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**Early Railways in South-West  
Lancashire.**

BY  
**W. H. WILLIAMS.**

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**Early Railways in South-West  
Lancashire.**

To  
W. T. Palmer, Esq.

Liverpool

With kind regards.

W. H. Williams

1892

BY

W. H. WILLIAMS.

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## EARLY RAILWAYS IN SOUTH-WEST LANCASHIRE.

By *W. H. Williams.*

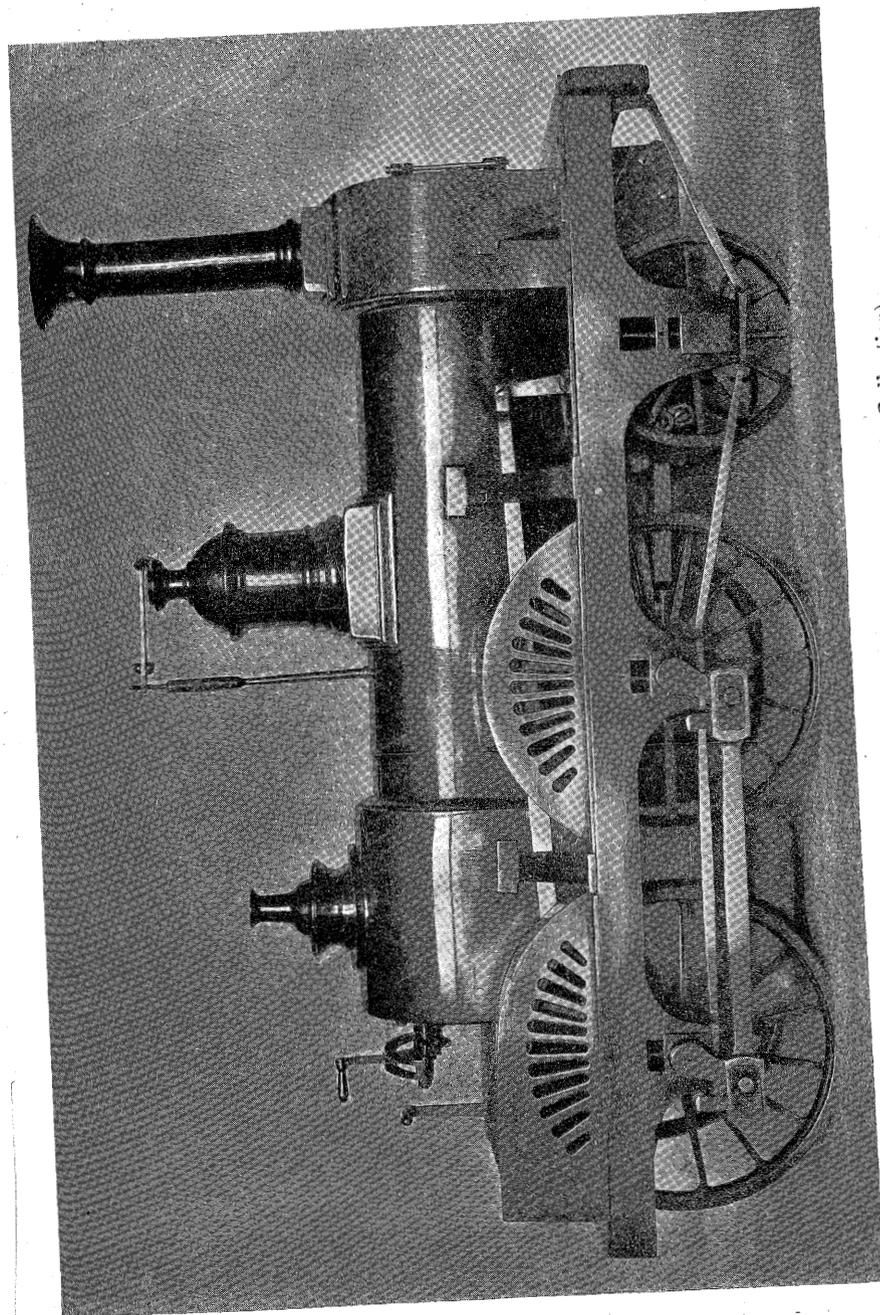
Read 30 March, 1922.

**R**AIL-ROADS or Railways are not so modern as is generally believed. Mr. Nicholas Wood, C.E., in his treatise on Rail-roads (Second Edition, 1831, pp. 11 and 12) quotes thus from a work by a Mr. Gray published at Newcastle in 1649, a survey of Newcastle-on-Tyne:

Some south gentlemen hath, upon great hope of benefit, come into this Country to hazard their monies in coal pits. Master Beaumont, a gentleman of great ingenuity and rare parts, adventured into our mines with his £30,000, who brought with him many rare engines not known then in these parts, as the art to boore with iron rodde, to try the deepnesse and thicknesse of the Coale; rare engines to draw water out of the pits; waggons with one horse to carry down coales from the pits to the stathes, to the river, etc.; within few years, he consumed all his monies, and rode home upon his light horse. *Chorographia*, 24.

Then Mr. Wood goes on to remark that considering the carts employed in conveying the coals were, in 1602, called "waynes," and the carriages introduced by Mr. Beaumont "waggons," and that ever since that period, the vehicles employed on rail-roads have been designated by the latter name (waggons), we may infer that the "waggon" of Mr. Beaumont was employed upon a railway and that he was the first to introduce them into the North.

The date of the introduction of railways as a substitute for common roads at Newcastle, would then be between the years 1602 and 1649, probably a considerable time prior to the latter period, as we find Master Beaumont had



MODEL LOCOMOTIVE, 1841 (from Dr. Nelson's Collection).

It illustrates the new link motion, which consisted of a quadrant link with two eccentrics, one controlling forward gear, and one the back gear.

at that time expended his £30,000. In 1676 they are thus described:

The manner of the carriage is by laying rails of timber from the colliery to the river, exactly straight and parallel, and bulky carts are made, with four rollers fitting these rails, whereby the carriage is so easy that one horse will draw down four or five chaldrons of coal, and is of immense benefit to the coal merchants.

Clearly our first rail-roads were of timber, secured to wooden sleepers by pegs. Doubtless they were very imperfect, but as the earliest known are worthy of mention. Prior to that we find that eight bolls of coal (equal to 17 cwt.) was the regular load for a horse with a cart or wain, upon the common roads; while upon the rail-road the general load for one horse was 19 bolls, or about 42 cwts.

According to the same authority (Nicholas Wood) about this period, in all the extensive mining districts, canals were the only system of internal communication for general traffic; and these, by the indefatigable enterprising genius of Brindley and other eminent engineers, were carried to every quarter of the country. Hence, the attention of all scientific men being absorbed in another species of conveyance, rail-roads had little attention, so that a long period intervened after the introduction of wooden railways before the application of any other material. The first indisputable evidence we have of iron railways comes from a statement of R. Stevenson of Edinburgh, respecting his visit to the great iron works of Colebrookdale in Shropshire, that it appeared from the books of the company that between five and six tons of rails were cast on the 13th of November, 1767, as an experiment; but Mr. Curr in his *Coal Viewers and Engine Builder*, 1797, says, "the making and use of iron rail roads were the first of his inventions, and were introduced at the Sheffield Colliery about twenty-one years ago." This would make the date of the introduction about 1776, which is nine years subsequent to that of Colebrookdale.

The first stone supports, instead of wooden sleepers, were used on the iron railway laid down in 1797 from the Lawson Colliery, near Newcastle-on-Tyne, to the river.

Various forms of rail were used with either wooden sleepers stretched across the whole breadth of the railway, or short square wooden sleepers on which the rails were nailed. In 1816 a patent was obtained by W. Losh of Wallsend, and George Stephenson of Killingworth, for a form of chair and rail, which proved to be a great success; the plan was to join the rails tightly into the chairs by what is called halfap, each chair being pinned down to the sleepers at both ends of the rail. This in a measure did away with the previous rough jolting as the vehicle passed over the jointed rails. In 1808 malleable iron rails were first introduced at Lord Carlisle's coal works on Tin Dale Fell, Cumberland. In 1820 J. Burkinshaw, of the Bedlington Iron Works, obtained a patent for an improved form of malleable iron rails. Many forms of rails and modes of securing to the wooden or stone sleepers were introduced from time to time, until the present magnificent system of permanent way was evolved.

#### LOCOMOTIVE ENGINES.

Locomotive engines were not in use on the earliest railways, in fact had not been invented. To the celebrated engineer Watt is due the credit of the first patent, described in his fourth article, 1769, and again in the specification of another patent in 1784, with the mode of applying it to the moving of wheel-carriages; but it was Trevithick and Vivian who introduced locomotion by the expansive force of steam. In March, 1802, they obtained a patent for that species of power to propel carriages upon rail-roads. In 1804, Mr. Trevithick built a locomotive engine in South Wales, which worked upon the Merthyr Tydvil rail-road (a colliery rail-road). It is stated to have had an 8 in. cylinder with 4 ft. 6 in. stroke, and drew after it as many

carriages as contained ten tons of iron, a distance of nine miles, at the rate of five miles an hour. The supposed want of adhesion of the wheels upon the rails, and so retarding the locomotion of the engine, was a great obstacle to the general introduction at that time, but we can safely claim this engine of Trevithick's as the first railway locomotive by steam power in the world.

Blenkinsop, of Middleton Colliery near Leeds, in 1811 obtained a patent for the application of a rack or toothed rail along the rail-road, whereby cogwheels turned by the engine produced a motion of the train enabling it to ascend acclivities which Trevithick's engine could not surmount for want of adhesion.

In 1813 Brunton of Butterley Iron Works obtained a patent for a mode of locomotion without the aid of rack-rail or cog, by means of moveable legs worked by two cylinders and two pistons.

In 1815 an engine was constructed by George Stephenson, and on March 16th of that year worked upon the Killingworth Colliery railway. This engine had two cylinders; projecting cogwheels fixed to the leading and rear wheels, over which passed an endless chain, connected by a rod from each piston.

Passing to the period when it had been discovered that cogwheels and endless chains were quite unnecessary to the production of locomotion by steam, we find that in 1818, backed by Edward Pease and others, the first steps were taken to obtain an Act of Parliament for a line from Whitton to Stockton. As the measure was strongly opposed by the Duke of Cleveland because the proposed line passed near to one of his fox covers, a new survey was made, avoiding the duke's cover; and in 1819 renewed application was made to Parliament, but it was not until April, 1821, that the bill was passed and the royal assent given to the first Stockton and Darlington Railway Act. In 1823, an amended Stockton and Darlington Act

was passed at the urgent request of George Stephenson, taking power to work the railway by locomotive engines, and to employ them for the haulage of passengers as well as merchandise. This is the first clause in any railway Act empowering the employment of locomotive engines for the working of passenger traffic. George Stephenson was appointed the company's engineer at a salary of £300 a year. About this time it is worthy of note that Mr. Pease, the chairman of the company, entered into partnership with George Stephenson for the establishment of a locomotive foundry at Newcastle-on-Tyne and here were built the earliest engines for the Stockton and Darlington railway, and later for the Liverpool and Manchester one. The Stockton and Darlington line was opened on 27th September, 1825, so that we are now within a measurable distance of celebrating the centenary of the world's first public railway. The first of Stephenson's locomotives worked on the line from 1825 to 1850.

Although Parliamentary power had been obtained for the conveyance of passengers by locomotive engines, it was not brought into use for some five or six years; in fact not until after the Liverpool and Manchester Company had established passenger trains in September, 1830. Until this latter period the Stockton and Darlington Company sublet the passenger traffic first to Pickersgill and Harland, who employed horse power for the purpose, and subsequently to different coaching companies who used the same motive power. Then, owing to congestion brought about by the rival proprietors, the directors of the company found it necessary to take over the entire working.

We now come to the formation of the Liverpool and Manchester Railway, the first in Lancashire, from which may be traced the evolution of railways to-day. The project was first discussed in 1822. In 1824 a deputation, consisting of Mr. Saunders, Mr. Lister Ellis, Mr. Henry

Booth, and Mr. Kennedy, proceeded to Darlington, to view the unfinished Stockton and Darlington railway, and afterwards to the neighbourhood of Newcastle and Sunderland, where various colliery railways were in operation. Upon return these gentlemen made their report on 20th May, 1824, to a committee in Liverpool, of which John Mcss was chairman; when it was determined to form a company for the establishment of a railway between Liverpool and Manchester. The first petition for the bill was presented to the House of Commons on 8th February, 1825, but the bill was lost on a division, 1st June. A second petition for the bill was presented to the House of Commons 7th February, 1826; it was read a third time 6th April, and passed by the Lords 1st May.

The first general meeting of shareholders after the passing of the Act was held in Liverpool on 29th May, 1826. The chief consideration of the directors was the selection of a principal engineer, and ultimately George Stephenson was appointed at a salary of £1,000 per annum. He at once took up residence in Liverpool; in 1827 he resided at 31 Upper Parliament Street, in 1829 at 34, and in 1832 at 49 in the same street. I recollect as a small boy, conversations I had with old Liverpool and Manchester Railway men, who remembered George Stephenson riding his horse from his Upper Parliament Street residence on to the railway while in formation.

At about this period it is interesting to find John Stephenson recorded as rail-road superintendent in 1829, and again in 1832, residing at 4 Mount Street, Liverpool. Probably he was a family connection of George Stephenson, and evidently the first superintendent of the Liverpool and Manchester Railway.

#### EARLY RAILWAY WORKERS.

The men of these early days on the railway were enthusiastic workers, the spirit of emulation was strong

within them, each trying to do better than his fellow. I recollect many of these old hands very well, and have listened enraptured to their tales of early days.

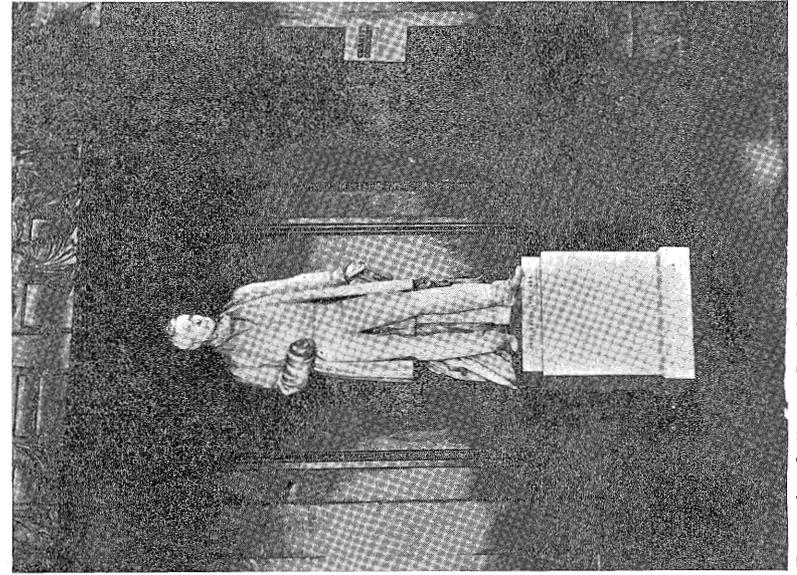
Doubtless the greatest genius, next to George Stephenson, was the indefatigable secretary and manager, Henry Booth, a Liverpool corn merchant, born in Rodney Street, on 4th April, 1788, to whom we are indebted for the introduction of the screw coupling between the coaches, which has since been extended to express goods and cattle trains. He was also the inventor of grease boxes for lubricating the axles of railway vehicles, and of the steam tubes fitted to the celebrated engine "Rocket," for which he was awarded half the £500 prize given by the directors for the successful locomotive at the Rainhill trial 8th October, 1829.

The mention of this trial calls to mind the "Sanspareil," built by Timothy Hackworth, locomotive foreman for the Stockton and Darlington Railway. So late as May, 1916, I saw one of its cylinders working a pumping engine at Rainhill gas works, and it is probably still so employed.

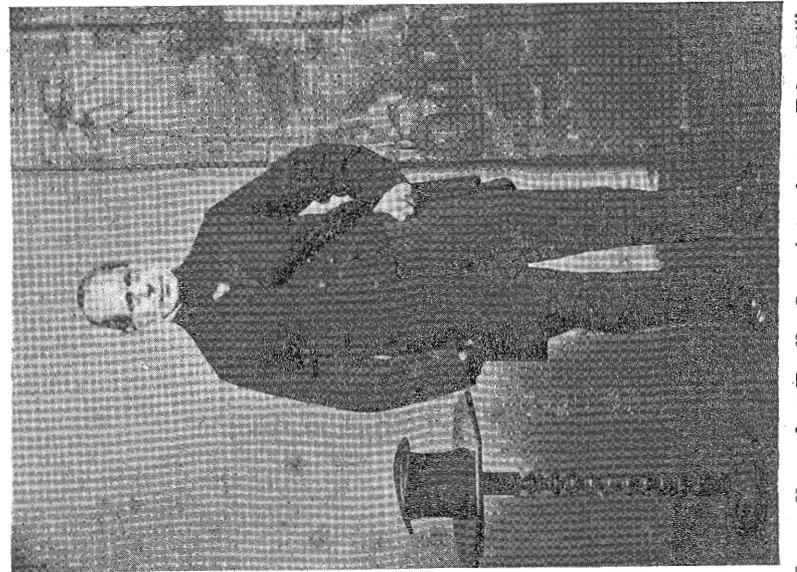
It is perhaps not generally known that a statue to Henry Booth is in St. George's Hall, shown with a railway coupling by his side. He died 28 March, 1869, and was interred at the Antient Chapel of Toxteth.

James Knox was the first traffic superintendent of the Liverpool and Manchester Railway at Edge Hill. He had thus the earliest problems of railway working to deal with, and occupied his position until 1867. He was the father of Walter Knox, superintendent of the Northern Division of the L.&N.W.Ry., who resigned 1867 to take up the management of an East Indian railway.

Eli Cook succeeded James Knox as traffic superintendent, and retired in 1893. He had to contend with the complete alteration in the marshalling and despatch of goods, etc., trains, from that of sorting the traffic on the level by horses and locomotive power, to that of gravi-



Portrait of Henry Booth, first Secretary and Manager  
Liverpool and Manchester Railway.



James Knox, first Traffic Superintendent at Edge Hill,  
Liverpool and Manchester Railway.

tation by what is known as the Gridiron, which was opened 21st March, 1881. It is an indication of the growth of merchandise traffic, that in 1849 only 9 trains were despatched from Edge Hill in 24 hours, but by the time Mr. Cook retired the number had increased to sixty. A view of Edge Hill Traffic Yard in 1867, taken from Wavertree Bridge looking eastward, shows on the left the old boundary wall of Wavertree Park; further on still to the left the grounds of Edge Lane Hall, containing a goodly growth of trees. The structure on the line to the right of this is the wagon repair shop, then (as will be seen) on the margin of the line, but now almost in the centre through the acquisition of a portion of Wavertree Park and adjoining land to form the Gridiron. A peep over Wavertree Bridge shows the vast extension.

Robert Death entered the service of the Liverpool and Manchester Railway in 1845, in the wagon building and repair depot, then at Crown Street, and was shortly afterwards appointed store and timekeeper, continuing at this post nearly sixty years, till he retired in his eightieth year. He was born in the army, a son of Trumpeter William Death, of the 1st King's Dragoon Guards, a Waterloo veteran.

Thomas Mercer was born 6th July, 1804, and baptised at Prescott parish church. He took service with the Liverpool and Manchester railway in 1826, when the line was in formation, and was first employed upon the Rainhill section. Upon completion of the line he worked with the company's engine fitters, and as engine cleaner; he was also engaged as fireman of the celebrated engine "Rocket," and subsequently as platelayer, retiring in 1887, after sixty-one years' service. He died 27th December, 1899, in his ninety-sixth year.

James Harling entered the employ of the North Union Railway in 1839, and was transferred to the London and North Western upon completion of the amalgamation

about 1850, retiring after an active service of fifty-five years.

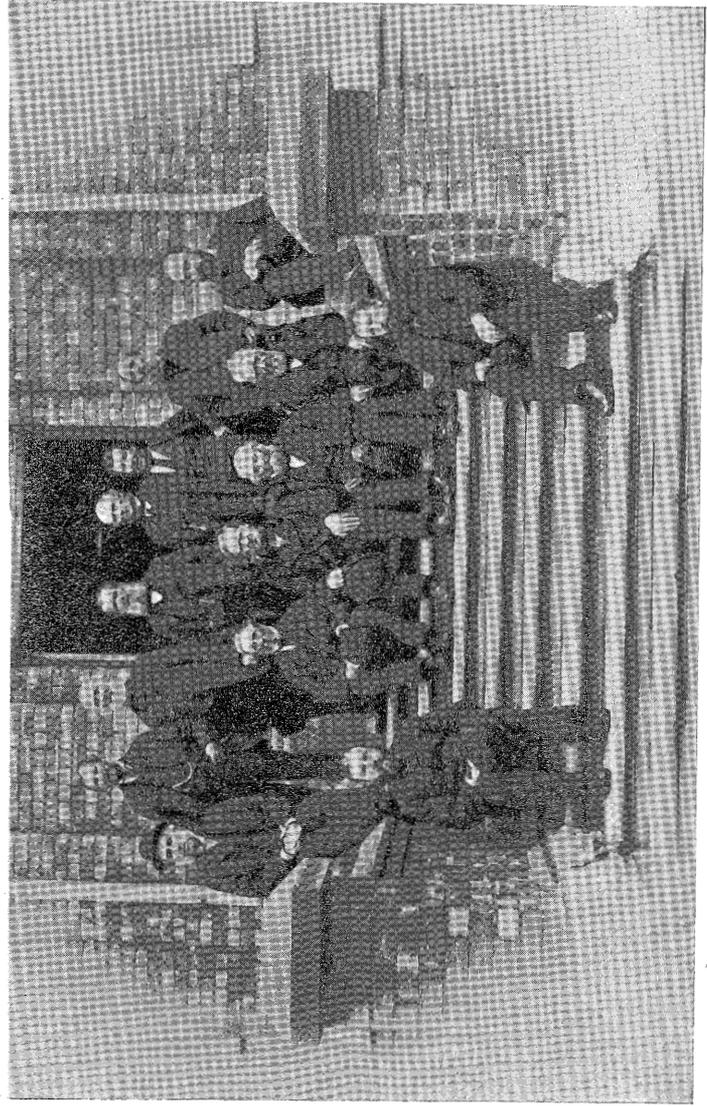
A group of engine-drivers may next receive notice. John Murphy entered the service of the Liverpool and Manchester Railway in 1828, during its formation. He was appointed regular fireman 1836, and engine driver the same year, retired from the service 1880, and died the same year. He handled the "Rocket," the "Arrow" and other of the earliest types of locomotives; and during his long travelling career never met with mishap. Thomas Valentine was another of our early enginemen on the Liverpool and Manchester Railway at Edge Hill; he retired 1880 after almost half a century of active service. James Middleton entered the service of the Grand Junction Railway while it was in formation.

THE PRIMITIVE ARRANGEMENTS.

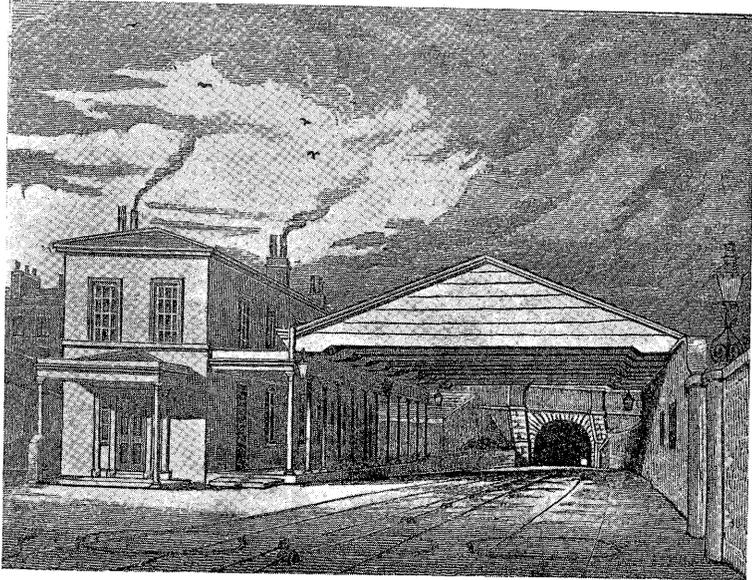
The site of the original locomotive shed of the Liverpool and Manchester Railway is now occupied by the additional platform at Edge Hill Station known as the up slow line.

The illustration shows the Area with its Moorish Arch. This arch contained a stationary engine at each side for working the endless ropes moving goods traffic from Wapping, and passenger coaches to Crown Street, being an inclined plane in each direction. The third tower-like building seen on the right contained residential apartments for the enginemen. The entrance to these long disused and almost forgotten premises, at one time in open country, their massive door-way and iron window-frames, all bricked up, are still to be seen, although hidden from general view, in the back passage of cottages in Lissant Street, bounding the railway. It was through this entrance that at the opening of the line the privileged public were admitted, and thence they passed down the rock-hewn steps to the Area below, to view the departure of the trains by locomotive from this point. The worn

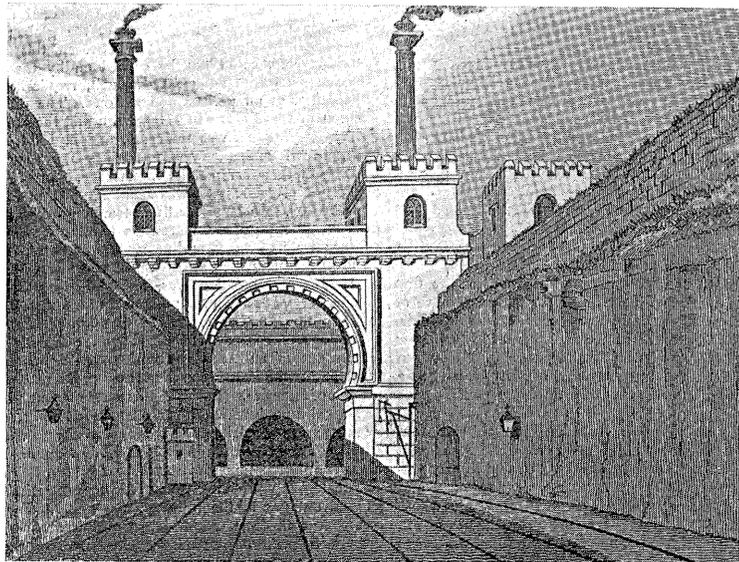
Ralph Mort, 1839, L. & C. Ry., Carlisle.  
 Sir Richard Moon, Chairman, L. & N. W. Ry.  
 Thos. M. Hall, 1841, N. U. Ry., Preston.  
 Thos. Valentine, 1833, L. & M. Ry., Edge Hill.  
 Wm. Manners, 1842, L. & M. Ry., Manchester.  
 John Murphy, 1828, L. & M. Ry., Edge Hill.  
 G. Jct. Ry., Preston.  
 John Meers, 1837, G. Jct. Ry., Birmingham.  
 T. Stronach, 1838, L. & C. Ry., Carlisle.  
 Thos. Stockton, 1838, L. & M. Ry., Manchester.  
 F. W. Webb, Chief Mechanical Engineer, L. & N. W. Ry., Crewe.  
 A. L. Mumford, Assistant Mechanical Engineer, L. & N. W. Ry., Crewe.



GROUP OF EARLY ENGINEMEN, &c.



Original Passenger Station Crown Street Liverpool and Manchester Railway.



The Moorish Arch.



Old Liverpool and Manchester Railway Offices, Smithdown Lane.

remains of the steps are still to be seen on the railway premises. The centre tunnel is that to Wapping station at Park Lane; that on the right the short single-line tunnel to Crown Street passenger station, about 290 yards long; and on the left is another tunnel, at that time only partly cut. It was for some years used as a wagon repair shop, but ultimately cut through to Crown Street and a double line of rails laid, over which the coal traffic is worked to that station.

The first passenger station in Liverpool was at Crown Street. It was indeed the first railway passenger station ever constructed; the Stockton and Darlington Railway having only points of call. It was approached on the railway through a short single-line tunnel from the Area at Edge Hill, 290 yards in length, 15 feet wide, and 12 feet high. This tunnel was the first ever constructed for the use of railway passenger trains, and in the roof near the Crown Street end the date 1829 is still clearly shown.

The station was approached from the town through what is now Messrs. Richard Evans & Co.'s coal depot, and passengers were taken to and from it by omnibuses along Myrtle Street. No locomotive worked to this point; the passenger vehicles were drawn up the tunnel by endless rope with stationary engine worked from the Area. The outward passenger train was lowered down the incline from Crown Street to the Area, and there the locomotive engine was attached to take it to Manchester. At the corner of Edge Vale, in Smithdown Lane, were the first offices of the Liverpool and Manchester Railway, used during the formation of the line for general purposes and the payment of wages. They are now falling into decay.

From these offices access to the station below in Crown Street yard was by a door in the wall directly opposite (in Smithdown Lane) and by a stair-case, the marks of which are still to be seen from the railway premises.

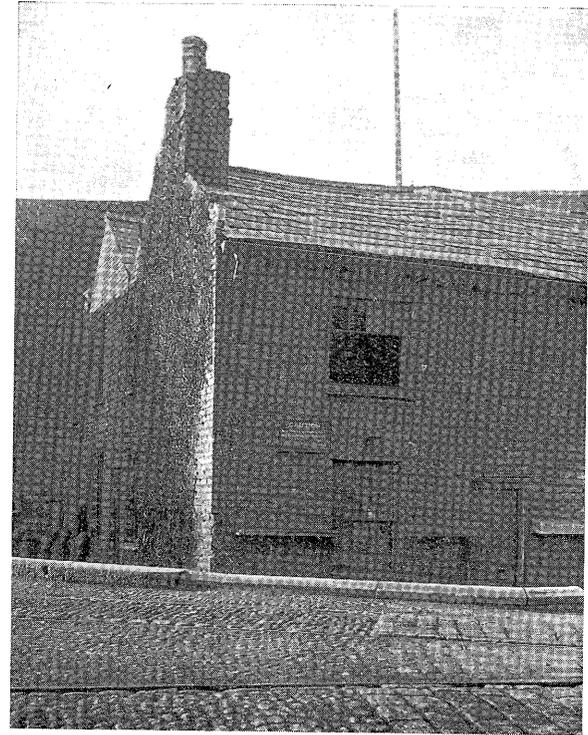
A passenger station stood at Wavertree Lane, now the

## II *Early Railways in South-West Lancashire.*

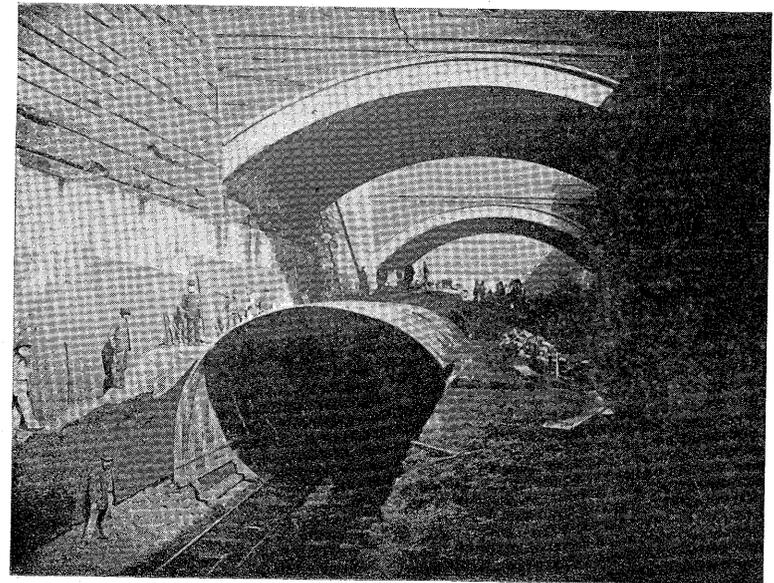
site of Wavertree Bridge; a level crossing was made at this point for foot passengers, carts, etc. Part of the road to this crossing is still to be seen by Wavertree Park gates (Leigh Road); it is now a cul-de-sac, used by the Corporation as a depot for road repairing materials. A crossing keeper was put in charge of the gates to keep them closed against road traffic on the approach of the trains. A cottage was built for his accommodation. It still stands (although its origin is almost forgotten) in what is now the yard of Wavertree Gas Works, hidden from view by the high wall at the junction of Spofforth Road and Picton Road. The Gas Company acquired the cottage and adjacent land to build the works about 1850.

Proceeding eastward a short distance Olive Mount Cutting is reached. At first only two sets of rails were laid, with the exception of a junction for the first cattle depot near to Broad Green; but about 1870, and again about 1880, the line was very much widened, and now from Olive Mount Junction westward eight sets of roads are in use.

The first entire trip, Liverpool to Manchester, prior to the official opening of the line, was made on 14th June, 1830, on the occasion of a board meeting held at the latter town. The train was drawn by the "Arrow," a new locomotive, and driven by George Stephenson arrived at Manchester in less than two hours; the return journey to Liverpool was accomplished in about one and a half hours. The directors, along with George Stephenson, alighted at Wavertree Lane Station and proceeding to Wavertree Hall, the residence of the chairman, Charles Lawrence, which then stood on the site of the present Wavertree Park, were entertained to dinner by Mrs. Lawrence (Rose D'Aguilar) who will be remembered as a very cultured lady, the author of that fine descriptive poem, "The last Autumn at a favourite residence" (Wavertree Hall), other poetry and "Recollections" of



Old Level Crossing Cottage at Wavertree Lane Station  
Liverpool and Manchester Railway.



Opening up Lime Street Tunnel.

her friend Mrs. Hemans. It is difficult to realise to-day the magnificent growth of trees at that spot, then (about 1836) in full vigour.

The Liverpool and Manchester Railway was opened by a procession of eight trains, 15th September, 1830, each drawn by a locomotive built at Stephenson's works, Newcastle-on-Tyne.

It is interesting to recall the names of these early locomotives: the "Northumbrian," "Phoenix," "North Star," "Rocket," "Dart," "Comet," "Arrow," and "Meteor." It speaks well for their workmanship to find that nine years later six of those early engines are recorded as working on the line. They are shown in the manuscript record of the working of these and other engines for 1839-40, which shows the number of trips made daily between Liverpool and Manchester, and the coke consumed per mile, per trip, per day and per month. It was a special record set up with a view of reducing the consumption of fuel by friendly rivalry and emulation amongst the enginemen, and was highly successful.<sup>1</sup>

It is commonly known that the opening day of the railway was greatly marred by the fatal accident to Mr. Huskisson, one of the members of Parliament for Liverpool, who was knocked down and run over by the "Rocket" at Park Side; but as an indication of the great speed attainable by these early locomotives, it is worthy of attention that the "Northumbrian" conveyed the injured gentleman to Eccles, a distance of nearly 15 miles, in twenty-five minutes, or at the rate of thirty-six miles an hour.

#### LATER DEVELOPMENTS.

The next railway in Lancashire was the Warrington and Newton, opened on 25th July, 1831. It was a very

<sup>1</sup> See *Observations on the consumption of fuel in locomotive engines*, by Edward Woods, C.E., Liverpool, Division A. New ed. Tredgold, pub. John Weale, 1850.

short line, terminating at the present Earlestown Junction. Fares from Warrington, first class, 1s. 6d., second class, 1s; with through bookings to Liverpool or Manchester, first class 4s. 6d., second class 3s. 6d. Passengers changed at Earlestown Junction and there joined the Liverpool and Manchester service. The tickets were printed in sheets and had to be cut separate for each passenger, each name having to be recorded on the counterfoil, much in the style of the booking in old coaching days.

The Warrington and Newton Railway was incorporated with the Grand Junction Railway by Act of Parliament, 12th June, 1835, as and from 31st December, 1834.

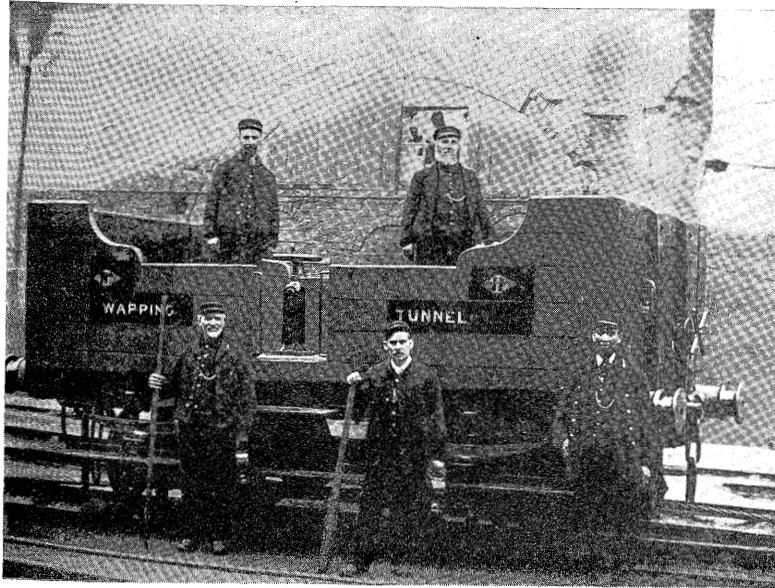
The Bolton and Leigh Railway, with extension to Kenyon, was opened 1831; and the St. Helens and Run-corn Gap shortly afterwards.

#### THE FIRST AMALGAMATION.

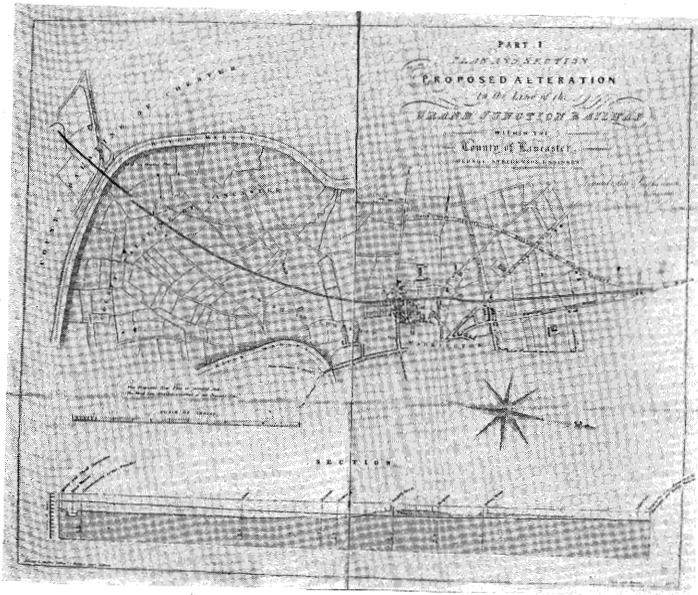
The Wigan Branch Railway (Wigan to Parkside) was opened 3rd Sept., 1832, providing connection with the Liverpool and Manchester Railway. The Preston and Wigan Railway was opened 31st Oct., 1838, and these two lines were shortly afterwards amalgamated under the style and name of the North Union Railway. It is worthy of note as the first recorded amalgamation of railways.

The Preston and Lancaster Railway was opened 26th June, 1840, and the section Lancaster to Oxenholme on 22nd Sept., 1846, and a further extension from the latter point to Carlisle was opened on the 17th Dec. of the same year.

The Grand Junction Railway, Birmingham to Warrington, was completed 4th July, 1837, and as that company had absorbed the Warrington and Newton Railway, the line extended to the present Earlestown Junction; and at this point connecting with the Liverpool and Manchester Railway, a through service Liverpool and/or Manchester to Birmingham was secured, running powers having been



"Pilot" working with endless rope, Wapping Tunnel.



Proposed Plan of alterations, Grand Junction connection at Warrington with Newton and Warrington Railway.

Reproduced from the Chairman's original plan. The suggested alteration to connect at Bank Quay, faintly indicated, is in pencil, doubtless by George Stephenson.

obtained. The connection at Warrington, as at first designed and sanctioned by Parliament (1834), was at Jockey Lane; but an amended connection at the rear of Bank Quay station was authorised in June, 1835.

The London and Birmingham Railway was opened throughout on 17th September, 1838, so that Liverpool and Manchester had then railway communication with the metropolis. This is but a matter of 84 years ago, yet the enormous advance on the old coaching days is hardly appreciated by the present generation, except when we pause to consider that less than two years previously, the London coaching mail, due in Liverpool on Tuesday night, 27th December, 1836, did not arrive until the following Thursday (29th) at 9 a.m., owing to the roads being impassable by heavy snowfall.

The Liverpool and Manchester Railway was amalgamated with the Grand Junction Railway in 1845. Then an Act to consolidate the Manchester and Birmingham, Grand Junction, and London and Birmingham Railways, received the royal assent on 16th July, 1845. This union formed the London and North Western Railway.

It is worthy of note that the label numbers of the engines belonging to this company, carried on the weather shields, indicative of the home station to which each belongs, were instituted by order of the General Manager, Mr. W. Cawkwell, 28th January, 1863, and are still in use.

Before making reference to further developments of railways in South-west Lancashire, attention may again be called to the Liverpool and Manchester Railway. The ultimate decision to work the line generally by locomotives did not apply to Wapping tunnel, which extended from Wapping Dock to the Area at Edge Hill, a distance of about one mile and a half; it has an incline rise of about 1 in 48. Stationary engines in the Area, one each side of the Moorish Arch, with endless rope, were employed to work the traffic up to Edge Hill. At first a hempen rope

was used, the maximum load was six wagons, averaging say each 4 tons, 10 cwt., including the weight of wagon, a total of 27 tons. No break-vehicle was used; the man in charge had to ride on the front wagon holding what is known as a "messenger," consisting of a short strong rope which was secured to the winding or travelling rope. It was shortly found necessary to replace this hempen winding rope by one of steel, and to erect at the easterly side of Tunnel Road stronger stationary engines. Pilot wagons were provided to travel in front of the up traffic, and the train increased to 16 loads; the loads also were increased in weight.

Shortly after the opening of Crown Street passenger station in Sept., 1830, the traffic outgrew the accommodation and the situation was found to be too far from the business centre of the town. Hence a tunnel was cut from Edge Hill to Lime Street, 2,230 yards long, 25 feet high and 17 feet broad, costing £150,000, and Lime Street station was opened for traffic in August, 1836. Locomotives were not allowed through the tunnel. On the arrival of each incoming train at Edge Hill the engine was detached and worked into a short *cul-de-sac* siding between the station and the tunnel mouth, clear of the main line; each compartment of the carriages was then illuminated by an oil lamp hung outside the sliding window of the door, and the train was then pushed by hand in the direction of the tunnel mouth, where an open break-wagon with guard in charge had been placed to receive it; and so it went forward to Lime Street by its own gravitation on the falling gradient.

Up to 1869 the marshalling and formation of the passenger trains at Lime Street was performed by horse power in teams of four; but in that year, owing to the increasing weight of the trains, it was found necessary to provide locomotive power to form the heaviest, horse power being still continued for the lighter trains. Until

March, 1870, the trains from Lime Street were worked to Edge Hill by endless hempen rope worked by stationary engine on the platform at the latter station, but at this time the rope working was discontinued, and since then all trains to and from Lime Street have been worked by locomotive power, which was also used to marshal and form the trains, the horse power being dispensed with. The work of opening this tunnel was proceeded with in 1881.

Waterloo Tunnel, about a quarter of a mile long, runs from Great Howard Street to Byron Street, and was opened in August, 1849. Goods traffic from Waterloo Station to this point was worked by locomotive engine, and thence by endless steel rope and stationary engine *via* Victoria Tunnel to Edge Hill; as the gradient is less 18 loaded wagons could be hauled.

The old Liverpool and Manchester system of working these tunnels by stationary engine and endless rope continued until nearly the close of the nineteenth century. The Victoria Tunnel rope broke on 16th February, 1895, and since then the traffic has been worked by locomotive. Wapping Tunnel rope was superseded by the locomotive, 11th May, 1896.

The Lancashire and Yorkshire Railway was constituted in 1847 by an amalgamation of the Manchester and Bolton, Manchester and Leeds, Huddersfield and Sheffield, Wakefield, Pontefract and Goole, West Riding Union, East Lancashire, and West Lancashire railways. The Company's passenger station in Tithebarn Street, Liverpool, was opened in 1850.

Garston Docks L. & N. W. Railway opened 1853.

The Cheshire Lines Committee Railway was constituted in 1865 by the Great Northern and the Manchester, Sheffield and Lincolnshire Railways acquiring short lines, *viz.*, the Cheshire Midland, Garston and Liverpool, Stockport, Timperley and Altrincham Junction, Stockport

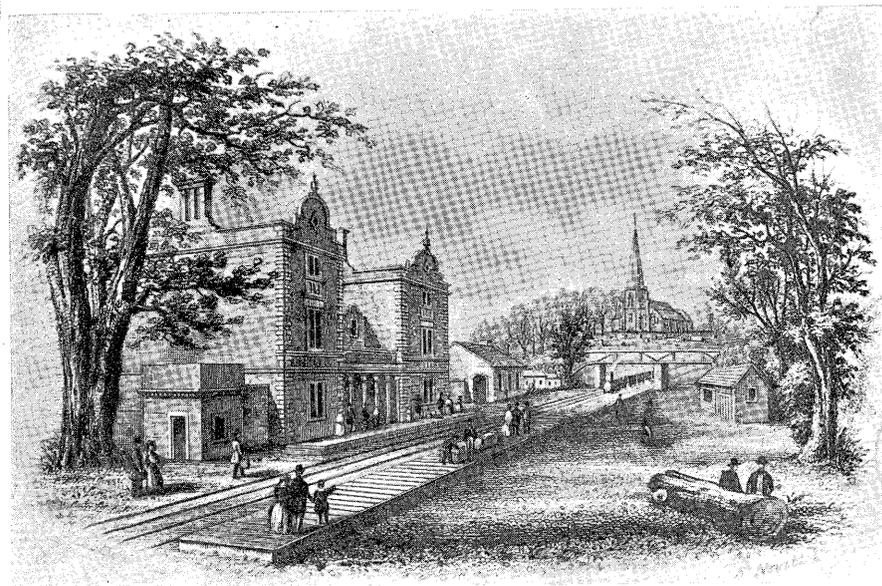
and Woodley Junction, and the West Cheshire Railways. Next year the Midland Railway came in as a third partner. Each of these companies nominated three directors as a board of management. This joint company's original passenger station in Liverpool was opened at the Brunswick Dock, 1st June, 1864, and was closed on the opening of the Central Station in Ranelagh Street in March, 1874.

The L. & N. W. Co.'s Bootle Branch was utilised for passenger traffic June, 1870, having for four years previously (1st June, 1866) been used exclusively for goods traffic between Edge Hill and Canada Dock. Alexandra Dock Goods Station was opened in January, 1880.

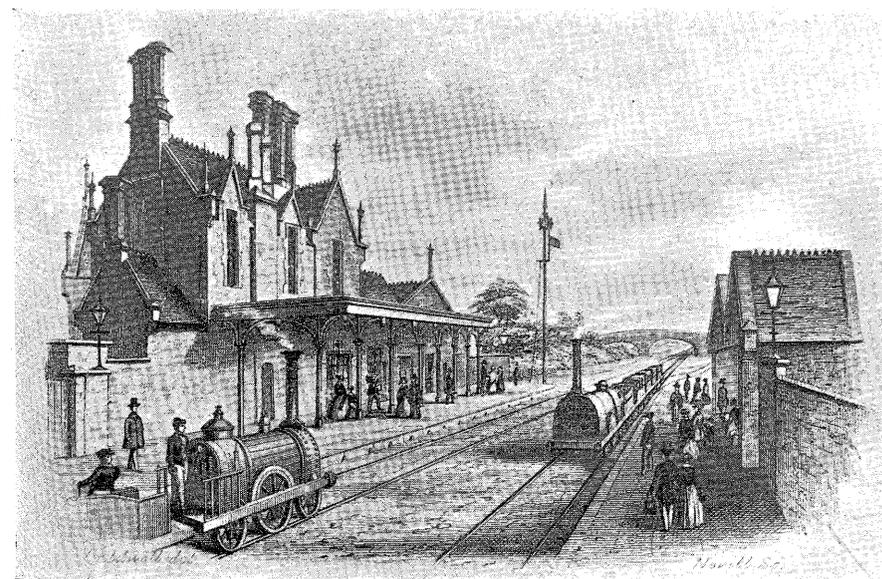
Runcorn Bridge was opened 1st April, 1869, and by this means the journey between Liverpool and London was shortened by about nine miles.

The Mersey tunnel Railway was opened 1886, and the Liverpool Overhead Railway on 6th March, 1893.

The Riverside Station was opened 12th June, 1895, with a special train from Stafford off the 9 a.m. from Euston conveying American passengers via Victoria and Waterloo tunnels.



LICHFIELD CITY STATION, 1849.



TRENT VALLEY STATION, LICHFIELD, 1849.