

J. C. Bourne has captured a scene of great activity in the Camden area during the construction of the winding engine houses and the locomotive depot, which is in the final stages of completion. In the foreground is the excavation for the accommodation of two 60hp winding engines and steam boilers from the works of Messrs. Maudsley, Son & Field. The mode of drawing trains up the steep gradient out of Euston Grove was by dint of an endless rope measuring 4,080 yards in length and seven inches in circumference. The rope cost £476 19s and was the product of Messrs. Hodgart & Co. of Limehouse, London. Two chimneys were to dominate the area – these have yet to be built.

## Genesis

The success of the Liverpool & Manchester Railway (LMR) as a passenger-carrying railway encouraged the business world in the North West of England and London to establish a link between the LMR and the Metropolis. The northern arm of such a trunk line would link Liverpool with Birmingham: this was the so-called Liverpool & Birmingham Railway, an early title that blossomed into the more impressive Grand Junction Railway.

The southern arm between Birmingham and London would be the longer of the two, totalling a distance of 112½ miles. Moves in this direction were made in 1830, when two prototype schemes were proposed and rejected. The two schemes joined forces under the title London & Birmingham Railway (L&B). *The Lancaster Gazette*, 9th October 1830, reported that "The two companies formed for the purpose of constructing railways between Birmingham and London

# THE FORMATIVE YEARS OF THE BIRMINGHAM RAILWAY 1830

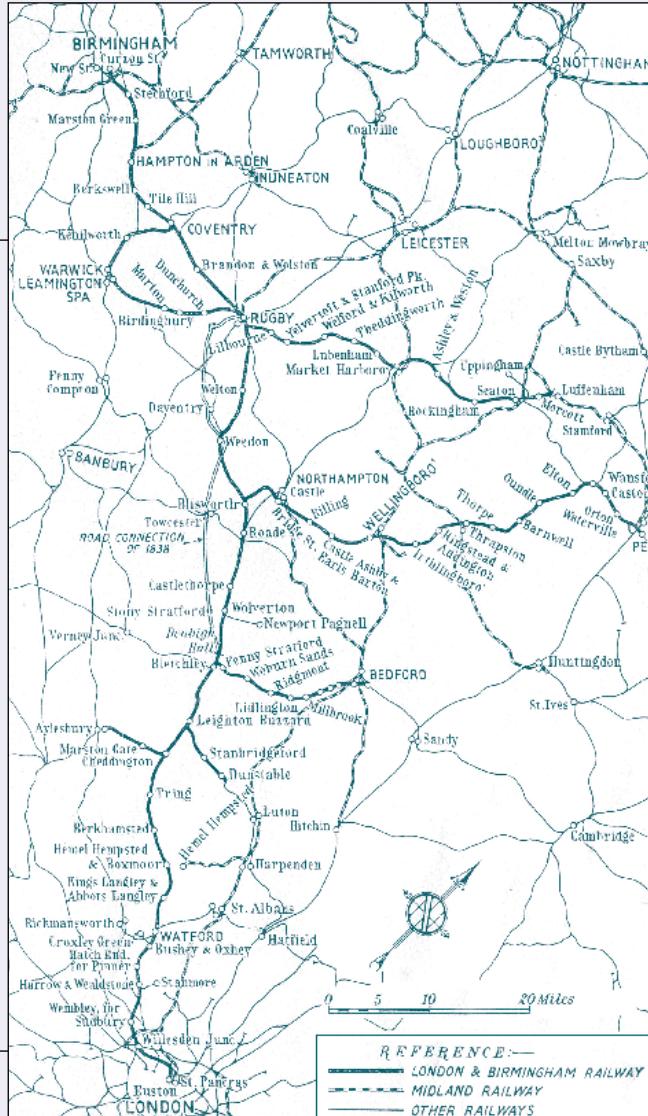
BY JEFFREY WELLS

have coalesced; and they intend to apply to Parliament next Session for an act to empower them to carry their plans into execution."

In its 17th December 1830 issue, the *Liverpool Mercury* apprised readers of the following development: "The London & Birmingham Railway Company have increased their capital from two millions to three millions, wisely resolving to construct the road on the best possible plan that can be devised. They intend forming a quadruple line of road all the way; and we understand that it is in contemplation to light the road in winter with gas, as coals can be procured along the line in various parts on very reasonable terms, the coke produced will be of importance to the Company in supplying their own engines. The Liverpool & Birmingham Railway Company, it is said will pursue the same plan on their line. Both companies expect to obtain acts of Parliament in their favour this session, if they succeed the works will be prosecuted with such vigour, that the whole line may be completed in three years." Such optimism was confounded when the ambitious plans were rejected.

A further attempt in obtaining an Act of Parliament was made in 1832. It met with stiff opposition from landowners who perceived that the line would be deleterious to their estates and residences. The railway company did all in its power to allay the fears of the gentry. The following is an abridged version of the 1832 prospectus, which appeared in *The Morning Post*, 3rd July. The proposed trunk line would be:

"A line from the Liverpool & Manchester Railway at Newton to London, way of Birmingham, will unite the two greatest seaports in the kingdom. The proposed railway from London to Birmingham forms part of this great national line. Its



Map reproduced by courtesy of  
*The Railway Magazine*.



# THE LONDON & 2-1838 PART ONE

length will be 112½ miles; the cost will be £2,000,000. The railway will probably not be used to convey coals, lime, and other heavy articles, which comprise the chief traffic of canals; and will, therefore, very little, if at all, interfere with the interests of the canal proprietors.

"The engines will burn only coke and cause no smoke; the carriages, going at the rate of a mile in three minutes, will only be a part of the time in sight and hearing from any one place. The railway does not intersect with any park or pleasure ground, or approach so near as to be an annoyance to any considerable mansion."

Such assurances failed to impress the gentry. The principal opponents comprised several influential bigwigs: the Earl of Harrowby, the Countess of Bridgewater, the Earl of Essex, the Earl of Clarendon, Lord Norwick, Sir John Filmer, the Ryder family and others. Their opposition to the L&B was based upon three notions:

1. Large embankments would be necessary in low-lying areas and deep cuttings through high ground, both of these disfiguring and injurious to estates, farmland and properties.
2. A trunk line was considered unnecessary because passengers and goods were already conveyed by canals and roads.
3. The undertaking had been projected without the benefit of local knowledge and support – it was based upon false calculations.

*The Newcastle Courant*, 21st July 1833, reported that "The London & Birmingham

**The southern portal of Primrose Hill Tunnel was an impressive one. Built of stone, Whishaw considered the ornamental design to be too flamboyant. Within the tunnel, the walls and arched roof were lined with three layers (rings) of bricks, held in cement. The invert (the corresponding subterranean arch) consisted of two layers of bricks. It appears in the image that work continues, judging by the loaded trolley and the two men nearby. On the other side of the lines, close to the portal, a lone policeman stands outside his timber shelter.**

**LMS 5XP 'Jubilee' 4-6-0 No.5559 (yet to be named *British Columbia*) vigorously attacks the climb of Camden bank heading a northbound express out of Euston c1935. (Pendragon Collection)**





#### **Harrow & Wealdstone station in LNWR days, being visited by 'Precedent'**

**2-4-0 No.1532 Hampden. The branch to Stanmore had opened in 1890.**

(Pendragon Collection)

Bill was, on Tuesday [17th July] thrown out in a Committee of the House of Lords, upon a resolution that the promoters had not made out such a case as would warrant the forcing of the railway through lands and property of so great a proportion of dissentient landowners, and it was decided by a large majority that the preamble had not been proved."

Undaunted, the nascent body of directors made yet another application to Parliament for an act of authorisation. A modified route was produced, the line now passing through Pinner (near Harrow), Watford, Leighton Buzzard, Stoney Stratford, Blisworth, Daventry, Rugby, Coventry and on to Birmingham. There were to be nine tunnels: the longest, Kilsby Tunnel, bored through Kilsby Ridge, was forced on Robert Stephenson by opponents of the scheme: it was to raise difficult engineering problems. A new estimate of the total cost of the railway was £2,500,000, the anticipated revenue set at £730,692. Daventry was bypassed three miles to the east. Eight tunnels were actually constructed.

In the 19th November 1832 issue of *The Morning Chronicle*, space was generously allocated to a report entitled 'Advantages of the London and Birmingham Railway'. This was based on the opinions of several traders, merchants and others who would benefit from the railway. Two examples will suffice to show the level of support.

Mr. Hellmsley, a director of the Union Kent Glass Company, said "the swiftest conveyance of goods at present was by fly boats, which are four days on the road"; 1,500 tons were received in London from the Company's factories at Birmingham every year. The breakage of glass in transit amounted to 2½%, therefore the glass company sustained a loss of £5,000 a year." On a railway the breakage of glass would not amount to a half per cent."

Lt-General Gordon averred that a railway would afford excellent facilities for the transport of troops in an emergency. This

was a cogent reason for supporting rapid movements of the military to quell civil unrest (this was at time of the rise of Chartism) and the riotous behaviour of railway navvies.

*The Leicester Chronicle*, 1st December 1832, stated that "The Directors have come to an arrangement with the noblemen whose opposition led to the failure of the bill last Session in the Lords, and this important undertaking is now likely to obtain the sanction of the Legislature." In the event, in April 1833 the L&B Bill was read a third time

and passed and a month later, on 2nd May, the Lords announced that Royal Assent had been granted. The L&B Company was incorporated on 6th May 1833.

Construction commenced in the same year. *The Essex Standard*, 17th August, noted that "The London and Birmingham is at length commenced, excavations are now going on in the fields between London and Hampstead, and the whole undertaking will doubtless be completed in less time than it has taken to get the Act of Parliament. For the first twenty

**The Watford Viaduct spanned the valley of the River Colne. The structure (portrayed by Bourne) was built of brick with the usual stone dressings (copings and imposts) and consisted of five semi-circular arches, each of 30ft span. Two land arches are found at each end. The greatest height above the river was 35ft and a width of 28ft separated the parapets. LeCount made the following observation about the viaduct: "The construction of this bridge [viaduct] was a work of considerable skill and labour, the foundations being of the loosest material possible; in fact, it may be almost called a floating bridge – for it rests entirely on platforms of wood, having sheet piling to protect them. The cost of its construction was little less than £10,000."**



miles of its course, the railway is intended to follow the track of the Grand Junction Canal."

The first meeting of the L&B directors and shareholders was held at the City of London Tavern, 19th September 1833. It was made known that equal portions of the railway had been placed under the superintendence of local committees. Robert Stephenson was appointed Engineer in Chief. Eleven directors recommended that the line at the London end "should be finished with expedition, from a conviction that the novelty and convenience of a railway contiguous to the metropolis would excite general interest, and prove an early and productive source of revenue to the Company".

### **Early progress 1834–1834**

At the first half-year general meeting, Captain Moorsom stated that the whole of the line from London to Birmingham had been staked out and levelled, with the exception of a few points, and that the plans and specifications for 70 miles of railway would be ready for inspection on 1st March 1834.

*The Lancaster Gazette*, 17th May, reported that "tenders have been accepted for executing the first 21 miles from London...on terms which are considered very favourable, this being, in many respects the most expensive part of the line". Further contract advertisements were to appear for the section of line between Coventry and Birmingham.

On 2nd August *The Essex Standard* reported the level of progress made: "The work to be done in the immediate vicinity of the London end of the road is to raise an

embankment across Pancras-hill to make a nearly level way. The men are now cutting through a depth of ten feet a day, and the road is made on a trifling descent...after proceeding by cutting away the earth about 100 yards further...to commence a tunnel, which will go under the foot of Primrose-hill, and under the new road to Bilburn [sic], Kilburn."

To facilitate conveyance of excavated material to form the embankment a temporary tramroad was laid. Horses were used to haul the four-wheeled wagons, this daily activity resulting in an accident to one young worker. *The Standard*, 7th October, enlightened readers of the incident: "Yesterday afternoon, between two and three o'clock, a fine lad, named John Crisp, aged 12, son of a labourer employed on the London and Birmingham Railway, whilst in the act of unchaining one of the horses attached to a large waggon filled with earth, was thrown down across the tram road, and the waggon [weighing three tons] passed over him." One of his legs was crushed and he was immediately taken to Middlesex Hospital where it was deemed essential to amputate his stricken leg.

*The Birmingham Gazette*, 23rd February 1835, noted the company's intention to extend its line from Camden to Euston Grove: "The Directors believing that it would be for the interest of the Company that passengers by the railway should have a nearer access to the metropolis than is afforded by the station at Camden Town, caused surveys and estimates to be made of a line, which the Engineer recommended, about a mile in length, without

a tunnel, from the present termination to Euston Grove."

On 3rd July 1835 the L&B Company successfully obtained a second Act for the purpose of extending the railway from Camden Town (the initial location of the terminus station) to Euston Grove, a distance of 1½ miles, and also the authorisation to arrange a loan to the value of £165,000. Concurrent with this decision to extend to Euston Grove the company was beset with a major accident at Watford Tunnel. *The Morning Post*, 18th July, presented the 'Fullest Particulars' of the 'Awful Occurrence' at the London and Birmingham Railway.

"Thursday morning [16th July] the town of Watford, and the country for many miles round, was thrown into a state of the greatest excitement and alarm, in consequence of a report gaining rapid circulation...that one of the shafts of the tunnel...had fallen in, and been attended with an immense sacrifice of human life."

The shaft affected (one of four) in the 1,700-yard long tunnel was a gin shaft, about 90ft

**LMS 'Coronation' No.6224 Princess Alexandra speeds the 'Coronation Scot' across the embankment at Watford in 1937. The 70ft high embankment along the Colne valley, consuming over a million cubic yards of earth in its construction, was completed in 1937. Note the access steps for Post Office staff to the mailbag collection net.**  
(Pendragon Collection)





**Watford Tunnel was 1 mile 70yd in length, cut through chalk with intermixtures of sand and gravel. LMS Class 5 4-6-0 No.5350 leaves it behind with a lightweight four-coach express in the late 1930s.**  
(Pendragon Collection)

in depth below an elevated platform "erected for the purpose of moving the earth". From the bottom of the shaft, two headways, about nine feet in length, had been bricked, whilst a third heading had just been mined and awaited the night shift bricklayers (comprising five bricklayers and six labourers) to form the tunnel brickwork. In removing the timber supports the earth gave way, bringing the timber shattering with it and leaving a void of about 35ft deep and about 40ft in breadth. The night gang and a horse were buried beneath the mound of earth. Sixty men bravely extricated the deceased men and the dead horse. In a rare display of empathy, the Earl of Essex and Lord Clarendon expressed concern for the bereaved families. A liberal subscription was arranged by the inhabitants of Watford.

On 7th October 1835 *The Times* carried a contract advertisement for the extension line to Euston Grove: "The London Committee of Directors of the London and Birmingham Railway Company will meet at the Railway Office, 83, Cornhill, on Wednesday, 18th November next, at 1 o'clock precisely, to receive TENDERS for MAKING and LAYING the RAILWAY, finding all the materials, except the permanent rails, chairs, keys, pins, blocks, sleepers, and trenails, from the crossing of the proposed line of railway over the Regent's Canal near Camden Town, to the intended depot at Euston-grove, Euston-square, being a length of about 86 statute chains, with all excavation, embankments, retaining walls, bridges, culverts, roads, gates and fences complete, and to keep the whole in repair for one year after completion."

Six weeks later *The Sheffield Independent*

reported that company had announced that it was ready to receive tenders "for the supply of locomotives" which would be put into service on the London to King's Langley line (fifteen miles) as from 1st January 1837. The successful contractor was expected not only to manufacture suitable locomotives but also to keep them in repair. Progress had really taken a positive stance.

#### RIOT AMONGST THE LABOURERS ON THE LONDON AND BIRMINGHAM RAILWAY, ON BOXMOOR'

News spread quickly of a riot that took place in and around the Sun Inn on Monday 14th March 1836. A master bricklayer, working under Messrs. Cubitt, the contractor, had some ninety bricklayers in his charge, plus a number of labourers. Saturday evening was pay day, but unfortunately, the master bricklayer had insufficient money to pay the men, a situation which met with anger: they refused to work on the following Monday.

The evening before there had been a quarrel between an English and an Irish navvy, resulting in the former being badly injured and taken to hospital. This was the catalyst for Saturday night's fracas. Some of the Irishmen were armed with sticks and used them to force the English contingent out of the inn's backyard and on to the turnpike. Despite the efforts of a railway superintendent to quell the rioting, he was threatened and wisely backed off.

English navvies from other parts of the work joined their compatriots, and finally overpowered the Irish who fled into the woods and neighbouring lanes. Some were caught and badly beaten. With the aid of the local constabulary, about fifteen of the navvies (both English and Irish) were rounded up and spent a night in the Berkhamstead lock-up. The fifteen appeared before a magistrate in the King's Arms in Great Berkhamstead: seven were committed for re-examination at Hemel Hempstead. Meanwhile, the police hunted

for the known ringleaders. During this time little work was carried out on the line in the Boxmoor area.

At the sixth half-year meeting of the company, held on 5th August 1836, the directors were able to report that "the whole line of road is expected to be completed by the summer of 1838, and the first 21 miles from London in the spring of next year". Formidable difficulties had been overcome in the tunnels at Primrose Hill, Honeypot Tunnel, Watford and Kilsby.

Kilsby Tunnel deserves attention in its own right. Published in 1849, William Whellan's *Gazetteer* described the immense problem encountered during 1836 and 1837. "Difficulties of an unusual character presented themselves during the completion of this tunnel. These arose from the existence of an extensive quicksand in the line of the tunnel. Extra shafts were sunk, and four powerful pumping engines erected which continued to pump from the quicksand for six months, with scarcely a day's intermission, at the rate of 1,800 gallons per minute, till at length the difficulty of tunnelling in the sand was reduced, though the operation was still one of extreme difficulty and danger."

On 12th March 1836 J. Newell & Sons relinquished their contract on the tunnel: the firm gave up in desperation. Robert Stephenson took over, determined to extract the quicksand water, despite the intercession of Captain William S. Moorsom who suggested that assistance should be called for. Doggedly, Stephenson remained optimistic. Moorsom's report to the company reflected this optimism, although it was not shared by them. After thirteen months of pumping, the directors felt that the time had come to cease work on the tunnel. In the end Stephenson was given a further six months to solve the problem, otherwise the tunnel project was to be abandoned.

The engine houses were located on the northern fringe of the Kilsby Ridge, the twin





chimneys indicating that there were two steam engines driving the subterranean pump via a mechanism on the surface. In total, Stephenson employed thirteen pumping engines and twelve steam engines. The groundwater was pumped to the surface and discharged by pipes, probably into a local river.

**The L&B station at Tring was designed by George Aitchison and constructed by W. & L. Cubitt for £16,885. Francis Whishaw considered that the station was "inconveniently placed in a cutting". Access to rail level from the top of the cutting was by means of a flight of steps for foot passengers "and a sloped road for the private carriages to be embarked or disembarked at the carriage dock". A separate passage leading from the railway permitted passengers arriving by train to exit the station. The original station was replete with facilities: booking office, waiting room, urinals and water closets (placed well away from the general waiting area "on the other side of the offices"). This LNWR view is looking north towards Linslade and Cheddington. The single line bay would be used for loading and unloading road vehicles. Two coupled locomotives await departure at the island platform.**

(Pendragon Collection)

*The Manchester Times*, 24th September 1836, made light of the quicksand water, informing readers that the problem "will be speedily overcome". Furthermore, "Two additional steam engines and pumps are just about to be erected, to aid the draining of the quicksand, at the earliest possible period."

It was discovered that below the quicksand lay beds of compact limestone and hard blue clay. The water level had already been reduced 15ft and only about 13ft remained to be pumped out. F. B. Head, writing in 1849 and published in his book *Stokers and Pokers*, commented on the final success: "By the main strength of 1,250 men, 200 horses, and 13 steam engines, not only was the work gradually completed, but during night and day, for eight months, the astonishing and almost incredible quantity of 1,800 gallons per minute from the quicksand alone was raised by Mr. Robert Stephenson and conducted away."

The effects of the influx of 1,250 navvies and 200 horses upon the small village of Kilsby were profound. Barns and outhouses in the village were occupied by the navvies, while a camp of tents and mud huts sprang up on Kilsby Ridge. The horses also had to be stabled, fed and watered. Again F. B. Head noted that "Besides the 1,250 labourers employed in the construction of the tunnel, a proportionate number of sutlers [sic] (sutlers) and victuallers of all description concentrated

**Whishaw noted that "There is scarcely a portion of this line, from one end to the other, which is not either carried by embankment above the general surface of the country, or sunk below by means of excavation." This fact alone caused enough problems, added to which were the tunnels. Bourne's image shows the excavation of the 2½-mile-long Tring Cutting and the method of carrying the spoil from the base of the cutting to the top by means of wheelbarrows hauled up wooden planks, guided by men. This was a dangerous operation: many accidents occurred due to slipping and overturning of men and barrows. LeCount and Roscoe were well aware of the danger: "It is a fearful practice; and should any accident occur, by the breaking of a rope or restiveness of the horse, the workman is precipitated to the bottom in an instant."**

**The date of this J. C. Bourne image is 17th June 1837.**

on the village. In several houses there lodged in each room 16 navvies, and as there were four beds in each apartment, two navvies were constantly in each; the two squads of eight men alternately changed places with each other in their beds as in their work." (*Stokers and Pokers*)

In addition to the problem of finding



accommodation for the workforce, Kilsby village witnessed the recreational activities of the rough men in bouts of drinking, inebriation, petty thefts, dog and cock fighting and fighting each other. On more than one occasion, the military had to be called in to quell the disorder and anti-social behaviour. Kilsby, for a few years, was an unpleasant place to be.

The winter of 1836/7 was particularly severe for a period of four months, the consequence of which was that all construction work was very much impeded. Nevertheless progress picked up in the spring: the first 21 miles from London were expected to be opened by the summer of 1837 and the line to Tring (30 miles from London) was anticipated to be open by autumn of that year. By March 1837 it was reported in *The Standard* that Watford Tunnel, one mile and seventy yards long, 25ft high and 24ft in width, was completed. It had been a difficult job, driving a tunnel through mixed sand and gravel. The embankment along the Colne Valley, Watford, some 70ft in height, was also finished.

Good news was impaired by the occurrence of "a dreadful accident" caused by the falling of an iron bridge very recently

thrown across the Grand Union Canal at King's Langley. A report in *The Standard*, 2nd March, drew attention to the fact that "the bridge was considered to be perfectly strong, but on the morning of Monday, 27th February, it suddenly gave way and broke...[and] it fell upon the engineer and killed him on the spot [the engineer is not named]. Six unfortunate men were thrown into the canal; drags were immediately obtained, and they were taken out of the water and conveyed to the infirmary". Four of the men were not expected to survive.

"Observations have been made by eminent medical men upon the effects which produce upon the human frame. The question is an important one, not only to those who are engaged in the construction of railways, but also to the public, who are eventually to travel by them."

Primrose Hill Tunnel had been driven through London clay: it was lined with brickwork throughout its length of 3,750ft. Whishaw states that the tunnel "is of three bricks in thickness, and built in cement, with an invert of two bricks". An inspection of Primrose Hill Tunnel was made by Drs. Paris and Watson, accompanied by Messrs. Lawrence, Phillips and Lucas. Their report

begins with the above justification of the inspection; the following is an abbreviated version of their report.

"The experiment was made under unfavourable circumstances. The western extremity of the tunnel being only partially open, the ventilation is less perfect than it will be when the work is completed. The steam for the locomotive engine also was suffered to escape for 20 minutes, while the carriages were stationary near the end of the tunnel; even during our stay near the unfinished end of the tunnel, where the engine remained stationary, although the cloud caused by the steam was visible near the roof, the air for many feet above our heads remained clear and apparently unaffected by steam or effluvia of any kind; neither was there any damp or cold perceptible."

The atmosphere inside the tunnel was found to be dry and "of a very agreeable temperature, and free from smell". As the train passed through the tunnel, the carriage lamps were lit and the sensation was similar to travelling in a coach at night "between the walls of a narrow street". Moreover, the noise of the train moving through the tunnel did not prevent normal conversation.

The overall opinion of the five men was that because of effective ventilation, there was no danger in passing through well-ventilated tunnels, nor more than in travelling by train in the open or by coach along a turnpike road. Apprehension, which had been expressed by the public, that tunnels were detrimental to health, was groundless.

The village of Kilsby and the associated tunnel appeared as a news item in *The London Dispatch*, 7th May 1837. Instead of expending energy on working, the navvies engaged in working on the tunnel assembled to watch a fight between two of their compatriots. While the fight was in progress the clergymen of Kilsby attempted to intervene and restore peace. This, however, prompted the fighting to continue and the local police tried to restore order until threatened by the horde of navvies, some of whom made their point by smashing the windows of the Devon Ox public house and the windows of the police station. During the fracas, four incarcerated navvies were released by their comrades from the local lock-up. Someone had the mind to send for the military which, on arrival, arrested thirteen of the rioting mob. After a night in Northampton gaol, they awaited trial at the next sessions. The inhabitants of Kilsby stayed behind locked doors until the trouble was over. Meanwhile, a day's work on the tunnel was lost.

In the summer months of 1837 the Kilsby riot had been forgotten. The L&B Company now concentrated on essential matters prior to the opening of a section of the railway. *Berrow's Worcester Journal*, 8th June, reported a mundane procedure in preparation for laying track, that of kyanisation of timber sleepers. "The tanking process for the preservation of rot in timber...becomes daily more used by builders; and we hear that a contract for six thousand sleepers is now landing at the Anti-Rot Company's wharf at Sheepcote Bridge for immersion in the tanks." (Sheepcote Bridge was located on the Birmingham Canal Navigation, Birmingham.)

(to be continued)

