above river level, and the River Trent here has a maximum depth of 3 metres (10 feet). Either side of the aqueduct the canal continues on an approach embankment about 2.7 metres (9 feet) high, and Brindley was just as reluctant as Riquet to build an embankment higher than this. The structure consists of six arches each 6.5 metres (21 feet 4 inches) span. The spandrel walling is on a slight batter with each course slightly set back above the course below. There is a thick layer of clay puddling between the spandrel walls and the trough lining. Oddly enough, there is no clay lining over the crowns of the arches. As far as I know *pouzzolana* was never used on the English canals, except perhaps on those designed by John Rennie. Sandstone ashlar masonry was used for the piers and the lower courses of the vaults and wing walls. The remaining structure above the arches has been refaced in Staffordshire blue bricks, though two courses of sandstone voussoirs remain above the springing of each arch.

The Duke of Bridgewater, as Francis Egerton was later known, became involved with the Trent and Mersey project when it was decided to terminate the northern end at Preston Brook on the duke's canal. The most obvious thing to be noticed about this aqueduct is how small, commonplace and mundane it looks. The Canal du Midi was designed to pass large river craft and coastal sailing barges, and the bridges on the Duke of Bridgewater's Canal are almost the same size as those on the Canal du Midi. The Trent and Mersey Canal only passed narrow boats 2.08 metres (6 feet 10 inches) beam, corresponding to the width of the locks. What is surprising about Brindley Bank aqueduct, is that the navigation trough is wide enough to take three narrow boats abreast, wide enough for one Canal du Midi barge, though only two-thirds of the depth.

Establishing separate traditions. The four examples of functional canal architecture mentioned above set trends which established separate traditions in England and France. In France all walls tended to be vertical with masonry chains of 'headers' and 'stretchers' neatly arranged with radiating voussoirs (see Fig. 5).

The English functional tradition of battered concave walls. Battered walls were a feature of medieval castles, the lowest two metres being sloped. During a siege this enabled rocks that were thrown down from the battlements to deflect and smash into any enemy soldier trying to gouge out masonry blocks to weaken the castle walls.

A later meaning of the term ‘batter’ was applied to a retaining wall which sloped back against the ground it supported, the deeper the ground the more the wall leaned back, and the wall became more upright the further up the structure, so a high retaining wall would have a concave section.

Red Brow underbridge, Bridgewater Canal, England. Figure 4 shows the battered left wing wall (a) of Red Brow underbridge on the Bridgewater Canal, near Preston Brook. This is one of Brindley’s early structures and probably pre-dates Brindley Bank aqueduct.

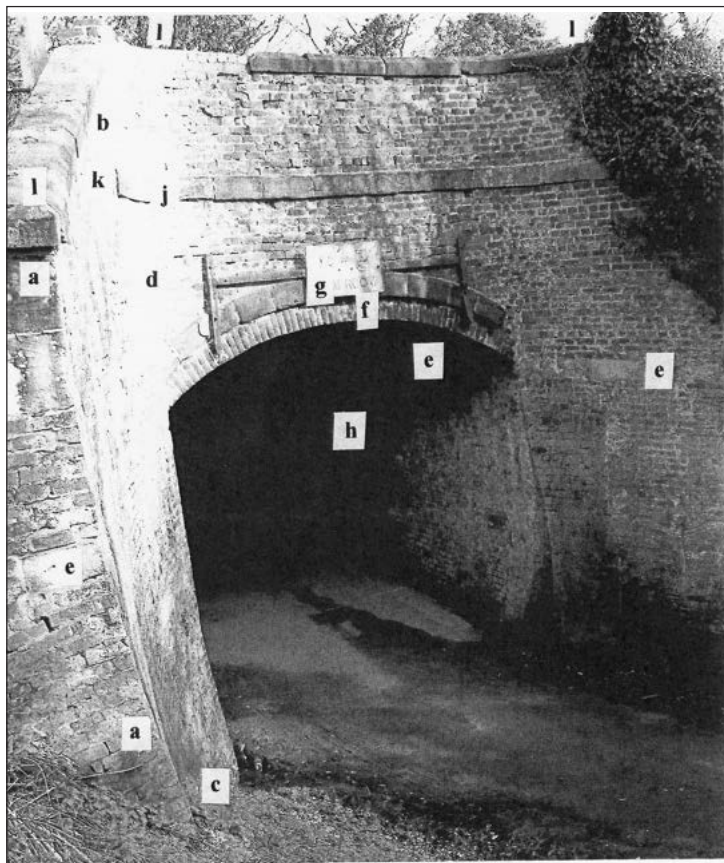


Fig. 4. Red Brow underbridge, Bridgewater Canal

The battered wing wall (a a) is straight beneath the coping (b), but changes to concave on plan (c). Above the arch the wing wall curves gently into the elevation (d). There are three courses of sandstone in the brick walls. The lowest (e e e) acts as the base from which the arch soffit is sprung, using soldier courses (f) overtopped with shaped sandstone voussoirs (g). The imposts, supporting the arch, continue the concave battered walls in the tunnel. The next stone course follows the concave curve of the elevation wall but does not link on to the coping (k). Brindley was not bothered by such an unsatisfactory architectural detail! The top sandstone course consisted of the wing wall copings which continued on the parapet (l l).

This ‘architecture of concave battered walls’ reached its zenith with the aqueducts of John Rennie, such as Wyre on the Lancaster Canal and Biss on the Kennet and Avon Canal. In regions where hard stone is found several courses, or the whole wall, was left with the front face of ‘bull-nose’ or ‘boasted’ finish, creating an attractive texture effect.

The final part of this article is concerned not with how the French tradition started but how it continued and became standardised in the 1840s. A good example is La Walck aqueduct at the head of lock 29 on the Marne and Rhine Canal (Fig. 5). It is illustrated in Graeff’s treatise *Canal de La Marne au Rhin*.¹⁸

The puzzling thing about this drawing is that it does not show puddling above the extrados or in the infill over the piers. But this canal was built between 1839 and 1853, a time when engineers were seeking ways to find a substitute for eliminating the bulky deadweight of puddled clay. The depth of water for navigation over this aqueduct was 1.60 metres. Option **a** shows an impervious layer of 12 centimetres of bitumen allowing 83 centimetres of freeboard, whilst in option **b** the puddling is 40 centimetres deep allowing 55 centimetres of freeboard: both options are possibilities. (The eventual solution was to build the entire structure using riveted panels of wrought iron.)

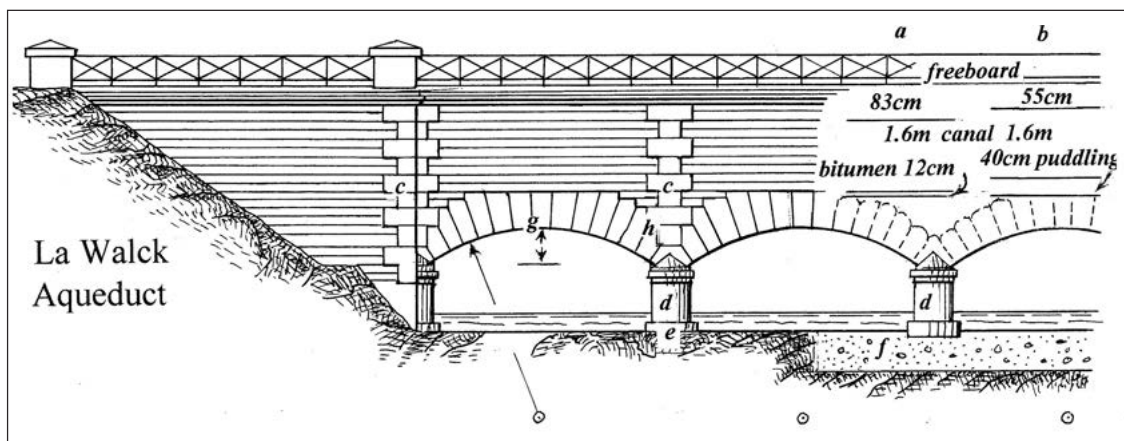


Fig. 5. La Walck aqueduct

The main characteristic of every French masonry bridge was that it must comply with ‘the law of the fifth’, which means that the width of the arch span must be five times the width of a pier between the arches. Another characteristic is the very neat ‘chain’ of ashlar freestone masonry blocks *c* which have v-section joints and are arranged ‘header’ and ‘stretcher’ vertically; each block engages two courses of smaller blocks. The chains continue upward alignments from the piers *d* or to punctuate the quoins. Also unmistakably French are protruding cutwaters *e* which are semi-circular in plan; they are the front face of the piers from which the chains continue upwards. At La Walck they are set in a metre depth slab of concrete *e* that extends the width of the river and across the width of the bridge. The arches spring from the top of the cutwaters or piers *c, d* at an angle of 30 degrees and the vertical height from springing level to crown *f* is 15 per cent of the span making a flattish arch. The arch voussoirs *g* key neatly into the chains *h* and horizontal courses.

So, what was it that so impressed Francis Egerton as a result of seeing the Canal du Midi in 1754? Though his impressions were profoundly visual, it must have been the commercial traffic that stirred his imagination. Could he have imagined England being criss-crossed by canals serving big towns, factories, collieries, quarries, etc., with enormous tonnages being hauled by teams of men from the towing path? Seeing the Cesse aqueduct may have given him the confidence to build Barton aqueduct. Malpas tunnel and the Fonserannes eight-rise locks probably convinced him that crossing any type of terrain was possible.

The English canal-building frenzy, that gave so much impetus to the Industrial Revolution, would become inevitable.

Notes and references

1. Pierre Miquel, *Histoire des canaux, fleuves et rivières de France* (Paris: Fayard, 1994)
2. Julia Elton, *Rivers and Canals: the Science and Engineering of Waterways* (London: B Weinreb Architectural Books, 1984)
3. Starting at Toulouse, on the River Garonne, the canal goes south east for 240 kilometres (150 miles) to a lagoon alongside the Mediterranean, crossing the watershed 189 metres (620 feet) above sea level. The locks are mostly oval-shaped, 5.90 metres (19 feet 4 inches) wide at the gates, 9.50 metres (31 feet) across the middle of the chambers, and 30.6 metres (100 feet) internal length. There are 99 chambers, many in staircases.
4. Joseph Jerome de Lalande, *Des canaux de navigation: et spécialement du Canal de Languedoc* (Toulouse: APAMP; Grenoble: Euromapping, 1996)
5. ‘Un canal des canaux’: catalogue of an exhibition held at the Conciergerie in Paris, 7 March–8 June 1986 (Caisse Nationale des Monuments Historiques et des Sites)
6. Hugh Malet, *Bridgewater, the Canal Duke, 1736–1803* (Manchester University Press, 1977)
7. Information kindly supplied by Samuel Vannier, the Canal du Midi Archivist, Toulouse
8. John Phillips, *A General History of Inland Navigation, Foreign and Domestic: containing a complete account of the canals already executed in England, with consideration on those projected* (5th ed, London: 1805), p. 114

9. Pierre Gerard, *Le Voyage de Thomas Jefferson sur le Canal du Midi* (Portet-sur-Garonne: Loubatières, 1995)
10. Bernard Le Sueur, *Le Canal du Midi* (Grenoble: Editions Glénat, 2013)
11. *Philosophical Transactions of the Royal Society of London*, (1669) no 56, (1672) no 84
12. L T C Rolt, *From Sea to Sea: the Canal du Midi* (London: Allen Lane, 1973)
13. Conseil d'Architecture, d'Urbanisme, et de l'Environnement (Haute Garonne), *Canal royal de Languedoc: le partage des eaux* (Portet-sur-Garonne: Loubatières, 1992)
14. Ibid
15. Chandra Mukerji, *Impossible Engineering: technology and territoriality on the Canal du Midi* (Princeton University Press, 2009)
16. Charles Hadfield, *The Canal Age* (Newton Abbot: David & Charles, 1969)
17. Peter Fraenkel and Partners, 'Inspection report concerning Brindley Bank aqueduct' (British Waterways Board, July 1983)
18. M I A Graeff, *Construction des canaux et des chemins de fer: histoire critique des travaux executes dans les Vosges au chemin de fer de Paris à Strasbourg et au canal de la Marne au Rhin* (Paris: Lacroix, 1861)



'Whitmoor marshalling yard explained, on a British Railways poster of c1950', from Simon Bradley, The Railways: nation, network and people, reviewed on p. 458.

The Eagles of Crewe – some modern myths corrected

Paul Blurton

Four Victorian cast-iron eagles can be seen at different locations at Crewe: two are at the Heritage Centre (Fig. 1), one at the entrance to the Electric Depot opposite Stewart Street and one at the Eagle Bridge Health and Wellbeing Centre on Dunwoody Way (Fig. 2).

Their original location was on Robert Stephenson's Dee bridge on the Chester & Holyhead Railway at the Roodee in Chester. They can be seen in an 1847 engraving of the collapsed Dee bridge by John Romney and also in a later Romney engraving, dated 1853, of the repaired bridge. The eagles were also mentioned three times in the report of the coroner's inquest into the Dee bridge failure of 24 May 1847. When the bridge was rebuilt in 1870–71 the eagles were sent to Crewe, along with other scrap metal. There they were saved from being melted down by F W Webb and used as ornaments on the bridge that spanned the Chester line between the locomotive works and the carriage works, all within Crewe railway works. This bridge, the 'Eagle Bridge' (Fig. 3), was only yards from where the Eagle Bridge Health Centre is now situated. However, in recent years what can only be described as a myth has become quite widely propagated, according to which the eagles were originally installed on the viaduct at Llanddulas on the Chester & Holyhead main line which washed away in a flood in 1879, or alternatively were manufactured at Crewe in the 1930s to adorn the bridge at Conwy.

However, in about 2006 a plaque was mounted on the wall of the medical centre which presented an entirely different account of the origin of the eagles:

A violent storm in 1879 saw the Llandulas viaduct on the Chester to Holyhead line partly washed away. A new bridge was quickly made in Crewe works; whilst the remnants of the old one as well as its 4 cast iron Eagles were sent to Crewe for scrap. When Francis W Webb saw the Eagles he instructed that they were mounted on a bridge that joined the carriage and steel works over the Chester line in Crewe.

They were moved from the bridge in the late 1980's when the bridge was demolished.

The Eagle that is situated here is approximately $\frac{1}{4}$ mile north from its original site on Eagle Bridge.



Fig. 1. An eagle atop the 1940 'bomb-proof' Crewe North signal box, inside Crewe Heritage Centre



Fig. 2. Another eagle outside the medical centre; it has been mounted without its shield

The mention of Llandulas was a surprising addition to the story of the eagles and completely at variance with the generally accepted account of their origin. On being asked, the author of the text in question was unable to supply a source for his statement that the eagles came originally from Llandulas viaduct; the present writer therefore embarked on his own research to establish whether or not it was well grounded.



Fig. 3. Eagle Bridge, c. 1970. The bridge in the background was sometimes erroneously referred to as the Eagle Bridge. A plaque was formerly mounted in the centre of the Eagle

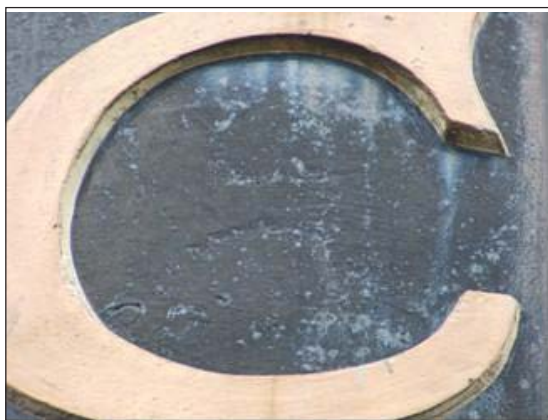


Fig. 4. An enlargement from Fig. 1. The letter H can just be discerned in the centre of the C.

A search in the '19th Century British Library Newspapers' database produced a report of the inquest into the Dee bridge disaster of 24 May 1847 which described how an eye-witness pointed to a model of the bridge and stated that the fracture occurred at the centre of the girder 'between the two eagles'.¹ Other witnesses also mentioned the eagles. Robert Board, superintendent of the Horseley ironworks at Tipton where the girders were manufactured, stated that

The girders of the Chester railway bridge over the Dee were manufactured at these works. There are two fractures – one in the length nearest to the Saltney abutment, and which was of considerable extent, 3ft. 8in. wide at the bottom, the fracture running along the web, just on the top of the lower flange, and then upwards in a slanting direction on one side and perpendicular the other side. The section of the iron at this fracture, which shows two bolt holes at the top, *made for fixing on an eagle ornament*, and doubtless considerably weakened the girder, as at these bolt holes the flange was found to be completely crushed. From the appearance of this fracture, upon the whole, we are inclined to assign it as the part that first broke. The other fracture is nearly in the centre of the middle length of the girder, and takes a diagonal direction across the girder upwards, to the extent of 4 feet horizontally.²

and also that

The eagles that have been subsequently appended to the bridge are twelve cwt. each.³

These statements are borne out by an engraving by John Romney, a well known nineteenth-century engraver who lived in Chester, which shows the bridge in the aftermath of the disaster.⁴ His engraving, which exists in at least two different versions, shows what appear to be two eagles in each bay of the bridge (Figs. 5, 6). Under magnification (Fig. 7) there can be no doubt of this: the eagles themselves are rather formless but they are clearly perched on shields inscribed 'C H' (for Chester and Holyhead, of course). Three of these four shields still survive. The letter 'H' was ground away at some stage but faint traces can still be seen, for example on the shield above the Heritage Centre (Fig. 4).

After the disaster of 1847 the Dee bridge was repaired using wrought iron and with additional supports for the decks. Despite claims made at the inquest that the girders had been weakened by the bolt holes made for them, the eagles were reinstated as shown in another engraving by Romney from 1853 (Fig. 8). This shows six eagles on the south-east side and no doubt there were a corresponding six on the north-west, making an original total of twelve. The fate of the other eight is not known: perhaps they were melted down at Crewe in 1870–71 and only four were rescued.

Where were the eagles manufactured?

The evidence of Board at the inquest indicates that the eagles were not an integral part of the girders but ornamentation that was added later. This raises

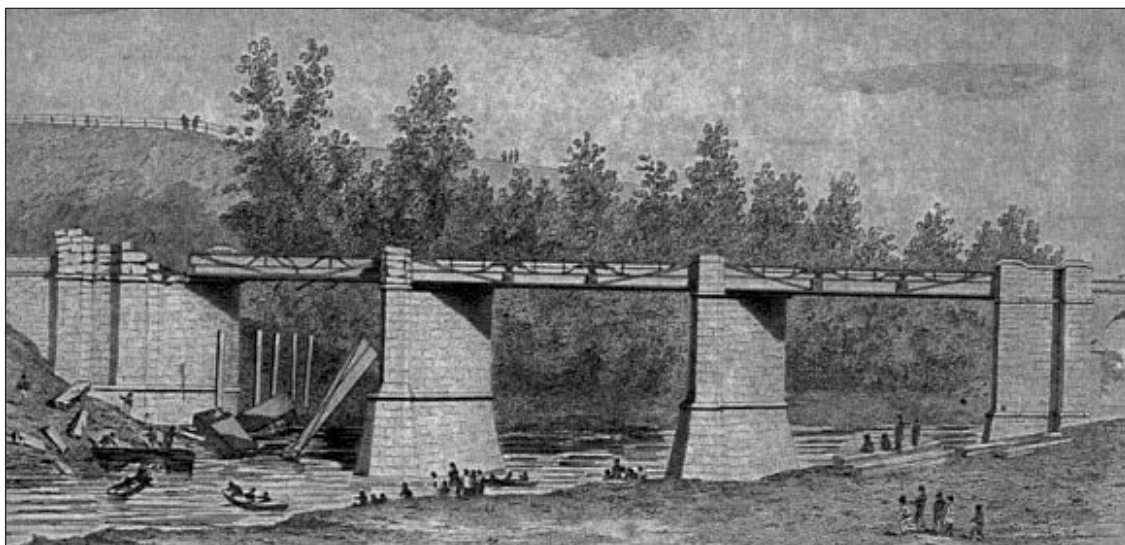


Fig. 5. Engraving by John Romney of the Dee bridge at Chester, following the collapse of 24 May 1847. Note what appear to be eagles on the bridge deck between the stone built pillars and the right hand bridge abutment.

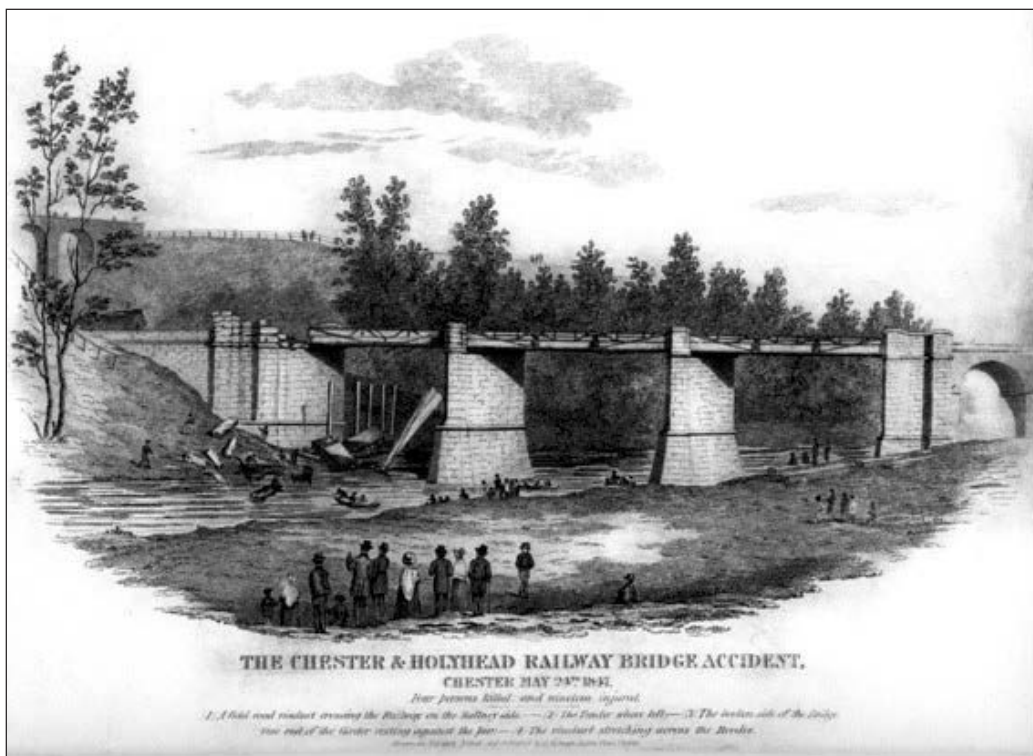


Fig. 6. A revised version of the John Romney engraving. Onlookers have been added in the foreground and a tree on the embankment on the left-hand side. The eagles are still to be seen.

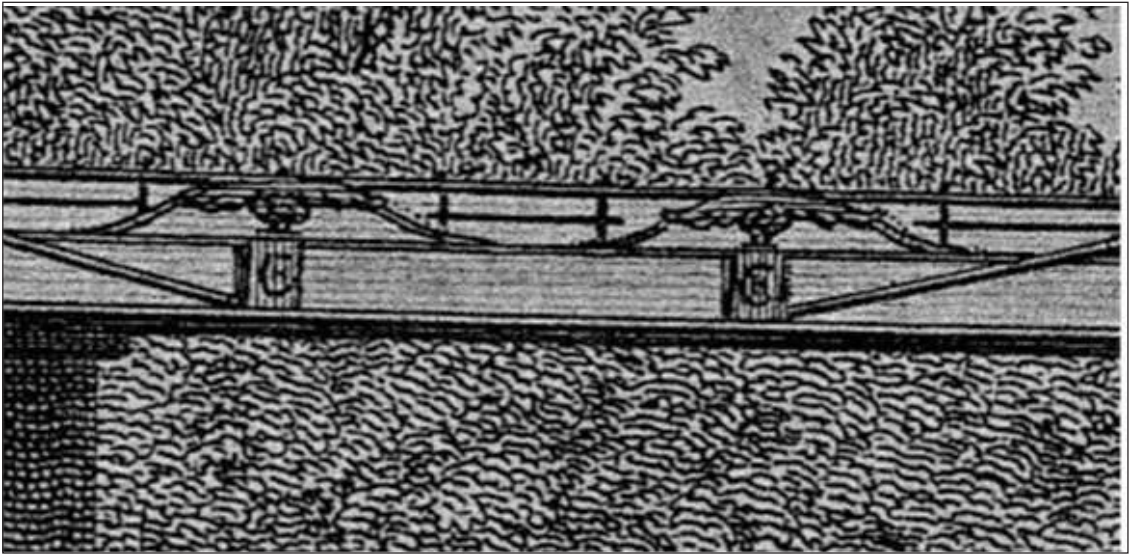


Fig. 7. An enlargement from Fig. 5 showing the eagles in more detail. Note the letters C and H on the shield (Chester & Holyhead). (By courtesy of the Revd Tony Foster)



Fig. 8. Engraving of 1853 by John Romney showing the rebuilt Dee bridge. Note that the eagles have been reinstated.

the question as to where the eagles were actually made.

Some publicity material put out by Crewe Heritage Centre states that the eagles were cast in the works in the 1930s to adorn the bridge at Conwy but this is quite untenable. The eagles are far older than the 1930s and the idea that they were intended for Conwy seems to have been suggested by nothing more than a misunderstanding of the letter 'C' on the shields. It has also been suggested that they were the work of foundries in Newtown or Bangor but no evidence has been found to support this belief in either case. In the absence of any better evidence it can only be assumed that they were produced at Horsey Ironworks. Horsey certainly made the girders and cast holes in them to carry the eagle ornaments, so it seems reasonable to suppose that they also made the eagles. The foundry's records survive in part in the Staffordshire Record Office but unfortunately they do not go as far back as the 1840s.

Llanddulas

The belief that the eagles originated at Llanddulas (or Llanddulas as it is now more correctly spelt) seems to be a very recent one that goes back no more than ten years. It is claimed that the eagles were originally installed on the viaduct that was washed away in a flood on 17 August 1879. However, accounts of the collapse in the press of the day, some of them very extensive,⁵ make no mention of the eagles and there is no folk memory or tradition in the village of them ever having been there. The viaduct was a stone-built structure and no cast-iron ornaments can be seen in photographs from the Crewe Photographic Register or the Science and

Society Picture Library of the Science Museum. The source of this notion remains a mystery with no firm evidence to support it.

By way of a footnote, it is interesting to note that a picture of Robert Stephenson's High Level Bridge between Newcastle-upon-Tyne and Gateshead, built in 1847–49, shows birds similar to those on the Dee bridge.⁶ It has not been possible to discover anything further about these.

Acknowledgments

The author acknowledges research carried out by Sue Chambers and Harry Jones, and also the assistance of Michael Gillsenan of Crewe, R Barnsdale of Conwy County Borough Council and the Revd Tony Foster, editor of *Cheshire History*.

Notes and references

1. *Daily News* (London), 17 June 1847
2. Evidence given at the inquest into the disaster, *Civil Engineer and Architects Journal*, July 1847, pp. 204–8. The italics are mine; the questionable grammar is from the original. According to the report, Board was the superintendent of the 'Mausley Iron Works', but this must be an error for 'Horsey'.
3. *Chester Chronicle*, 4 June 1847
4. The original engraved plates are now in Cheshire Record Office.
5. In particular the *Wrexham and Denbighshire Advertiser*, 23 August 1879, p. 8
6. Cyril Bracegirdle, *Collecting Railway Antiques* (Patrick Stephens, 1988), p. 32

Arnold Bennett's memories of the Staffordshire steam tram

Arnold Bennett (1867–1931) was a prolific, and at one time popular, writer. His reputation suffered a decline after his death but more recently he has come to be better appreciated. He was born in Hanley in the Potteries and the formative years spent in this district influenced much of his later work. His best known, and probably his best, novels are set within the Five Towns and are coloured by reminiscences of his early years.

Among the aspects of life in the Five Towns in the late Victorian period that he recalls are the steam trams. They were operated by the North Staffordshire Tramways Company between 1881 and 1899. Bennett gives a brief but colourful description of a ride in one of these vehicles in *Hilda Lessways*:

The steam-car was rumbling down Duck Bank. It stopped, huge above them, and they climbed into it through an odour of warm grease that trailed from



Steam tram engine and trailer on City Road, Stoke-on-Trent

the engine. The conductor touched his hat to Janet, who smiled like a sister upon this fellow-being. Two middle-aged men were the only other occupants of the interior of the car; both raised their hats to Janet. The girls sat down in opposite corners next to the door. Then with a deafening continuous clatter of loose glass-panes and throbbing of its filthy floor, the vehicle started again, elephantine. It was impossible to talk in that unique din. Hilda had no desire to talk. She watched Janet pay the fares as in a dream, without even offering her own penny, though as a rule she was touchily punctilious in sharing expenses with the sumptuous Janet.

In another passage, this time in *These Twain*, he describes the informal way in which the steam cars were operated:

In the dusky road, Edwin curtly signalled to the vast ascending steam-car, and it stopped. That was in the old days, when people did what they liked with the cars, stopping them here and stopping them there according to their fancy. The era of electricity and fixed stopping places, and soulless, conscienceless control from London had not set in. Edwin and Hilda mounted. Two hundred yards farther on the steam-tram was once more arrested, and Johnnie and Janet joined them.

As well as describing the physical experience of the steam trams, Bennett was also aware of the effect that they had on the social geography of the towns.

In *Clayhanger* he describes how the tram made possible a middle-class migration from the crowded town centres to the cleaner air of the overlooking hills. 'Bleakridge' was in reality Cobridge, then a relatively exclusive suburb between Burslem and Hanley where Bennett lived between 1880 and 1888.

A house stood on a hill. And that hill was Bleakridge, the summit of the little billow of land between Burnley and Hanbridge. Trafalgar Road passed over the crest of the billow. Bleakridge was certainly not more than a hundred feet higher than Bursley: yet people were now talking a lot about the advantages of living 'up' at Bleakridge, 'above' the smoke, and 'out' of the town, though it was not more than five minutes from the Duck Bank. To hear them talking, one might have fancied that Bleakridge was away in the mountains somewhere. The new steam-cars would pull you up there in three minutes or so, every quarter of an hour. It was really the new steam-cars that were to be the making of Bleakridge as a residential suburb. It had also been predicted that even Hanbridge men would come to live at Bleakridge now. Land was changing owners at Bleakridge, and rising in price. Complete streets of lobbied cottages grew at angles from the main road with the rapidity of that plant which pushes out strangling branches more quickly than a man can run. And these lobbied cottages were at once occupied. Cottage-property in the centre of the town depreciated.

Correspondence

Memorials to railway and canal individuals

(*RCHS Journal*, March 2015, pp. 252–256)

Robert Humm's excellent survey includes Peter Beames, but fails to link his name to his more famous father, Hewitt Pearson Montague who was briefly Chief Mechanical Engineer of the LNWR and has suffered much to his reputation by the ill-chosen words used by E S Cox to denigrate his competence. It must have been a dreadful blow to lose one of his two sons and he must have arranged for a memorial window to be installed in Christ Church, Crewe.

Sadly the church funded by the Grand Junction Railway in 1843 has had to be demolished, except for the later tower, but the stained glass window depicting Saints George and Michael and a plaque are in storage according to the Imperial War Museums website.

Kevin Jones

Some future directions for waterways history

(*RCHS Journal*, November 2015, pp. 372–376)

Joseph Boughiey suggests a range of themes, each with examples of specific neglected topics, that might be included in a new waterway history research agenda. May I be permitted to add another?

One of Joseph's proposals is a comparative study of why British canals failed to be enlarged and developed, in contrast to continental Europe and parts of North America. There is arguably a more intriguing study to be made of British canals being held up as a model, following the Napoleonic wars, that the French should follow in order to match Britain's economic development. In 1819–25 no less than three comparative studies of British and French waterways were published in France¹ which contrasted the much higher density of Britain's privately-financed, pragmatic mix of wide and narrow canals with France's public investment in a more limited system of wide canals which had a tendency to display 'ostentatious magnificence and ridiculous vanity'.

1. Joseph Michel Dutens, *Mémoires sur les travaux publics de l'Angleterre* (1819). Baron François Pierre Charles Dupin, *Voyages dans la Grande-Bretagne entrepris relativement aux Services Publics de la Guerre de la Marine, et des Ponts et Chaussées, en 1816, 1817, 1818 et 1819* (1820–40); English edition, *The commercial power of Great Britain* (1825). L F Huerne de Pommeuse, *Des canaux navigables considérés d'une manière générale* (1822).

Grahame Boyes

A reason for railway expansion in Britain from 1840 (Kyanisation)

(*RCHS Journal*, November 2015, pp. 388–389)

Further to my piece on Kyanisation in the last issue of the *Journal*, readers might be interested in this advertisement from *Aris's Gazette*, 4 October 1841, which gives details of the sale of the Anti Dry Rot Co in Birmingham. The location of this canalside property appears to have been on the Oozells Loop, offside near the New Union Mill; it had previously been a boat yard.

TO
TIMBER-MERCHANTS, BUILDERS, CONTRACTORS, AGENTS, AND OTHERS.
SALE OF
ALL THE VALUABLE PLANT UTENSILS,
SUPERIOR OFFICE FIXTURES, TIMBER,
AND MISCELLANEOUS EFFECTS,
At the Anti Dry Rot Company's Wharf, Sheepcote-street, Birmingham.

Consisting of nine strong Timber Tanks, varying in length from 11 to 90½ feet, with wood covers, iron-work, and fittings complete, round Vat to contain 3500 gallons, with pumps and apparatus, Bricks and Iron-work; also the whole of the Implements and Utensils connected with the process of Kyanising, a quantity of Oak and Fir Sleepers and Timber of various sorts, two sets of Triangles, Ladders, Grindstone, Wheelbarrows, Water Butts, Iron Vice, Cramp, Chain Timber Dogs and odd Iron-work, old Metal and Lead, Smiths' Bellows, Carpenter's Bench, Iron Rack and Manger, Boxes and odd Wood; likewise the excellent and very complete Office Fixtures and Fittings, large lettered Sign-boards and Bearers, and numerous other valuable Effects.

TO be SOLD by AUCTION, by S. BLOORE, jun. on Tuesday, October 12, on premises above-named.
Sale to commence at eleven o'clock precisely.
N.B. The whole of the sound and excellent Timber forming the Tanks, &c. might be converted to building or other purposes to great advantage.
Any other information may be had by applying to Mr. W. E. Lloyd, Cherry-street, or to the Auctioneer, New-street, both of Birmingham, at whose offices catalogues may be obtained on Thursday next.

Ray Shill

The importance of fieldwork in researching railway history

(*RCHS Journal*, November 2015, pp. 377–387)

The message of the article by Michael Aufrere Williams is an important one, and the value of fieldwork in complementing and validating other forms of research cannot be too highly stressed. With the vast amounts of data available electronically one can see researchers being more and more led down that well known path lined with good intentions to conclude that it is no longer necessary to move from one's desk to complete any given project.

Apart from the lack of exercise being bad for one's health, this is a complete fallacy and Williams's article should be a standard text for any would-be researcher. My own experience chimes exactly with that of Williams. Many years of field walking the 33½ miles of the former Cromford & High Peak Railway have not just elucidated what was written about the line, contemporaneously and since, but also identified much that has never been written about at any time.

Even a well trodden (on the page) theme, the subject of repetition in authoritative publications over many years, still should be checked out by personal observation. Repetition in print does not make something true, if the facts were wrong in the first instance.

Perhaps I may be permitted to give a rather dramatic example of this from another project in which I am closely involved. Just over a 100 years ago the first naval battle of the Great War took place in the Falkland Islands, ending in a decisive victory for the British forces and the sinking of the two German armoured cruisers that took part in the encounter. Nothing surely could be simpler than identifying what took place in the battle and, more significantly, where it took place. The British warships, departing at full speed from Port Stanley, soon caught the

retiring Germans and the encounter could be seen from the land. Yet there is only one contemporary account by a participant in the engagement and no known location for the sunken warships. A multi-million pound search project is now going on to carry out the all important fieldwork necessary. Understandably, since the search has to penetrate 5,000 feet of water, walking an old railway or canal is far easier!

William Featherstone

The full name of 'C Camwell' (p. 378) was William Arthur Camwell (18 November 1906 – 14 January 1995).

Owen's Cliff signal box (p. 381) is shown (as 'S.B.') on the OS 6 inch map re-surveyed in 1893 and published in 1895 – see <<http://maps.nls.uk/view/100941776>>. The box itself is even more clearly marked on the OS 25 inch map of 1894 – see <<https://www.old-maps.co.uk/#/Map/483821/515791/12/100392>> – just south of the mouth of Kettleness tunnel but on the *opposite* (coastal) side of the line from the position Dr Williams speculates. The signal post – carrying *both* home signals, as mentioned in Fig 9 – is also marked. Both box and signal post have gone by the edition re-surveyed 1911–13 and published in 1919 – see <<http://maps.nls.uk/view/100941773>>.

However, what Dr Williams doesn't tell us it why the NER originally deemed a signal box with no crossing loop necessary in this location – and had then, by some 20 years later, changed its mind! The box's only function can have been to break up the block section and to allow two trains running *in the same direction* to follow each other more closely than would otherwise have been the case.

Also, *if I'm scaling the map correctly*, I'd put the open-air distance between the Sandsend (or Deepgrove) and Kettleness tunnels as nearer 300 yards than the '100 yards of so' given on p. 381.

Richard Maund

Reviews

***The Railways: nation, network and people* — Simon Bradley**

648pp, 280x205mm, 63 b&w and 22 colour illustrations, 2 maps & diagrams, hardback, Profile Books, 3 Holford Yard, Bevin Way, London WC1X 9HD, 2015, ISBN 978 1 84668 209 4, £25

In recent years there have been several general histories of railways in Britain, but few as generously proportioned as this one. With more than 550 pages of text available, its themes can be explored in greater depth than is usually possible.

The book is divided into two parts: 'In the carriage' and 'Down the line'. The first of these, containing eight chapters, focuses on the ways in which railway travel changed society. It examines the passenger's experience of the train, the staff and, not least, other passengers. Authors such as Dickens, Wordsworth and Trollope are drawn on frequently in this context. Succeeding chapters cover worrying topics such as accidents, health hazards, pickpockets, lechers and murderers. Chapter 7, 'The improved British railway train', brings the story up to date, including inter alia consideration of alarm systems, corridors, diners, and the shortcomings of Pacers and Pendolinos. Sleeping cars are given a separate chapter.

'Down the line', with nine chapters, is rather more technical, dealing with subjects such as the permanent way including the gauge question, telegraphs and signalling, the intrusion of the railway upon landowners, the Modernisation Plan, and the decline of traditional freight traffic. The chapter on 'Goods and services' considers the inability of early

legislation to protect railway staff from death and injury. 'Managing' covers both railway accountancy and the ability of plausible rogues such as Hudson and Redpath to circumvent it. The remaining chapters deal with the features and practices of the railway station, including railway hotels. The story concludes by examining 'Information and image', including train indicators and advertising, and 'Enthusiasm', which looks at loco-spotting and railway preservation.

The book's overall emphasis is on the social rather than the mechanical history of the railway, and motive power does not feature strongly. Nor is there any significant mention of railway shipping, road or air services. These caveats aside, the book is comprehensive and a delight to read. At all times entertaining, authoritative and well written, it is an absorbing account which deals with many more aspects of railway history than can be mentioned here, and will appeal both to the layman and to the more knowledgeable.

There is a representative selection of illustrations, some of them being reproductions of posters and handbills, but these are not a strong feature of the book. The index and bibliography are particularly detailed, and all references are listed.

GRAHAM BIRD

***Time for Coppernob* — Denny Mallows**

128 pp, A5, 36 watercolour illustrations by Philip Bannister, softback, Cumbrian Railways Association, 2015, ISBN 978 0 9570387 4 5, Book Sales, 50 Tattershall, Toothill, Swindon SN5 8BX, £7.95 (See the CRA website for a 'taster'.)

It is unusual for a work of fiction aimed at children (aged 7+) to be reviewed here, but a book published by the Cumbrian Railways Association and featuring *Coppernob*, the preserved Furness Railway locomotive, is always going to be worth consideration.

The heroine of the story is Liana, a young girl, whose widowed father works at the National Railway Museum in York. Together with her friend, Joe, she spends a lot of time in the NRM after school waiting for her father to finish work and becomes attached to the old locomotive. Without revealing too much about the plot: they discover that by moving a lever in a signal box there they are able to travel through

time back to Barrow-in-Furness where they meet *Coppernob*'s old driver and his family. They travel to different periods in the locomotive's life including the British Empire Exhibition and the bombing of Barrow station in the Second World War when *Coppernob*, which was proudly on display there, had a narrow escape from destruction. On their travels the children resolve some problems concerning the locomotive's future in York as well as unravelling some mysteries in Liana's own family life. Needless to say everything ends happily.

I thoroughly enjoyed the book – I could hardly put it down!

RICHARD COULTHURST

Thomas Hackworth: locomotive engineer — George Turner Smith

144pp, 234x156mm, 56 b&w illustrations, softback, Fonthill Media, Millview House, Toadsmoor Road, Brimscombe, Stroud GL5 2TB, 2015, ISBN 978 1 78155 464 7, £16.99

Thomas (1797–1877) was Timothy Hackworth's junior brother by 11 years. In 1811 he was offered an apprenticeship as a smith at Wylam Colliery where Timothy was foreman under William Hedley. After the building of *Puffing Billy* and while the *Wylam Dilly* was being constructed, Timothy walked out, refusing to work on the Sabbath. Thomas chose to remain to see out his apprenticeship and so gained first-hand experience of constructing and maintaining locomotives. He then joined Timothy at Walbottle Colliery before they both got involved with the Stockton & Darlington Railway and formed a partnership with Nicholas Downing at Shildon. By 1840 he had left and formed the partnership of Fossick & Hackworth at Stockton with premises adjoining the Clarence Railway.

Smith describes the development of locomotive design at these companies without suggesting Thomas was responsible for any innovation. Whilst Timothy was a designer, Thomas's career was more as a manager. In the final chapters he describes the legacy of these companies beyond the Hackworths.

Two appendices list details of all locomotives and marine engines in whose construction Thomas played some part. A summary of parallel CVs of the two brothers would have been useful as an appendix.

As with his previous book, *Wylam: 200 years of railway history* (reviewed in the July 2013 issue of the *RCHS Journal*), Smith has avoided the academic approach of the Early Railway Conference papers. However, the lack of source references means it is difficult to see this book being cited as an authority, there being no indication what is newly discovered from the author's primary research (into the Hackworth papers for example) as opposed to churned opinion from the printed works of his bibliography. Certainly there are some factual errors and other issues which are controversial.

His chatty style would jar on many professional historians. Yet it is a worthwhile read and his two books make some sense of the complicated early business history of locomotive building in the north-east, rather than just concentrating on the technical.

STEPHEN ROWSON

Minutes of Meetings of the Cromford Canal Company 1789–1799: Derbyshire Record Society, Volume XXXIX — Hugh Potter & Philip Riden (Editors)

224pp, A5, hardback, Derbyshire Record Society, 9 Owen Falls Avenue, Chesterfield S41 0FR, 2015, ISBN 978 0 94632 438 5, 30 (plus £3 p&p)

The Derbyshire Record Society has a good reputation for printing primary transport documents. This volume joins the *Minutes of the Chesterfield Canal Company (1771–1780)*, *The Records of the Cromford & High Peak Railway*, and *Trent Navigation Company Gauging Books (1799–1919)*, and, like them, is a handsome and well-produced volume.

It commences with a 24 page introduction by its two eminent editors, which not only sets the minutes in context but also provides a commentary on the affairs of the Company during the period covered. The transcription of the minutes – general, special general and committee – follows without further division or annotation, and the book concludes with a comprehensive index. The period covers the building of the canal, unsurprisingly attended by difficulties physical and human, and requiring the injection of additional capital, and the early operation

of the canal including its relations with other canal companies.

Only two small caveats need to be made: a map showing the locations mentioned would help those not familiar with the area, and brief biographies of the principal shareholders would be both helpful and interesting. Still, the volume is a valuable addition to the corpus of printed early canal records, and is, although dry company records, an interesting and entertaining read. We may never know why Sir Richard Arkwright received ten times as much per acre for his land as anyone else but we can hope the next minute book will tell us what happened to Mr Hunter's compensation claim for the coal under the canal he was prevented from excavating. The remaining (two) minute books of the Company until its purchase by the Midland Railway in 1852 are extant, and their publication by the Derbyshire Record Society is highly desirable.

WILLIAM FEATHERSTONE

***Canals: the making of a nation – a journey into the heart of industrial Britain* — Liz McIvor**

312pp, 225x140mm, 1 map, 25 pictures & 15 colour plates, hardback, BBC Books, an imprint of Ebury Publishing, 20 Vauxhall Bridge Road, London SW1V 2SA, 2015, ISBN 978 1 84990 108 6, £16.99

Liz McIvor is the Curator of Social History and Technology for the Bradford Museums. The book complements a six-part television series which, through a series of interviews with key experts, considers the themes identified by the chapter headings. The author warns that the book is ‘not intended to be a concise history ... [but] a gentle way in for those who are interested in British history and culture’. It does just that.

Chapter 1, ‘The new capitalism: London’, explores the capital markets and the way these were used to support major infrastructure developments; the value of shares purchased by the public providing the means by which canals could be funded. The example of the Grand Junction Canal is used as a case study. Chapter 2, ‘The engineers: Yorkshire’, uses the Leeds & Liverpool Canal to identify the issues that the succession of canal engineers had to confront to achieve their various tasks. The third chapter, ‘The geologist: The Kennet & Avon’, points up how the demands of the port of Bristol became a driver for

new inland links and highlights the role John Rennie played in creating the key structures. It also identifies the role that the Somerset Coal Canal [sic] played in creating the scientific study of geology.

The fourth chapter, ‘The workers: the Manchester Ship Canal’, shows how Manchester became a driver for the industrial development of the north-west. It identifies the way in which the Irish provided a reservoir of labour to facilitate the construction of the Ship Canal. Not surprisingly, the role of ‘organised labour’ also receives attention. Chapter 5, ‘The family: the east midlands’, identifies the growth of manufacturing and the role of the industrialist, highlighting the plight of the poor and the work of the social campaigner, George Smith. The final chapter, ‘The designers: Birmingham’, looks at the way functional buildings created their own value along the canals and how these today are valued by the leisure users.

An interesting approach to interpreting canal history.
ROGER SQUIRES

***The Regional Railways Story* — Gordon Pettitt & Nicholas Comfort**

240pp, 280x205mm, 12 b&w and 230 colour illustrations, 10 maps & diagrams, hardback, Oxford Publishing, Heritage House, Hamm Moor Lane, Addlestone KT15 2SF, 2015, ISBN 978 0 86093 663 3, £30

In similar format to its two predecessors on InterCity and Network SouthEast, this volume relates the growth, development and transformation of the organisation which, from 1990 to 1997, was known as ‘Regional Railways’. The main author was formerly its Managing Director and this means that we get the ‘inside story’ on the developments described.

The first six chapters are broadly chronological, starting in the 1970s with the run-down and demoralised state of many local lines and services and the continuing threat of their possible closure. The story then moves on to a slow but steady improvement in the guise of the Provincial Sector, designation as Regional Railways in 1990, and the transition to a privatised operation. The remaining seven chapters are subject-based, covering topics such as urban services (including the involvement of the PTEs and the development of local identities such as Midline), the increasing success of inter-urban services, and efforts to minimise costs on the more rural lines.

Whilst in broad outline the story will no doubt be

familiar to many, the clarity and detail with which it is related here mean that the book is an eye-opener. At all stages there is a clearly related analysis of the challenges involved in turning the operation round. Chapters 5 and 6, covering the privatisation process and its aftermath, well relate the managerial frustrations involved in responding to the rapidly changing demands of politicians, developing marketable proposals, and at the same time keeping the existing railway running. Chapter 11, ‘Engaging with communities and stakeholders’, brings out particularly well the varying attitudes and successes of local councils with sometimes conflicting interests and policies; Chapter 12 deals with rolling stock matters including the early mechanical troubles with the Pacer units and the long delays in delivery of later rolling stock. The main text concludes with a look at the future and a postscript on the case of the Settle & Carlisle line.

The book is profusely illustrated, indeed some may feel that there are rather too many small images at the expense of fewer, but potentially more effective, larger

ones. And some of the acronyms used – MOIRA, CAPRI and the like – may be unfamiliar to lay readers, as will many of the individuals mentioned. But these are minor criticisms.

The ten appendices (here termed ‘Factfiles’) include a chronology and statistics on topics such

as finance, punctuality, journey times, line and station reopenings, and closures. Some of these are particularly useful but it is difficult to follow certain of the ‘Stations’ figures in Factfile G1.

A bibliography and index round off a revealing account of the subject. GRAHAM BIRD

***La Navigation intérieure sous l’Ancien Régime: naissance d’une politique publique* —**
Éric Szulman

376pp, 241x165mm, 16 pages of plates, maps & diagrams, softback, Presses Universitaires de Rennes, 2014, ISBN 978 2 7535 2942 7, •22

This account of public policy towards inland navigation in France between about 1660 and 1789 will be of interest to British historians for several reasons, not least as an illustration of the very reasonable price at which French university presses are able to issue lengthy monographs in good quality paperback editions. There is also a full bibliography which would be an excellent starting point for anyone wishing to read more on the subject.

The main thrust of the author’s argument, in a series of detailed, closely documented chapters, is that from the time of Colbert and Vauban down to the eve of the Revolution, the French developed a coherent policy towards the improvement of rivers and the building of junction canals. Their aim was to unify what the French call their ‘national space’, to expedite the distribution of corn and other products from inland provinces to coastal regions, and to try to create a national market. There is less emphasis on the distribution in the opposite direction of imports (from the French West Indian colonies or the Far East) and little on the coal trade, which dominates discussion in England. French policy was more concerned with the supply of firewood to Paris (and some other cities), not least by opening some rivers to *flottage* (rafting timber downstream), where full navigation was impractical. In England most firewood seems to have reached London coastwise from Kent. Szulman makes only occasional reference to coastal traffic as an adjunct to inland navigation, whereas in England, from Willan’s time onwards, a central tenet of the historiography has been that the two were complementary aspects of the same process. It may be that Szulman felt he could not also tackle the coasting trade in what was already a lengthy study, or it may be that *cabotage*, as others have suggested, was simply less important in France.

Overall, Szulman is more optimistic about inland navigation in France before the Revolution than the

only other (admittedly much shorter) modern account, the first chapter of Reid Geiger, *Planning the French Canals* (1994). He feels that more was achieved than has been assumed, even if policy fluctuated between direct action by the State, concessions to private individuals, and encouraging the provincial Estates (especially in Burgundy) to improve rivers and build canals. Inevitably, there were tensions between these interests, but Szulman argues that in the thirty years before the Revolution the State, principally through the all-powerful Ponts et Chaussées (and having largely given up on failing private enterprise), achieved as much, in a distinctively French way, as either the English, with their reliance on private construction and operation, or the Dutch, whose municipalities created a dense network of inter-urban waterways. He compares total expenditure in France and England, using figures from J R Ward, *The Finance of Canal Building in Eighteenth-century England* (1974), suggesting that the two were similar.

Historians of English waterways will envy the much greater richness of archival sources in France. Szulman cites hundreds of reports in the Archives nationales relating to projects throughout the country, many of which include valuable general observations on transport by land and water, and on the need to improve internal distribution. There is, of course, nothing comparable for England. Nonetheless, this book should stimulate English scholars to look afresh at why and how rivers were improved and the earliest canals built in Britain between the Restoration and the late eighteenth century, and to consider why England and France followed such different routes, both then and later, to the modernisation of inland transport (and indeed many other aspects of economic policy and public administration).

PHILIP RIDEN

***Trent & Mersey Canal Trade and Transport 1770–1970* — Tom Foxon**

280x212mm, 280 b&w photographs, 17 maps & plans, hardback, Black Dwarf Lightmoor, Unit 144B, Lydney Trading Estate, Harbour Road, Lydney GL15 5EJ, 2015, ISBN 978 1 903599 22 8, £25

The author, a former working boatman, has successfully combined recollections and experiences from his early career of the canal-carrying trade during the 1950s with his more recent researches into the wider history of that subject. The extent of his knowledge and quality of the research performed are clearly apparent in the narrative.

The book explains the interaction between the canal and the industries in the areas it served and how the trade operated. Initially promoted by Josiah Wedgwood, the Trent & Mersey Canal was built as a 93½ miles waterway linking the rivers Mersey and Trent. As a result of Wedgwood's foresight the canal and the services it provided were a major contributor to the growth and success of the pottery industries of Stoke and north Staffordshire. The canal provided a vital transport link with the Mersey ports through which most of the raw materials were imported and the finished ceramic products exported.

The predominant trade associated with the pottery industry is covered in the opening chapters of the book, which include descriptions of the industry, the raw materials used in the manufacturing process, names of carriers and locations of the numerous

wharves used for transhipment and storage. Later chapters describe other cargoes that were regularly carried along the canal. These cargoes included coal, coke, metal products, timber, building materials, salt, chemicals, liquid fuels and foodstuffs. The final chapter describes the decline of cargo-carrying trade on the Trent & Mersey Canal, the majority of which had ceased by 1970.

The book is generously illustrated with images reproduced from old photographs and postcards, mostly sourced from private collections and local archives. The scenes and subjects, including maps and drawings, are particularly interesting and their associated captions are informative. There is a contents page, a list of reference sources at the end of each chapter and a comprehensive index.

The book contains a considerable amount of previously unpublished material and undoubtedly makes an important contribution to the mercantile history of the trade that operated for 200 years along the Trent and Mersey Canal and its interconnecting waterways. A highly recommended read for waterway historians and enthusiasts.

GERALD LEACH

***The Great North of Scotland Railway: a new history* — David Ross**

256pp, 280x220mm, many b&w pictures, 6 maps, hardback, Stenlake Publishing, 54 Mill Square, Catrine KA5 6RD, 2015, ISBN 978 1 84033 701 3, £30

This is the fifth book in five years by David Ross on the five major railways of Scotland. It consists of: 21 chronological chapters from the 1830s to 1923; brief chapters on the character of the company (from bad to good over the years) and an overview of rolling stock; two appendices carrying a case study of industrial relations and a snapshot of the company in 1913; and a timeline. As with all the books in the series, the primary sources are extensive.

The initial background information, on inception and development in a wider area, is difficult to follow, partly because of the lack of an overall map. Indeed the maps generally are a disappointment as they are repetitive and not comprehensive. Some important information is to be found only in the timeline and not in the text.

Previous reviews of the series commented on the single-column format on a large page, making it

difficult to read. This has not changed. On the other hand, some of my own comments on *The North British Railway* (in the March 2015 issue of the *RCHS Journal*) seem to have been addressed, in that some minor information is in the footnotes not the main text, the captions to the photographs do not contain any information which should be in the main text, and any details in the captions are indexed. There is also some grouping of themes outside the chronological order. This makes the book easier to read, and less like a simple compendium of information.

If, in any second editions of any of the books, the editors were to rearrange the material so as to combine the best features of any of the five volumes, this would be a definitive series which should set a benchmark for others and be the last word for the foreseeable future.

DAVID PEDLEY

The Functions & Organisation of the Midland Railway Engineer's Department

— A E Overton & R F Burrows

90pp, A4, 93 illustrations, 9 maps, 11 organograms, softback, Midland Railway Society, Highview, Roade Hill, Ashton, Northampton NN7 2JH, 2015, ISBN 978 0 95374 869 3, 12.95

In his foreword Ian Howard, Editor of the Midland Railway Society's *Journal*, says 'this book is unique, for nowhere am I able to find anything that resembles the depth and breadth of this study of the Engineer's Department of any great railway company of the Victorian and Edwardian eras (one might add of any era)'. This encapsulates exactly what this book is about and equally exactly states what is its achievement. And all this is complemented by the many fascinating, rare, and well reproduced illustrations, immaculate editorial standards, useful footnotes, and the pleasure of both subject and personnel indexes. The innovative use of organograms (organisation charts) to provide easy reference to structural and managerial changes is particularly helpful.

Surprisingly, the functioning of this part of a railway company's operations has been largely ignored by general and specialist historians alike. Crucial to the running and safety of a railway, it includes: virtually the entire railway infrastructure – stations, bridges, permanent way, warehousing, cranes; all the signalling arrangements – signals, signal boxes, crossing gates, wagon turntables; the telegraph – the prime means of communication; and the whole of the land

and properties owned – for example, in 1913 the Midland Railway had 25,000 tenants paying a total of more than £175,000.

Following an introductory chapter, the next three chapters are chronological, covering the periods 1844–1875, 1875–1883, and 1883–1922, the split determined by the careers of the Chief Engineers of the company. Chapter 5 looks at the entire breadth of the Engineer's Department in the years 1914–1915, which the authors consider to be its zenith. Chapters 6 to 9 describe a number of specific functions within the Department: Telegraph, Signal, the Derby Signal Works and the Estate Department. The final chapter usefully describes the interface between the Department and its controlling Board sub-committee, Way and Works. There are five interesting appendices of sidelights on the main story.

The fourth explains why neither this nor any other work on the Midland Engineer's Department can be truly definitive. In 1967, during the Derby Works holiday period a 30 foot high bonfire of the Department's records was kept alight for three days! If not definitive it will be a standard work of reference for many years to come. **WILLIAM FEATHERSTONE**

A history of the Berks and Hants line, Reading to Westbury — Peter Simmonds

208pp, 275x213mm, 195 photographs (31 coloured), 43 maps, plans & track diagrams, hardback, Noodle Books, PO Box 279, Corhampton, Southampton SO32 3ZX, 2014, ISBN 978 1 906419 88 2, £30

The Berks & Hants was not a typical railway. Starting as a branch line, it became part of a network of secondary lines radiating from Newbury and then from 1906 the Great Western's principal main line from London to the west country. Likewise, this history of the line does not follow a conventional pattern. It begins with a description of the line in the form of an imaginary journey from Reading to Devizes in 1865. Thereafter the history is presented chronologically.

The first four chapters are essentially an historical geography of not just this line but of all the lines projected and built into its territory up to 1900, set against the background of the GWR/LSWR rivalry and the gauge war. The focus is on railway politics and the development of the network. The other four chapters take the story up to 1993, the author not feeling competent to deal with the privatised era. These concentrate on the Berks & Hants itself, in increasing detail, although still focussing primarily

on changes to the infrastructure.

A flavour of the line's freight traffic emerges from the many references to private sidings. But other aspects of the line's history, such as staffing, passenger traffic, train services, locomotives and rolling stock, are mentioned only incidentally when they impinge on the infrastructure. Social history is not considered. There are indexes of places, personalities, railway companies and other organisations, but significantly there is no index of subjects.

Frequent sub-headings make the book easy to navigate. Each chapter ends with lengthy notes and lists of Acts, archival sources in the Berkshire, Hampshire and Wiltshire Record Offices, relevant books, magazine articles and references in newspapers. The book is attractively produced and, provided one understands what it is (and is not), a useful work of reference.

GRAHAME BOYES

Care on the Cut: every boater matters

— Della Sadler-Moore, Lorna York & Christopher M Jones

301pp, 248x190mm, 137 illustrations, 40 tables, softback, privately published by Del-Lor-Chris Publishing, 2015, ISBN 978 0 9933780 0 3 £18.99 from the Canal Museum, Stoke Bruerne. (Copies may also be obtained from the Canal Book Shop, Audlem Mill, for £19.95 + £2.80 p&p. This is a limited edition which is selling well so please check its availability before sending any money.)

Information on the back cover of this publication tells us that 'this long awaited book on Sister Mary Ward, the Family Boaters' Nurse on the Grand Union Canal, whose Surgery was housed in her family home in Stoke Bruerne, Northamptonshire. The book traces the health and well-being of family boaters throughout the commercial carrying era on the Grand Junction /Grand Union Canal from 1805 to 1962, and Sister Mary's family who were an integral part of boater's lives as they passed Stoke Bruerne for over a century.'

This it does, with more besides as it covers the background and building of the canal as well as giving a considerable amount of detail of the workings of the family-run boats operating on it. With a dozen appendices and over 500 end-notes or references, the reader (should they so desire) will be well able to

take further any matters arising.

This book will appeal to everyone interested in the social as opposed to technical and historical side of canal operation over nearly 200 years, rather longer than the life of the book's main subject. The depersonalised extracts from her case books and surgery diaries give a clear picture of the hardships endured by boaters and their families during the period of there being a Consultant Sister to Long Distance Boatmen & Families at Stoke Bruerne. Working for a pittance from just the Grand Union Carrying Company, Sister Mary did not restrict her care to just that one, assisting all boaters alike when they passed through her patch.

If I have any reservations about the book, they lie with the darkness of the printing of the photographs, as some details are quite difficult to pick out.

MIKE CONSTABLE

Lakeland Waterways: a history of travel along the English Lakes

— Robert Beale & Richard Kirkman

192pp, 280x220mm, 267 illustrations (many in colour) including maps, hardback, Lily Publications, PO Box 33, Ramsey, Isle of Man IM99 4LP, 2015, ISBN 978 1 907945 86 1, £19.95

This extensively researched history of water transport on the English Lakes is surely the last word on the subject. It is profusely and excellently illustrated including many pictures of historic value. The two-column text is extremely detailed, with contemporary accounts from old local newspapers and Lake District guides.

The book begins with an account of tourism in the Lakes, starting with Defoe in 1772, covers early road improvements, then railways and now bus services. The Furness Railway's extensive steamer services on Windermere, its connecting cross-Morecambe Bay steamers from the Lancashire coast, and Alfred Aslett's circular tours by rail, road and water are all described. There follow chapters on the largest lakes: Coniston Water, Derwentwater, Ullswater and Windermere. The Windermere chapter is much the longest, as befits the largest and busiest lake. All four were used for transport from mediaeval times and earlier – on Windermere from the Neolithic period – serving local industries such as quarrying and

charcoal-burning and, on Ullswater, carrying mails. Piers and landing-stages are described.

The Windermere chapter examines in detail the growth of steamer services, launches and boat hire. Some craft have been extraordinarily long-lived. Ferries are fully examined, together with little-known activities such as dredging for sand and gravel – as recently as 1975 – and even a short-lived passenger-carrying submarine.

Appendices detail boat-builders, private steamers, aviation on Windermere and Ullswater, and boating on the smaller lakes. There follow fleet lists of Furness Railway cross-bay vessels and craft on the four larger lakes, detailing building dates, builders, owners, disposals, dimensions and engines. An extensive biography indicates the authors' depth of research.

Sadly this splendid book is severely disadvantaged by lack of an index, so very essential if it is to become a standard work of reference, which it undoubtedly deserves to be. Otherwise it is excellent value for money.

GORDON BIDDLE

***James Brindley and the Duke of Bridgewater: canal visionaries* — Victoria Owens**

159pp, 234x156mm, 34 photographs (mostly colour), softback, Amberley Publishing, The Hill, Merrywalks, Stroud GL5 4EP, 2015, ISBN 978 1 4456 4966 5, £15.99 (e-book also available)

The author's stated aim is to examine the working partnership between James Brindley and the Duke of Bridgewater and the reasons for its success – said to be little explored. That is certainly the focus of the early chapters: mediated by Gilbert, the Duke's agent, the relationship is described as subversive, with all social distinctions dissolved. It shaped the courses of both men's lives as they worked to bring about the Duke's canal.

However, the second half of the book explicitly concentrates on Brindley and his subsequent canal projects. It includes his later relationship with Josiah Wedgwood, providing an interesting comparison to that with the Duke. This is therefore largely a biography of James Brindley, with a briefer account of the Duke of Bridgewater. That is not to decry the book's many merits; it is simply mis-titled.

Although the text is dense, it is helpfully broken down into very readable individual topics within chapters. A few new primary sources have been found, but almost inevitably, the book has to draw

on many that are well known and on previously published biographies. Perhaps as a consequence, there is much re-assessment of previous work, including the hoary chestnut of Brindley's contribution to the Bridgewater Canal – here, intriguingly, as both promoter and potential fall-guy.

More generally, it is hard to accept criticisms of other authors for drawing conclusions from sparse evidence, when the many explicit suppositions made here carry the same admitted caveat. Nonetheless, some interesting issues are freshly aired; for example, the problems with the Barton aqueduct, the extent of Brindley's lock-building limitations, and his aversion to river improvements.

Assiduously referenced, with a good bibliography and index, and colour photographs, this book will appeal to many readers who are looking for a well-written and very readable account of James Brindley, his diverse relationships and his myriad canal undertakings.

PAUL J SILLITOE

North Eastern Railway Branch Lines: North Yorkshire & Cleveland Railway

— Peter J Maynard

76pp, A4, 61 b&w & 20 colour photographs, 21 maps & diagrams, softback, North Eastern Railway Association, NERA Sales Officer, 15 Woodside Drive, Darlington DL3 8ES, 2015, ISBN 978 1 873513 98 9, £12.95

The first half of the book is a company history of the very short lived North Yorkshire & Cleveland Railway Company. This was authorised in 1854 to connect the port of Whitby and the mineral deposits in the Cleveland district with the industrial heartlands of County Durham via a connection at Picton with the Leeds Northern Railway. As with many small enterprises, it proved advantageous within four years to merge with the North Eastern Railway which slowly completed the principal line by 1865. This completion took lower priority than the exposed Rosedale mines branch and that to Ayton and thence Middlesbrough, now expanding rapidly to become the area's main town and port.

Mineral exploitation proved over-optimistic or short-lived, with such industry as had developed closing by late Victorian times and the remainder declining till closure in the 1920s. Lost hopes were exemplified by the three-road Battersby locomotive

shed which was only active for two short periods in the 19th century. Whitby never developed in the way envisaged, so by the 1920s the line had become a backwater. The closure of the Picton–Battersby section came early in the British Railways era. A debatable decision in the Beeching period caused the remainder of the line to become, with a reversal onto the Battersby–Guisborough–Middlesbrough line, the only rail connection with Whitby.

Branch line histories are widespread and increasingly detailed, but this history strikes a good balance. The story is to a large extent completed in the second half of the work which separately describes and illustrates the individual stations, their layouts, traffic and senior staff history in a concise fashion. Pulling together the whole history of the line as an NER/LNER/BR branch therefore requires careful attention. However the excellent and precise research ultimately produces a satisfying whole.

BRIAN JANES

***River, Railway and Ravine: foot suspension bridges for Empire* — Douglas Harper**

164pp, 225x245mm, 129 b&w and colour illustrations, hardback, The History Press, The Mill, Brimscombe Hill, Brimscombe, Stroud GL5 2QG, 2015, ISBN 978 0 7509 6213 1, £20

John Harper was an iron gate and wire manufacturer in Aberdeen; level crossing gates and lineside fences for railways were an important part of the business. In 1863 he obtained a patent for a fence strainer. This device, together with cambered cables at deck level, enabled him to develop a type of light suspension footbridge that was noticeably more rigid than earlier examples. The bridges could be kit-built from components designed by Harper's to suit information provided from a site survey. Over fifty of them are known to have been built, in places from Nepal via Estonia to the Falkland Islands; only five are known to have survived the ravages of time and the elements.

This book, by John Harper's great-grandson, describes the progressive improvement of the bridge design, at first by John and then by his son Louis. The author is not an engineer and describes the

process in layman's terms, but there is plenty of technical detail. He also gives space to John and Louis in their family background, showing how the family business expanded into areas as separate as motor car manufacture. The largest part of the book however is devoted to a historical record of each bridge, the author's search for information about them in documentary sources and his travels to known sites to find what remains. It is well illustrated by photographs, old and new.

Confining himself to the history of Harper & Co, the author hardly mentions other companies such as James Abernethy & Co or David Rowell & Co, who also made light suspension bridges. Despite this, a wealth of new information is provided about a subject that has not been treated at this level of detail before. The book is well produced and excellent value for its reasonable price.

PETER CROSS-RUDKIN

***Abandoned & Vanished Canals of Ireland, Scotland and Wales* — Andy Wood**

156pp, 235x160mm, 12 b&w photographs, 11 maps, paperback, Amberley Publishing, The Hill, Merrywalks, Stroud GL5 4EP, 2015, ISBN 978 1 4456 4868 2, £15.99 (e-book also available)

The last book recording abandoned navigations was Ronald Russell's *Lost Canals and Waterways of Britain* in 1982. Research moves on, and where Russell's book recorded seven cases in Scotland, for example, this book has seventeen. Even then, the author has missed some, such as the short Lewis Chemical Works canal in the Outer Hebrides. He has not trawled the Society's *Journal* as he missed, for example, a detailed article about the Plas Kynaston Canal near Pontcysyllte.

The format is, at best, a short history of each canal's life and death, an OS reference (but no more detailed illustration of the route, even where it will not be clear from a modern map) and details of visible remains, including structures. However the uniform-

ity of this format is somewhat variable. A major reason for buying the book would be to know what to look out for on the ground. The total omission of such details in some cases is therefore frustrating, as it is not clear if there are no remains or whether the author has not actually visited the site to find out.

There are some small-scale diagrammatic maps covering most (but not all) of the listings and (curiously) the 'Burnturk Canals' in Fife, which are not dealt with in the text.

It might be charitable to regard this book as Work in Progress. It does prompt the thought, though, that it might sometimes be wise to send out a review copy before, and not after, publication.

DAVID PEDLEY

***The Victorian Steam Locomotive: its design and development 1804–1879* — G D Dempsey**

177pp & 16 plates, 235x165mm, 31 illustrations (mainly photographs), 78 diagrams, hardback, Pen & Sword Transport, 47 Church Street, Barnsley S70 2AS, 2015, ISBN 978 1 47382 323 5, £19.99

Originally published in 1879 with the florid title *A rudimentary treatise on the locomotive engine in all its phases, popularly described, with illustrations for students and non-professional men*

(Ottley 2965), the title page of this reprint shows an incorrect date range. Daniel Kinnear Clark provided the preface; indeed Clark is the author of the second and larger part of the book. There is no biblio-

graphical history and the preface by Pete Waterman adds little. The plates in the centre are not from the original work but fall within the spirit of it.

This is not a facsimile reprint, but is a product of a scanner and OCR software: 'Kailway', and 'Pigs' instead of 'Figs', all too clearly indicate its limitations.

To an extent the book is something of a curiosity, but it does give some indication of how mid-Victorians regarded locomotive design and its history: a history in the first part which gives a surprising

emphasis to the light locomotives associated with William Bridges Adams and to the Fairlie type. Chapter 9 begins with a description of *D. Luiz*, a Beyer Peacock 2-2-2 supplied to the South Eastern Railway of Portugal, surely an obscure choice; although it won a gold medal at the Paris International Exhibition of 1862, by 1879 it would have been rather out-of-date. This is not really a popular account as, for example, the section on reversing mechanisms is written in a highly demanding fashion.

KEVIN JONES

***Where to, Guv? The complete history of the British taxi service* — Danny Roth**

208pp, 245x160mm, about 30 illustrations, hardback, The History Press, The Mill, Brimscombe, Brimscombe Port, Stroud GL5 2QG, 2015, ISBN 978 0 7524 9941 3, £19.99

As grandson of one of London's last hansom cab operators, I looked forward to reading this book. It is a great disappointment to report that, apart from not matching the promise of the title, much of the text is difficult to read. If the publisher had chosen to separate paragraphs more clearly in the dense text, that problem might have been eased. More positive editing of the author's sometimes difficult phrasing of sentences would also have improved aspects of the flow of the story.

Despite the publisher telling us on the rear dust jacket that the author has 'a fascinating collection of images', a significant number of pictures in the sparse sections of illustrations are identified as being sourced from the Library of Congress.

There is a great amount of information to be gained by studying the contents, which primarily relate the development of the taxi trade in London, rather than

Britain. Unfortunately, while obviously diligently researched, no reference details are provided, nor is there a bibliography. A good index is included, together with 22 appendices, which include a guide to taxicab 'language', regulations and statistics plus other matters that, arguably, might have been more usefully included in the main text.

When the motor taxicab era is reached, there is a considerable amount of interesting information concerning manufacturers and their relationship with operators and the Public Carriage Office while trying to produce viable vehicles. The support of relevant illustrations could have transformed that narrative.

This is essentially an interesting book with an important story to relate that is seriously inhibited by poor planning, indifferent layout and lack of appeal for the serious transport historian, let alone a general reader.

BRIAN A L JONES

***Warwickshire's Lost Railways* — David Blagrove**

82pp, 273x211mm, 102 illustrations, softback, Stenlake Publishing, 54-58 Mill Lane, Catrine KA5 6RD, 2015, ISBN 978 1 84033 702 0, £13.95

This book combines two *bêtes noires* of the railway reviewer – a misleading title and descriptions arbitrarily cut-off at a county boundary. It describes closed stations on lines, both closed and open, within the author's definition of the historic county boundary. The lines are dealt with by company – London & Birmingham, L&NWR, Midland, Great Western, and finally Great Central – and there may be a logic in this but since the book lacks a contents page, map and index, locating a specific station or line is more difficult than it should be. Each line description commences with a helpful tabulation of ownerships and dates, although these do differ on

occasion from the body of the text, not itself faultless.

The redeeming feature of this book, and one which recommends its purchase, despite its faults, is its photographs. These depict scenes full of the atmosphere of the rural and suburban station, and are packed with interesting details which will fascinate the social as much as the railway historian. What makes these illustrations come alive is the high quality of the reproduction values; amply illustrated in the eight double-page photographs, where the reader becomes totally absorbed in their reality, and the 'lost railways' live again.

WILLIAM FEATHERSTONE

***The Axminster & Lyme Regis Light Railway* — Peter Paye**

144pp, A5, 113 photographs, 10 line drawings, 10 facsimile documents, 2 maps, 15 track plans, softback, Oakwood Press, PO Box 13, Usk NP15 1YS, 2015, ISBN 978 0 85361 739 6, £13.95

It was not until 1903 that the opening of a branch from Axminster brought the railway to the fashionable Dorset seaside town of Lyme Regis. It lasted until November 1965; this book has been published to coincide with the 50th anniversary of closure. The line had a distinctive character which attracted enthusiasts, so it is surprising that the only previous monograph was that by Lewis Cozens published in 1952.

This book first examines unsuccessful proposals for connecting Lyme Regis to the national network from the 1840s to the 1890s. Then follows the story of building and opening the line under an 1899 Light Railway Order and its operation first by the London & South Western Railway, which took it over in 1907, then by the Southern Railway and British Railways. Seasonal holiday traffic was always important, including through carriages to and from Waterloo, and this helped the line to survive for as long as it did. Subsequent chapters include a description of

the line and thematic coverage of engineering and operational topics, but there is some tedious repetition of detailed information which should have been avoided. The longest chapter concerns motive power, important because axle-load restrictions, numerous sharp curves and steep gradients meant that finding suitable locomotives proved difficult. Various types were tried over the years, but the most successful were the LSWR class 415 4-4-2Ts. These were nearly 30 years old when they arrived on the branch and in spite of repeated attempts to find replacements they remained until usurped by ex-LMS 2-6-2Ts in 1961.

This book is well illustrated with numerous photographs and detailed track plans; there is a bibliography of primary and secondary sources and a brief index. Attractively produced in the usual Oakwood Press style it makes a welcome addition to the literature of branch lines and light railways.

TIM EDMONDS

***The British Transport Police: an illustrated history* — Richard Stacpoole-Ryding**

96pp, 235x165mm, 177 photographs, softback, Amberley Publishing, The Hill, Merrywalks, Stroud GL5 4EP, 2015, ISBN 978 1 4456 5104 0, £14.99

As the title suggests, this is a history of the British Transport Police as told largely through many illustrations and with an outline text. The structure of the chapters emphasises the variety in the BTP's work with railways, waterways and London Transport handled separately. The waterways chapter is headed 'Docks, harbours and canals' and it would be interesting to hear more of the canal police, reportedly called 'Cut runners'. Then comes a chapter on police women, one on training and uniform, and finally the current situation.

Historical coverage is therefore very brief. There is little room for detail so the use of the generic term 'policeman' in connection with duties that were

largely those of a signaller on the early railways is not explained, despite the fine illustration of this provided from a children's book. Important themes, such as the growth of terrorism or the policing of football hooligans, are left aside or hinted at through pictures.

The interest of the book therefore lies in its pictures. Some of these are posed images from training materials and there are perhaps too many modern stock images of little interest to those with a focus on railways. Truly interesting historical scenes, such as the police guard outside Ambergate Station Junction signalbox during the 1911 strike give a flavour of the subject's potential.

ADRIAN GRAY

***Victorian Railway Stations* — Trevor Yorke**

128pp, 280x147mm, copious all-colour illustrations, softback, Countryside Books, Highfield House, 2 Highfield Avenue, Newbury RG14 5DS, 2015, ISBN 978 1 84674 335 1, £9.95 (or £7.95 to RCHS members quoting 'R&C')

The author's enthusiasm for his subject comes through very clearly in this little book, in which he eloquently describes the progression of railway station design and layout from the earliest days in

the 1820s to the 20th century, reflecting contemporary changes in architectural taste. The work concludes with lists of preserved heritage railways having restored stations and working Victorian

stations recommended worth visiting. Both are on a regional basis. Oddly, under Scotland, in the latter list, Perth is not included.

The illustrations, two or three to a page, are superb, all either photographed by the author or, notably, drawn and coloured by him in a variety of media. He has lettered some of them to identify particular features of changing Victorian styles, thereby usefully amplifying the glossary of architectural terms in the appendix. There is a short bibliography and an index.

It is the greater pity therefore that such a bountiful offering in a small book is marred by a large number of errors, some factual but mainly grammatical or misspellings, suggesting lack of editing. Others are purely careless, such as 'London Chatham and Dover (LBSC)', and 'Liverpool Exchange Street' alongside a photograph clearly showing 'Exchange Station'. However, if you can ignore these shortcomings the book is a good introduction to the subject, and for the illustrations alone well worth its modest price.

GORDON BIDDLE

***The Waverley Route: its heritage and revival* — Ann Glen**

144pp, 280x220mm, hardback, 295 illustrations, colour and b&w, Lily Publications, PO Box 33, Ramsey, Isle of Man IM99 4LP, 2015, ISBN 978 1 907945 85 4, £19.95

With a genesis in waggonways to the southeast of the city, the Edinburgh & Hawick Railway, opened in 1848, was a branch of the North British Railway. In 1862 it was extended to Carlisle via the steeply graded Borders Union Railway and became 'the Waverley Route'. It was instrumental in the transformation and development of the Borders textile industry; regular coal trains served the steam engines which replaced waterpower in the woollen mills. In conjunction with the Midland Railway it provided a popular through route from Edinburgh to St Pancras. However, following the Beeching Report of 1963, a protracted decline amid much protest ensued and the line finally closed in 1969. In the 1980s there was talk of reopening at least the northern 30 miles or so that served the most populous areas of the Borders. A campaign slowly gathered momentum and, after more than four decades, restoration commenced in earnest in 2012.

This is the second book on the Waverley Route to be reviewed in the *RCHS Journal*. The previous

appraisal (July 2013) noted that story was unfinished; the line had yet to reopen. However, with this latest work the author and publisher have wisely waited and the account can be now said to be complete, for traffic was restored to the newly-named Borders Railway on 6 September 2015.

This is a beautifully produced book with abundant illustrations which will appeal to railway aficionados. In the section concerning the history of the line, from its beginnings, through its zenith and up to closure, there is an assortment of contemporaneous photographs, postcards, posters, engravings, portraits of key individuals and maps together with photographs of the significant engineering features and buildings surviving after abandonment. In the latter half of the book colour predominates and the photographs clearly show the many and varied aspects of the restitution of the railway. Superb reproduction is the norm and even those pictures that are relatively small are clear, benefiting from the near-A4 format.

JOHN HOWAT

***The Great Brunel* — Chris Morris**

128pp, 168x246mm, fully illustrated, softback, Amberley Publishing, The Hill, Merrywalks, Stroud GL5 4EP, 2015, ISBN 978 1 4456 5079 1, £19.99

This is a collection of early-21st century photographs of the works of I K Brunel. It is the third edition of a book first published in 2005 (reviewed in *RCHS Journal* in March 2006), updated in a couple of places to reflect changes since then. Although some Brunel sites are very well known, others are not, and the author has been helped by many individuals and organisations in finding the latter. Because the

author was limited by what remains of the works, the book cannot deal with every aspect of Brunel's career, but the illustrations cover a wide range of artefacts, often from a fresh perspective. The captions are interesting and perceptive.

Owners of previous editions of the book need not buy this, but others may share the author's enjoyment in 'discovering' these relics.

PETER CROSS-RUDKIN

***Henfield's Wonderful Railway: the Brighton to Horsham line 1861–1966* — E J Colgate**

120pp, 250x180mm, 120 illustrations, 2 maps, hardback, George Mann Publications, Easton, Winchester S021 1ES, 2015, ISSN 978 1 90764014 8, £15

This is an attractively produced history of the former LB&SCR byway between Horsham and Shoreham via Henfield and Steyning. Its focus on Henfield perhaps reflects the author's viewpoint and his personal memories are a special feature of the book, including his days walking along the tracks back from school. The line was never electrified and closed in 1966, sadly a few decades before its potential as a diversionary route for an overcrowded Brighton line might have saved it.

The strengths of the book lie in its ability to show something of the human character of a country railway through the people who worked on and around it. There are some good pictures, inevitably dominated by the 1930s onwards, with the one of the

sandpit line at Henfield a highlight. Also highly unusual is what seems to be an old railway carriage, sold for a beach home, being dragged by horses across the River Adur at Shoreham. It is probably the only railway book to have a chapter entitled 'Mazawattee Tea' although surely the final 'Tea' is tautologous – as the illustration suggests!

However this is not a solid history of the line aimed at railway historians. For example there is no real attempt to explain why the line was built – essentially as a 'defence' to keep rivals away from a good route to Brighton – nor does it consider that the Adur Valley attracted railway proposals long before the 1850s. Nonetheless, it is an enjoyable light read.

ADRIAN GRAY

***The Stronach–Dutton Roadrail System of Traction* — R G Cash.**

62pp, 235x175mm, 60 b&w images, softback, Narrow Gauge Railway Society, 6 The Crescent, Orton Longueville, Peterborough PE2 7DT, 2015, ISBN 978 0 9554326 9 9, Sales Officer: 1 Archers Drive, Old Bilsthorpe, Newark NG22 8SD, £6.95 (plus £1 p&p)

The concept behind the 1917 patents of the South African military engineer Frank Dutton (1875–1945) was to combine some of the best features of heavy road haulage with lightly constructed, and therefore low-cost, 2ft gauge railways. The motive power would be provided by modifying existing internal combustion or steam tractors with large, broad-tread wheels to give excellent traction, the front axle substituted by a small bogey to provide guidance – in forward motion. The trailing load would be distributed over conventional railway wagons, advantage being taken of the low-friction of steel wheels on steel rails. Such a combination would allow the opening of new routes in difficult terrain, using sharper curves and steeper gradients on rails only half the weight per yard of conventional track. But the system failed because of the wear and tear

on the 'road' surface beside the rail-tracks unless this was paved, the cost of which would totally negate the construction economics.

This admirable monograph describes in fascinating, well-illustrated detail all the experimental routes that were built in various countries between 1919 and 1927 and all the various models of tractors tested, including the 'double-ended' ones designed to overcome the problems of reversing while shunting. The concluding chapter includes brief references to other comparable systems designed with the same objectives, for example, the Larmanjet and Ewing monorails, and the Skelton and Brockhouse guide-way experiments. Highly recommended to all members who, like me, revel in the more bizarre by-ways of railway history.

MILES MACNAIR

Talylyn Railway Through the Years

DVD, running time 97 minutes, Oakwood Visuals, P O Box 13, Usk NP13 1YS, 2015, 5 030095 100120, £18.95

Produced and directed by Andrew Kennedy, this DVD incorporates historic and recent films from nine sources, principally the collections of L T Catchpole and Patrick B Whitehouse. Such productions can be a mishmash, but this has been carefully edited

and illustrated to provide an historical portrait of the Talylyn Railway.

The DVD is divided into three sections. The first narrates the history of the line until the preservation era, with a coherent arrangement of shots from

various films and stills, including recent ones. The second deals more with operations, focusing on the revival of the line and its locomotives, the latter in much detail. This includes excerpts from interviews with Dai Jones, who worked for the railway both before and after preservation, and John Bate, involved since 1950. These recordings cannot be very recent, since Mr Jones died in 2008. The third section deals with preservation, and then covers the line section by section up to the terminus and back. There are other ways in which this could have been edited, so that the voices of Messrs Jones and Bate

could have contributed to this last part.

The Talyllyn history has been discussed in detail in various publications and the commentary provides a good introduction. There are some insights into wider interpretations. The role of Sir Henry Haydn Jones as the saviour of the line is queried, while John Bate stresses the limited impact of volunteers in the early days of preservation. Pleasant to view and very well produced, this is also instructive and superior to some DVDs of railways and other transport.

JOSEPH BOUGHEY

***Beckton's Railways and Locomotives* — Dave Marden**

132pp, 274x215mm, 163 b&w & 2 colour photographs, 8 maps & diagrams, softback, Kestrel Railway Books, PO Box 269, Southampton SO30 4XR, 2015, ISBN 978 1 905505 38 8, £17.95

For nearly 150 years London burnt increasingly vast amounts of gas from coal produced in commensurately large production units. The most important of these was opened in 1870 on the remote eastern Thames marshes. The Gas Light & Coke Company named the site Beckton in honour of its Chairman, Thomas Beck. Coal supplies came in by sea and river, with internal transport and onward movement of coke and processed products by railway. At its height the works employed around forty shunting locomotives. The end came with great suddenness in the early 1970s with the arrival of natural gas, and the huge premises rapidly disappeared.

Important as such sites are for the fullest under-

standing of our railway system, they are still a specialist study. This work is probably on the lighter side of such studies. It concentrates on photographs and brief descriptions of the rich variety of attractive shunting locomotives. A brief description of the works and associated activities together with adequate line diagrams give the background to the works and its area, but this serves only as backdrop to the locomotives previously listed elsewhere in the excellent Industrial Railway Society publications.

A wider understanding of the plant and the importance of its railway system to its operations is needed to properly complete a study of Beckton.

BRIAN JANES

***A History of the Great Western Railway* — Colin Maggs**

317pp, 235x155mm, 87 photographs, 4 maps, 17 diagrams, softback, Amberley Publishing, The Hill, Merrywalks, Stroud GL5 4EP, 2015, ISBN 978 1 4456 4428 8, £14.99

When this book was first published in hardback form in 2013, it somehow slipped through the RCHS net but as it has now been published as a softback, a review is still appropriate. Colin Maggs is a most prolific and accomplished author with a reputation for accuracy and he has written many railway histories, especially in the area of the Great Western.

This railway is of course the most written about. One must therefore ask if there is room for another GWR general history and, if there is, whether the author has greatly added to our understanding of the company's history.

I am loath to criticise what is a nicely written text but I found it disappointing that the author did not seem to get to the corporate heart of the company.

Perhaps this is because he appears not to have used primary sources in the form of the company minutes and GWR policy files at The National Archives. In his bibliography, he has listed sixty books including ten of his own but has made no mention of any archives he has consulted.

There are three useful appendices, Power Groups and Route Colours, a list of the company's main locomotive classes and a schedule of opening dates, but the latter takes up nearly fifty pages.

Nevertheless the book is a good general introduction for anyone who wants to gain a broad understanding of the Great Western's many achievements.

JOHN KING

Thomas Telford — Anthony Burton

232pp, 234x156mm, 37 illustrations, 4 maps, hardback, Pen & Sword Transport, 47 Church Street, Barnsley S70 2AS, 2015, ISBN 978 1 47384 371 4, £19.99

Pen & Sword have republished what in my opinion is the best biography of Telford: eminently readable, as comprehensive as a single volume can realistically be, and balanced in its assessment of its subject. The text is identical to that published by Aurum in

1999 (and reviewed in the *RCHS Journal* in July 2000) though a few more illustrations have been added. And, although sixteen years have passed, the price is unchanged from that of the original edition.

PETER BROWN

The Butterley Gangroad [or Crich Rail-way]: the collected research material, documents and illustrations from the Butterley Gangroad Project (2013–2015)

354 pp, 265x210mm, 122 photos (65 colour), 7 paintings, 17 figs, 55 maps, 10 facsimiles, 13 graphs, 8 tables, Derbyshire Archaeological Society, 2 The Watermeadows, Swarkestone, Derby DE73 7FX, 2015, ISBN 978 1 32 043860 5, print on demand from Blurb <www.blurb.co.uk>, £25.19

This Derbyshire industrial railway went through several iterations but began life in 1793 as an Outram plateway from a Butterley Company limestone quarry to the Cromford Canal. The Gangroad Project, a strongly community-based effort, has researched its history and notably brought to light that at Fritchley the line can boast the world's oldest railway tunnel.

The reprinted and original material collected on the Project's website and collected here within hard covers includes – amongst much else – an archaeological report on the tunnel, a conventional history of the line by Trevor Griffith and collaborators, and a reprint of Dieter Hopkin's paper to the Early

Railways 5 conference on Brunton's walking engine, which was tried out on the tramroad. There is also much information on the quarries and their workers, and ample maps and photographs to enable those interested to explore the remains.

Although this assemblage of material has been produced in book format in a small number of copies for reference, it is expected that most people will wish to download the content of interest to them from the Project website at <www.butterleygangroad.co.uk/bgarchive.html>. Enthusiasts for early railways should certainly investigate what is available there.

MATTHEW SEARLE

The Railway Atlas of Scotland: two hundred years of history in maps — David Spaven

240pp, 280x315mm, 148 colour maps & diagrams plus miscellaneous illustrations, hardback, Birlinn, West Newington House, 10 Newington Road, Edinburgh EH9 1QS, 2015, ISBN 978 1 78027238 2, £30

This is a collection of maps of various types, around each of which has been woven a story. The maps come from many sources. Early railway plans show delightful details, Jowett's Scottish maps are included to describe the network at its high point, OS maps have been used, there are some modern maps from TRACKatlas, and there are a number of diagrammatic maps from the Beeching Report and subsequent proposals for the shape of the modern network.

Topics vary in scope from the small, such as Garliestown harbour, to the general such as the complex network in the Forth–Clyde valley. The definition of a map has been extended to include publicity leaflets such as that for the Enterprise freight service offered in 1995.

The last half century or so is well covered: a period

of decline and then limited expansion, from the Beeching Report to the modern ScotRail, concluding with the reopening of the Borders line about which the author has written a separate book. In my opinion more space could have been devoted to early maps which, as well as being a delight to look at, can also illustrate how towns and cities developed and facilities were expanded to match.

The quality of map reproduction is excellent. The text is laid out generously and the style is easy to read. The publisher's press information suggests that this is the story of Scotland's railways but rather, as the author says, it uses maps to show the impact of railways and how they have evolved.

A book for dipping into rather than reading from cover to cover.

KEITH FENWICK

***The Old Forth & Clyde Canal* — Guthrie Hutton**

49p, 53 photos, 172x240mm, softback, Stenlake Publishing 54–58, Mill Square, Catrine KA5 6RD, 2015, ISBN 978 1 84033722 8, £10 (post free).

Guthrie Hutton has written many books on Scottish local and industrial history. Particularly interested in Scots canals, he has researched and written previously on the Forth & Clyde. As a prominent member of the Forth & Clyde Canal Society, he was active in the campaign leading to restoration for navigation.

This latest offering follows the format of his earlier works: profusely illustrated, with near full-page photographs from a collection gathered over years.

All have informative extended captions; those showing the eastern end of the canal, which is no longer extant, are especially interesting.

Although the photographs are presented in geographical order from east to west, a map showing the place names in context would have been helpful for readers unfamiliar with central Scotland. However this is a minor criticism in an otherwise excellent book.

JOHN HOWAT

***The Ruabon to Barmouth Line: reflections of a lost Welsh railway* — Martin F Williams**

288pp, 280x220mm, 738 b&w illustrations, 45 colour illustrations, 36 maps & station plans, hardback, Lightmoor Press, Unit 144B, Lydney Trading Estate, Harbour Road, Lydney GL15 5EJ, 2015, ISBN 978 1 8998 8997 6, £30

The railway from Ruabon to Dolgelley via Llangollen, Corwen and Bala was built in stages in the 1860s by three companies but was operated from the outset by the GWR. In 1896 they were all absorbed formally into the GWR. Until the 1923 grouping the continuation from Dolgelley to the coast at Barmouth was part of the Cambrian Railways. In 1968 the whole line as far as Barmouth Junction ceased operation.

The modern adoption of part of it by the Llangollen Railway is not given a mention in this massive scrap book of photographs (many cropped and over-

lapping) and ephemera that include way bills, wagon labels, incomplete timetables, excursion notices, letterheads, first aid certificates, accident forms and tickets. The author takes us on a journey along the line mentioning people and events as we go. The approach is derivative of the more disciplined 1990 Foxline book by Rear & Jones. Collecting tickets and ephemera is one thing but why do authors have to inflict what is mostly meaningless trivia onto the reader who is seeking a reasoned history?

STEPHEN ROWSON

***York and its Railways, 1839–1950* — Paul Chrystal**

96pp, 270x210mm, 185 illustrations, 3 maps, softback, Stenlake Publishing, 54–58 Mill Square, Catrine KA5 6RD, 2015, ISBN 9 781840 337082, £16

The author's stated aim is to look at the commercial, cultural and social impact of the railway on York and its surrounding region. To a certain extent he succeeds, but the two strands – railway and city – are never successfully brought together. The role of the railway in the economic revival of York from its 18th century stupor (for example, the growth of the confectionery and glass industries) is not explored, nor the continued dependence of many of the city's industries on the Ouse into the 20th century. Although census data is used to show the growth of industrial employment, there is no attempt to do the same for railway workers: where did they come from? Where did they live? How many, if any, were among the 30% of the population in poverty identified by Seebohm Rowntree in his pioneering study of the

dark side of an outwardly-prosperous provincial city *Poverty: a study of town life* (1901)?

The basic development of York's stations, workshops, locomotive sheds and industrial railways is covered, but not the broader railway infrastructure nor – in any detail – traffic patterns. The text could have benefitted from editing: some paragraphs appear transposed, others repeated, and errors creep in, such as details of the career of George Townsend Andrews. Captions are basic, again occasionally transposed and sometimes downright wrong: that on page 13, for instance, shows NER 4-4-0s at Carlisle, not York, and a view of the preserved SR 850 *Lord Nelson* on the 'Scarborough Bridge' is attributed to the 1920s.

Sadly, not recommended.

TONY KIRBY

British Railway History in Colour, Volume 2: Forest of Dean Lines and the Severn Bridge

— Neil Parkhouse

328pp, 280x220mm, full colour, 633 photographs plus maps, tickets and timetables, hardback, Lightmoor Press, Unit 144B, Lydney Trading Estate, Harbour Road, Lydney GL15 5EJ, 2015, ISBN 978 1 8998 8998 3, £30

This will surely be as successful as Volume 1 which dealt with the West Gloucester and Wye Valley lines. Collecting these images from a wide number of noted photographers has been a labour of love for Neil Parkhouse, proprietor of Lightmoor Press. The result is an outstanding portrait of the Forest of Dean, almost every image being a study of the railway in the landscape – so different from mainline monographs that abound with anonymous trackside views of express trains.

With some outliers, the period covered is from the

late 1950s to the mid 1970s. Inevitably the collection includes many taken during rail specials, most notably the SLS Severn & Wye District Tour of 13 May 1961. The introduction includes a relevant section recording the history of rail tours in the Forest. As well as the lines deep in the Forest other sections portray Lydney docks, and the demolitions of Lydbrook viaduct and the Severn Bridge.

Beautifully designed and knowledgeably captioned, this is highly recommended. STEPHEN ROWSON

Britain's Lost Lines: new uses for former railway sites — Anthony Poulton-Smith

128pp, 233x155mm, 142 photographs (134 in colour), softback, The History Press, The Mill, Brimscombe Port, Brimscombe, Stroud GL5 2QG, 2015, ISBN 978 0 7509 6055 7, £14.99

This is a gazetteer of about 350 railway sites in Britain, 90% of them in England. Entries comprise brief text, a captioned photograph, or both. However, there are no national grid references to locate the sites so it is not always clear exactly what is being discussed. Further confusion arises from placement of some illustrations remotely from the text to which they relate, often under a different name – such as Flyers Way (p 50) and Westerham (p 118). The text is superficial and littered with errors and misunder-

standings, including scant information about historical significance and a lack of clarity as to what can be seen. The entry for Manchester Liverpool Road tells nothing of its importance and the illustration is of a different building – the nearby exhibition hall. There is no bibliography.

It is hard to tell at what readership the book is aimed – regrettably although it is attractively produced it fails as a reference work or field guide.

TIM EDMONDS

The Branch Lines of East Anglia: Bury, Colne Valley, Saffron Walden and Stour Valley branches — Andy T Wallis

126 pp, 234x165mm, 211 photographs, 5 maps, softback, Amberley Publishing, The Hill, Merrywalks, Stroud GL5 4EP, 2015, 978 1 4456 4827 9, £12.99

A photographic survey of the lines in the title, with a brief historical introduction to each. Most photographs date from the 1950s/60s with a few inter-war views and some from the 1880s. Several (particularly those taken by the late Dr Ian Allen) are well-known; others – such as Class 15 diesels on passenger trains – have rarity value.

Overall there is a good balance between trains and infrastructure, the latter dominated by the '1865 style' station buildings that were such a feature of the

Essex/Suffolk border, but also including the 1950s concrete brutalism of Acrow Halt (which amazingly survives) and the sprawling layout at Halstead which with its industrial surroundings gave the impression of a bit of the industrial north transplanted to Constable country.

The captions are informative, especially on signalling and there is a short bibliography. Sadly, the flat reproduction of many in a muddy monotone leaves much to be desired. TONY KIRBY

Brief Notes

Great Western Railway War Reports 1914–1919

303pp, A5, softback, Ian Allan Direct, 1920 (republished 2015), no ISBN, <www.ianallanpublishing.com/railway/great-western-railway-war-reports-1914-1919.htm>, £12.99

During the First World War Frank Potter, the GWR's General Manager, made regular reports to the Board of Directors detailing the involvement of the company and its employees. These reports are valuable source documents concerning the day-to-day implications of the war for staff, services, locomotives and rolling stock. They are reproduced as written; there is no interpretation or analysis for the modern reader.

This reprint is available only from the Ian Allan Publishing Website and not via bookshops or other online retailers.

A Guide to the Industrial Archaeology of Sussex — John Blackwell, Peter Holtham & Martin Snow (editors)

76pp, A5, 190 small photographs, 1 map, softback, Association for Industrial Archaeology, 2015, ISBN 978 0 9560251 4 2, Sales Officer, Roger Ford, Barn Cottage, Bridge Street, Bridgnorth WV15 6AF, £6.50 (post free)

Over 100 entries in this gazetteer relate to transport: ports, navigable waterways, railways, roads and airfields. They range in age from Stopham bridge over the Arun (1423) to Chichester railway station (1958) and in size from milestones to the 1,375ft long Balcombe Valley viaduct. We learn that Gatwick is the busiest single-runway airport in the world; Volk's Railway at Brighton is the world's oldest operating electric railway; and the oldest licensed airport in the UK is at Shoreham.

The Iron Men: the workers who created the new iron age — Anthony Burton

191pp, A5, 29 b&w illustrations, softback, The History Press, The Mill, Brimscombe Port, Brimscombe, Stroud GL5 2QG, 2015, ISBN 978 0 7509 5955 1, £14.99 (includes p&p via publisher's website)

Through a lifetime of journalism, Anthony Burton has popularised aspects of industrial history in over seventy books and more than 100 television and radio programmes. His latest volume has iron and steel

manufacture and usage as its subject. The book's subtitle is slightly misleading since the accent is still on the entrepreneurs, inventors, architects and engineers whose histories we have come to know and love. There is a short bibliography of secondary sources.

General Motors Type 5 Class 66 Locomotives — Ross Taylor

96pp, 235x165mm, 180 photographs, softback, Amberley Publishing, The Hill, Merrywalks, Stroud GL5 4EP, 2015, 978 1 4456 4850 7, £14.99

A short historical introduction to this ubiquitous locomotive class is followed by a high-quality photographic survey arranged by operator: DBS, Freightliner and GBRf account for most coverage, but smaller players (including the now-defunct Advenza and Fastline) are not forgotten. The lack of external detail variation between individual locomotives is compensated for by the amazing variety of liveries shown and the book's portrayal of the breadth of the rail freight scene in the early 21st century gives it a wider appeal than the title might suggest. The standard of photographic reproduction is, thankfully, much better than in some other Amberley publications.

Class 52 Westerns: the twilight years — Stephen Dowle

128pp, 170x245mm, 157 colour and b&w illustrations, softback, Amberley Publishing, The Hill, Merrywalks, Stroud GL5 4EP, 2015, ISBN 978 1 4456 4898 9, £19.99 (£17.99 including p&p via publisher's website).

In 1973 when Stephen Dowle learned that BR Western Region was to rid itself of all diesel hydraulic motive power he decided to make his own photographic record of the last years of his favourite D10XX Western class of locomotive. All images in this book are from that three-year period yet the collection is remarkably varied and the captions, though lyrical and nostalgic, are fully informative. This is not a technical monograph. It would make a good stocking filler for sixty-year olds who saw the Westerns as the last hoorah of a GWR continuum.

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

Wolverhampton to Stafford including Walsall
— Vic Mitchell

ISBN 978 1 908174 79 6, 2015

About half of this addition to the Midlands Main Line series is devoted to routes which were certainly not main line: the Midland Railway Walsall–Wolverhampton route via Wednesfield (opened 1872, closed to passengers 1931 and to freight 1965–80) and the LNWR/MR route via Darlaston. The maps also reveal the changing pattern of industry, together with the canals and urban tramways. The rest covers Wolverhampton High and Low Level Stations, the complexities of Bushbury, and the line to Stafford.

Newark to Doncaster featuring Retford —
Vic Mitchell & Keith Smith

ISBN 978 1 908174 78 9, 2015

This, the latest in the 'Eastern Main Lines' series, covers the Newark to Doncaster (inclusive) stretch of the East Coast Main Line. The coverage ranges over a considerable time with much of interest and no overburdened captions. Two things particularly stand out: the photographs of Retford station, redesigned in the 1960s, and the four pages allotted to Bawtry, closed to passengers since 1958 and to freight since 1971, at which some main-line passenger services stopped regularly. The Doncaster pages include images of the Plant Works and locomotive shed.

Boston to Lincoln, also from Louth and Horncastle — Vic Mitchell & Keith Smith

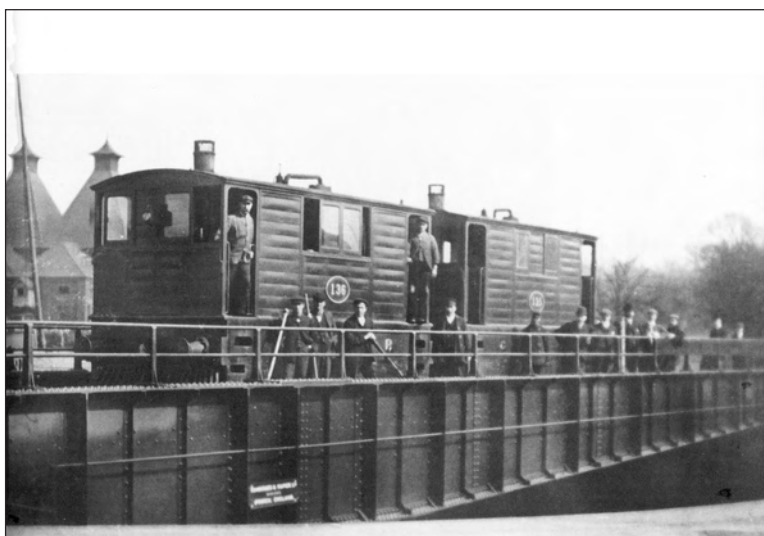
2015, ISBN 978 1 908174 80 2

This volume covers the Great Northern route from Boston to Lincoln along the River Witham which was briefly part of the GN's main line; amidst an interesting selection of pictures this brief glorious era is absent. Other sections cover the short branch to Horncastle and the very rural line across the Wolds between Louth and Bardney. What stands out are the pictures with people such as those posing at Dogdyke station or the lonely signalman at South Willingham & Hainton. But most stations are shown bereft of passengers and all except Boston and Lincoln are now closed, though one enjoyed a brief revival as a Methodist chapel.

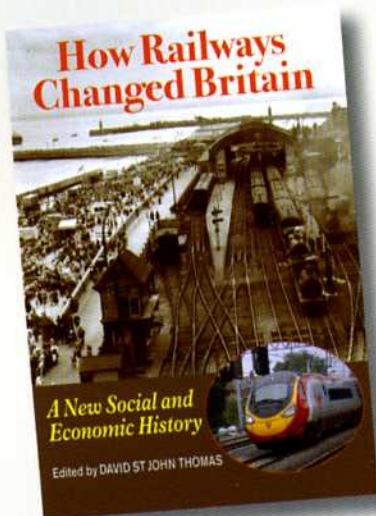
Ipswich to Diss — Richard Adderson & Graham Kenworthy

ISBN 978 1 908174 81 9, 2015

For a rural line, except on the Eye branch – just three miles long – there was a remarkable amount of rail-connected industry, generously illustrated here. Highlights: the photographs of Ipswich docks; Needham station building with turrets and Dutch gables photographed about 1900 compared with the plainer but still elegant building as rebuilt in the 1920s; and 18½ couple of hounds traversing the barrow crossing at Mellis.



***Ipswich docks: two 0-6-0
tram engines, 136 & 135, on
the swingbridge over the Wet
Dock entrance in Great
Eastern Railway days
(R J Adderson collection,
reproduced in the Middleton
book reviewed above)***



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This book celebrates that change in a new and different way, with contributions by a team of authors whose pooled knowledge and enthusiasm is boundless. They look at railways in the context of social and economic history in a way that helps one think again. Subjects covered include the era before the first main lines, the role of railways in Britain's transition to modernity, the 'Leisure Revolution', the financing of railways, urban expansion, the changing relationship between government and railways, employment history, railways in the country and their impacts as a business enterprise on the economy and society.

How Railways Changed Britain was conceived and edited by David St John Thomas, author and publisher. It is dedicated to his memory, as sadly he died during the final stages of its preparation.

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