Guide to: The Viaduct, the Double Bridges, Broadley Station, and the Stone Rubbing Mill

## Transport during the Industrial Revolution

Transport was extremely important since industry needed a reliable and cheap means of moving raw materials and manufactured goods. Canals were built in order for heavy goods to be transported the length and breadth of the country. However, this was a very slow process and not all areas could be covered by the waterways, even using a system of locks! Transportation by road was much more flexible, but it too was very slow because of the state of the roads and because horses were used to pull the loads.

These problems were solved by a countrywide railway network that was powered by steam.

Horse Drawn Canal Barge from
http://www.horseboating.org.uk/
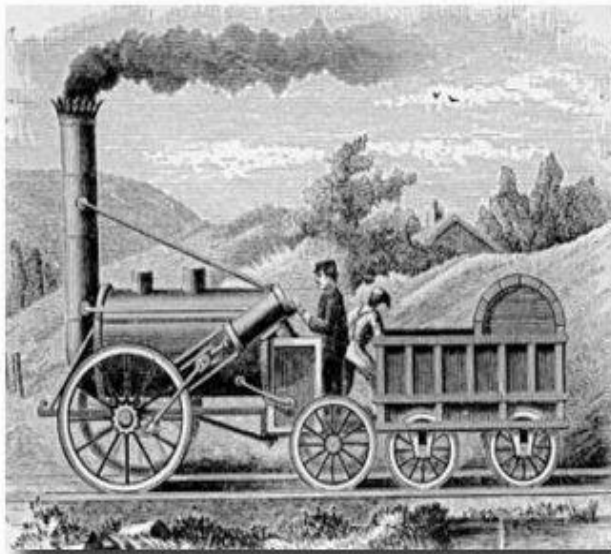
Stephenson's Rocket from http://www.cottontimes.co.uk

Railways were not a new idea. In the 18th Century horse-drawn railways were improved by the introduction of iron rails, wheels, and axles, but they were still limited. With steam trains however, (just as long as there was plenty of coal) there was an inexhaustible form of power.

The first steam locomotives were built in the early 19th Century. George Stephenson, an engineer in Newcastle, designed the Rocket which was tested in 1829. The Liverpool to Manchester line was opened the year after, and railway building began in earnest.

The introduction of a railway network that could travel at greater speeds and cover larger distances was the turning point of Britain's Industrial Revolution. It boosted the iron, steel, and engineering industries creating many more jobs. It also made British industry less dependent on textiles.

Since cotton is not grown in Britain, the industry relied on foreign countries to produce it. The textile industries were therefore susceptible to foreign affairs.

If the raw materials were not brought to Britain, the mills would have nothing to work with. In turn, there would be no cotton with which to trade and sell and no jobs for all the workers.

The Cotton Famine 0f 1861

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Four years of misery for the cotton workers in Lancashire began as a result of the outbreak of the American Civil War in 1861. America's Federal forces blockaded the Southern ports from which the raw cotton was exported, and so Lancashire's cotton supplies dried up and the mills closed down. The result was hardship on a vast scale. Many thousands of workers were reduced to extreme poverty and forced to exist on minimal state help and charity soup kitchens.

Rather than Lancashire's poor unemployed blaming Abraham Lincoln and the American forces for the grim state of affairs that they were experiencing, they met on New Years Eve in 1862 in Manchester Free Trade Hall to pledge their support for the Federal forces. This was because the poorest of the poor in England sympathised with the cotton plantation slaves in America that the federate forces were trying to free from the Confederates.

The bond that emerged between the Lancastrian and American workers was supported by Lincoln, who wrote expressing his thanks three weeks later. Britain viewed her American possessions simply as a captive market for her own manufactured products and, in 1774, just before the start of the War of Independence, banned the export of cotton-spinning machinery and the emigration of cotton workers to America.

From a British point of view, what is appalling is that the upper classes had so little in common with their workers. The working classes were more like the slaves and abused workers in America when they lived in the richest and most prosperous country in the world. As Mr Grant, a Manchester spinner, stated on 20th April 1833, "Much was said of the black slaves and their chains. No doubt they were entitled to freedom, but were there no slaves except those of sable hue? Has slavery no sort of existence among children of the factories?"

See:
http://www.bbc.co.uk/education/beyond/factsheets/makhist/makhist6_prog1c.shtml for a work sheet on the Cotton Famine.

Steel and iron were stable industries in Britain. This was because they could be mined and manufactured here. Iron and steel were very expensive to transport, and huge amounts of money had to be put into building and maintaining the railways. However, railways were still cheaper to use than sending large heavy bulky items by water.

It was not until the 1850s that railway companies made more money from cargo than it did from carrying fare paying passengers. This was why it took so long for the Rochdale to Bacup line to be built.

The Railway comes to Healey Dell

When the Rochdale to Bacup railway line was built, it passed over right over Healey Dell. It was a long time in the planning. Initially the idea for this line was suggested to Parliament in the Manchester and Leeds Railway Act of 1846, but it failed to get off the ground. It was not until a final Parliamentary Act was passed in 1872, which included Facit in the line, and therefore the then prosperous town of Bacup, that Healey Dell got its station.

This was because it was felt by people within the Lancashire and Yorkshire Railway company that the expense of construction and running costs would not justify the amount of money it would make from both passengers and freight.

Broadley Station in 1955. From *An Illustrated History of Rochdale's Railways*, J. Wells, 1993.

Originally the railway was drawn to the valley because of the large number of mills between Rochdale and Bacup, including of course those at Healey Dell. The large amount of stone being quarried and finished in the area also encouraged money to be invested in the route.

From Rochdale, the finished route passed through stations in Wardleworth, Shawclough and Healey, Broadley, Whitworth, Facit, Shawforth, and Britannia until finally reaching Bacup just over 30 minutes later.

The Building of the Rochdale to Bacup Line

Work began in 1865 using plans drawn up by a local architect from Healey. It was not finished until 1881; it turned out to be a very difficult line to build and was beset with problems from the start. Even after construction there were 'accidents'. For example in 1891 a passenger train travelling from Bacup to Rochdale was hit by a goods train as it left Facit. Three passengers were killed and many were injured. And then there was the case of a suspected murder at Broadley Station… (See Rochdale Observer 13th May 1899).

Healey Dell Viaduct under construction around 1866. From *An Illustrated History of Rochdale's Railways*, J. Wells, 1993.

The building of the railway line was both a time consuming and an extremely difficult task. The land that the route used was unstable, steep and crossed huge ravines and valley bottoms.

'The line was almost mountainous, rising to near enough a thousand feet above sea level and having steep gradients of which the hardest was 1 in 39.' (The Bacup Branch: Introduction).

Problems arose from the very beginning, but the greatest turmoil the contractors faced was with a viaduct between Bacup and Broadley Station. The brickwork had been laid and the embankments needed to be built up. However, no matter how much spoil that had been excavated from Broadley was brought in, the quicksand just turned it into expanding mud. At one point 200 wagon loads of spoil were tipped without the height of the embankment advancing a metre. The huge amounts of land being moved threatened the structure of the viaduct, so that eventually the foundations had to be rebuilt.

The Double Bridge

There are two theories regarding this oddity in circulation. One is that on top of all the other problems the contractors Barnes and Beckett had had with other embankments, they found that the first bridge was sliding over the sloping greasy clay towards Heap Mill Reservoir. This meant that they had to build another bridge and embankment 18 meters closer to the hillside. When one takes into account the logistics, time, money, and the complexities of building the Viaduct, this story is slightly far fetched. This brings us to the second, less romantic theory, that the bridge had simply been put in the wrong place and the previous story was circulated so that the basic error would not be noticed!

The Viaducts and Station

Coming into the Dell, the branch line curved northwards hugging the hillside above the valley of the River Spodden, but to get into Broadley Station the branch had to cross over the River. In order to achieve this, the Viaduct was built in 1867 and was erected some 32 metres high above the River. It is 61 metres in length and has 8 arches each with a 24 metre span. It is constructed of locally quarried stone and the amount of masonry has been calculated at more than 4,358 cubic metres!

When the Viaduct was built the River Spodden had to be diverted, and in 1866 a worker was killed by falling masonry; although a hard hat would probably not have helped, flat caps would certainly have done little to soften the blow! In the masonry there are small round holes; these were used to support the wooden scaffolding during the Viaduct's construction.

The second viaduct marked the boundary of the Dell itself and provided road access to Broadley Station. From the railway viaduct the branch then passed beneath the footbridge and entered Broadley Station. The Station had a small goods yard consisting of two sidings, which came off a passing loop to the north of the Station.

Broadley Stone Rubbing Mill

About a quarter of a mile further down the railway line from Broadley Station was Broadley Stone Sidings, which serviced the Stone Rubbing Mill. The site consisted of a stone processing plant crane and loading platform from which the flag stones from the quarry were transferred to the wagons.

Locally it is claimed that locally quarried stone that was finished at this mill was used in the building of Trafalgar Square in London!

A connection with the mainline was made at the southern end of the Stone Sidings, as the northern end had been disconnected in 1899. There was a narrow gauge track which ran from the Sidings heading straight up to Rooley Moor where the wagons were pulled using ropes.

By 1900 the quarry concern had declined and the rope-worked quarry line fell into disuse. In 1910 though, Broadley Stone Sidings gained a new lease of life when a further narrow gauge line was laid to serve Mycock Spring Mill Dye Works. The Sidings were later used for coal in the 1950s.

In the Stone Rubbing Mill, stone was dressed, polished and finished. The process developed on this site because of the railways, and was therefore a relative late comer to the area. It is probable that the mill was in fact an offshoot of the quarrying firm of Henry Heys & Co., which in a trade directory of the 1885 advertised itself as:

> Henry Heys & Co; Stone Merchants, Stacksteads, nr. Manchester. All kind of Landings, Flags, Curbs, Channels and Setts of the Hardest Material, either Self-faced or Polished. Facit Quarries, near Rochdale; Hambledon Quarries near Burnley; Brandwood Quarries, Stacksteads (Slater 1885).

The mill itself would have been used to grind such products to a smooth finish. The polishing of the stone was done under the cover of a shed. The flags were placed on long tables which could be wheeled beneath the polishing machines. The polish was obtained by means of flat concentric iron rings, slightly spaced in a horizontal plane, given an eccentric rotation by a vertical shaft.

By 1890 Broadley Siding was the terminus of a mineral railway comprising a 3 feet (0.9 meters) gauge incline which served quarries at Lower Bagden, Bagden and Middle Bagden on the eastern side of Rooley Moor. It also had its own quarry tram road.

The Social Effects of the Railway

The 'Railway Age' combined the engineering, technological and iron-making skills of the Industrial Revolution with a social revolution; because 'Railroad travelling is a delightful improvement of human life… Everything is near, everything is immediate – time, distance and delay are abolished' (Nigel Smith, The Industrial Revolution, 1990: 26).

Some saw the railways as an exciting new development, whilst others were frightened by the changes. Whichever way you look at it, railways changed people's lives.

'We were introduced to the little engine which was to drag us along the rails… this snorting little animal, which I felt rather inclined to pat, was then harnessed to our carriage… The steam-horse being ill-adapted to going up and down hill, the road was kept at a certain level, and appeared sometimes to sink below the surface of the earth… You can't imagine how strange it seemed to be journeying on thus, without any visible cause of progress other than the magical machine.'

-21 year old actress Frances Kemble was one of the first people to travel on the Liverpool to Manchester Railway. In a letter of 26th August 1830, she describes her ride along the line a few weeks before its official opening.

Farmers claimed that the railways would destroy agriculture; the cows would stop producing milk, hens would stop laying and the grass would whither and die.

The Duke of Wellington feared that the railways would encourage the workers to 'move about' (Nigel Smith, The Industrial Revolution, 1990: 27). Unfortunately, for the owning classes, he was right!

For example, the 1844 Railway Act ensured reasonably priced travel for the working classes, and required that every railway company sent at least one train a day along each line. They had to stop at every station and charged just one penny for each mile covered.

The middle classes could now move out of the town centres into the new suburbs because of good transport links, and in the summer the mill towns were deserted as the masses went on their thousands to the new holiday resorts like Blackpool, Scarborough and even Hollingworth Lake!
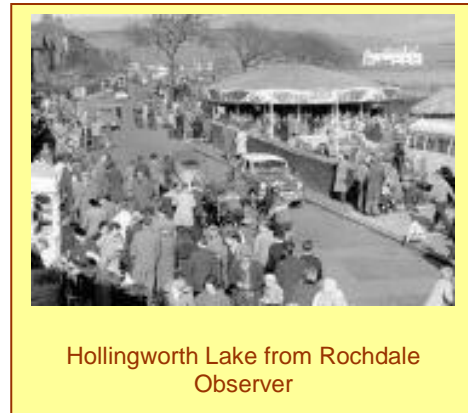
On the passenger trains each class had their own coaches and were kept completely separate from each other. Social importance was reflected in everything in Victorian society, even what you sat on… those in 1st

Hollingworth Lake from Rochdale Observer

Class had cushioned seats, 2nd Class had wooden seats and 3rd Class passengers had to stand.

Evidence of the railway today

Although the line has been taken up, walking along Station Road will take you to Broadley Station which has the only surviving platform with building foundations on the Rochdale to Bacup line. The foundations show the outline of the waiting room, which would have held a pot-bellied coal stove, and the station toilet buildings.

The signal box was erected in the gap in the middle of the platform. There was a wooden stairway and gated entrance leading down to the Station where the stationmaster and his staff kept and tended his gardens which were kept 'in pristine condition' (Blackshaw 29)!

The death of local passenger train lines in the area happened for a number of reasons. World War I and World War II meant that the quarry, mill, and railway workers had to either go and fight in the wars, or work in jobs that helped the war effort, like in artillery and aircraft factories.

There was just not the money available anymore to produce the amount of goods that the trains had previously carried. Fuel prices were later raised so much during wartime that the trains could not be run. This was because trade was limited around the world and materials could not be moved as freely as they had been in the 19th and early 20th Century.

Of course, although you cannot go by train, you can still cross the Viaduct and stop and stare at the magnificent views, and then walk along one of the Double Bridges.

Although the Stone Rubbing Mill is just a picturesque ruin, it is interesting to try and decipher what each bit was used for, as even in 1928, the building was a shell.

Nevertheless, from Industrial Archaeological evidence we know that the mill would have been made up of a rectangular building aligned along the siding platform.
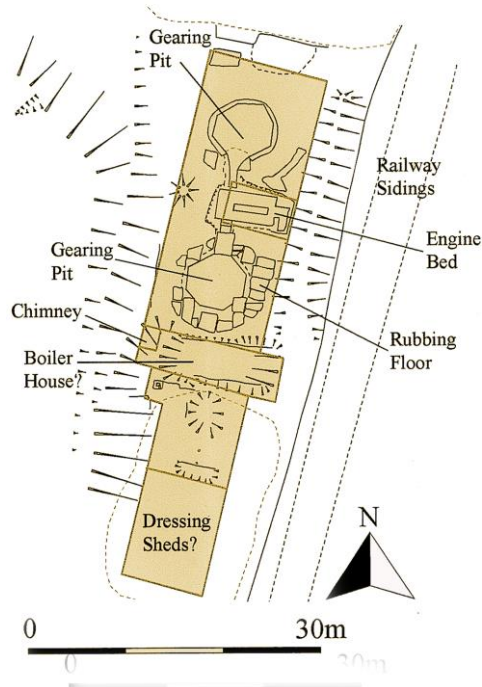
The surviving remains here include two grinding pits set between a central engine bed which were inside a 30 metre long building. This was open-sided with the exception of the engine, which may therefore have been enclosed within its own engine house, and the central bay, which was probably a boiler house. This made up the northern half of the site.

Abutting this on the south was a narrow bay with a chimney at its western end. This bay is now difficult to identify on the ground, but may have been a boiler house. This theory most certainly dispels the contention that surrounds whether or not horses or machinery powered the mill. It is likely that the engine and boiler houses were a later addition to the site after the widespread introduction of machinery during the latter part of the Industrial Revolution.

The southern part of the range of buildings, now evident as a linear depression, was divided into two equal bays and was possibly the 'dressing shed' listed in the 1890s.

The Line closes

Official closure of passenger trains on the Bacup line began on the 14th of December 1949, and up to 1952 only light engines ran between Bacup and Rochdale. This left a service of 2 coal goods trains per day from Rochdale to Facit Yard.

During the final years the locomotive power used at the Dell consisted mainly of Austerity 2-8-0 freight engines and Ivatt Mogules with very occasional Black Fives, but by August 1967 the branch no longer existed.

Coming into Broadley Station

Sources

http://www.**cotton**times.co.uk   http://www.horseboating.org.uk/
http://www.**cotton**town.org   http://www.spinningtheweb.org.uk

Arrowsmith, Dr. Peter. "Healey Dell: An Archeological Desk-Based Assessment Vol 1: The Text and Vol. 2: The Illustrations". University of Manchester, December 2004.

Bairstow, Martin. *The Manchester and Leeds Railway: The Calder Valley Line.* Published by Martin Bairstow, 1987.

Crowe, Nigel. *Canals.* English Heritage, 1994.

Well, J. *An Illustrated History of Rochdale's Railways*. Irewell Press, 1993.