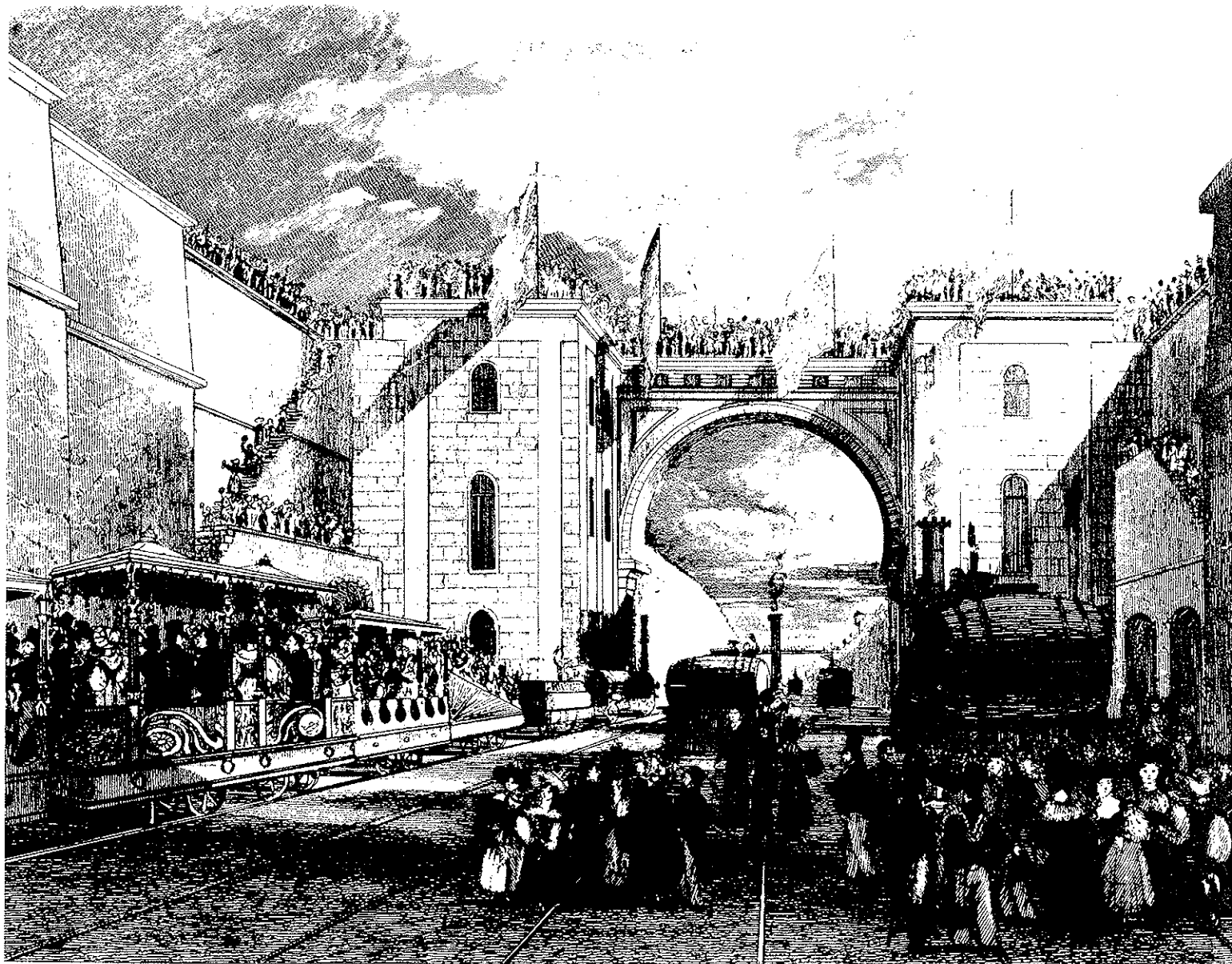


150 YEARS OF THE LIVERPOOL & MANCHESTER RAILWAY

pictures, books and commemorative ceramics
drawn from the Elton Collection



THE OPENING OF THE LIVERPOOL & MANCHESTER RAILWAY SEP^r 15th 1830,
WITH THE MOORISH ARCH AT EDGE HILL AS IT APPEARED ON THAT DAY.

Published Jan^r 1831 by / Store Post Office Place Liverpool & Grundy & Fox Manchester

Coach House Gallery
Darby Road, Coalbrookdale



7 June to 30 November 1980 Free Admission

Open daily 10.00 to 18.00

150 Years of the Liverpool & Manchester Railway

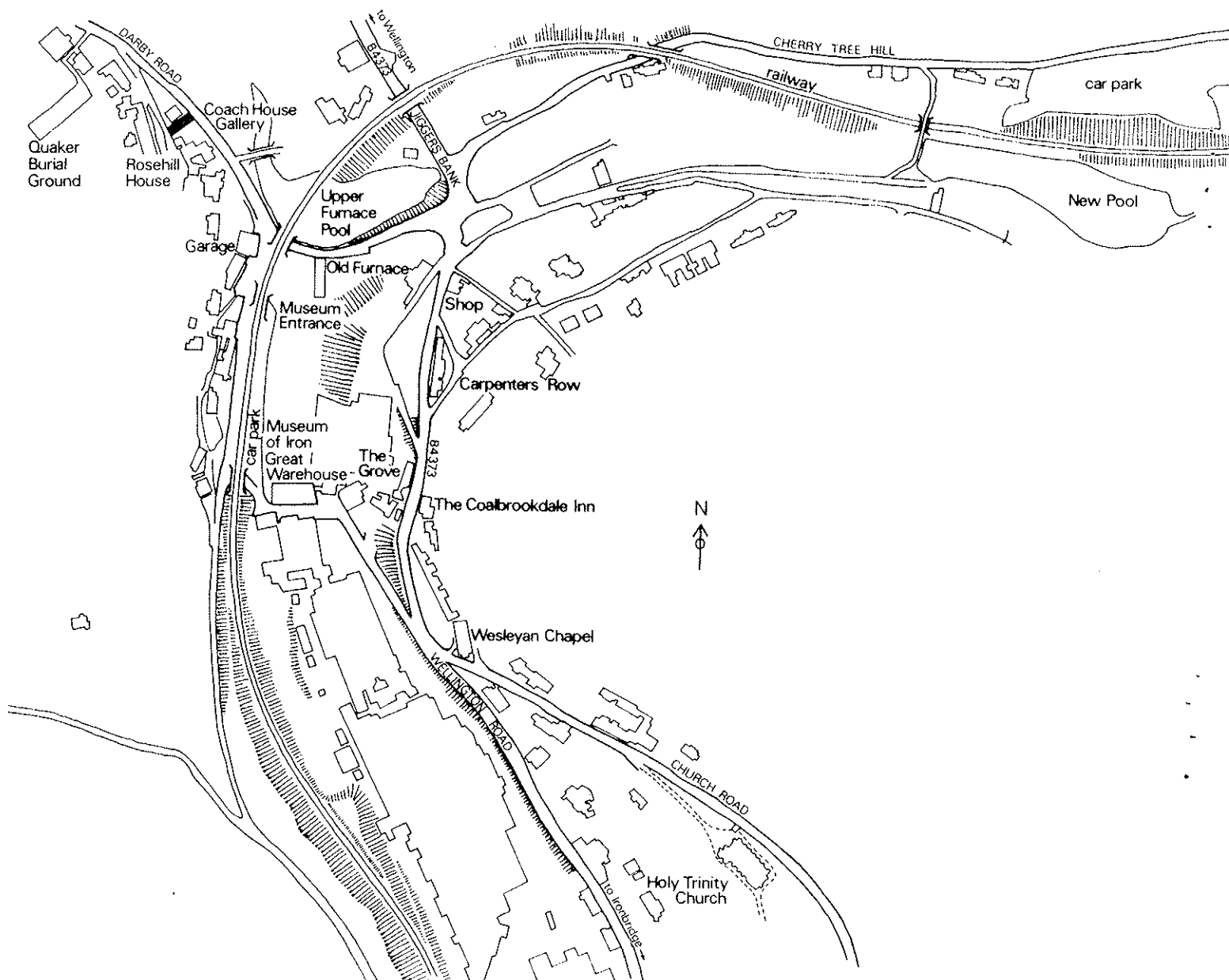
September 15, 1830 saw the opening of the world's first 'modern' railway, a line linking two key cities of the Industrial Revolution - Manchester the textile manufacturing centre of the world, with its Atlantic port of Liverpool.

An intercity railway, double-tracked throughout and worked by locomotives from the outset, it was an unprecedented success particularly for carrying passengers, and laid the foundation of railway building the world over.

Commemorative ceramics, early views, documents, pamphlets and books tell the story of the line and its locomotives, using items from the magnificent Elton Collection.

For further information contact David de Haan at the Ironbridge Gorge Museum, telephone Ironbridge (095245) 3522. Gallery lectures are available on request in writing to the Curator of the Elton Collection, Ironbridge Gorge Museum Trust, Ironbridge, Telford, Shropshire, TF8 7AW.

Location of the Coach House Gallery in Coalbrookdale



THE BACKGROUND TO THE LIVERPOOL & MANCHESTER RAILWAY

Between the first experiments in steam traction and the first steam railways, development was relatively slow and unspectacular. Cugnot, Murdoch and Trevithick had all made successful trials with steam-powered vehicles before 1805 and by 1815 several English collieries used slow lumbering locomotives to haul coal wagons. Some prophetic ideas were published as early as 1820 relating to a national railway system, but few saw it as anything more than horse-drawn carriages along a track. It remained to the two Stephensons, father and son to prove the locomotive viable on anything more than a goods line.

The Stockton & Darlington line opened in September 1825 and this proved to be something of a catalyst. It paid good dividends and caused industrialist's imaginations to run riot. Some favoured conquering the road with steam vehicles, while others saw the future traced out in iron rails, and others turned words into deeds and approached Parliament with Railway Bills. Under the guidance of Joseph Sandars and William James a bill was proposed in 1825 to link Liverpool with Manchester, and based on his experience George Stephenson was appointed engineer. While other horse-drawn lines were proposed elsewhere, the L & MR was conceived to be steam-hauled, efficient, and three times cheaper and quicker than any existing canal or packhorse route. Undaunted by failure at the first Parliamentary session in 1825, the Company tried again the following year and in May 1826 were granted an Act and from then on never looked back.

Construction began of a 32 mile line, level enough to be worked by locomotives along almost the entire line, though it was not until 1829 that a formal decision was finally reached as to the most suitable form of power - horses, stationary steam winding engines or locomotives. Shallow gradients meant heavy civil engineering works in the form of embankments, tunnels and cuttings - features which gave local artists something to draw. As the scale of the undertaking became apparent, the number of views of the line grew and it is to these we owe much of our understanding of its character. Unlike some later works, no major artists painted the line. Does this reflect a period of relative complacency, trade flourishing without government intervention and with no major political revolution to otherwise focus the attention? Whatever the reason, the Liverpool & Manchester Railway almost crept up on the country. Once opened, its immediate success bolstered egos and strengthened the stockmarket. It also produced a flood of commemorative views, mugs, jugs, games and the like, and most important of all, a flood of new Railway bills in Parliament.

A glance at the account books taught the proprietors a new lesson. Passenger receipts were far higher than they had expected - in fact so much so that it took ten weeks of running trains full of travellers before they could spare a single locomotive to haul the first goods train.

1. ROBERT and GEORGE HAVELL (active 1812-37) after GEORGE WALKER (1781-1856)
The Collier
Aquatint, hand-coloured
Plate III from 'The Costumes of Yorkshire'. Published in Leeds 1813 by
Robinson & Sons
AE185.767

The Costumes of Yorkshire first appeared as ten parts issued 1813-14, and as a single volume shortly afterwards with forty aquatints. The Collier stands in front of pithead gear of Charles Brandling's Middleton Colliery near Leeds, while in the middle distance is a Murray locomotive on the Blenkinsop rack railway. Built in 1812, this is one of the earliest known views of a steam locomotive.

Prior to the Rainhill Trials, J.U. Rastrick and J. Walker visited the Middleton Railway on January 16, 1829 to inspect the Blenkinsop locomotives, one of several visits made to ascertain the comparative merits of locomotive and fixed engines for use on the L & MR. Their report was inconclusive.

From the same book comes Factory Children, plate XXXVI, aquatinted in 1814 and shown above, Plate III.

2. THOMAS GRAY (1787-1848)

'Observations on a General Iron Rail-way: (with plates and map illustrative of the plan,) showing Its Great Superiority, by the General Introduction of Mechanical Power, over all the Present Methods of Conveyance by Turnpike Roads and Canals;' etc

1823 (Fourth edition) published in London by Baldwin, Cradock, and Jay, Paternoster Row.

AE185.3888

Gray's prophetic work was first published in 1820 and went through five editions by 1824. Ten years before the opening of the L & MR, it advocated a national railway network to be worked by locomotives rather than horses. He recommended laying tracks along canals where the civil engineering had already provided a level bed and suggested that two or even three tracks should be laid in each direction because the different types of trains -passenger, mail and goods- would have travelled at different speeds. Already in 1820 he was aware of the impact a railway line would have on the trade of Liverpool and Manchester:

"It has frequently occurred to me of late, that an iron rail-way, from London to Edinburgh (passing near to all the commercial towns of Leicester, Nottingham, Sheffield, Wakefield, Leeds &c.&c. with branch rail-ways to Birmingham, Bristol, Manchester and Liverpool, &c. &c.), would be productive of incalculable advantage to the country at large; and here I would suggest the propriety of making the first essay between Manchester and Liverpool, which would employ many thousands of the distressed population of that county."

The frontispiece shows an engraving of three Blenkinsop rack locomotives (see item 1) pulling respectively a passenger, mail and goods train of three waggons. A staunch believer in the rack system even in 1831, Gray condemned the L & MR for using ordinary locomotives which relied on friction for adhesion to the rails.

3. J. BOUSEFIELD Jr.

View of the Opening of the Stockton & Darlington Rail Road.
Lithograph, Darlington 1826
AE185.327.1-3

George Stephenson had engineered the S & DR and on the opening day, 27 September 1825 he took the controls of 'Locomotion' to pull six chaldron waggons of coal, the 'Experiment' (which was a road coach fitted with flanged wheels and normally pulled by a horse along the track), and twenty more chaldrons full of guests. The line is hailed as the world's first practical steam railway, with a gauge of 4 feet 8 inches and mixed working by locomotive, stationary winding engine and horses. In December 1828 G. Stephenson and his assistant Joseph Locke spent two weeks on the line conducting experiments and were followed in January 1829 by Rastrick and Walker on a similar errand concerning locomotives and fixed engines. The line was also visited at the same time by American engineers engaged on the Baltimore and Ohio Rail Road (see item 5).

The lithograph shows the opening ceremony with Stephenson's 'Locomotion' hauling the train across the only major civil engineering construction on the line, a bridge crossing the turnpike road near Darlington. In a second vignette, it also shows a stylised view of the Brusselton Incline, with its stationary steam winding engine on the summit to haul the waggons up the steep gradient. The line had only one locomotive and trains were more commonly horse-drawn.

4. ROBERT SEYMOUR (1796-1836) alias Shortshanks

Going it by Steam

Etching, hand-coloured

Published by G. King, Chancery Lane, London, 1829

AE185.371

In 1828 Goldsworth Gurney had offered the L & MR Company the use of his steam coach but Stephenson turned it down, along with various other suggestions for motive power. The following year successful road trials were made of Gurney's steam road coach (which resembled a mail coach with a steam engine mounted below it), but opposition from the traditional coaching companies in the form of this satirical sketch suggested the fate of would-be travellers. In December 1829 and February 1831 Gurney offered again to supply modified steam coaches to the Railway but later withdrew over a disagreement in the terms of the contract.

5. M. SWETT

Buzzard's Rock, Balto. & Ohio R.R.

Lithograph 1830 by and after M. Swett, published by Endicott & Swett, Graphic Hall, (Baltimore) USA

AE185.440

America's first railway, the Baltimore and Ohio Rail Road, was begun in 1828 and the first 14 miles went into operation on May 22 1830 just three weeks after the Canterbury & Whitstable Railway (see item 6). The entire route of 300 miles took a further 25 years to complete due to major civil engineering works, opening throughout in 1853.

The line was double-tracked with very tight curves and so horse-drawn carriages were used until locomotives had been developed to work this difficult line. Swett's lithograph, one of four, shows part of the route at the Baltimore end of the line with a passenger carriage just rounding a corner. These waggons carried 12 inside and a further 12 outside on a

5. continued

knife-board seat. After the success of the Rainhill Trials in England, the B & ORR followed their example and offered a £500 prize for the best locomotive, as a result of which six were ordered the following year in 1831. The winner 'York' resembled 'Perseverance', one of the entrants of Rainhill, which was damaged during delivery between Liverpool and Rainhill and so never took part.

6. ANON

Canterbury from the Railway
Lithograph, hand-coloured, 1842
AE185.178

Though it is eclipsed by its more flamboyant rival, the Canterbury & Whitstable Railway is in fact the first steam-hauled passenger service in the world, opening as it did four months before the L & MR on 3 May 1830. Like the L & MR, it had been originally projected by the visionary William James (see item 8) and there too he had been replaced by George Stephenson. As was so often the case, Stephenson entrusted the work to his assistants. The line was surveyed by Locke, seen through Parliament in 1825 by Dixon, and finally completed and opened by Robert Stephenson.

A close look at the picture reveals the absence of a locomotive, for 4 out of 6 miles of single track were rope hauled by stationary steam engines, their only locomotive 'Invicta' working the near-level Whitstable end. With Canterbury in the background, the train is descending Tyler Hill just before entering an 800 yard tunnel engineered with great accuracy by the young Locke, though he was recalled in 1825 to Liverpool before its completion to replace Vignoles on the Wapping Tunnel (see item 11).

7. ANON

Port Madoc, Carnarvonshire.
Engraving, c1835
Published by W. Pritchard, Carnarvon
AE185.722

In the 1790s William Madocks purchased land on the west coast of Wales and began building a two mile long dam of sand and sods to reclaim some land for farming (George Stephenson was to use the same techniques later when laying rails across Chat Moss). In 1807 he began to build a similar embankment across the mouth of Traeth Maw in order to develop a new town, Portmadoc, to serve the flourishing Welsh slate industry. After an earlier breach in 1811 it was finally completed in 1814 and carried a tramway across it, the latter running from the slate quarries high up in the hills near Ffestiniog down to the port via the embankment. For much of the way the loaded waggons descended by gravity while the ponies that hauled them rode down in a dandy cart, as can be seen in the foreground of the engraving. The Cob, as the embankment is called, still carries the Ffestiniog Railway and a road across Traeth Maw.

8. Statement and Plan of the Intended Liverpool and Manchester Rail Road.
Letterpress and lithograph, Jan 29, 1825
Printed by Rushton & Melling, Liverpool.
AE185.827

A Statement in the name of Charles Lawrence, the Company's second chairman

8. continued

and at that time Mayor of Liverpool, it compares the speed of travel on the rival waterways and roads. "The average time by Water, is about thirty-six hours. By the Rail Road it will be only five or six." This opinion is based on a combination of stationary steam engines, horses and locomotives capable of less than 10 mph.

The map shows the early route substantially as proposed by the Company's first engineer William James, who had been bankrupted in 1823 and was replaced by George Stephenson the following year. Relying on assistants, including one who had worked with James, Stephenson did little new work himself and was unable to carry the Bill through Parliament in 1825, due to well organised opposition from interested parties who picked on his lack of detailed knowledge of the line. (Note the route runs to the north of Liverpool via Bootle and north of St. Helens.) As a result of his failure in the House, Stephenson was dismissed and replaced by the Rennie Brothers, who in turn appointed Charles Blacker Vignoles to survey a new line. He altered the route south of St. Helens to enter the outskirts of Liverpool in a deep cutting, and took it safely through Parliament in 1826 (see item 9).

9. L & MR Acts of Parliament 1826-29, 4 bound together:
7G.4.c.49.(5 May 1826), 9G.4.c.7.(12 April 1827), 7 & 8G.4.c.21.(26 March 1828)
and 10G.4.c.35.(14 May 1829)

Printed by George Eyre and Andrew Straham, Printers to the King's most Excellent Majesty.
AE185.4160

After failing in 1825, a new Act passed through Parliament and received Royal Assent on 5 May 1826, with 199 clauses. From the outset there was reference to the use of "locomotives or movable Engines" but these would have "to consume their own smoke". In April 1827 a further Act was passed to raise more money, followed in March 1828 by the first deviations to the original route, though these were very minor and mostly around Prescott and Warrington. Also in the 1828 Act is a reference to the width between the rails which was to be "Four Feet Eight Inches".

The major alterations were passed in the Act of May 1829 to extend the line from its proposed terminus in Salford to a new terminus inside Manchester at Liverpool Road, necessitating crossing the River Irwell and Water Street by new bridges. Previous opposition from Landowners had been overcome allowing the line nearer the heart of Manchester.

10. Charles Lawrence's pocket map
Engraving, hand-coloured, 1830
Published by Richard Dawson, Exchange Alley, Liverpool
AE185.5016

This small map shows the capital at the incorporation of each Company by listing the number and value of the available shares. It folds up and fits in a small leather pocket tooled in gold with the wording 'CHARLES LAWRENCE, ESQ.R' on the front, and on the reverse 'MAP OF RAILWAYS & CANALS IN LANCASHIRE'.

The line marked 'Liverpool and Manchester Railway' is the Vignoles route. The Rennie Brothers were quickly replaced by Stephenson when they seemed too rarely to visit the site, but Vignoles stayed on although distrusted by Stephenson, working on the new approach to Liverpool. This section ran through the cutting at Olive Mount before descending under the city to the docks via a steep tunnel 1 in 48 gradient. Discovering

10. continued

Vignoles' error in the alignment of the 8 shafts sunk from the surface (see item 11), Vignoles was dismissed and Joseph Locke was brought back from the Canterbury & Whitstable Rail to replace him.

Despite differences of opinion, personality clashes and the appointments of several different engineers, the period from 1826 to 1829 saw the establishment of the line in its full form. The term had shifted from 'Rail Road' to 'Railway' and Stephenson's perseverance and experience had persuaded the Company to build the first double-tracked line, as level as possible and to be worked almost exclusively by locomotives.

11. JOHN DAVIES after C. & G. PYNE

Entrance to the tunnel of the Liverpool & Manchester Rail-Way, Edge Hill Engraving, hand-coloured c1828. trc: LIVERPOOL.

AE185.235

Tenders were advertised on 25 August 1826 'for excavating the tunnel at Liverpool' to be submitted by 2 September, though there were in fact two tunnels to be built and a third 'blind' one for symmetry (see item 45). The main tunnel was to be 22 feet wide and 16 feet high and run downhill on a gradient of 1 in 48 to a goods depot at Wapping docks over a mile away (see items 40 and 43). At its upper end it opened out into a cutting 22 yards wide cut through solid rock, 68 yards long and 40 feet deep, the west end of which can be seen in this engraving. The rock was cut away wherever possible in blocks large enough to be made into stone sleepers for the rails, which had to be from 18 to 24 inches square by 12 inches deep. Joseph Locke was the engineer in charge of this section, having replaced C.B. Vignoles in 1827, the latter having been dismissed for incorrectly aligning the 8 working shafts of the tunnel by as much as 13 feet. The contractor, Thomas Harding, had also built some of the tunnel for which he was paid $2/5\frac{1}{2}$ d per yard. The engraving shows a temporary way running into the main tunnel, and a horse gin on the surface for removing spoil, though from its position it appears to be over the second tunnel which ran uphill on a gradient of 1 in 87 to the passenger station at Crown Street, 290 yards away. The artist has incorrectly shown the shadow on the north face of the cutting, an error also made by T.T. Bury (see items 44 and 47).

12. W. CRANE of Chester (attrib)

Entrance of the Tunnels

Taken from the Engine Houses Edgehill

Lithograph 1830. brc 'see page 49', referring to Booth's account (see item 27)

AE185.4153.2

One of the plates from 'Eight Views illustrating the Liverpool and Manchester Railway', it shows the cutting at the mouth of the tunnels being completed with piles of stone blocks and a contractor's waggon much in evidence. The artist took the view from underneath the Moorish Arch looking back towards the tunnels but unlike the similar view by DAVIES (see item 11), the shadow is drawn on the correct side. The plate follows Booth's description of June 1830 at which time he described the Moorish Arch as unfinished, though there is no direct connection with Booth's book and the 'Eight Views' which were published independantly.

13. W. CRANE (attrib)
MILL Lane Archway and Excavation at Olive Mount
Lithograph 1830, brc 'see page 51'
AE185.4153.3
Another plate from 'Eight Views' (see item 12). Excavation work is shown almost complete in this view, though the timber centring is still in place and some work is being done on the steep rock sides.

14. W. CRANE (attrib)
Viaduct
Over the Sankey Valley and Canal. Height to the canal 70 feet Span of each Arch 50 feet.
Lithograph 1830 brc 'see page 54' Another plate from 'Eight Views'
AE185.4153.5
The Plate shows the line seemingly complete, but in fact at the right edge of the picture one can still see a temporary timber staging at a point where the approach embankment is still incomplete. The bird in the sky looks uncannily like a Pterodactyl! The viaduct was based on a thumbnail sketch by Stephenson but turned into a realistic design by Jesse Hartley (1780-1860), the builder of the Liverpool docks, and was constructed of brick with stone facings. The track is 75 feet above water level.

15. W. CRANE (attrib)
Bridge over Water-Street, Manchester,
With the Offices and Warehouses of the Railway Company
Lithograph 1830. brc 'see page 58' From 'Eight Views'
AE185.4153.6
The Company's station in Manchester was at the junction of Liverpool Road with Water Street, the latter running parallel with the River Irwell. In order to allow river traffic to continue unhindered, the railway crossed on a stone bridge at a height of 30 feet and then almost immediately over the iron bridge at Water Street, continuing into the station on a vaulted viaduct. At road level on either side were respectively a warehouse and the passenger station, only part of which is shown complete in this view. The Agent's house on the corner is there, as is the ticket office (ground floor) and waiting room (1st floor) for the 1st Class passengers. Scaffold poles are seen against the roof of this waiting room, but at this stage the 2nd class passenger offices have not been built and so the vaulting can still be seen, suggesting a date of late summer 1830. Compare the modern photograph by Ron Fitzgerald of 1979 (see item 16).

16. Liverpool Road Station as it is today
Photograph by Ron Fitzgerald, 1979
From this modern view it can be seen how the vaulted viaduct has been completely hidden by buildings and while the ground floor of the Agent's house has been considerably altered, the 1st and 2nd class passenger offices are little changed. Liverpool Road Station is the oldest extant railway passenger station in the world and is now being restored as part of the site for a new industrial museum for Manchester.

17. M. JACKSON
Wharf Shed of the Trafalgar Dock, Liverpool
Wood engraving, c1855
The port of Liverpool had grown with the rise of the slave trade and the importation of raw cotton to supply the mills of Lancashire. With the development of steam power, the cotton mills had moved from the country riverbanks where they had used water power and now grouped together in the overpopulated city of Manchester. As a result of the L & MR which greatly improved trade, many new warehouses grew up, the one shown here being as late as 1840. On either side of the open shed are moored sailing vessels, while dockers sort, grade, load and unload the goods. Note the bales of cotton and three cast iron 'missionary pots' of the Coalbrookdale type.
18. A New Plan of Manchester and Salford, 1832
From 'Panorama of Manchester and Railway Companion' by J. Everett, 1834
Engraving by J. Fothergill
AE185.4909
The map was surveyed in 1832 and clearly shows the railway entering the outskirts of the city at the west through open fields, before crossing the River Irwell and Water Street and into the property marked 'Railroad Station'. But the L & MR Directors were already considering extending the line at the Liverpool end to come closer to the heart of the city and were later to do the same in Manchester.
19. T. HIGHAM after G. PICKERING (c1794-1857)
Manchester
Engraving, Published by Fisher & Co London 1844
In this view of the city the horizon is dominated by endless factory chimneys belching smoke and as if in an attempt to ease the blow, the artist has led the eye past romantic farming scenes with milkmaids, shepherds and young men fishing.

THE RAINHILL TRIALS

During the construction of the L & MR George Stephenson repeatedly tried persuading the Directors to consider locomotives to work the completed line. He produced a report which satisfactorily proved the supremacy of the locomotive over the horse, but in order to answer the next question the Directors appointed James Walker and John Rastrick in January 1829 to concentrate on two key aspects:

- a) "What, under all circumstances, is the best description of moving power to be employed upon the Liverpool and Manchester Railway?"
- and b) "The comparative expense of conveying goods upon a Railway by locomotive and fixed Engine (is) the primary object of inquiry."

These two eminent civil engineers were scrupulously fair and in less than eight weeks published their findings with a slight bias to fixed engines; bearing in mind that stationary steam engines could boast over a century of development, this in fact speaks volumes for the locomotive. Stephenson and Locke produced a counter-report favouring locomotives and so to overcome this stalemate Walker suggested the Directors offer a £500 prize for the best locomotive at a competition to be held in October 1829. One year before the completion of the line the Company was to decide finally what form of traction to adopt. In one year they would either require a dozen locomotives or, based on Rastrick's estimate, 54 stationary engines along the railway. A $1\frac{1}{2}$ mile level stretch of track was prepared by Stephenson to run the competition and the place chosen was to become world famous - Rainhill.

The contestants had to pull a load three times their own weight equivalent to the distance between Liverpool and Manchester and back. On 6 October four serious contenders entered: 'Rocket' built by Robert Stephenson, 'Novelty' by John Braithwaite and John Ericsson, 'Sans Pareil' by Timothy Hackworth and 'Perseverance' by Timothy Burstall. 'Perseverance' had suffered damage while being moved to Rainhill and withdrew on the first day, along with two unlikely muscle-operated vehicles: 'Cycloped' powered via an endless belt rotated under two walking horses, and a 'Manumotive Carriage' hand-cranked by two men. The first day drew large crowds and 'Novelty' won an affection which it never subsequently lost by darting along at speeds of 28 and 30 mph. Needing no tender, she was lighter than 'Rocket' which only reached 18 mph. Bad weather caused the second day to be abandoned, during which time the judges reworded the rules. Over the nine days of the competition 'Rocket' soon displayed her superiority over all the other designs although 'Novelty' continued to be championed by the press well after the event was over. She was a light and rapid machine but unable to successfully pull the required load. Constructed in the remarkably short time of seven weeks, she had not been fully tested before Rainhill and under different circumstances and with better repair facilities might have performed more fully to her credit. 'Sans Pareil' proved a strong workhorse, but too much like her colliery ancestors. The competition conditions did not suit her ponderous though powerful performance. Mechanical failures also dogged her trial and she was withdrawn.

'Rocket' won almost by default, performing throughout the nine days without mishap and improving in speed and hauling capacity as the competition proceeded. She benefitted enormously from her multi-tube boiler which provided a greater heating surface and more opportunity to steam freely. Henry Booth, who in collaboration with the two Stephensons had entered the engine for trial, deserves the credit for encouraging them to adopt the multi-tube boiler, and the three men jointly received the £500 prize. The Company also bought 'Sans Pareil' in recognition of the expenses defrayed by Hackworth and offered to take 'Novelty' as well, though the owners refused.

20. J. Walker and J. Rastrick's Report
Printed by Wales and Baines, Castle Street Liverpool, March 1829
AE185.5324

The Directors briefed the two civil engineers on 12 January to report on the most suitable form of power to be used on the line and also to compare costs of locomotives and fixed engines. They began the very next day and in less than eight weeks visited all available steam locomotives and stationary engines in operation. They saw locomotives working on Blenkinsop's rack railway at Middleton Colliery (see item 1), others working on the more conventional edge-rail at Killingworth and Hetton Colliery, while on the Stockton & Darlington Railway they were able to compare horses, stationary engines and locomotives all working the same line.

Published on 7 March, the report concludes with the following statement:

"All circumstances, therefore, considered, we are of opinion that it will be most advisable to adopt the stationary system upon the Liverpool and Manchester Railway."

21. G. Stephenson and J. Locke's counter-report
Bound together with reprints of Rastrick and Walker's Report, an Account of the Rainhill Trials and Booth's Account of the L & MR
Published by Carey & Lea of Philadelphia, USA, 1831
AE185.4851

This American publication of 1831 usefully brings together the two reports for and against locomotives, as well as a description of the Rainhill Trials and the Company Treasurer's history of the line up to a period shortly after its opening in 1830.

With George's son Robert running a Locomotive works in Darlington, this report is recognisably biased and sets about questioning every statement made by Rastrick and Walker. It was placed before the Directors on 20 April, only five weeks after the latter gentlemen had come out marginally in favour of stationary steam engines. Stephenson and Locke's report redressed the balance but left the decision still undecided, only to be solved by a motion from one of the Board members. This was to adopt Mr Walker's suggestion of a £500 prize to be offered for a "Locomotive engine which shall be a decided improvement on those now in use..." The advertisement and terms of the competition appeared in newspapers on 1 May 1829.

22. ANON

'The Locomotive Steam Engines

Which competed for the Prize of £500, offered by the Directors of the Liverpool and Manchester Railway Comp^y - drawn to a scale of $\frac{1}{4}$ inch to a foot.'

Lithograph by Day, Lincolns Inn Fields, London, November 1829

AE189.2792, from Volume 12 of the Mechanics Magazine.

Having shown the individual locomotives as the front pages of three earlier issues with different scales and inaccuracies (for example Sans Pareil was drawn with its tender behind instead of in front of it), this lithograph was specially produced to redress the balance. The Magazine also described the competition in detail and remained throughout an ardent admirer of the 'Novelty', as had most of the spectators at Rainhill. This is borne out by the data the editors choose to compare - speed and running cost - which are naturally helped or hindered by the weight of the engine. 'Novelty' was extremely light and proved unable to pull any significant weight, surely the most critical criteria for adoption on a railway. During the 9 days of the Trials, only 'Rocket' met all the requirements but it

22. continued

is fair to say she was undoubtedly designed for the contest and Stephenson had had a hand in framing the original rules.

Speeds on the first day proved that locomotives could travel at least twice as fast as had been thought possible, and suddenly the public imagination was seized. Overnight Man had quadrupled his speed of travel, for although a horse can gallop for short distances at 30 mph, the locomotive could do it continuously. 'Railways' and 'locomotives' became synonymous after the success of Rocket which had proved the scientific winner if not the popular one.

In the first day of the reconstructed trials 150 years later, 24 May 1980, history was proved wrong. Rocket got derailed three times and so never appeared! Novelty could not raise enough steam and so appeared mounted on a waggon with its driving wheels chocked up and only just revolving! But Sans Pareil, after a difficult start requiring help from a modern diesel shunter, was finally able to make a run under her own steam.

Verdict: Sans Pareil won the Rainhill Trials in 1980.

23. ANON

Locomotive Carriages

Fig. 7. Ericsson and Braithwaite's 'Novelty' including a section through the boiler.

Fig. 8. R. Stephenson's 'Rocket'

Fig. 9. Sir J. Anderton and W. James' Patent Steam Coach

Line engravings, published by T. Kelley London 1830

AE185.243.1-3

These engravings, originally appeared in three separate issues of the Mechanics Magazine during 1829 complete with the same annotation lettering. In figure 7 can be seen Novelty's boiler pipe winding back on itself within the water-filled boiler 'E', while Rocket's boiler, which is far more interesting, gets no such detail, again reflecting public opinion. Sir James Anderton, Bart, and W.H. James' Patent Steam Carriage, however, had nothing to do with the L & MR, unless it had been one of those designs which never got to the Trials on time. It was based on patents of 1824 and 5 by James - who had originally proposed the line (see item 8) - but conceived as a road coach. It had a spiral tube boiler $\frac{3}{4}$ inch diameter by 430 feet long, which was prone to clogging up quickly, (unlike Rocket's boiler which had 25 3-inch tubes) but it is interesting in that it drove the cylinders under the vehicle powering the back wheels, the system adopted late in 1830 in Stephenson's 'Planet'.

24. The Rocket

Postcard, by the London North Western Railway Company c1904

AE185.940

This postcard shows a replica built c1904 which ran in 1930 the centenary celebrations at Liverpool. Based on earlier engravings it perpetuated the mistake of a slope on the back of the firebox. A cut-out figure of George Stephenson stands by the tender although the locomotive was designed and built by his son Robert. The original locomotive was rapidly superseded by more efficient engines and after her famous start 'Rocket' soon worked as a maintenance engine, finally being sold in 1836 and then left virtually idle until 1862 when she was presented to the South Kensington Museum.

25. Sans Pareil

Postcard, printed for HMSO by the Zinco Callotype Co, Edinburgh, c1920
AE185.937

The photograph shows Sans Pareil in the state in which she was presented to the South Kensington Museum in 1864 (now the Science Museum), without its tender. Built by Timothy Hackworth, Engineer and Manager to the Stockton & Darlington Railway, she was a strong locomotive, but with a ponderous performance and unable to travel faster than $12\frac{1}{2}$ mph under load. During the Trials various mechanical problems arose but she was purchased afterwards by the Directors for £550 and lent to the nearby Bolton & Leigh Railway in March 1830, until they bought her in 1832 for £100. Sans Pareil worked the line until 1844 after which she drove pumping and winding machinery at Cophull Colliery near Chorley until 1863.

26. W. CRANE (attrib)

Rocket, Novelty and Northumbrian

Lithograph, 1830 from 'Eight Views illustrating the Liverpool and Manchester Railway' (see item 12)

AE185.4153.8

Compared with the 7 landscape views that accompanied this plate the quality of drawing is poor and betrays little knowledge of machinery. The *raison d'être* for these three locomotives appearing together is also unclear for only two out of three (Rocket and Northumbrian) were used once the line was opened. Northumbrian was delivered on 9 August 1830, almost a year after the Rainhill Trials, and due to her improved performance over all the other 6 Stephenson engines produced that year for the L & MR, she was chosen to haul the Duke of Wellington's train on the opening day in September 1830. The drawings show the engines on rails and sleepers which were actually covered by ballast to within an inch of the top and so would not have been seen.

THE OPENING DAY, 15 SEPTEMBER 1830

Several successful trial runs had been made with trains of mixed passengers and goods, the earliest on 14 June 1830, so it was decided on 21st June to open the line formally on 15 September. Eight locomotives had been delivered by September from R. Stephenson & Co, but two more from Braithwaite and Ericsson were not ready on time.

To avoid any problems of claustrophobia on the grand day, the guests joined the waiting trains in Liverpool at the Edge Hill Cutting in front of the Moorish Arch, descending by the steps on either side. The guest of honour was the Duke of Wellington, Prime Minister, whose train ran on the left hand track with George Stephenson on the footplate of 'Northumbrian'. Seven other trains took the right hand track. Many thousands of spectators lined the route and at 11 o'clock the cavalcade set off.

About halfway along the line the locomotives took on water and it was here at Parkside that the fatal accident to William Huskisson occurred. He had left his carriage to chat with the Duke but before he could rejoin the train he was hit by the approaching 'Rocket'. The narrow clearance between the tracks, coupled with his advancing years made it impossible for him to get back in the train before being knocked down. With great confusion, the injured man was rushed ahead to Eccles and there treated by doctors, but he died later that evening. The rest of the party continued to Manchester in a sober mood and after a meal the trains returned to Liverpool, not without problems, for one locomotive had broken down and the Duke's train had left earlier to escape the unruly crowds. The extra load slowed the return journey and the guests did not arrive back in Liverpool until 10.30pm.

27. HENRY BOOTH (1789-1869)

An Account of Liverpool and Manchester Railway.

Published by Wales and Baines, Liverpool. 1st edition, 1830

AE185.4850

Booth was the Company's Secretary, Treasurer and later General Manager of the Railway. His 'Account' includes a history of the Parliamentary proceedings prior to the opening of the line and a description of the Railway in an excursion from Liverpool to Manchester. This is followed by a chapter on the mechanical principles of railways based largely on the information supplied in the various reports from Rastrick & Walker, and Stephenson & Locke (see items 20 and 21).

The frontispiece is a lithograph by Hullmandel of the Edge Hill tunnel mouths seen through the Moorish Arch at Liverpool, and includes three locomotives one of which can be identified as 'Novelty', though apart from its appearance at the Rainhill Trials it was not used on the line. This naive view was widely copied particularly on commemorative ceramics (see items 64-66), and also appears in an American edition published in Philadelphia in 1831 (see item 21).

28. ISAAC SHAW

The Opening of the Liverpool & Manchester Railway Sep.^r 15th 1830, with the Moorish Arch at Edge Hill as it appeared on That Day.

Engraving, proof copy which was to be published 1 January 1831 by I Shaw Liverpool

AE185.4156

This magnificent view of the cutting at Edge Hill shows the crowds

thronging to see the procession. The special carriages of the Duke of Wellington's train can be seen behind the locomotive 'Northumbrian', with a band in the first waggon behind the tender. The Duke's carriage was built for the occasion 32 feet long by 8 feet wide, considerably overhanging the 4ft 8inch gauge rails and decorated with lace and silk, crimson drapery, gilded pillars, and Grecian scrolls. There was an ottoman down the centre providing seats for 30 while the other smaller carriages held 50 in slightly more cramped conditions.

To avoid hauling the guests through either of the two tunnels, all eight of the ceremonial trains started from the cutting, access being down the steps on either side of the Moorish Arch.

This plate comes from Shaw's set of 8 engravings published in two parts in 1831, and was copied in oil paints on a papier maché tray (see item 29). In its original wrappers and in two parts, this is the first plate in Part I. The towers of the Moorish Arch were still incomplete at this time (see item 45 by Clayton for their completed appearance).

29. Papier maché tray c1830
AE185.1850

The painting on the tray follows closely Shaw's engraving of the Opening day at Liverpool (see item 28) on 15 September 1830. Of the five locomotives in view, only one is identifiable - 'Northumbrian' pulling the Duke's ceremonial carriages.

30. The Edge Hill cutting today at the site of the Moorish Arch
Colour photograph. 2 June 1980
Copyright IGMT

Taken from the same spot as Isaac Shaw's view, this photograph clearly shows the steepness of the cutting. The left hand wall and parts of the staircase remain with two arches cut into the rock face which served as locomotive sheds (compare Bury's view, item 47, where they are shown in use). The right hand wall has been cut back about six feet to accommodate extra tracks and the Moorish Arch has almost completely gone. Part of its wall is still visible just beyond the second arch below the steps, while the excavations in the foreground reveal what is left of the rope-haulage chanel (see also item 46). A road bridge now dominates the view strangely reminiscent of the former arch.

31. Wallis' Game
Liverpool and Manchester Railway.
Wood engravings, published by E. Wallis, 42 Skinner Street, London, 1830
AE185.244

This sheet forms part of a board game, which can be seen in made-up form in the adjacent showcase (see item 32). From the broken lines, particularly noticeable on the rails, it can be seen that each carriage can be cut out separately and made to stand upright by glueing it to a wooden block. The top row shows the Duke of Wellington's special train drawn by 'Northumbrian' and directed by George Stephenson at the Opening ceremony on 15 September 1830. The Duke is shown in the middle of the central carriage, wearing a top hat and facing the engine. The same train drawn in reverse, can be seen as a transfer on a commemorative mug (see item 68) but without the Duke's carriage, presumably because of size.

The second train is pulled by 'William the Fourth', an engine designed by Ericsson and Braithwaite as an improvement on 'Novelty' and supplied along

31. continued

with a sister engine called 'Queen Adelaide'. Not ready until 21 September 1830, 'William the Fourth' did not form part of the Opening cavalcade as this engraving might suggest, and in performance neither engine was much better than 'Novelty' and were quickly offered to the nearby St. Helens & Runcorn Gap Railway where Vignoles used them.

32. Wallis' game: The Locomotive Engines on the Manchester and Liverpool Railway. accurately delineated.

Published by E. Wallis. 42, Skinner St. London. 1830
AE185.1882

Wrongly titled the Manchester and Liverpool instead of the other way round, the game comprises only two locomotives though the name might suggest more and eleven carriages though two of the latter are missing (see item 31). The box lid shows an unfamiliar aquatint of Newton viaduct and a train approaching a road bridge, possibly the one west of Rainhill skew bridge as shown in Shaw's view (see item 50). Having deteriorated with time, little remains of the leather couplings joining each cut-out carriage with the next, and two of the supporting wooden blocks are also missing, but in this form they are hand-coloured. 'Northumbrian' sports a lilac flag as set out in the Orders of the Day from the L & MR Directors for September 15 1830, with the ceremonial carriage correctly coloured in crimson and gold.

33. HUGH HUGHES (1790-1863)

The Pleasures of the Rail-Road. - Showing the Inconvenience of a Blow up. Etching, hand coloured

Published by S. Gans, Southampton Street, London 1831
AE185.777

Like the steam road coaches before them, early locomotives were ridiculed by satirists as being dangerous and particularly liable to explode. Such occurrences were in reality quite rare, but the coach owners were losing money to the modern machines and felt any trick was justified. In Glasgow one of Gurney's steam road coaches did in fact suffer an explosion in the boiler on Wed June 8, 1831, destroying the vehicle and severely injuring two boys.

The theme of this cartoon is rather brutal and has a direct reference to the opening of the L & MR for although no such explosion occurred, the decorated carriage full of overdressed ladies is the Duke of Wellington's ceremonial coach built for the procession of 15 September 1830, and can be recognised by the scroll decoration below the window. Equally, what is left of the tender can be identified as that belonging to the locomotive 'Northumbrian'.

Despite their alarming predicament, Shortshanks has shown the men to be opportunists in peering up ladies' skirts.

34. W. CRANE of Chester (attrib)

Rainhill Bridge

Lithograph 1830, from 'Eight Views', (see item 12)

AE185.4153.4

This view of the Rainhill skew bridge shows a locomotive approaching from the Liverpool direction on the wrong track. One possible explanation is that this view was made on the Opening day when the eight special trains

went to Manchester in convoy, using both tracks at once, with the Duke's train on the right and all other trains on the left track. This state of affairs led directly to the unfortunate accident at Parkside while taking on water, when the Rt Hon William Huskisson, MP for Liverpool was run down by 'Rocket' and died later that evening. Another reason for the unlikely appearance of the locomotive on the wrong track could be the artist's misunderstanding of railway practice - like on the roads, trains travel on the left.

35. Rt.Hon. Wm Huskisson, MP for Liverpool

Lithograph, Printed by the Liverpool Journal for Saturday 2 October 1830
AE185.745

This portrait, three-quarters full face and torso, includes Huskisson's signature printed along with the legend which reads: 'Born in 1769. died at Eccles, near Manchester Sept. 15th and interred in St James's Cemetary Liverpool, Sept. 24th 1830. Presented with the Liverpool Journal Saturday Oct. 2nd 1830.' He had been involved with the Railway almost from the outset, playing a major part in seeing the Bill through Parliament, but as is so often the case, his death brought him wider fame. At his funeral it is reported that as many as 20,000 people attended, and in respect a memorial was erected on the site of the accident at Parkside.

36. HUGH HUGHES (1790-1863)

The Pleasures of the Rail-Road - Caught in the Railway
Etching, hand-coloured
Published by S. Gans, Southampton Street, London 1831
AE185.776

A companion piece to Hughes' macabre 'Inconvenience of a Blow-up', this is a second reference to the unfortunate William Huskisson and also a warning of the dangers of the railway. The MP had fallen under the wheels of 'Rocket' (not 'Northumbrian' as shown here) and in this cartoon he is replaced by a tramp with a wooden leg. Another unfortunate victim lies under the locomotive, while a dog is being run over by the front wheel and six other people are about to be mown down. The engine driver is oblivious to all this and calmly reads a newspaper, while the fireman is snoozing beside him.

37. H. PYALL after T.T. BURY (1811-77)

Taking in Water at Parkside
Plate 13 from 'Coloured Views on the Liverpool and Manchester Railway'
Photograph of the hand-coloured aquatint, published by Ackermann, 1831
AE185.4155

Subtitled 'The Station where M^r Huskifson fell' the reasons for the fateful stop are evident in the shape of water cranes on each side of the tracks. Judging by the elegant visitors beside and on the line, the lesson of Huskisson's accident seems to have been ignored.

38. James Scott Walker

An accurate Description of the Liverpool and Manchester Railway...with an account of the ...Melancholy Accident which Occurred'
Published by J.F. Cannell, 81 Lord Street Liverpool 1830 (2nd edition)
AE185.4746

A writer and traveller (and no relation to James Walker who prepared

38. continued

the report on stationary steam engines with Rastrick) Walker's book includes two lithographs, one of which forms the frontispiece. It shows a plan and section of the line as built and a view of the Sankey Viaduct with two trains on it, one of which appears to be 'William the Fourth'. Such was the popularity of 'Novelty' at Rainhill, that Ericsson and Braithwaite's locomotives were indelibly though wrongly linked with the L & MR in the public's mind. The title page bears the signature 'George Leather C.E. Leeds 1831' which is interesting because he spoke in Parliament in 1825 against the Bill while acting civil engineer to the Ayre & Calder Navigation Company.

39. ANON

Manuscript letter 1830

AE6.640

The letter describes a journey in the ceremonial carriage built for the Duke of Wellington, and although there is some confusion as to the capacity of the carriage (the Duke's carriage only took 30, not 130) it is likely that the description relates to the three special carriages which together could account for 130.

The special carriage was only used a few times directly after the opening day for special excursions before being laid up in a siding where it gradually fell apart. The 'Lofty embankment' referred to is the Sankey Viaduct approach and the 'walls of solid rock' is Olive Mount Cutting, so from the order in which they are described, the journey would seem to be from Manchester to Liverpool.

Yesterday we took places for 12 on the Rail road in the Dukes Carriages, it is a splendid sort of immense palanquine or rather 3 palanquines fastened together & holds about 130, it is full every day or nearly so, Parties going to the Sankey Viaduct. I should have enjoyed it more if I could have forgotten Mr Huskifsion (sic), not that I was at all nervous, our quickest speed was 29 miles p^r hour & when another train pafsed us, & within a foot of us apparently, going at the same speed making between the 2 a rate of from 50 to 60 miles an hour the rush & clang of the huge machines was something quite unearthly.

The railroad is indeed a stupendous work, you fly over lofty embankments (without stick or stone at the sides; indeed all guards would be ineffectual, if any accident happened the weight and rapid motion would burst any barriers) 69 feet high & then find yourself at an equal depth between walls of solid rock & feel yourself such a powerlefs being to stop or excercise any other volition. The motion is but slight, lefs than that of a carriage on the smoothest road. You can read comfortably if not oppressed as I am easily by noise, wether of inanimate or animate machines; inanimate seems a most inappropriate epithet to a whizzing, hissing, groaning, creaking, steaming, puffing, terrific looking Bestia which is whirling all things living and dead at its tail at the rate of 30 miles an hour I could not help fancying myself in Satanafsos kingdom occasionally ----

VIEWS ALONG THE LINE

The new railway was a great success as was proved by the receipts and to satisfy the demand several illustrated volumes appeared shortly after the opening. The most famous, T T Bury's 13 aquatints and Shaw's 'Long Prints', both published by Ackermann, went into many editions; a set of three lithographs were drawn by A Clayton and I Shaw produced eight engravings in 1830. From these 27 images come most of the illustrations in all subsequent books, though often badly copied and a poor shadow of the original. To meet the continued interest in railways, an exhibition was mounted in London in 1834 where a long Panoramic canvas of the line was painted, though none of this appears to have survived.

Drawing from copies in the Elton Collection, it is possible to 'travel' the route from Liverpool to Manchester through the artist's eye and capture some of the pioneering spirit of the age. Spectators are frequently shown on the line and technical details are often misunderstood, the greatest inaccuracies being reserved for the locomotives.

40. S G HUGHES after T T BURY (1811-77)
Warehouses at the end of the Tunnel towards Wapping
Aquatint, hand-coloured
Plate 9 from 'Coloured Views on the Liverpool and Manchester Railway', 1st edition, 2nd issue, published by R Ackermann, 96 Strand, London. 1831
AE185.4155

In the first issue of Bury's aquatints there were only 6 plates, but by the second issue there were 13, though the order in which they are bound into the book bore no relation to their geographical progression along the line.

The line in Liverpool had two branches - one to a passenger station at Crown Street and the other to a goods depot near the docks at Wapping, shown here. Both were approached by tunnels which met at Edge Hill and both built on gradients too steep to be worked by locomotives; this illustration bears this out by showing a goods waggon being manoeuvred by two men from one track to another prior to being hauled up the rails by a rope. A turntable can be seen in the foreground and between the tracks are the endless ropes mounted on pulley wheels, which drew the loaded waggons up the steep 1 in 48 tunnel to the waiting locomotives over a mile away at Edge Hill. A warehouse supported on cast-iron columns straddles the line.

Bury was only 20 years old when he drew these views and they show a freshness and keen sense of grandeur in their composition, though their stylised perspective and exaggerated scale may owe more to Hughes' aquatinting than to the original drawings. They show little of the artistic gift so proficiently displayed in J C Bourne's drawings of the London & Birmingham produced some six years later and which retain their original energy by dint of Bourne transferring his own sketches onto lithographic stone.

41. S G HUGHES after T T BURY
Railway Offices, Liverpool
from Bury's 'Coloured Views' 1831 (see item 40)
Photograph of plate 7
The passenger station was at Crown Street, and as can be seen from the print it was an insignificant building with only one platform. Though the tunnel was not very steep, locomotives were not used here and again the endless rope is evident in between the middle of the three tracks. The tunnel in the distance ran 290 yards downhill to Edge Hill where the locomotives were attached. Only wide enough for a single track, the tunnel shows signs of damage due to the points being sited too near the mouth as can be seen in the modern photograph taken from the same spot (see item 42).
42. The site of Crown Street Station as it is today
Colour photograph 2 June 1980
Copyright IGMT
With traffic rapidly outgrowing the site, Crown Street was closed to passengers as early as 1836 when the new Lime Street Station opened (see item 82). It continued to be used as a coal yard until the mid-1970s and was served by a new tunnel cut from Edge Hill. Almost nothing remains apart from the original tunnel mouth which clearly shows the damage caused by the carriage tops as they crossed over points. The red brick structure in the right foreground is a ventilation shaft serving the Wapping tunnel which passes below this area, but the structure dates from around 1896 when locomotives first worked the steep 1 in 48 climb. Note the stone sleeper lying in the grass beside it, still carrying an original cast-iron rail chair, and dating from the opening of the line when each rail was supported by one of these at three feet intervals.
43. H PYALL after T T BURY (1811-77)
The Tunnel
Three separate states of a plate from Bury's 'Coloured Views' Aquatints, hand-coloured published by Ackermann 1831.
AE185.237-9
Three successive states of the same print come from the earliest editions of Bury's aquatints and show how a locomotive has been transformed into a truck. The view is taken at the bottom end of the Wapping Tunnel which rises from the goods station at the Liverpool Docks up to Edge Hill over a mile away. The double track rises on a gradient of 1 in 48, too steep for the early steam locomotives, and so the waggons were hauled up on an endless rope running over rollers on the tunnel floor. The tunnel caused great interest in Liverpool and on its completion was whitewashed and gas-lit at 50 yard intervals so that sightseers could marvel at the works at the cost of a shilling a head. Once the line was opened, the public were strictly refused admission, though all the states of this plate were published after September 1830 and all show visitors until 1833.

44. H PYALL after T T BURY
Entrance of the Railway at Edge Hill, Liverpool
From Bury's 'Coloured Views' 1831 (see item 40)
Photograph
At the opposite end of the Wapping and Crown Street tunnels (items 40 and 41) is the 'Grand Area at Edge Hill'. The central tunnel descends steeply down to the docks at Wapping, while the right hand tunnel rises gently uphill to the passenger terminus at Crown Street. The left hand tunnel was in fact only a few yards long and 'blind', being built for the sake of symmetry. Bury's viewpoint is directly under the Moorish Arch, hence the shadow in the foreground, though he has mistakenly drawn another shadow on the right hand wall which actually faces due south. In this view the two chimneys are prominent, belonging to the winding engines which were housed in the two wings of the Moorish Arch further east along the track.
45. ALFRED B CLAYTON (1795-1855)
Moorish Arch
Lithograph printed by Englemann, Graf and Coindet, 1830
AE185.810
Clayton's view clearly shows the interrelation between the Moorish Arch and the mouths of the tunnels, and the left hand one is correctly blocked up. The proportions and perspectives are more accurate than any other illustration of the same area, as is the scale of the people and he correctly shows Company workmen on the line as opposed to Bury's preoccupation with sightseers.
- The chimneys (there were two) above the tunnel mouths were linked by underground pipes to the engines housed in either tower of the Moorish Arch. Compare the same view today (item 46).
46. Site of the Moorish Arch, Liverpool, and the mouth of the tunnels as it is today (compare item 45)
Photograph 2 June 1980
Copyright IGMT
The Moorish Arch is now gone, but the cutting and tunnel mouths are clearly recognisable. With the widening of the left side of the rock face in 1845, two further tracks led up to the Crown Street depot in a new tunnel of the same dimensions as the one down to Wapping. The base of the right hand chimney is still visible, though the left one has entirely gone (despite some brickwork which suggests otherwise, and which is in fact too far to the left) and a brick wall has been raised above the stone castellated parapet because it now borders a school playground. Access to the cutting is now possible through the Rail Trail opened from Edge Hill Station a few hundred yards up the line.
47. S G HUGHES after T T BURY (1811-77)
Moorish Arch, Looking from the Tunnel
Aquatint, hand-coloured. London, published by Ackermann & Co Strand 1832
AE185.809

In this view (plate 10 from the 2nd edition of Bury's 'Coloured Views') a locomotive can be seen on a turntable which connects with one of the engine sheds under the stairs. Gas lamps and hand rails are also in evidence, not present in the first edition of 1831. The ropes can be seen on the two middle tracks serving the Wapping Tunnel and points allow trains to reach the outer tracks. In this and several other views by Bury, the lines are being inspected by visitors, as is the Moorish Arch designed by architect John Foster. In Elton's revision of Klingender's 'Art and the Industrial Revolution', a remarkable comparison is shown between an 1802 aquatint of the Grand Gate of Cairo by Thomas Malton after Luigi Mayer and Foster's design for the L & MR. At this point the line faces almost due east, making the shadow shown on the south-facing wall an impossibility.

48. ALFRED B CLAYTON (1795-1855)

View of the deep cutting in the Olive Mount
Drawn and lithograph by Clayton, published by Engleman,
Graf and Coindet, 1830
AE185.815

The second of three lithographs by Clayton, this view shows the canyon-like excavation cut out of solid rock 70 feet deep and 20 feet wide. As in Crane's view (item 13), some work is still in progress. The man on the track is a 'policeman' or signalman indicating all-clear by standing parallel to the rails. The artist clearly misunderstood the linking of the crank and connecting rod on the locomotive.

49. Postcard of Olive Mount in the early 20th century showing the widened cutting (not exhibited).

In 1870 the cutting was widened to take four tracks and in 1880 further work allowed two more tracks to be laid, but today as when originally opened, only two tracks are used.

50. ISAAC SHAW

Rainhill Bridge
Engraving, 1831, bound into the 3rd edition of J S Walker's 'Accurate Description of the Liverpool and Manchester Railway'.
AE185.4744

The famous skew bridge was built at an angle of 34 degrees to the track and was completed in June 1829 at the cost of £3,735. Though earlier skew bridges are known, this one was something of a novelty to the builders who erected a full scale wooden mock-up in a nearby field and from its profile cut the angled stone voussoirs. A plaque carved in the stone records the names of Charles Lawrence and George Stephenson. The locomotive 'Planet' is seen hauling a goods train towards Manchester and the engine driver blows a warning trumpet to keep cattle away from the line.

51. Rainhill Skew Bridge
Photograph, 1979 by Ron Fitzgerald
Seen from the Liverpool side, the angled stone blocks are evident, while the steel girders can be seen above which were added in 1963 to widen the road by four feet. It carries the A57 over the line, the original Liverpool to London stagecoach route. The photograph is also reproduced in Ron Fitzgerald's book 'Liverpool Road Station, Manchester' published in 1980 by the Manchester University Press.

52. J H KERNOT after GEORGE PICKERING (c1794-1857)
Sankey Viaduct, Liverpool & Manchester Rail-Road
Engraving published by Fisher, Son & Co, London 1831.
AE185.236

The nine arches of the viaduct and the two approach embankments carry the tracks 75 feet above the water of the Sankey Navigation, one of the main canal routes linking Manchester with Liverpool. A sailing barge can be seen at a wharf-side crane to the left and at the extreme right is the mast of another barge just about to pass through the Newton Common locks. Over this section, the boats were towed by horses, two of which can be seen waiting for their craft to pass through the lock. This, the northern side of the Sankey Viaduct, should be compared with a similar view by C Hullmandel after T Lindsay, where the lock gates are clearly visible (item 53). The lock was opened in 1757, was closed in 1931 and finally filled in in 1974, though a larger lock can still be seen in the valley to the south of the viaduct.

53. C HULLMANDEL after T LINDSAY
The Rail-Way, A characteristic Rondo for The Piano Forte.
Composed for and Dedicated to Mifs Hardy; by S Bryan,
price 2/-
Sheet music, published Cramer, Addison & Beale, 201 Regent Street, London. c1831
AE185.518

The cover carries a lithograph of Newton Common Lock on the Sankey Navigation with the Sankey Viaduct in the background, being crossed by two improbable trains. The music begins with the subtitle 'Departure from Manchester' and the page carries a footnote which reads: 'The sounds or notes emitted by the Steam Engine on the Rail way form the subject of this Rondo'. The next passage bears the subtitle 'Arrival at Newton' with a further footnote: 'Newton is the Station halfway between Manchester and Liverpool'. Remaining passages are titled respectively 'Off to Liverpool', 'The arrival at the Tunnel' and five bars later 'passing through the Tunnel at Liverpool', and finally, four bars before the end 'Meeting of the trains'.

Lindsay's view would seem to be based on Isaac Shaw's engraving of Newton Viaduct which is plate II of Part I in his 'Views' (see item 28) as they originally appeared in 1831.

54. ANON

Viaduct at Newton, on the Line of the Liverpool and Manchester, Railway erected by George Stephenson Esq Civil Engineer.

Lithograph c1830

AE185.240

The four arches of the viaduct, each 30 feet span and 40 feet high, cross a small tributary of the Mersey and the main road through the village of Newton. Built of brick with stone facings, it resembles the nearby Sankey Viaduct in construction and was completed before it in 1828, Sankey still being without its parapet in late 1830 (see also item 14).

The locomotive and train are incorrect for the L&MR, being more suited to the Stockton & Darlington Railway of five years earlier, when 'beam engines on wheels' were still the basic design. The train is made up of chaldron wagons loaded mainly with the coal and bales of cotton, and like at the opening of the S&DR (see item 3) there is a passenger coach in the middle, being a stage coach with flanged wheels. Four of the passengers travelling outside are holding umbrellas. Compare the medallion in the adjacent showcase which bears the same image (item 63).

55. G F NICHOLSON after ALFRED B CLAYTON (1795-1855)

View of the Liverpool & Manchester Rail Road at the point where it crosses the Duke of Bridgewater's Canal.

Lithograph 1830, printed by Englemann, Graf & Coindet, Lithogrs to the King.

AE185.816

Clayton's naive scene shows the intersection of two historical transport routes, with a 3rd class passenger train on the L&MR crossing the bridge over the Bridgewater Canal near Patricroft. A barge pulled by two horses in tandem is passing underneath, using the rival route between the two cities. The railway carriages are very inaccurate particularly in the clearance above the rails (compare item 59), but the artist has included a signalman with his horn standing on the other track. This is the last of Clayton's three lithographs along the line and shows a rural area that has now been swallowed up by the Manchester conurbation.

56. H PYALL after T T BURY

Entrance into Manchester across Water Street.

Photograph of Plate 6 from Bury's aquatints of 1831

AE185.4155

The busy River Irwell is crossed on two brick arches faced in ashlar as the line enters the outskirts of Manchester. Between the river and road bridge is a ramp giving access to a road also crossing the Irwell and beside it is a tower supporting a water tank and chimney. After crossing Water Street on an iron bridge, the line enters the eastern terminus at Liverpool Road Station (see items 15 and 16) on a viaduct. The iron girders of the road bridge were cast as inverted T-beams to a design by Eaton Hodgkinson and based on

experiments undertaken in Manchester. The station just beyond the bridge served passengers until 1844 after which it became a goods station, remaining in use until 1972. Two accompanying photographs show details of the bridge in 1905, the day it was being demolished, prior to replacement (note the crane on top of the bridge in the lower photograph).

57. MOSES HAUGHTON

George Stevenson (sic) Esq./To the Proprietors of the Liverpool & Manchester Rail Road this Portrait is respectfully inscribed. By their obedient humble Servant Moses Haughton

Lithograph 1831 printed by Englemann, Graf, Coindet & Co lithog.

Published by M Haughton, 51 Great Marlborough St.

AE185.578

Advertised for sale in Liverpool in 1831 at 7/6 on India Paper and 5/- plain, this proud portrait must have annoyed the Directors and Stephenson alike by its mis-spelling of his name. In pose, dress and composition it closely resembles the memorial portrait of Huskisson (see item 35) and in his hand is a sketch of 'Rocket', the engine that caused the MP's accident.

58. S G HUGHES after ISAAC SHAW

Travelling on the Liverpool and Manchester Railway. A train of the First Class of Carriages with the Mail. A train of the Second Class, for outside Passengers.

Aquatint, hand-coloured, published by Ackermann & Co, London Jany, 1833.

AE185.241

In this second state of Ackermann's famous 'Long Print' the second class carriages have had canopies added to them (compare item 59 for the original state of a later facsimile edition). Railway carriages were built by road coach builders, a fact emphasised by the designs particularly noticeable in the first class. Note too the possibility for first class passengers to load their own road carriages onto flat wagons - the occupants thus benefitting from two sets of springs.

59. S G HUGHES after ISAAC SHAW
Travelling on the Liverpool and Manchester Railway, 1831.
Plate I, A Train of the First Class of Carriages with the
Mail - Plate II (below) A Train of the Second Class for
outside Passengers, with three third Class Carriages behind.
Chromolithograph, printed and published by Raphael Tuck &
Sons, 1894.

AE185.811

An 1894 reprint of the original 1831 first state of the
passenger train 'Long Print', very similar to item 58, but
without the canopies on the second and third class
carriages. The private road coach was omitted and there
were differences in construction of the third class compar-
tments. Text below the print gives details of the two
locomotives 'Jupiter' and 'North Star'.

60. S G HUGHES after ISAAC SHAW
Travelling on the Liverpool and Manchester Railway, 1831.
Plate III, A Train of Waggons with Goods, &c, &c Plate
IV (below) A Train of Carriages with Cattle.
Chromolithograph, printed and published by Raphael Tuck
& Sons, 1894.

AE185.812

The companion piece to item 59, this print shows a variety
of goods wagons. The upper train, hauled by the locomotive
'Liverpool', carries exciting looking shapes hidden under
tarpaulins and can be seen passing the water crane at
Parkside. The lower train pulled by 'Fury' carries live-
stock, notably cattle and pigs in open-top trucks and sheep
in double-decked wagons. Unruly animals are being
restrained by a group of ill-behaved gentlemen who seem
to be torturing the beasts.

COMMEMORATIVE ITEMS

63. Pewter Medallion, 1830, 46mm diameter

AE185.1949

Obverse: a portrait of George Stephenson side view facing
left, and the wording "GEO STEPHENSON ESQ ENGINEER".
Reverse: Newton Viaduct with a locomotive on it resembling
a Stephenson Patent engine of 1825, a type which never ran
on the L&MR. The wording reads 'BRIDGE AT NEWTON' and in
the exergue 'LIVERPOOL & MANCHESTER RAILWAY OPENED SEPT.
15 1830'. (The image closely resembles that on the litho-
graph, item 53.)

64. Half Pint Mug, c1830

AE185.1779

Earthenware mug c1830 printed in violet with decorative
transfers inside and on the handle, and a train of one
carriage and one goods waggon hauled by 'Novelty'. Also
a view of the Moorish Arch and entrance to the tunnels at
Edge Hill, based on the Hullmandel lithograph which forms
the frontispiece of Booth's Account of the L&MR (see item
27). The artist who drew the transfer misinterpreted
Hullmandel's treatment of the bare rock wall of the cutting
and reproduced them resembling foliage.

65. Jug cl830
AE185.1780
A bell-shaped jug printed in sepia with the same transfers around the rim and on the handle as item 64, and also the same view of 'Novelty' with its train and the Moorish Arch. Because of the waisting of the neck, the transfer has had to be cut and portions removed, as a result of which the wording reads 'ENCE TO THE IVERPOL & MNCHESTER AILWY'.
66. Jug cl830
AE185.1781
A small earthenware waisted jug with the near identical transfer to items 64 and 65, but in blue and with different rim designs. The stylised rails may allude to the stone sleepers which were set down 'diamond-pattern' at three feet intervals.
67. Cup cl830
AE185.1778
Porcelain cup printed with two transfers in black. One titled 'Liverpool & Manchester Railway' and shows 'Novelty' pulling one open carriage - a familiar transfer seen with slight variations on several other objects (see items 64-6). The second transfer shows a very stylised 'Rocket' without tender or carriages. The cup is lined inside and out in a pale mauve.
68. Bell-shaped jug cl831
AE185.1782
The black transfer decoration is based on the wood engravings in the Wallis' game (see item 32), though they are printed in reverse and due to lack of space the Duke's ceremonial carriage has been omitted. The train is hauled by 'Northumbrian' and behind the tender is a flag waggon, then a carriage for the band and finally one of the VIP carriages.
69. Frog Mug cl831
AE185.1783
This rare earthenware quart frog mug is decorated with black transfers inside and out and in the bottom has a brown and yellow upraised frog with red eyes. Very few frogs mugs survive due no doubt to them being dropped in alarm by the drinker when first seeing the frog 'floating' on the ale.
- The transfers outside show a view of the Exchange Buildings in Liverpool docks while on either side are respectively 'Rocket' and 'Northumbrian' shown on fish-bellied rails and stone sleeper blocks. Inside the mug are transfers of 'Novelty', two different 1st class passenger carriages and a portrait of Queen Adelaide.
70. Pint mug, Leeds ware, cl831
AE185.1793
An earthenware mug transfer printed in magenta showing a train pulled by 'William the Fourth'. A contemporary engraving by G Gladwin for the 'Mechanics' Magazine of 25 September 1830 shows the tender in front of the locomotive, but for a similar view to that on the mug, compare

the train in Wallis' game (see item 32). Delivered too late for inclusion on the Opening Day, 'William the Fourth' underwent test runs on 22 September, only to be derailed on the Sankey embankment on the 24th. Final trials took place in February 1831 but the engine could not keep up a sufficient head of steam and was soon caught up by the next scheduled train behind it which had left 30 minutes later and helped push it to its destination in Liverpool. Having thus failed, the L&MR declined to buy 'William' and 'Queen Adelaide' and they were used by Vignoles on the nearby St Helens and Runcorn Gap Railway.

71. Snuff box cl833
AE185.1854

Papier mache with a painted scene on the lid depicting 'Rocket' pulling a third class carriage.

72. Letter seal
AE185.1843

A small brass seal on an ivory handle, giving an impression of a locomotive resembling 'Northumbrian'.

73. Railway tickets, 1832
AE185.5535

This rare sheet shows a page of six unused tickets from Liverpool to Warrington. A branch line joined the L&MR at Newton and was opened in July 1831 under the name of the Warrington and Newton Railway.

There are no perforations on the tickets. They were torn off against a brass rule, the details being written in ink on both halves of the ticket. On the back is the wording 'NOTICE - No gratuity allowed to be taken by any Guard, Porter, or other Servant of the Company. Smoking in the First Class Carriages is strictly prohibited'. On the front the Agent selling the ticket had to fill in the seat number, time of train and name of passenger.

THE INFLUENCE OF THE L&MR ON LOCOMOTIVE DEVELOPMENT

The Liverpool & Manchester not only established the building techniques, operation and organisation of British railways, it without doubt stimulated the development of the modern steam locomotive.

After the Rainhill Trials in 1829, locomotive design progressed apace; in order to open in September 1830, the L&MR needed at least half a dozen engines, an unprecedented number at the time and it is all the more astonishing that not only did Robert Stephenson produce the required engines, but in that short period he developed locomotives that were to lay the foundation of all other designs from then until the end of steam in Britain in 1960.

'Rocket' was comparatively light, fast and capable of strong running, but its weakness lay in the high inclined cylinders (a compromise between Robert Stephenson's desire for horizontal cylinders and his father's experience with vertical ones). The 'Northumbrian' type and eight similar machines followed before September 1830, built substantially to the 'Rocket' design but with the cylinders placed nearly horizontal, thus producing a more even ride. The other important design of 1830 was Robert's

'Planet', with a 2-2-0 wheel arrangement, sandwich frames and inside cylinders positioned under the firebox and acting on the rear driving wheels. 'Planet' formed the basis of all subsequent sound locomotive design. The feature which most separated her from the 'Rocket' was the position of the cylinders at the front of the engine, working back onto the driving wheels.

'Planet' fathered 16 engines for the L&MR between 1831 and 1833. At the same time Edward Bury constructed a similar engine for the line but with coupled driving wheels forming an 0-4-0 but it was the Planet type that incorporated the most features adopted by later engineers. Its natural predecessor was Robert Stephenson's 'Patentee' of 1834; in this design a longer firebox was supported on a trailing wheel giving a wheel arrangement of 2-2-2 which was to remain standard on numerous railway companies all over the country until the late 1890s. Daniel Gooch, first locomotive superintendent to the GWR had bought the 2-2-2 'North Star' from Stephenson in 1838 for the opening of the line from Paddington to Maidenhead. He recorded in his diary: the line "was opened to the public on 4th June (1838), and then my difficulties with the engines began. The 'North Star' and the six from the Vulcan Foundry Company were the only ones I could at all depend upon." Gooch adopted the 2-2-2 wheel arrangement himself for the Broad Gauge and did perhaps more to establish its reputation than any other locomotive engineer. Thus in just four years after Rainhill, the essentials of a modern locomotive had appeared in this country. Experiments over the years modified the details of 'Patentee', boiler sizes and pressures increased, but the initial design influence was considerable.

61. Puffing Billy
Photograph c1863
AE185.319

This rare photograph shows William Hedley's 'Puffing Billy' in its last state before being preserved at the South Kensington Museum in 1863. It was built c1813-14 for use in Wylam colliery, Northumberland where coal was readily available and any thought for efficient running was irrelevant. This was the sort of machine available before the competitive inventiveness which encouraged the Rainhill entrants to break new ground and depart from the 'beam engine in wheels'. Its return-flue boiler was similar to 'Sans Pareil' requiring the stoker to charge the firebox at the chimney end, while the engine was driven from the other end.

62. S&DR No1 1825, or 'Locomotion'
The First Locomotive Engine Employed on a Public Railway.
Photograph by W Salkeld c1875, published by Harrison Penney, Darlington.
AE185.321

'This engine was built by George Stephenson in 1825, and continued to run on the Stockton and Darlington Railway till 1850 and is now placed upon a pedestal in front of the Darlington Station.' 'Locomotion' hauled the opening train over the S&DR in 1825 (see item 3) and only four years later George's son Robert designed 'Rocket' which won the £500 prize at the Rainhill Trials. These two engines mark definitive phases in locomotive development - 'Locomotion' was the last successful 'beam engine on wheels' and 'Rocket' was the first modern locomotive. Both were essential to the acceptance of steam motive power on Britain's railways.

74. ANON after JAMES NASMYTH (1808-90)
Locomotive Engine the Rocket 1830
Aquatint, hand-coloured c1895
AE185.246
Wrongly titled 'Rocket', this is actually 'Northumbrian' in a late-nineteenth century copy of an original sketch by Nasmyth. The artist had mistakenly captioned his drawing "This sketch of 'The Rocket' I made at Liverpool on the 12 Sept 1830 the day before the Opening of the Liverpool and Manchester Railway while it remained stationary after some Experimental Trips in which George Stephenson acted as Engine Driver and his son Robert as Stoker".

Due to the lower angle of the cylinders, the engine ran much smoother than 'Rocket' and is reputed to have travelled at 40mph on 16 August 1830 during trials, only a week after its delivery. On the Opening Day George Stephenson drove the engine, but Robert was released to drive 'North Star'.

75. G H TRIPPS
The locomotive 'Planet'
Lithograph by Day & Hague forming plate VIII to 'Treatise on Rail-Roads' by Nicholas Wood, published by Hurst, Chance, and Co., St Paul's Church-Yard. London 1831 (second edition).
AE185.3390
The first edition of Wood's Treatise appeared in 1825, five months before the Stockton & Darlington Railway opened to passengers and goods traffic. By the time this second edition was published railways and locomotives had advanced enormously, and as a reflection of this great change Wood chose to illustrate the L&MR's newest locomotive 'Planet' as the frontispiece. The modern outlines can clearly be seen: with boiler, firebox and smokebox all in alignment (though the elaborate fluted chimney betrays artistic licence achieving a decorative effect only possible in cast-iron); two cylinders placed at the front of the locomotive below the smokebox and driving the 5ft diameter rear wheels to provide smooth and easy running. Here were embodied the main features of all succeeding engines and also the immediate foundations of Robert Stephenson's 'Patentee' locomotive of 1834.

'Planet' cost the L&MR £800, but they were immediately impressed with its performance and ordered six more at the end of 1830. Three other engines which had previously been ordered to 'Northumbrian's' design, were modified and delivered as 'Planet' types in 1831.

76. H AUSTEN
Travelling on the Liverpool and Manchester Railway
Lithograph by Baird, 50th John St Lpool, published by T Taylor at his Establishments 31 Castle St and 73 Church St Liverpool. c1833
AE185.242

'Planet' can be seen pulling three first class carriages, though there is only one figure on the footplate instead of the usual two. The ends of the two cylinders can be seen as part of the smokebox which supports the large ornamental chimney. The 2-2-0 wheel arrangement is emphasised by the large nameplate over the driving wheel (however in the familiar engraving by I Shaw, the nameplate is a small rectangular one mounted on the side of the boiler as with on the other locomotive drawings relating to the early years of the line).

77. ANON

Messrs Bury Curtis & Kennedy's Four Wheeled Locomotive Engine

Engraving with text, elevation, plan and section, cl837 AE185.

Born in Salford in 1794, Edward Bury supplied the L&MR with the 0-4-0 locomotive 'Liverpool' in 1832. He had gone into partnership with Curtis and Kennedy in the early 1830s and in 1837 built engines for the London & Birmingham Railway. The engine shown here is one of many such 2-2-0s constructed for British and foreign railways. Resembling Stephenson's 'Planet' in many ways, Bury's locomotives could be distinguished by their high D-shaped fireboxes and bar-frames. This engineering drawing is unusual in that it includes two figures in realistic poses on the side elevation drawing.

78. Great Western Railway. 1837. 'Vulcan' No 2.

Blue print, general arrangement drawing, side elevation with leading dimensions. By C Tayleur & Co Vulcan Foundry near Warrington No 51. AE185.224

When the Great Western Railway opened its first section of main line between London Paddington and Maidenhead in June 1838 the company used a variety of locomotives supplied by outside contractors. This interesting blue print shows the engine built for the GWR by Charles Tayleur at his Vulcan works at Newton, just off the L&MR line. It owes much to Stephenson's 'Planet' with inside cylinders powering cranked driving wheels, but the arrangement of six wheels (2-2-2) is derived from his 'Patentee' which was delivered to the L&MR in 1834.

By 1837 the boiler had increased in length from 'Planet's' 6 feet to 'Vulcan's' 8 feet, requiring the provision of a trailing wheel to take the firebox and minimise any hunting or tail-wagging that might occur. This print records all the basic dimensions of 'Vulcan' as built in 1837, but differs in wheel spacing from another elevation of the same locomotive reproduced by E T MacDermot in his 'History of the Great Western Railways', and reputed to show the same engine in the same year. Of the two elevations, it is likely that the blue print bears a closer resemblance to the real 'Vulcan'.

79. ANON after DANIEL GOOCH (1818-89)
Section through a GWR Broad Gauge 2-2-2 locomotive
Engineering drawing in ink, cl840.
AE185.14

This somewhat unsophisticated engineering drawing shows one of the first standard design locomotives produced by the GWR's young locomotive superintendent Daniel Gooch between 1840 and 1842. He based it on the successful running of 'North Star', a 2-2-2 engine supplied by R Stephenson in 1837. This type of locomotive was known as the 'Fire Fly' class and 83 models were built, having a reputation for speed and reliability.

80. ANON
Photograph of Daniel Gooch (1816-89) cl844
AE185.3.115

A youthful Daniel Gooch stands proudly before a model of his first locomotive type for the Great Western Railway, the 2-2-2 'Fire Fly' class. Based on Stephenson's 'North Star', Gooch developed the type in his own way taking full advantage of Brunel's 7-foot gauge, and did much to establish the 2-2-2 as Britain's principal express locomotive.

EXPANSION OF THE LIVERPOOL & MANCHESTER RAILWAY

The Liverpool & Manchester Railway had a crucial effect on the growth of other railways in this country. By successfully tackling Parliament at the second attempt the company encouraged others to fight for their own railway projects. Railway projects were not new to Parliament. The Surrey Iron Way had been authorised in 1801 for example. But the Liverpool & Manchester by bringing its project to fruition caused a wave of enthusiasm and growing confidence. Once the way had been cleared by the company, the thickets of Parliament were easier to penetrate and Westminster became more amenable to succeeding railway bills when the Liverpool & Manchester had proved a viable concern.

A bill for a railway between Birmingham and Liverpool had been drawn up as early as 1823 and (later called the Grand Junction Railway) had been rejected on a number of occasions. Following the successful opening of the Liverpool & Manchester and the ensuing confidence in railways, the Grand Junction Railway finally passed through Parliament receiving the Royal Assent in 1833. It was to start from the Warrington—Newton branch of the Liverpool & Manchester and run to Birmingham where a link was to be made with the London & Birmingham Railway company receiving its Royal Assent in the same year. Together the two projects heralded the beginning of large scale trunk railway building.

The Liverpool & Manchester began to find itself in the position T Gray had foreseen in 1820 as an important feeder to a main-line railway from London going northward. But the L&M was more than the 'first important essay' as Gray had stated in his paper of 1820. Its example was transmitted by those who made the line work. In 1832 Henry Booth was asked to submit evidence for the London & Birmingham bill then in Parliament. Stephenson's assistant Joseph Locke who gained experience on the Liverpool & Manchester, became engineer to the Grand Junction Railway in the face of Stephenson's failure there. 'The Liverpool Party' who were the

influential group backing the L&M financially helped promote the Grand Junction Railway and virtually controlled the company from Liverpool. Their capital launched the Eastern Counties and the Midland Counties Railways though both lines were the other side of the country from Liverpool. John Moss was for a time chairman of both the L&M and the GJR. Charles Tayleur who was joint founder of the Vulcan Foundry just off the L&M at Newton, was also influential in the Grand Junction Railway company.

Gradually around the L&M, branch lines took shape. In 1828 the Bolton and Leigh Railway had opened and in 1831 it joined up with the Liverpool & Manchester at Kenyon Junction. In July 1831 the 4½ mile branch from Newton to Warrington was opened followed two years later by the Wigan Branch Railway later forming part of the North Union Railway from Preston to Wigan.

Before long the Liverpool & Manchester found itself physically at the centre of Britain's growing railway network. In 1837 the Grand Junction Railway opened followed one year later by its close companion the London & Birmingham. By 1838 a traveller could utilize the railway from London to Preston and in 1839 through carriages could transport him from London to Liverpool or Manchester in just 11½ hours.

Gradually the railway network expanded in the rest of the country. The 16 mile Leicester and Swannington opened in 1832 and a line between Leeds and Selby in 1834. In 1838 the first section of the Great Western Railway opened and a year later the first part of the Midland Counties Railway between Derby, Nottingham and Leicester.

Despite its increasing importance it must be borne in mind that the Liverpool & Manchester Railway was not conceived as part of a national scheme of railways. Its roots lay with the canals and a desire to break their monopoly of transportation between the heart of Lancashire and its American port. Nevertheless when the Newton to Warrington branch was opened in July 1831, Joseph Locke was already seeing this as the beginning of the Grand Junction Railway south to Birmingham and London beyond.

In 1845 the Grand Junction absorbed the L&MR. The following year the London and Northwestern Railway was formed, amalgamating the GJR, L&BR, the North Union and the Manchester and Birmingham, which together formed the basis of the British Railways West Coast route to Scotland.

When George Stephenson was asked whether the gauge of track of the Canterbury & Whitstable and the Leicester & Swannington railways should be compatible he replied:

Make them the same width; though they may be a long way apart now, depend upon it they will be joined together some day.

81. R MARTIN after CHARLES BLACKER VIGNOLES (1793-1875)
View of a Train of Carriages drawn by a Locomotive Steam
Engine on a Railway.
Lithograph, c1831. Published by R Martin's Lithographs,
12 High Holborn London
AE185.245

Despite having been dismissed by Stephenson in 1827 from the early stages of construction on the L&MR, C B Vignoles was still highly regarded by the Directors and they asked him to organise the Rainhill Trials in 1829. During the competition he rode on the footplate of 'Novelty' and like the Press and the crowds he was very impressed, despite the fact that the locomotive consistently failed when required to pull a load. The inclusion of wagons therefore suggests that Vignoles' drawing of 'Novelty' pulling a train is more likely to date from 1831-2 when he used the engine whilst employed as engineer to build the Wigan Branch Railway (which joined the L&MR at Parkside). Similarly, when he was building the nearby St Helens & Runcorn Gap Railway he used Ericsson and Braithwaite's other engines 'Queen Adelaide' and 'William the Fourth'. It is from this second line that the rolling stock seems to come, because an aquatint by S G Hughes of 1832 shows a coal train made up of wagons similar to the one behind the engine. The source of the locomotive illustration however, is the original supplement to the Mechanic's Magazine (see item 22).

82. JOHN HARRIS (1791-1837) after S KEPLER
New Station, Lime Street. Entrance to the tunnel, booking offices, etc; Edge Hill Station. End of the tunnel;
New Grand Entrance to the Liverpool and Manchester Railway.
Three aquatints, hand-coloured on the same sheet, published by Ackermann & Co London, and Henry Lacy, Liverpool.
30 September 1836.
AE185.229.1-3

Crown Street Liverpool quickly became inadequate to cope with the mounting traffic on the L&MR and a decision was taken as early as October of 1831 to build a new terminus nearer the city centre. It was linked to the existing line via a tunnel 1.1/3 miles long, rope-hauled on a gradient of 1 in 97, and opened in 1836. As at Crown Street, locomotives did not enter the station, a situation which remained unchanged until 1870. In the background of the top two views can be seen either end of the same tunnel. Locomotives hauled trains from Edge Hill Station which accounts for the waiting engines, seemingly 'parked' off the rails in the second of the aquatints.

The third view shows most of the proud facade of Lime Street Station, 330 feet long with 36 Corinthian pillasters, and built at a cost of £7000 to a design by John Foster, the architect of the nearby Moorish Arch.

83. Textile printing block
Brass rules embedded in a wooden block, c1837
AE185.1849

This block uses a system of printing fine line patterns known in England since 1785, where brass rules of varying thickness stand proud of a wooden base and are used to print

designs onto cotton. The image it produces is the view of Edge Hill Station and is copied from Kepler's drawing (item 82). It perpetuates the same mistake of the 'parked' locomotive, no rails being visible at this point. At the top of the block is a simplified view of John Foster's design for the facade of Lime Street Station.

84. ANON

System of Working Inclines as Applied at the Edgehill Station, Liverpool & Cowlairs, Glasgow. Pulley gearing for endless rope on the incline.

Engraving, plate V from a set of five published in The Imperial Journal of Arts, Science, Mechanics and Engineering. c1847

AE185.359

The new station at Lime Street allowed more traffic on the line and exceeded the hauling capacity of the existing winding engines in the Moorish Arch. New engines were ordered in 1834 from Mather, Dixon & Co and installed at the new Edge Hill Station. The ones illustrated in the set of engravings were replacements ordered c1847 and plate V shows the tensioning gear to keep the endless rope taut. A pair of engines of 80hp each was installed and served the Lime Street tunnel and also the two earlier tunnels to Crown Street and Wapping Docks, both of which remained in use as goods stations.

85. Map of Liverpool, 1848

Engraving, frontispiece to Smith's Strangers' Guide to Liverpool, its environs, and part of Cheshire, for 1845. By Alexander Brown, AM Published by Benjamin Smith, South Castle Street, Liverpool.

AE185.4902

The railway ran below ground level within the city boundary so the line is shown dotted, two main tunnels running down from the top of the map. The left hand tunnel runs to Lime Street, opened in 1836, while the right hand tunnel is the original one serving the goods warehouse at Wapping. Crown Street is marked as 'Crown Street Rway Stn', but is shown on the wrong side of the line of the tunnel. At the foot of the map is a row of Liverpool's civic buildings, all drawn to the same scale.

86. ANON

The London, Birmingham, Liverpool, and Manchester Railway. Sketch of the Origin and Progress of Railways.

Engraving, hand-coloured. Published by John Passmore, 18, Fleet Lane, Farringdon Street, London. c1840.

AE185.6.696

The illustration forming the top part of this broadsheet also exists in the Elton Collection as a jigsaw (AE185.1877), but in this form with the text it shows how the railway network had grown via three individual companies to link Liverpool with London by 1839. It describes the L&MR opened September 1830, the Grand Junction opened July 1837 and also the London & Birmingham opened September 1838. Vignettes includes Liverpool Lime Street, Wapping Tunnel, Manchester Water Street, Birmingham Town Hall, and the Euston Arch, besides a passenger train hauled by the locomotive 'Samson' and the wagons of a goods train based largely on the 'Long Prints' (see items 58-60).

87. By and after A F TAIT

Victoria Station, Hunt's Bank, Manchester

From Views on the Manchester and Leeds Railway, with a descriptive history by Edwin Butterworth. Published by Bradshaw and Blacklock, 59 Fleet Street, London, 1845. Tinted lithograph, printed by Day & Hague.

AE185.5291

As at Liverpool, the original Manchester Liverpool Road Station soon proved to be inadequate and in 1844 Victoria Hunt's Bank was opened, at the time the largest in the country. It linked the metals of the Manchester & Leeds Railway and the Manchester, Bolton & Preston Railway with the L&MR, but in 1847 all these were absorbed in the London & North Western Railway. By 1888 Victoria Station had expanded to occupy the adjacent Exchange Station as well, with one continuous platform linking the two, making it the longest in the world.

88. T L ATKINSON (b1817) after JOHN LUCAS (1807-74)

George Stephenson

Mezzotint, published 23 May 1849.

AE185.577

In the background is the marshy waste of Chat Moss, west of Manchester, which the L&MR finally crossed early in 1830 after endless quantities of soil had been tipped into the bog. In particularly deep places, a raft was floated, made of interwoven hurdles and reed matting. This was capped with balast and wooden sleepers to carry the rails. The black landscape identified an area which was considered to be impassable to man or beast, so the successful completion of the railway embankment greatly enhanced Stephenson's reputation. He died in 1848, a year before this mezzotint was published and it is fitting that he is shown on old age before one of his greatest triumphs - the Liverpool & Manchester Railway.

