The Leeds & Liverpool Canal Historical Information

Along the Canal

LEEDS & LIVERPOOL CANAL SOCIETY

Liverpool

Water transport has played a major role in Liverpool's development, but it was not simply tidal waters which provided the impetus for the rapid changes which put Liverpool at the centre of the fastest growing economic area in the eighteenth century. It was the attitude of local entrepeneurs to inland waterways which gave the town its opportunity to develop, and to provide one of the most important examples for others to follow. There can be no doubt that Liverpool's growth in the first part of the eighteenth century was one of the decisive factors in the development of the Industrial Revolution – a revolution which was to change the world.

So how did inland waterways come to affect the growth of Liverpool? To find the answer we must go back to 1709, when local merchants and leaders, such as the Earl of Derby and Sir Thomas Johnson, decided that to encourage the growth of the local economy the town needed a dock. The man they chose to design and build it, Thomas Steers, is now almost forgotten, but it was he who realised that for these changes to be sustainable, a regional infra-structure was necessary for the development of the town. Within three years of arriving in Liverpool, he was not just constructing Liverpool's first dock, but he had also produced plans for the Mersey & Irwell Navigation and the Douglas Navigation, and was probably involved with the Weaver Navigation as well. These provided Liverpool with the coal its growing industries and inhabitants needed, and transported the raw cotton and finished goods of Lancashire's textile industry, an industry which created ten times more wealth than any other, and was undoubtedly the keystone in the economic wonder that was Britain in the eighteenth and nineteenth century. Steers' attitude to the docks and inland waterways around Liverpool were vital to this economic growth. He went on to build the Newry Canal, Britain's first summit level canal, to plan the Calder & Hebble Navigation, and he trained Henry Berry, Liverpool's second dock engineer and the man who built the Sankey Navigation.

Although, economically, cotton was the most important of goods carried by these new waterways, coal comprised the greatest tonnage. In the eighteenth century, Liverpool was the largest industrial centre in Lancashire, with industries such as copper refining, potteries, chemicals, sugar refining and iron working, and all needing coal. The growing number of sailing vessels using the port also needed supplies for cooking, as did the local inhabitants, so it is no surprise that the carriage of coal was one of the most important factors in the development of the local inland waterway network. The Douglas Navigation, planned and engineered by Steers, brought coal from the Wigan coalfield, and opened in 1742, and was soon carrying thousands of tons annually.

Over in Bradford, merchants in the woollen textile industry also needed coal, and they too proposed to build an inland waterway. They also needed limestone from Craven and saw the benefits of a link to Liverpool from where they could export their cloth to the growing colonial markets. A canal from Leeds to Liverpool was suggested and merchants in Liverpool approached for their help in promoting and financing the project. The Liverpool merchants were in favour, but suggested a link to Wigan, a canal being able to carry coal more economically than the old Douglas Navigation.

Opposition to the scheme came from the Sankey Navigation, and from a new canal proposed to run eastwards from Liverpool, crossing the Sankey and then turning north to enter Wigan from the south. A battle ensued in Parliament, but the new Liverpool Canal had insufficient support from local landowners, and the Leeds & Liverpool Canal overcame this opposition. The Act for the canal was passed in 1770, and two years later the new company purchased the Douglas Navigation, giving them all the water rights on the river. In fact, when Liverpool built Rivington Reservoir to supply the growing town with water in the 1840s, it had to purchase the right from the canal company.

The canal opened from Liverpool to Parbold in 1774, a link from there to the Douglas Navigation at Gathurst allowing coal to reach Liverpool. The old navigation was closed in 1781 when the canal was extended to Wigan. Progress on constructing the canal was then intermittent due to wars and economic fluctuations, and it was not completed until 1816. A link into the Mersey was authorised by the canal's Act, but agreement had to be reached with the Town Council over the land required. For some reason this was not built in the 1770s – the Town Council minutes are missing for the relevant three months so we will never know why – and it was not until 1848 that the link was finally made. Efforts were made before then, particularly during the long drawn out planning for Princes Dock, but the Town Council, who controlled the docks, were uncooperative. It was left to Liverpool's second great dock engineer, Jesse Hartley, to build the link during his construction of Stanley Dock. There were further schemes for canal links to the northern docks – Canada and Brocklebank Docks – as they were extended, but these did not develop beyond the planning stage.

Considerable trade was carried up and down Stanley Locks as it was cheaper to transship cargoes between ships and canal barges than it was to land goods on the dock wharfs. The locks were built larger than others on the canal so

that dumb barges could work between the docks and canalside factories and warehouses, the canal being deepened between Bootle and the locks to allow these larger barges to carry their full load. Great Howard Street bridge over the canal was the 'gauging' point, its small height still apparent today.

When the canal was built, its terminal basin was built on the edge of the town, on cheap open land to the north of the dock system and the town's centre. However, the benefits of canal transport soon encouraged development along its banks, such as the residential areas around Bootle – from where regular packet boats carried passengers into town – and Muspratt's chemical works which were soon to become a source of much pollution. Engineering works and sugar refineries also developed next to the canal, the latter becoming one of Liverpool's best-known industries. Some of the town's worst housing was here as well, the clay sub-soil and the lack of drainage creating terrible conditions, some of which survived into the twentieth century.

To some extent, the canal blocked access to the land to the north, and in the 1880s a new road, Pall Mall, was planned at the same time as Exchange Station was extended. Over half of the old canal basin, used mainly for coal and manure traffic at this time, was filled in as part of this development, and new canal warehouses, still surviving, built alongside the new basin on Pall Mall. Coal and manure wharfs survived, the latter used for nightsoil and street sweepings (horse manure) which was taken out to West Lancashire for spreading on agricultural land. Well over 100,000 tons of manure were carried annually in the latter half of the nineteenth century. Traffic on the main line of the canal finally ended in 1964 following the severe winter of 1963/4. The basin was filled in shortly afterwards and an extension to Tate & Lyle's sugar refinery built over part of it, though the section next to Pall Mall is still recognisable as a canal, albeit with no water.

The Docks

When the canal opened to Liverpool in 1774, there were only three docks, Old, Salthouse and George's, the last having only just opened. The original canal link into the river may have been planned just to the north of this, though there would no doubt have been objections from the military authorities whose fort was nearby. Two docks associated with inland waterways were built, Duke's and Manchester, in 1773 and 1785 respectively, with King's and Queen's following in 1788 and 1796. Three years later, the Act for Prince's Dock was passed, followed by long arguments over whether to build docks to the north or south of the town. The canal link to the Mersey was associated with early plans for Prince's Dock, but this was forgotten despite criticism from the canal company when the dock finally opened in 1821. Eight years later Canning opened, followed by Clarence in 1830.

Clarence Dock marks a change in shipping, as it was the first dock to be built for steam ships. It was to the north of the existing docks and completely separate from them in case of fire, always a major worry with sailing ships and warehousing. The space between the docks was soon filled with the opening of Waterloo Dock in 1834 and Victoria and Trafalgar Docks in 1836. To the north, Salisbury, Collingwood, Stanley, Nelson and Bramley-Moore Docks opened in 1848, the canal finally obtaining its link to the river by way of Stanley Dock.

One feature of the early docks was their entrance basins. These had no gates so that sailing vessels could enter whenever there was sufficient water. The basin also provided sufficient space for sails to be lowered and the vessel brought under control and moored. Access to and from the dock was only possible at high tide, each sailing vessel having to be manually winched through the lock. As the numbers of vessels using the docks increased, this system became unsuitable, as there was insufficient time each tide to pass all the vessels in and out of each dock. To overcome the problem, half-tide basins were created by putting gates on the entrance to the old basins. These gates were opened before high tide and closed after, giving more time particularly for sailing vessels to enter the docks. As steam boats increased in numbers, simple entrance locks were built to provide access.

The development of the system is apparent when comparing maps of the docks, the old basin system never fully disappearing until George's Dock closed in 1900 when the Pier Head began to be developed. Canal boats passing through the docks would have to time their passage so that they could get across the half-tide basins at Clarence and Prince's Docks, and particularly George's Basin which could only be crossed at high tide. To overcome any problems, the canal company had its own steam tug 'Warrior' on the Mersey from 1885, though this would have been used primarily for taking canal boats across the river to Birkenhead Docks where the main grain terminals were situated.

The Canal in Liverpool and its Connection to the Mersey

One of the original aims of the Leeds & Liverpool Canal was to carry goods between the ports of Liverpool and Hull, thereby linking the East and West coasts of England. The canal was joined to the Aire & Calder Navigation at Leeds by 1777, enabling canal barges to reach Hull and Selby, though in Lancashire the authorisation for a connection into the River Mersey at Liverpool, which was included in the canal's 1770 Act, was not carried out until 1846. The failure to build a connection to the docks, together with the opening of the Rochdale Canal in 1804, which provided a more convenient water route across the country, drastically reduced the importance of trans-Pennine traffic to the Leeds & Liverpool Canal. However the canal provided a major route for trade between the seaports and the developing industrial areas of East Lancashire and West Yorkshire.

The majority of the canal's early proprietors came from Yorkshire, the reason behind their desire for the canal was their need for a cheap and plentiful supply of Craven limestone for the rapidly expanding town of Bradford, as well as access to the colonial markets in Liverpool for their woollen manufactures. On the other side of the Pennines, the main requirement of canal proprietors from Liverpool was an improvement in the supply of coal to that town. The difference in the aims of the two groups caused much friction, and could have resulted in the failure of the projected canal had their arguments not been settled by John Hustler, the company treasurer. The first lengths of the canal to be opened, from Liverpool to Wigan, and from Leeds to Gargrave, were operating by 1777. Construction then ceased until the 1790s, when work started again in Yorkshire, with sections being opened westward as they were completed. It was not until 1816 that the canal was opened throughout.

In Yorkshire, merchandise trade with the ports of Selby and Hull increased with the opening of the canal, and goods were advertised as being delivered, by canal, to and from those ports in one bottom, without transhipment. Canal barges continued to work onto these tidal waters into the 1850s. In 1849, the company's Yorkshire carrying fleet of 33 boats included 19 hatch boats. The use of hatch covers gave the cargo extra protection compared to the normal canal practice of covering the hold with sheets, and must have made boats fitted with them suitable for use in tidal waters. They may have been sailing vessels, though their sailing gear would probably have been removed at Leeds to allow the boats to pass through the canal bridges and tunnels. Private traders boats also worked onto the tideway. In 1856, following a stoppage of the canal at Shipley, William Selby, a boatmaster from Hull, demanded 6 guineas compensation after his boat ***Faith*** had been held up for ten days.

The proposed line of the canal through West Lancashire made the Liverpool proprietors requirement for a supply of coal difficult to obtain. To overcome this difficulty, and to supply the canal with water, the River Douglas Navigation was purchased in 1771. The navigation had opened in 1742, and by 1770, the amount of coal and cannel carried had risen to over 10,000 tons annually, supplying markets all round the Irish Sea coast, particularly in Ireland. The boats used on the river were either drawn by men, or set a square sail when the wind was favourable. They had open holds, and could load up to 20 tons of coal or cannel which they would deliver to Preston or to the ports on the Ribble estuary for transhipment to coastal vessels, often returning upstream with limestone. The navigation was finally superseded by a canal branch from Burscough to Sollom, opened in 1780, through which the Irish market continued to be supplied.

The expansion of the Liverpool market for Douglas Valley coal dates from the opening of the Wigan to Liverpool section of the canal in 1773. Although this provided transport, it was not until several of the canal proprietors had invested directly in the mines that production could be increased to enable this new market to be supplied. The expansion was phenomenal, with the coal deliveries from the Douglas Valley to Liverpool rising from about 10,000 tons in 1775, to almost 150,000 tons by 1791. The supply was of good quality and used throughout Liverpool. Cannel was purchased for household purposes, while local industries, such as sugar refining, pottery making and ironworks, were supplied with coal. A large export trade also developed, though the coal had to be unloaded from barges in the canal basin and then carried down to the docks by cart. The double handling increased breakage, reducing the quality of the coal. This caused the canal company to again look towards a link with the river or docks, as then coal could be transhipped directly into the colliers, lessening breakage. It is uncertain why such a link was not provided when the canal was first built, though at the time the canal company's relations with the Town Council were sometimes strained which would have made negotiations difficult. The Town Council minutes for the period during initial negotiations are also missing. The rapid rise in the value of land in central Liverpool in the late eighteenth century could also have deterred the company from persuing the matter.

The first serious proposal for a canal branch came in 1813 when William Chapman of London was engaged to produce schemes for a link to the Mersey in conjunction with the proposals for Princes Dock. His report recommended

that four locks should be built from near the canal basin to a new coal dock, suitable for colliers of up to 200 tons burden. The dock would be capable of handling 120,000 tons annually and was to be 450 feet by 110 feet. Storage for 10,000 tons of coal was to be provided as estimates suggested that up to 1000 tons could be delivered daily by the canal. The dock was to be situated between the fort and Princes Dock, though there would not have been any direct connection with the latter, the canal dock opening into the river. Despite the report and the obvious need for the connection, work was not started, probably because the canal company's finances were insufficient. At the time they were probably more concerned to connect the two ends of their canal, an aim which they finally achieved in 1816.

Three years later the Leigh branch of the canal was completed, connecting the main line at Wigan with the Bridgewater Canal at Leigh. This enabled coal boats from Wigan to reach Liverpool Docks by using the Bridgewater Canal to Runcorn where they could lock down into the Mersey. Traffic soon developed, with coal being advertised for delivery alongside vessels in the docks. It seems certain that sailing flats were used in this trade, and early drawings of Barton aqueduct often show vessels with raised sails passing over the aqueduct, though lowering masts would have been essential to pass along the canal section. In the 1820s, Pecks of Wigan, who were tarpaulin manufacturers, certainly made sails for local barge owners, while Blundell's Collieries, when considering the introduction of steam powered boats in the mid nineteenth century, compared the operating cost with those of their sailing vessels. The Leigh branch was also used by barges supplying coal to coasting vessels operating out of Runcorn. Although this route to the docks was of great help to the coal merchants, it was of little use to the canal company as it reduced the distance coal was carried along their canal. This resulted in a loss of income which could only be overcome by ensuring that there was direct access into the docks at Liverpool from the canal. It was suggested, in 1834, that a branch should be constructed to the recently opened Clarence Dock, but nothing materialised and it was not until the construction of Stanley Dock in 1846 that the connection was finally made. The branch was built by Jesse Hartley as part of the new dock works and was subsequently sold to the canal company for £42,622. The Dock Board were allowed a compensation toll of one and a half pence per ton on all goods passing onto or off the canal which had not paid the Town or Dock dues they received for goods handled in the docks. Two men were employed at Stanley Dock, from Monday to Saturday, to record the passage of boats along the canal branch, and though it was closed on Sundays, permission could be obtained from the Dock Board for it to be opened.

After the branch was built, traffic developed quickly, encouraging proposals for further connections. In 1854, during the construction of Huskisson Dock, a system of six small basins for the timber trade were suggested inland of the new dock, a branch canal parallel to Castle Street, in Bootle, joining these basins to the main canal. Enlargements to Stanley Dock were also suggested on several occasions. The last of these was in 1872, when a river craft dock was proposed on the East side and parallel to the existing branch canal. It was not built, though a warehouse and arm for Bridgewater Canal boats was opened at the bottom of the locks.

The canal company carried on a considerable trade through Birkenhead. Their boats had difficulty in crossing the river as they were originally horse drawn, and to overcome this problem they purchased the steam tug ***Warrior***, in 1885, from Messrs W Allsupp of Preston at a cost of £2500. A depot was established at the East end of the South East side of Morpeth Dock in 1893, a hydraulic crane being provided for transhipping. This depot was given up nine years later, and a steam lighter, ***Irene***, purchased in 1905, used instead. Both boats were sold in 1921 when the canal company gave up carrying, the ***Warrior*** being sold to W Bate & Co. The Stanley locks were heavily used, particularly by flats and lighters serving the canalside works and warehouses in Liverpool. This could cause problems with water supply at times of drought, particularly as the canal company did not like filling the canal with water from the River Douglas due to its heavy polluted state. Matters were improved with the installation of electric pumps at the locks in 1934. These could supply 2 million gallons per day from Stanley Dock, which was equal to 20 locks full. Commercial usage of the locks continued until the 1960s, though the Dock Board ceased to record traffic passing in 1960. The locks are still used occasionally by pleasure boats, and hopefully this will increase when the warehouses around Stanley Dock are developed, as is currently being suggested.

Burscough

Throughout the history of the canal, Burscough and Lathom have been an important area for boatmen and their families. When the canal was first opened from Liverpool to Wigan in 1773, boatmen came from canalside communities throughout West Lancashire. Towards the end of the nineteenth century, and particularly after the introduction of steam boats around 1880, they seemed to reside more and more around Burscough. Boatmen here worked on the long-distance general cargo traffic, the grain traffic or the Liverpool coal trade.

Although there certainly were families who lived on the canal boats, the majority had houses on the bank. Boats on the Leeds & Liverpool originally carried around 35 tons, and as boat design improved, this was raised to 50 tons. Such a cargo could generate sufficient money to support two families per boat, and for the last hundred years boats were usually worked by men, their families living in houses alongside the canal. Many of these houses, usually built between 1880 and 1920, still remain and can often be identified by the stable for the boat horse built behind or near them. Coming towards Burscough from Liverpool, the first boatmen's houses were between Gregson's Bridge and Great Score. Known as Bog Houses, they were demolished about thirty years ago.

There are many boatmen's houses at New Lane, though a few alongside the road to the north of the canal have also been demolished. Behind the terrace facing the canal were a series of stable blocks running away from the canal at right angles. Most of these have also been recently demolished. On the opposite side of the canal was a manure wharf, now much overgrown. On the other side of the road is the Farmer's Arms which used to serve the boating community, providing stabling for boat horses. During the Second World War, a pill box was erected at the canal end of the stables. This was part of a defensive line to protect against a possible invasion here. There are other such works alongside the canal, and until recently the remains of tank traps were still visible at some of the canal bridges.

To the south of New Lane Bridge are several more semi-detached houses built for boatmen, with St. Andrew's Mission beyond. Built for the boating community, the mission was first established around 1860 or 70 in the stables alongside the Slipway in Crabtree Lane. It moved to its present site around 1930 and this corrugated building is probably the last Boatmen's Mission in Britain still to be used as a place of worship. Walking from the Mission down Crabtree Lane we pass more boatmen's housing before reaching the swing bridge. On the Liverpool side is another manure wharf, whilst the Slipway on the other side used to be a shop selling everything needed by the boating community from food for both people and horses to towing lines. There was also a baker's oven for baking fresh bread. The old Mission was held in the room over the stables, which was also used for dances at weekends. On the north side of the canal are more houses built for boatmen's families.

Halfway between here and Burscough, there used to be a swing bridge which was removed in the 1890s. Beyond, behind a modern engineering works, is another manure wharf where mooring rings can still be found on the tow path. Here, the canal enters the town of Burscough and many boatmen lived in the terrace streets close to the canal. On sunny summer's days, the boatmen's wives would sit outside, often knitting a gansey for their husband. This was part of the traditional clothing worn by boatmen - a navy blue woollen guernsey knitted with five needles such that there was no seam. The top half was patterned, much like a fisherman's gansey, though as far as is known there was no special design for each family.

The canal yard and warehouse, just through the bridge, were built in the 1880s for storage for proven and hay used by the canal companies horses. There was also a workshop for making leather tackle for the horses, together with stabling and loose boxes. Horses were sent here when they were in need of vetinary attention, and horses were often allowed to rest on local fields. Farmers sometimes allowed this for free as long as they could use the horses occasionally.

Proven was purchased from Ainscough's, the local millers, and hay was purchased from local farmers. Every week, a horse boat would be loaded with proven and hay for distribution to the canal company's stables, in particular those in East Lancashire. Early in the ninteenth century, Burscough became less important as a centre for the company's horses. The new stables at Burnley took over the role, with the manufacture and repair of horse tackle being transferred to Skipton. However, the office remained open, particularly for the payment of wages every second Friday when the boatmen's wives would line up outside for their money. They were paid the normal weekly wage, while their husbands could be given a 'sub', possibly coming out of their trip money, an additional amount paid which depended upon the distance travelled. Following the closure of Briers Mill Yard, the yard was used as a centre for the maintenance of the canal, and has now been made into a tourist attraction and community arts centre, with shops, a restaurant and cafés.

Just before the railway bridge is Ainscough's Mill, the firm receiving most of its supplies of grain by boat from the docks in Liverpool or Birkenhead. They had their own boats, a new fleet of motor boats being built in the 1930s. These boats were named after the firm's horses, of which the management was particularly proud. Beyond the railway bridge, the canal passes to former Ordnance Depot where the crane used for unloading boats can still be seen. This was not the only such depot on the canal, a large munitions store being established at Salterforth, where the wharf is still visible, during the First World War.

Top Locks, at the junction of the Rufford branch, is a classic canal community dating back to the eighteenth century. Most of the houses closest to Burscough were used by maintenance and boatyard workers, and there was also a smithy here, now converted into a house. Next to the main line of the canal, one house used to have a baker's oven in its cellar, the baker selling bread to passing boatmen. The lockkeeper's cottage at the top of the locks was, at one time, single storey. Behind it, there are more houses built for boatmen, together with their stables.

The drydock was built wide enough for two horse boats, which sat on wooden blocks, side by side, whilst being repaired. However, the dock is fairly shallow, making it less suitable for motor boats which are deeper in the water. There was also a slipway, operated by the Tyrer family, on the off-side of the canal just past the junction. The Tyrer family may also have been owners of a fleet of boats.

The next swing bridge, Glover's, received its name from the Glovers, a family of boat owners who lived in the house here. In the early nineteeenth century, they part-owned one of the largest fleets on the canal. Just beyond the bridge, on the off-side, is Briers Mill Yard which for many years was centre for the maintenance of the western end of the canal. It received its name from a windmill which used to stand nearby. The remains of the maintenance yard can still be found. There are the foundations for several buildings — carpenters shop, smithy, etc. — and there are mooring rings along the canal bank. The inspector responsible for the condition and maintenance of the Lancashire section of the canal lived in the canalside house here. For many years he was from the Moss family, the Bateman's holding a similar position in Yorkshire. Just beyond the house was the boathouse which accommodated the ***Waterwitch***, the Leeds & Liverpool's inspection launch. It was used by the canal's directors when they were visiting places along the canal, and was also used for taking the canal's main customers for pleasure trips — a perk which railway companies could not offer!

Just before Ring O' Bells Bridge, there is a large cobbled manure wharf. This was used by the Corporation of Liverpool who owned a farm just down the road. Originally, the manure from Liverpool comprised, in those days before sewage works, of night soil and street sweepings — horse droppings. Farmers were glad of this as it provided good fertiliser and they allowed it to be spread on their fields free of charge. However, over the years the quality of the manure declined as sewers reduced the amount of night soil and the volume of refuse, such as tins and paper, increased. Farmers started demanding payment for disposing of such manure, so Liverpool purchased a farm near Ring O' Bells where they could dump nightsoil mixed with rubbish without hinderance. The trade declined in the early years of the twentieth century, but the last boat did not finish carrying such a cargo until after the Second World War.

At Ring O' Bells is another canalside terrace of boatmen's housing, with some of its associated stabling still standing behind. Here lived many of the boatmen employed on the grain boats of the local miller, Ainscough's, and the East Lancashire miller, Appleby's, though there were also boatmen working on all the other traffics. These were not the last boatmen's houses, and there were others at Spencer's Bridge and at Giants Hall Lane, Newborough. Many boatmen lived elsewhere, but these canalside houses around Burscough formed one of the largest most important canal boating communities in the country, with only those at Middlewich and Braunston rivalling it in size.

The Canal around Wigan

The Orrell Coalfield, Just West of Wigan, was opened up from the sixteenth century, and comprised both bell pits and day eyes (horizontal workings) with the coal removed on a pillar and stall method. Over ⅓rd of the coal was at 60 ft or under, and it was natural that river navigation should be contemplated to convey coal from the centres at Dean and Gathurst. An Act of 1720 authorised navigation on the River Douglas from the Ribble Estuary to Wigan.

It opened in 1742, 'exporting' coal to the Fylde and North Lancashire, with some for Liverpool. Boats returned with limestone and slate from North Lancashire and Cumbria. A rapid expansion of the coal industry ensued, and the Orrell field was virtually exhausted within 100 years. Coal from Haigh Collieries, N.E. of Wigan, was brought down to the Douglas by horse; indeed, cannel coal, the richest and best for gas making, was so exported to Paris in 1788.

The Leeds & Liverpool Canal was authorised in 1770 and construction commenced immediately, although the planned route was varied several times before it opened throughout in 1816. It was originally intended to incorporate the Douglas Navigation above Newburgh (Parbold) as a branch off the main canal called Leigh's Cut, and the first boat between Liverpool and Gathurst, thence by river to Wigan, passed in 1774. By 1781 the canal was open to Wigan, but it was not until 1794 that the agreement with the Lancaster Canal rendered the Wigan section a part of the main line, and not a branch. After the opening of the Liverpool Section, coal traffic to Liverpool increased tremendously, and in 1810, further agreement with the Lancaster Canal led to leasing of that canal's southern section as part of the Leeds & Liverpool. The opening of Wigan locks in 1816 completed the main line. In 1820, a branch to Leigh from Wigan, with two locks at Abram and one at Plank Lane, was opened. This connected with the Bridgewater Canal and thus gave navigation to Manchester. The opening of the Leigh Branch led to a very rapid development of the South Lancashire Coalfield, with very many loading staithes and, as mines became deeper towards the end of the 19th century, very heavy subsidence.

It is difficult to envisage the pace of expansion of the coal industry in the area. There are some 1200 known pit shafts within 5 miles of Wigan centre, and possibly half as many again uncharted. More than twenty horse tramroads fed minerals to the canal between Kirkless, Appley and Leigh. The population of Wigan nearly doubled between 1801 and 1821, and from the middle of the century, the cotton industry also expanded in Wigan.

Passenger services were not ignored on the canal in the pre-railway era, and the daily 'packet' boats working between Wigan and Liverpool were incorporated, on the opening of the Leigh Branch, into a through daily service between Manchester and Liverpool. This gave connections to Southport by stagecoach from Scarisbrick.

The universal acceptance of steam power in industry led to a rapid expansion of the coal industry, with new, deeper pits replacing the shallow Orrell coalfield pits. New shafts were sunk thoughout the Wigan area, and new loading canalslde points were established, sometimes fed by tramway or railway (e.g. Blundell's Tip, near Seven Stars Bridge, serving Pemberton Collieries), and sometimes direct from barge to the colliery (e.g. Rosebridge Collieries). At Crooke, a branch canal had a ¼ mile tunnel for narrow beam craft to the underground loading point at Taylor Pit. It was in use from about 1800 to about 1840. A railway tip on the main canal nearby was open until 1968, serving the Liverpool coal traffic. Most of the newer loading points were, however, round the flight of locks, particularly at Britannia Bridge, Rose Bridge and Kirkless. A labyrinth of canal basins and arms below lock 17 incorporated Whalley's Basin, serving the Ince Hall Colliery, and a private branch canal serving the Ince Hall Coal & Cannel Co.

The private Haigh Estate near the Top Lock had not only coal mines but an ironworks. Lord Balcarres, the proprietor, was a major shareholder in the Lancaster Canal, and used canals extensively to support his estate. The ironworks were later moved to Kirkless, adjacent to the flight of locks, and here another complex of coal chutes, iron ore wharves (ore from Cumbria was being coasted to Tarleton), blast furnaces, open hearths, rolling mills and coke ovens. Fringe activities included brickworks, coke ovens, lime burning, and making paving flags from slag. The ironworks was closed in 1926 in favour of one at Irlam on the Manchester Ship Canal.

Another important group of leading staithes lay on the Leigh Branch, some connected by quite long railways to the collieries. Moss Bridge, Brynn Hall, Garswood and Bamfurlong were close together at the Wigan end; by Dover locks were Maypole and Edge Green; whilst near Leigh were Bickershaw, Westleigh, and Springfield loading points.

Lord Balcarres' Wigan Coal and Iron Company had a considerable fleet of canal craft, some short for working Wigan locks, and some long for the 72 ft locks on the Liverpool and Leigh sections. It is quite likely that their fleet would have included iron boats, but no record survives of these. Steam tugs ***England***, ***Ireland*** and ***Scotland*** worked below Wigan locks, whilst ***Wales*** lived in solitude at Top Lock. Long boat ***Scorpio*** and short boat ***George*** now reside at Ellesmere Port's Boat Museum.

Dean, Waddington & Co had an extensive fleet of boats both in the Wigan and Blackburn areas whilst the fleet of the Exors. of Colonel Hargreaves, later became Hargreaves (Lancashire) Ltd.and were adorned with a black diamond within a white one on bow and engine room. Some later sported a capital 'H' bursting into flames. Hargreaves became part of British Fuel Co, who ran the last regular traffic at Wigan — the coal to the 'new' Westwood Power Station which was fed from Bickershaw until 1972. By this time, life-expired iron ex-grain barges were being used, both short ones from the ***A36-A42*** series and long ones, ex-Ainscough's ***Ambush***, ***Viktoria***, ***Attractive*** etc.

The fleet of T & W Wells was an important one on the Leigh Branch and into Manchester, and was notable for the purchase of a number of redundant steam barges from the Canal Company. Richard Williams & Sons had an extensive fleet of craft carrying coal from Wigan to Liverpool, as did John Parke & Sons, who carried from Crooke to Liverpool's Atholl Street Gasworks until 1963, latterly behind diesel tugs. This last traffic was continued for one year by British Waterways, and was their only regular involvement with coal. A number of the smaller collieries delivered in their own boats, whilst for a trial period Manchester Collleries used their diesel tug ***Phyllis*** to take a single boat to Accrington once a fortnight, but the work involved with two boats locking separately up Wigan Flight was uneconomic.

Because of the number of collieries and different grades of coal, loaded coal barges often passed each other travelling in opposite directions, though after the Second World War loading was concentrated on the Leigh Branch serving Wigan and Blackburn, and Crooke serving Liverpool. The majority of coal barges were wooden with quite shallow sides and no coamings — this facilitated unloading by shovel and wheelbarrow where necessary. When redundant iron barges came to be reused, their coamings had frequently to be trimmed to enable the empty boat to get under the chute. Widdop, Gardner, Lister JP and National engines were popular as more craft were made self-propelled.

Coal boats into Liverpool sometimes had, as a backload, domestic rubbish to be tipped, or manure or night-soil as fertiliser for canalside farms. An interesting exception to the rule was one taking coal as its backload. This was Ainscough's horse drawn iron boat iron boat ***Parbold***, which conveyed bagged flour to a distribution warehouse in Wigan, and then collected coal for the mill at Burscough, from Crooke. This last horse boat continued until 1960.

The rich underground harvest of coal which provided so much of the canal's traffic also had a detrimental effect. The coal seams in the Wigan area are up to 7 ft thick and the total thickness of coal removed from under the area reached 85 ft. The consequent subsidence necessitated constant vigilance by the canal engineers. The Leigh arm as built originally had three locks, one at Plank Lane and two at Dover. Subsequently that at Plank Lane was removed while eventually the two locks at Dover were moved to their present site at Poolstock. One of the locks at Poolstock was constructed with wooden sides and was known as the 'coffin lock' being so built to cope with subsidence. Another feature of the Leigh arm caused by coal mining are the numerous flashes some of which were joined to the canal at one time and were used for the disposal of old boats. They also had a beneficial effect at times of water shortage.

On the line to Liverpool an extra lock was added at Pagefield in 1904 whilst that at Crooke was removed in 1909, Ell Meadow lock being rebuilt twice in this time! Trouble was also experienced on the Wigan flight with major repairs prior to the First World War. The effects of subsidence can be seen best near Plank Lane where the track bed of a railway line which originally passed over the canal is now below canal level and also at Edge Green where there are the remains of a canal basin and tramroad at the foot of a 15 ft. embankment carrying the main canal.

Although the coal traffic was the most important trade on the canal there were others. During the early history of. the Lancashire side of the canal the trade via Tarleton was very important. Coal was sent from there to Preston, Furness and Ireland by coastal sailing craft, the coal being transhipped from canal barges either on the River Douglas at Tarleton or on the Ribble off Lytham or Freckleton. The sailing craft then returning from Furness, with slate for building, gunpowder for the coal mines and iron ore for the foundries developing in Wigan and from Ireland with farm produce to feed the rapidly expanding South Lancashire townships. By the 1840s, 15% of the canal's total traffic was via Tarleton. This trade declined for two reasons, firstly the opening of the canal arm into Liverpool Docks in 1846 and secondly the leasing of the canal by a group of Railway Companies from 1850-73.

The income derived from the lease enabled the canal companies finances to be set on a proper footing and the thirty years after the railway lease lapsed saw great development in the facilities for trade on the canal. In particular warehousing was greatly improved and enlarged to cope with the raw materials required by the rapidly expanding cotton industry, many of the textile mills in the area dating from this time. The new warehouses were also depots for other companies such as Earles Cement, Tate & Lyles sugar, and Bibby's and Silcock's Oilcake. These general cargoes

were mainly carried by the Leeds & Liverpool's own boats, the company operating a large fleet and were one of the first to use steam powered canal barges and tugs. Urgent cargoes were sent by flyboats which had priority at locks. This was essential as Wigan locks at this time were so well used that there could be a boat in every lock with one waiting in every pound. Steam barges carrying about 30 tons of cargo would tow up to four dumb barges and stables were built at the local flights for horses to tow these dumb barges up the locks to rejoin the steam barge at the top, the stables at Top Lock at Wigan being used for this purpose.

Growing unionisation of labour after the First World War caused many canal companies to cease carrying, the Leeds & Liverpool finishing in 1921, the boats being sold to four companies who divided the trade into four areas each company being responsible for one area. This agreement lasted until 1930 when the canal company forced an amalgamation to form Canal Transport Ltd, which maintained the general cargo traffics until taken over by British Waterways. Throughout this time bulk cargoes, such as coal, were carried by by-traders and the coal mine owners own fleets.

To service the large numbers of barges on the Leeds & Liverpool there were at least twenty boatyards, two of the most important being at Wigan. At the bottom of the locks was the canal companies own yard for the building and repair nor only of the carrying fleet but also for the large number of boats required for maintenance of the canal. As well as woodworking facilities there were workshops for the repair and installation of steam and latter diesel engines. In 1933 after Canal Transport Ltd was formed this dockyard was leased to]ames Mayor & Co, whose original premises were at Tarleton. Mayor's relinquished the yard in 1959, but still operated their old yard in Tarleton.

The other important boatyard in Wigan was at the top of the locks and was operated by Wigan Coal & Iron Company. This yard was built on the site of Haigh Foundry, one of the earliest iron works in Wigan. The manager's house and clocktower can still be seen. The company operated up to 70 boats at one time, but only their short boats could be maintained at this yard, their long boats being repaired by boatyards on the canal into Liverpool. A third boatyard was operated by Ince Hall Coal & Cannel Company at their extensive canal works at Lock 17, but little is known of its operation.

After the Second World War there was a decline in general cargo traffic although the 1950s saw various attempts by British Waterways to develop new traffics. Among these were grain from Liverpool Docks for Kelloggs in Manchester in 1952 and peanuts and salted almonds from Liverpool to KP Products in Wigan in 1956. By 1963, however, general cargo carrying had ceased and in the following year coal carrying on the main line had also finished with the traffic to Atholl Street Gas Works in Liverpool being sent by rail due to the severe winter of 1963 interrupting supplies by canal. This left the coal traffic to Wigan Power Station from Plank Lane as the last traffic, this finishing in 1971. Since then, there have been several attempts to revive traffic, notably by Apollo Canal Carriers, with shipments of grain to Kelloggs at Trafford Park in 1973 and 1976. The only commercial boats fter this were those Northern Counties Carriers who operate an occasional winter coal retail business from Wigan to Burscough whilst undertaking camping holidays in the summer.

And what of Wigan Pier? Today is is considered to be the coal tip opposite the canal warehouses, but it has a much more apt origin. The East Lancashire Railway as it left Wigan towards Liverpool crossed the Douglas by a long wooden viaduct — the Railway had several of these, another crossing the canal at Church. It would have looked much more like a seaside pier. The origin of the title Wigan Pier comes from a song by George Formby Senior, who describes leaving Wigan North Western station bound for Blackpool. Looking out of the train he sees what looks like a pier, and ponders on why they have to leave Wigan. The East Lancashire Railway 'pier' was visible from trains leaving North Western station, and is a much more likely source of the name. The viaduct was converted to an embankment late in the 19th century, to overcome subsidence problems.

The Canal in Blackburn

The following are notes written in 1992 as a guide for creating the exhibition which was on display at Eanam Wharf for several years.

The early 1800s saw great developments in Blackburn as it began to grow from a village into an industrial town. The reason for this change was the textile industry, cloth from Blackburn being sold as far away as London even before 1800. Linen and woollen goods were produced at first, but Blackburn's skilled spinners and weavers were soon using the inventions of the Industrial Revolution to produce cloth from cotton.

In 1800 Blackburn had workshops and a skilled workforce. There were breweries, bleaching works and dyeing factories, even a theatre. In short, all the ingredients for making an important town. But the pace of change was slow, as slow as the packhorses which moved goods around the country. They used the ancient tracks over the hills or the new and expensive turnpikes, and could only carry comparatively light loads. It was the arrival of the canal in 1810, providing a cheap, reliable and efficient way of moving large quantities of goods, that really encouraged the growth of Blackburn.

By 1800 some Blackburn cloth merchants had already made their fortunes by becoming 'putters-out'. In 1800 the power loom had not been invented, and weaving was still a cottage industry, the weavers working in their own homes. The putter-out supplied them with yarn and paid them for the finished cloth. Some putters-out set up spinning factories, though here too the machines were still hand powered. They could then supply the weavers with their own yarn, increasing their profits. The cloth merchants realised that factories increased their profits, but they were difficult to supply as raw cotton was heavy and bulky. This made it expensive to move by road. Factory workers would also need feeding, and the grain used to produce bread and beer for them was also difficult to transport. A canal was essential for Blackburn's development.

By 1750 goods could reach Wigan, Manchester, Leeds and Wakefield from the sea by river navigations. These navigations made transport far easier and cheaper than was possible by road. The success of river navigations encouraged the Duke of Bridgewater to open his canal in 1765. It linked his coal mines at Worsley with Manchester, and halved the cost of coal in the town. There was little doubt that water transport was extremely efficient, and the Duke was soon extending his canal to the River Mersey at Runcorn. Goods from Liverpool now had a reliable route to the industries of Manchester, with canals thus established as the motorways of the 18th century.

In the 1760s Yorkshire was far more industrialised than Lancashire, and it was the wool merchants of Bradford who first proposed a canal from Leeds to Liverpool. They wanted not just a route to Liverpool so that their goods could be shipped to America, but also to ensure a good supply of limestone from Craven. This was burnt to make lime which they used for building and as a fertiliser. They sought support for the scheme from Liverpool merchants, who saw the canal as a way of supplying their town with coal. They suggested a route through Wigan and Blackburn instead of the Yorkshiremen's line by way of the limestone country round Whalley. Not surprisingly the two groups fell out over the choice of route. They eventually compromised on the Yorkshire scheme, provided that the canal was built simultaneously from each end. The canal would be the longest ever built in Britain, and it was clear that it would be very expensive.

An Act of Parliament was obtained in 1770, and work on construction was soon in hand. By 1777 the canal was open from Leeds to Gargrave, and from Liverpool to Parbold, from where Wigan could be reached via the Douglas Navigation. But the canal had cost far more than was anticipated, and the proprietors ran out of money. Worked stopped, though with Liverpool linked to the Wigan coal mines, and Leeds and Bradford linked to the Craven limestone, the proprietors were happy enough to wait for better times. The country was gripped by a recession for about ten years, but by the end of the 1780s it was becoming easier to raise the money for large projects like the Leeds & Liverpool Canal. By this time it had become apparent that canals not only encouraged industry, but also made large profits. 'Canal mania' swept the country, with schemes being promoted everywhere. Industrialists and merchants, who stood to benefit most, were the largest investors, though every section of society was gripped by the mania. Most of Lancashire's canals date from this period.

By the end of the century many canals were under construction or had already opened, and the country was soon criss-crossed by an interlinking network. During the 'Canal Mania', the Leeds & Liverpool were able to raise money to commence construction of the canal through East Lancashire.. By this time the proprietors had realised that the carriage of merchandise was the most profitable traffic. The limestone trade had proved to be far less lucrative than expected. Consequently they altered the line of the canal to pass through the growing industrial towns of East Lancashire in anticipation of increased income. This was certainly fortunate for Blackburn and Burnley, which were now to be on the canal's main line instead of at the end of branches as had been suggested originally.

The canal was not to open throughout until 1816. However as each new section was completed it opened to traffic from Gargrave to Burnley in 1796, to Enfield (Clayton-le-Moors) in 1801, and to Blackburn in 1810. The reasons for the slow progress were twofold. Money was still in short supply, and there were also engineering problems. The tunnel at Foulridge took four years to build, while the many embankments needed time to settle sufficiently for the canal to hold water. However trade grew rapidly after each section opened, and even in its incomplete state the canal led to increased industrial development.

During this time Britain and France were at war. Well away from any likelihood of invasion, Blackburn's industries flourished. The demand for cotton cloth soared as Britain's new industrial towns grew. Fashion helped as well. Delicate printed cottons were in great demand for the dresses of the early 1800s. Rich silks and satins were almost impossible to obtain — and many considered 'French' fashions unpatriotic. In June 1810 the canal opened to Eanam Wharf and Blackburn. There were great public celebrations, and a crowd estimated at 25,000 watched a procession of boats arrive from Enfield. Fireworks were set off, and there was even a salute from a cannon. For six months after the official opening the local newspaper described the cargo brought by every boat arriving at Eanam, just as if Blackburn was a major port. Unfortunately the return loads are not recorded. They must have included cloth 'pieces' woven locally, ales and beers from local breweries, and stone from the quarries around Grimshaw Park. There were further celebrations in 1816 when the canal opened throughout. The barge ***John Hustler***, named after the canal's most influential proprietor, was the first to travel the full length of the canal. It took five days from Leeds to Liverpool, though stopping many times for celebrations along the route.

Before it could be built surveyors had to lay out the line of the canal, ensuring that it remained as level as possible. Excavation work was expensive and had to be kept to a minimum. Between Burnley and Blackburn the canal crosses several deep valleys. Earth for the embankments had to be found nearby as it was difficult and costly to move it any great distance. There was also a ridge of high ground to pass at Rishton, and the depth of the cutting had to be balanced against the height of the embankments elsewhere.

The canal diggers became known as navigators or 'navvies' because they were constructing a navigation. The canal company paid contractors to build short sections of the canal, and the navvies were employed by the contractor. Some were itinerant and worked full time on canal building, moving on as the work was completed. Others were local labourers who often left the canal works for seasonal jobs, such as at harvest time. Where the ground was porous it was necessary to line the canal with puddle to make it watertight. Suitable clay had to be found nearby. This was trampled or 'puddled' by the navvies, removing air and cracks in the clay through which the water could escape. A towing path was made on one side of the canal, and locks and bridges had to be built. Wooden swing bridges often built at first as they were cheap to construct, but as industry and road traffic developed most have been replaced by stone arches. Building the canal caused many problems, and landowners often complained about damage to their property. Fields were churned up by the navvies carts and wheelbarrows — there was no high-tech machinery in those days — or stone may have been removed without permission. All had to be paid for. Besides, walls had to be built, and hedges, grass and trees planted to repair the countryside through which the canal passed.

Alexander MacKenzie was born at Muirton, Scotland, in 1769. He worked as a navvy on the Forth and Clyde Canal which was built by the engineer Robert Whitworth. Alexander followed him to Lancashire when he became engineer for the Leeds and Liverpool in 1790. Alexander married Mary Roberts, daughter of the landlord of the Chapel Inn at Marsden where he lived after arriving in Lancashire. They were to have eleven children. By 1801, Alexander had become a contractor, taking responsibility for the construction of sections of the canal, and employing navvies to do the work. He settled in Blackburn, and after the Leeds and Liverpool was completed worked on other canals. After his death in 1836 his son William continued the contracting business, eventually becoming a partner of Thomas Brassey, the famous railway contractor. In 1844 he erected a memorial to his father in the Independent Chapel in Blackburn. William died seven years later, his estate amounting to half a million pounds. The family must have seen tremendous changes to Blackburn during their lives as it developed from a small country town into a busy industrial centre.

Eanam was the original canal wharf in Blackburn, opened in 1810. Two new warehouses were erected around 1835 for storing cotton and grain, and they were extended around1885. The earliest maps of the town show several buildings on the wharf, though some of them were replaced as the canal company expanded their facilities here throughout the nineteenth century. They were even building new and improved sheds at the start of the twentieth century. The demand for storage was so great because they were providing a better service to the town than the Lancashire and Yorkshire Railway.

There was stabling here for seventeen horses. They were not used for towing boats, but were mainly delivery horses. The canal company would carry goods, which went by canal or were stored in the warehouses, to and from premises all around Blackburn. The stables have been demolished over the last thirty years, though some still remain in Blackburn, at Nova Scotia, alongside the locks. The storage and movement of goods to and from Blackburn was controlled by a agent who lived in the house opposite the warehouse. His office was the building with the rounded ends next door. The boats were controlled from the canal company's head office in Liverpool. Their carrying activities in Lancashire were taken over in 1921 by Lancashire Canal Transport who were based in the Blackburn office.

Boats on the Leeds and Liverpool Canal were about 60 feet long by 14 feet beam, though below Wigan the locks allowed them to be 74 feet long. The short boats carried 40 to 50 tons of cargo while the long ones could load up to 70 tons. Horses were used to pull boats until 1961 when the last one retired. The canal company introduced steam powered barges in the 1880's, and each one could tow three or four dumb boats. Horses were stabled at the flights of locks for towing the dumb boats up or down. Diesel engines started to be installed in the 1920s, and they eventually took over from the steamers. The most popular engine was the Widdop which was made at Keighley. Stables for boat horses could be found all along the canal, and the canal company was noted for the quality of it's proven. At several places, Eanam included, there was a vet and smithy nearby.

On the horse boats there was a cabin at either end. When engines were used they were installed where the rear cabin had been. From 1878 canal boats had to be regularly inspected by the local health department. Standards were set for the maximum number of occupants in a cabin, which had to be clean and well painted. the inspector could order boats to be cleaned, fumigated or repaired. Although some families did live on board their boats, this was less common on the Leeds and Liverpool Canal than on the narrow canals of the Midlands. Boats on this canal could carry twice as much as a narrow boat, which enabled the boatmen to earn enough to pay for accommodation on the 'bank' (on land).

The usual crew was two, though steamers, which worked non-stop, had a crew of four. There was a strong family tradition, and a father would often train his son. There were also boatwomen, with sisters or mothers and daughters working together. During the Second World War, when there was a shortage of boatmen, there was a national women's training scheme, and several worked on this canal. There were two types of traffic on the Leeds & Liverpool. Short haul cargoes, such as coal, and long haul merchandise traffic. Most boatmen from Blackburn worked the former, carrying coal from Wigan or Burnley to Blackburn. A trip could often be completed in a day, and if not, the boatman could easily return home by public transport. On long haul traffics the boatman could be away for over a week, and their wives would pack a wicker basket with food for them to eat. Many of the boatmen working these traffics came from Burscough where you only had tow choices, working on the canal or on a farm. If they were away, the boatmen's wives would go to the office in Burscough to collect their pay.

The construction of Leeds & Liverpool Canal boats was based on coastal sailing vessels, the 'flat' from Lancashire, and the 'keel' from Yorkshire. The paintwork and decoration also shows strong nautical traditions, with scrolls, stripes and chevrons featuring in the decoration of bow and stern. Inside, the cabins were painted with contrasting types of wood graining, separated by coloured mouldings. Perhaps they were originally built with varnished timber. Boats working between Liverpool and Wigan had the most stylish decoration. Many had square sterns which were lavishly covered with intricate geometric designs, bunches of fruit, flowers or picturesque scenes. Boats had to be registered with a local authority, and even this was an excuse for more decoration. For example, boats registered at Liverpool had a picture of a 'Liver Bird' at bow and stern. But nowhere would you find the roses and castles used on narrow boats.

Cotton

Cotton mills clustered along the banks of the canal, and many received their raw cotton by barge. Cloth, however, was not such an important cargo. It would need to be taken for dyeing and finishing to works often well away from the canal. It was valuable and easily handled, so made an ideal load for road transport. As Blackburn became more important for weaving, so less cotton was transported by canal.

Mills were built alongside the canal because it provided both a good supply of coal and abundant water. To make the steam engines powering the mills more efficient the exhaust steam was condensed using cold canal water. This was then returned, it's warming effect ensuring that the canal in Blackburn rarely froze even in the harshest winters. The canal company's charge for the use of the water depended on the horse power of the engine. The mills had to pay even though all the water was returned to the canal.

Coal

Coal wharves lined the towpath from Eanam to Grimshaw Park. The coal barges were unloaded by hand, the coal being shovelled into wheel barrows and then tipped through gates in the high walls which surrounded the yards. It would take three men about six hours to unload a barge's 40 ton cargo, and several men made their living at the job. Some coal would fall into the canal where it became the property of the canal company. Many poor people risked prosecution by 'kebbing' the coal out of the canal using wire baskets on the end of wooden shafts.

Grain

Grain was one of the canal's most important traffics. When the canal opened large quantities came from eastern England and Europe to supply the windmill at Eanam. Later, towards the end of the nineteenth century, Liverpool became the main source, and American grain was brought by boat to Shackleton's and Appleby's steam powered mills. Arthur Appleby built Daisyfield Mill and had mills at Clayton and Bootle as well. He owned a fleet of about ten barges which he used to supply them.

Limestone

When the canal was being promoted in the 1760's it was expected that limestone would be the most important cargo, and the promoters expected to carry ten times more limestone than coal. Exactly the opposite was the case, though at one time over 150,000 tons of limestone was carried annually. The limestone was burnt to make lime which was used for fertiliser, as a chemical and disinfectant, for decorating and as a mortar for building. The canal company owned several limestone quarries between Barnoldswick and Skipton, and limekilns could be found all along the canal. There was one on the far side of the canal, here at Eanam.

Manure, Sewage and Household Waste

As industrial towns grew during the nineteenth century they were badly affected by cholera and other epidemics. The cause was eventually traced to poor hygiene and sanitation, so the Council had to decide what should they do with all the town's refuse. There were the street sweepings from the horse drawn carts, and household rubbish, not to mention the sewage from cesspits in those days before the flush lavatory and sewers. Cesspits tended to be emptied at night to avoid too much unpleasantness, with the sewage thus being called nightsoil. A wharf was set up at Bennington Street where all the refuse could be brought and sorted. The rubbish was burnt in a destructor while the manure was loaded into boats and taken down to West Lancashire where it was used to improve farmland. This traffic continued into the 1930s, by which time the majority of houses had been connected to the sewer system.

By 1848, when railways reached Blackburn, the canal had paid off all it's debts. It was making a good profit, though this was soon reduced by railway competition. However, the canal's financial situation was much stronger than that of the railway companies who still had large debts. After two years of hard competition the canal company agreed to sell their general cargo boats and lease that traffic to the railways. For this they were to receive £13,880 for the boats together with £40,500 a year for the 21 year lease. The coal, limestone and grain traffics, which were operated by private carriers, were unaffected by these moves. The railways ran down the canal's merchandise trade, carrying much of it by rail instead. They still had to pay the lease, though some traffic transferred to private carriers on the canal. They must have thought the deal worthwhile as it was extended by two years, but it had allowed the canal company to build up their financial reserves.

In the early 1870s Blackburn and Burnley mill owners and merchants asked the canal company to take back the merchandise traffic from the railways. They complained that the lack of competition had allowed the railways to overcharge for a poor service. This the canal company did in 1874, using their reserves to update many of their facilities. Much of the warehousing at Eanam and Nova Scotia dates from this period. They were so successful that by the 1880s the Lancashire and Yorkshire Railway was laying men off in Burnley.

The Leeds & Liverpool Canal and Accrington

As the Leeds & Liverpool Canal winds its tortuous way through East Lancashire, it seems to carefully avoid Accrington. In fact, the town was the largest hereabouts not be served by the canal. This was never the intention. When the canal's route through East Lancashire was decided in 1793, it was planned to continue up the valley of the Hydburn, crossing it at a point close to the old Grammar School on Blackburn Road. The proposed Haslingden Canal was to join it here, creating a water link with Bury and Manchester. Had this happened there would have been a wharf near the junction where goods to and from the town could have been handled. Instead the route was altered. The Peel family asked the canal company to avoid crossing the Hyndburn above their printing works at Peel Bank. At that time it was one of the largest factories in the world and used the clear waters of the Hyndburn (How things changed later!) for washing the cloth during the printing process. Building the embankment necessary for the canal to cross the Hyndburn would have interupted this supply and caused production problems. A short branch along the original line did serve the factory, but the main line was built downstream, rejoining the original line at a right angle junction at Church. Much of the land for the canal deviation had to be purchased from the Petre family of Dunkenhalgh. Although they were quite happy for the canal to be built, they requested that the towpath was made on the side of the canal away from their house and lands. They hoped that this would prevent poachers from gaining easy access to their estate!

Accrington's lack of a canal was seen as a major disadvantage, and a branch canal was proposed on two occasions, in 1875 and 1882. The small branch built for the Peels would have been extended along the northern side of the Hyndurn, ending in a circular canal just below the railway viaduct. Besides providing condensing water for mill steam engines, the branch would have been used to bring coal to the gasworks and grain to the corn mill. A rather less savoury cargo would have been refuse and nightsoil. After collection from the 'bin 'oyls' and closets in the back entries of local terraced houses, it would have been delivered by boat to West Lancashire for spreading on farm fields as manure. The sewage works at Church certainly provided such cargoes into the 1940s. Unfortunately, the branch would have been expensive to build and unlikely to pay for itself and was never built.

Up until the early 1960s, when carrying by canal ceased, Accrington had to rely upon the wharves at Enfield and Church for its canal service. The former, opened in 1801, was built near to the junction of two turnpike roads which enabled goods to be carried to and from Bury and Clitheroe besides serving Accrington. The warehouses still stand and are now used by small businesses and by the Sea Cadets. Several factories were served by the canal at Enfield; of particular note are Royal Mill, the last to be built in Clayton, which opened in 1912, and Enfield Corn Mill, used for many years by Joseph Appleby, who had his own fleet of boats carrying grain on the canal. This mill was subsequently occupied by the East Lancashire Soap Company who used the canal for shipping their famous floating soap. Presumeably, it must have been carried by boat!

The history of the canal at Church is, perhaps, more interesting. The turnpike from Blackburn to Accrington was opened after the canal and the canal embankment across Tinker Brook was enlarged to carry the road as well. The first canalside warehouse was opened in 1836, a few years afterwards. This was built by the Hargreaves brothers of Broad Oak. A proper wharf was erected seven years later, the canal company draining the canal for just twenty four hours to allow the foundations to be built. The canal company later took over the warehouse, enlarging and improving the facilities in 1890. They also built a wharf at the end of Bradley Street which opened in 1891. Built on the site of the Church Lane Chemical Works, it was used for the storage of timber and machinery. Because they had little space at their factory, Howard & Bulloughs were one of the main users of this wharf. The canal company would then deliver their export textile machinery right to the ship's side in the docks at Liverpool, Birkenhead or even Hull.

Thomas Crawshaw, a local coal merchant, also provided a collection and delivery service from the wharf. He cannot have been too reliable as the canal company took over this part of his business in 1901, paying £700 for his stable, horses and lurries. The canal company had further problems at Church in that year as J W Varley, their agent there, was dismissed because of irregularities in his accounts. Things had improved by 1913 when an electric crane was installed to help with loading and unloading.

Four years later, the routine operation of the canal was upset once again. To supply the munitions industry, Lance Blythe had set up the Coteholme and Kirk Chemical Companies which made picric acid and high explosives. On the 27th April 1917 a fire started at the works. James Hardacre, a policeman at Church, was killed while attempting to ensure that everyone had left the site. He was awarded the King's Police Medal posthumously. There was large scale damage throughout Church. The houses in Bradley Street and Canal Street bore the brunt of the explosion, while Church Kirk was closed until the following August. The canal also suffered as four boats, towed by a tug, were passing at the time.

The explosion blew the tarpaulin covers off the cargoes and the boatmen must have been shocked. The wharf, which was directly opposite the factory, was also damaged, the company reporting: *The electric and steam derrick cranes were slightly damaged, cases of the machinery belonging to Messrs. Howard and Bullough protected by the waterproof cover were set on fire, the electric switch house and stabling consisting of 19 stalls with lofts over them, 3 loose boxes, cart shed and harness room were more or less demolished. The horses were got out uninjured. . . Owing to war conditions only nine horses are now employed whereas in normal conditions the stabling is fully occupied.*

There was also an 8 horse stable, but this only had its roof blown off and it was quickly repaired. Due to wartime restrictions, little about the explosion was made public. The wharf was rebuilt and continued in operation for many years. New warehouses were erected in the 1950s and 60s, with road transport using them after carrying on the canal finished. The wharf ceased being used in 1985 when a fire burnt out one of the new warehouses.

Burnley's Canal

Top o't'Town Bells by George Hindle (1890s)

How grand the sweet music That floats through the air,
From the bells of St. Peter's, Where memories are fair––
Aye! Memories that rise In my bosom that swells
To the rapturous tones of the 'Top o't'Town' bells.

The Top o't'Town Bells must surely have rung in 1796 when the Leeds & Liverpool Canal opened to Burnley. At first, boats could only sail to and from Yorkshire, the route to Liverpool only being completed in 1816. However, the initial opening of the canal was certainly one of the most important events in Burnley's history as it provided the town with safe and regular transport for the first time. Up until then, people had had to rely upon horse drawn wagons using the local turnpike roads. Because of the poor state of the roads, particularly in winter, it was extremely difficult and expensive to move goods, especially heavy and bulky things such as coal. The canal was an immediate success, and its traffic was varied, ranging from cotton and food stuffs to coal, limestone and even manure. To keep the goods moving, the canal had to be maintained regularly. Workshops were set up at various places along its banks where lock gates were made, boats built and all the other details of canal maintenance carried out. One of the most important of these maintenance yards was here, at Finsley Gate, Burnley.

Finsley Gate is at one end of the famous Burnley embankment - known locally as the Straight Mile, and called Burnley Val by boatmen. The largest canal embankment in Britain, it crosses the valleys of the rivers Calder and Brun. Burnley's name comes from the fact that the town was originally built alongside the Brun. The rivers date back to the Ice Age when the whole of East Lancashire was frozen over. As the ice slowly receded northwards it left the whole of the present Calder valley, from Burnley to Blackburn, filled with water. Known as Lake Accrington, these waters could not escape to the north because ice blocked the way. Instead, they forced their way through to Todmorden and so on to the North Sea. On their way they created the beautiful and spectacular valley between Burnley and Todmorden. Unusually, today it is the starting point for two rivers with the same name, the Calder. One flows eastwards to Castleford where it joins the River Aire, while the other flows through East Lancashire. When the ice melted, it was able to join the Ribble at Whalley after cutting its way through the Pendle hills at Whalley Nab.

The first route suggested for a canal from Leeds to Liverpool would have passed through Padiham and Whalley, where there was to be a huge aqueduct, 80 feet high. Why did it have to take this route instead of passing through Burnley. The reason was lime. In the 1760s, when the canal was being planned, people in the Pennines had just realised that by using lime as a fertiliser on their farm land they could increase production. The woollen industry was also expanding, and needed places where textile workers could install their handlooms. Until then, most workers had lived in single storey houses, but now an additional storey was needed where the looms could be set up. To build a two storey house you need a good mortar, and at that time it meant lime, making further demands for that material. The workshops also had to be painted to make them light enough for the weavers to see what they were making, so the walls were lime-washed. With all these demands, it is no surprise that the canal's promoters expected to carry vast amounts of lime. This had to be burnt to make it into a useful product, and lime kilns were built at many places along the canal. Some of the largest were in Burnley, and they can still be seen, either side of the embankment close to the aqueduct.

The canal was expensive to build, and only the sections from Leeds to Gargrave and from Liverpool to Wigan were built before money ran out. These sections had opened by 1777, but it was another thirteen years before money for further work was found. By that time the canal company had discovered that coal was a more important cargo than

lime. Also, the builders of the canal now wanted to serve the growing industrial towns of East Lancashire, especially Burnley. So they altered the route of the canal to its present one, which not only passes through the towns of Burnley and Blackburn, but also through the East Lancashire coalfield.

The canal opened to Burnley in 1796, and, because the great embankment was not yet complete, a terminus was built next to Colne Road. The canal opening was a time of rejoicing and the local paper reported the day's events. 'At some distance from Burnley, the company in the first boat were surprised with the instantaneous and unexpected appearance of 15 youths, the sons of the most respectable tradesmen in and about Burnley, smartly and uniformly dressed, who seizing the hauling line, drew that boat to the basin there. The effect of this pleasant incident was enhanced by the presence of a number of ladies who came on board the vessel.' At the terminus, boats from Yorkshire were unloaded and their goods transferred to horse drawn carts for delivery in Burnley, or via turnpike roads, to the rest of Lancashire and the port of Liverpool. There were warehouses and a boatyard at the terminus.

It was not until 1801 that the canal was opened beyond Colne Road. Because the embankment had to be allowed time to settle before the canal was safe enough to carry water, it took several years to complete. There were several canal embankments in East Lancashire, and they all caused problems in construction. Because one near Blackburn had not been completed on time in 1811, they had to move a boat by road to the newly opened canal beyond. It must have been quite an occasion, and a detailed report appeared in the Blackburn Mail. On Monday morning last, the Craven Company's barge Speedy, 35 tons burden, was drawn through this town on its way to Radburn Wharf. It was fixed upon 4 timber carriages and drawn by 16 horses. A great concourse of people assembled on this occasion. When it reached Moulden Water Brow, 5 additional horses were yoked to it, but these would have been insufficient, had not a great number of men assisted. It arrived safe at Radburn, a distance of 8 miles, at half past four, having been about seven hours on the road. It makes you wonder what today's Health and Safety people would have to say about such an event today!

Subsidence on the Burnley embankment, one of the wonders of Britain's canals, was a big problem for the canal company, especially as there were several coal mines in its vicinity. On one occasion a mine owned by the Rev. Hargreaves extracted the coal directly under the embankment causing a major collapse of the canal. The culvert through which the River Calder flows had to be partly rebuilt, with alterations that can still be seen. The embankment also had an aqueduct half way along its length, allowing the road from Todmorden to reach Burnley. Originally it was just a single semi-circular passage, and this was soon found to cause a bottleneck for road traffic. Two small side tunnels were added for pedestrians, but as road traffic continued to increase, these were still not enough. The aqueduct was completely rebuilt in its current form early in the 20th century. During this reconstruction a temporary wooden trough was built alongside the works to provide uninterrupted passage for canal boats.

From the embankment there is a unique view over Burnley's roof tops to the moorlands surrounding the town. Like many East Lancashire towns, the hills are not far from Burnley's centre. When the canal was first built, there were collieries on either side of the embankment, but these soon made way for factories, textile mills and the traditional stone-built terraced housing and cobbled streets of East Lancashire. For many years you could have heard the 'Knocker-up' on his rounds every morning, ensuring that the workers were at the mill on time. Burnley's last one, Robinson Rainey, continued working into the 1970s. Textile workers spent long days in the mill, in the 1820s the average was fourteen hours with just two hours less on Saturdays. When the hooter sounded at dinner-time or at the end of the day, there would be the clatter of clogs on the cobbles as the mill lads and lasses made there way homewards. At one time, clogs were worn by most of the population. In 1854 there were no fewer than 24 clog-makers in the town. At the same time there were 134 hotels, inns and beerhouses serving a population of around 24,000 people. No doubt many mill workers would have stopped for a fish supper on their way home, and there are still plenty of chip shops supplying the Burnley inhabitants. Visible from the embankment, and not far from it, is another source of traditional food, the market hall. It may be fairly new, but you can still purchase many of the other local delicacies such as black pudding, Lancashire cheese and oatcakes.

Also visible from the embankment, and just up the hill from the market is the parish church of St. Peter's. It may have been established by Edward the Confessor in the 11th century and the oldest part of the present church could date back to the 15th century. At one time St. Peter's had four chantries, each with its own altar. It was a Roman Catholic church until the middle of the 16th century when Henry VIII created the Church of England. Despite the Reformation, many local families remained Catholic, including the town's foremost citizens, the Townley's, though they had to worship secretly. Also part of the church was the Chantry School, but this, because of the Reformation, was discouraged. Instead, a Grammar School was established in its place in 1559. Although it probably used a house away from the church for some time, a new school building was built next to the church in 1602. This was used until

1693 when the school moved to new premises in Bank Parade, although links with the church remained. One aspect of Burnley's Grammar School not to be found in modern schools was the annual cockfight, with the town's cock-pit located close to the school. Cock-fighting was a common sport at the time, though the Grammar School's version was more of a cock-shy, where, for one old penny, the boys could stone the birds until they were killed or escaped.

The church was the centre of old Burnley, in an area known as Top o't'Town. Here, at one time, stood the market cross and the stocks. This was the centre of the town, and much business must have been transacted in the 'Old Sparrow Hawk' Inn by the market cross. Even today you can find several old shops in this, the most ancient part of the town. Closer to the canal, on Manchester Road, is the splendid Town Hall. Opened in 1888, and designed with a 90 foot high clock tower, it reflects the days when Burnley's textile production was so important to the country. How many remember the time when 'England's bread hung by Lancashire's thread'? The Town Hall reflected the pride of Burnley's inhabitants in their town, and George Hindle wrote these lines to Old Burnley in the 1890s.

I love thee, dear old Burnley, Thye borders still expand,
Thy honours rise, By enterprise, Built up by horny hand;
Still honest to thy purpose, Give right the might to know;
For Briton's skill And Briton's will Were Burnley's long ago.

But it was not all work in the town, and on the other side of the embankment is Turf Moor, home of Burnley's cricket and football teams. The cricket club dates back to 1833, when they played Preston at Turf Moor, their new ground. It was not until 1882 that an Association Football team was formed in the town from Burnley Rovers, a team which had previously played rugby. They originally played at Calder Vale, but the following year they were invited to play on the Turf Moor field alongside the cricket pitch. The two teams have had adjacent grounds ever since. On 23rd February 1924 a total of 54,775 spectators watched Burnley play Huddersfield Town in the F A Cup, Turf Moor's highest attendance.

For those not interested in sports, there was always the possibility of a stroll up Pendle Hill, seen from the embankment over the roof tops of Burnley's centre. It meant walking through the small villages at Pendle's foot, well known as the home of the Pendle witches. Today it is difficult to imagine life at that time, dictated by the superstitions which made it so difficult for people who did not conform to normal expectations.

Also visible from the embankment are the canal warehouses in Manchester Road. The toll keeper's cottage and office is now occupied by the Weavers' Triangle Museum which tells of life and work in Burnley and on the canal. The warehouses date from several periods as they were increased in size as traffic on the canal increased. Unlike many canals, railway competition did not affect traffic on the Leeds and Liverpool. In fact, in the 1880s they were taking trade away from the local railway company, the Lancashire and Yorkshire Railway, and were building new warehouses in Burnley to accommodate this increase. At that time it was reported in the Accrington Observer that 'It is a marked fact that the traffic on the railway from this district has fallen off considerably through these facilities offered by the canal company… and that the falling off in this department has been so great of late that the railway company has been compelled to dismiss some of their servants.'

The canal warehouses, with their wide variety of goods in store, must have been a great attraction to thieves. In 1832 a quantity of leather and other articles were stolen by '*…a notorious gang of thieves from the neighbourhood of Todmorden…*' who were successfully apprehended by Todmorden's constables. Brought before the Quarter Sessions in Preston, they were sentenced to transportation for fourteen years. Times have certainly changed!

The canal warehouses were a busy place. Boats arrived at the wharf or passed regularly carrying goods to and from Liverpool and Yorkshire, while others took coal to canalside mills or the lime to the kilns on the embankment. At first all the boats would be horse drawn, and stables had to be provided for them. The stables were also used by horses used for pulling delivery carts around the town, and the scene in the yard outside the warehouses must have been congested, with boat horses being led to the stables and delivery carts being loaded and unloaded. Today, one of the stables has been preserved, with displays on the life and work of horses and their handlers.

At one time there were even facilities for boatmen. Express or Flyboats operated non-stop between Liverpool and Yorkshire. The horses were changed regularly, every fifteen or twenty miles, at stables along the canal. By the time the boats reached Burnley, the boatmen must have been at work for about thirty hours without break. Perhaps this was the reason for the boatmen's lodging house mentioned in Burnley's 1841 Census, with crews changing at the warehouse and a fresh crew taking the boat on into Yorkshire.

A passenger boat service also operated between Blackburn and Burnley in the first half of the 19th century. It only stopped after the railway was opened in 1848. The service was run by the Crabtree family who also had the slower

goods-carrying canal barges. Their Packet boat, so called because it could carry small packages as well as passengers, acquired something of a reputation. The boat sailed daily between the two towns, stopping at several points along the way and an old fiddler often sailed on board as a travelling busker. As with all passenger transport, alcohol could be sold without a licence, and this led to riotous behaviour. The canal company had its own police force at this time, and their sergeant complained that people ran along the towpath after the packet boat, injuring the swing bridges and fences. He went on to say that drunkenness was allowed and that there were bands of music and riotous behaviour on Sundays. The company tried ineffectively to control events, and they must have breathed a sigh of relief on the opening of the railway. In those early Victorian days there were plenty of opportunities to enjoy yourself, but you couldn't be seen enjoying yourself!

As the packet boat sailed along the canal from Burnley's warehouses it must have passed a few mills. The first half of the century was one of unrest in Burnley's, as with the rest of Lancashire's, textile industry. With the introduction of machinery, many hand-spinners and weavers were thrown out of work. The hand-loom weavers, in particular, were well organised and there were several riots in the town. With the living conditions of the time, it is small wonder. One visitor to Colne described hand-loom weavers houses: They were destitute of furniture, save old boxes for tables and stools, or even large stones for chairs; the beds were composed of straw and shavings, sometimes with torn pieces of carpet or packing canvas for a covering, and sometimes without any covering whatever. The food was oatmeal and water for breakfast, flour and water with a little skimmed milk for dinner; oatmeal and water again for a third supply for those who went through the form of eating three meals a day. With such conditions, who can blame them for complaining.

There were several strikes and riots in Burnley, the main ones taking place in 1818 and between 1839 and 1842. Because of the earlier riots, a Barracks were erected in Burnley, where troops were based to keep control of the towns in East Lancashire. They were used against local strikers on several occasions. A few rioters were arrested after the 1818 riots, and most were sentenced to a few months in prison, but one, John Knight, a manufacturer and more wealthy than the others, was sent to prison for two years. The second series of riots were linked to the Chartist movement and Parliamentary reform. Feargus O'Connor, the Chartist leader twice addressed meetings in Burnley, and another leader in the area was William Beesley from Accrington. He was involved with Socialism in East Lancashire throughout his life and may well have talked with Karl Marx when the latter was visiting Engels in Manchester.

Burnley Barracks were the military home of General Scarlett, who was to become famous for leading the Charge of the Heavy Brigade. This was one of the most successful military events during the Crimean War, though it has been overshadowed by the infamous and disastrous Charge of the Light Brigade. General Scarlett, who lived in Bank Hall, presented Burnley with some of the guns used in the Crimea, but they were melted down as scrap during the Second World War. The Barracks used to be near Mitre Bridge, close to the canal, but have been demolished. The only reminder left is the railway station, Burnley Barracks.

The Barracks were at the western end of the Weavers Triangle, an area crowded with textile mills and engineering factories. It was here that Burnley's merchants and industrialists made their money. Until the middle of the 19th century, there were few textile factories, with the majority of production taking place at home. The introduction of the highly efficient condensing steam engine, where the exhaust steam was cooled at very low pressures until it condensed, made textile production in mills possible. The canal was an ideal source of cold water for condensing the exhaust steam, so most of Burnley's textile mills were built along its banks. As an added advantage, boats could deliver coal and other raw materials to the mills, and the warmed condensing water was returned to the canal, making it less likely to freeze in winter. Places where such water was returned were always magnets for local children, who used, illegally, to swim in the canal. Despite the dangers, the tunnel at Gannow was also used for swimming matches by older youths and men, an there were several fatalities. Burnley's first public baths, now demolished, opened in 1887. Today, baths are provided close to the canal at Gannow and near the embankment in Burnley's centre, a much safer place for swimming than the canal. Because of the danger, it is against British Waterways bye-laws to swim in the canal.

At the end of Gannow Tunnel is Gannow House. This was the home of the Fletcher family who took over control of the construction of the canal when Robert Whitworth died in 1800. The workshops for maintaining the canal could have been here before those at Finsley Gate were opened. The Fletchers were stone masons, and the intricate designs on the tunnel mouth could be the result of their craftsmanship. There is no towpath in the tunnel and when boats were horse-drawn they had to be powered by leggers. These were men, based in Gannow, who, laying on their backs on the boat's deck, moved the boat by walking along the tunnel's walls. Meanwhile, the boat's mate led the horse along the horse road to the other end of the tunnel. Eventually a steam tug was introduced, and this towed boats through

the tunnel at specific times. By the 1930s, many boats had been fitted with steam or diesel engines and the tug was withdrawn.

At the Gannow end of the tunnel, the canal runs under the new motorway and close to the railway junction where the lines to Colne, Todmorden and Blackburn meet. It was also the site of coke ovens, with coal brought down by tramroads from the local collieries. A bit further along the canal, past Gannow warehouse, the canal once again passes under the motorway. This was the site of Rose Grove locomotive shed, one of the few still housing steam engines when British Railways finally ceased steam operations in 1968. The water for the steam engines was pumped form out of the canal! The railway first opened in 1848, and the Mazeppa was one of the earliest locomotives. The driver of this engine was well known locally, and a poem was written about him by local poet, Henry Nutter. Called ***'Old Jim' the Engineer***, one verse goes:

In winter's cold, or summer's heat, I sit at ease with thee,
'Mazeppa's' throbbing voice is sweet, 'Tis always dear to me.
I've not the slightest dread, indeed With thee I've nought to fear.
Then welcome to thy puffing steed, Old Jim, the engineer.

Besides the main line railway, there were also small branches and tramroads in many places around Burnley, such as the one which served the coke ovens near Gannow House. The smaller tramroads were known locally as 'ginny roads'. They were of a narrower gauge than main line railways, and were powered by stationary steam engines. These drove an endless chain to which the wagons were attached and which ran from one end of the line to the other. With this system they could move the wagons between the pit and the coke ovens or canal wharf. Perhaps Burnley's largest standard gauge system served Bank Hall Colliery, which was close to the canal and Thompson Park just beyond the Yorkshire end of the embankment. The last regular cargo on the canal through Burnley was coal from this colliery to Whitebirk Power Station in Blackburn. It ceased at the start of the 1960s, though the canal basin which served the colliery still survives. Few other remains of the colliery can be found as the site has been landscaped. However, it is still possible to walk along the line of railway which passed under the canal alongside the River Brun. The remains of another tramroad can be seen, close to Finsley Gate. The line from Townley Colliery ran through a tunnel at the back of the canal maintenance yard, and the cast iron coal tips are still in place opposite Lambert's mill, on the edge of the Weavers Triangle.

With a large number of mills in a small area, the Weavers Triangle was, at one time, a forest of factory chimneys. Although several remain to give some impression of how they dominated the skyline, the majority have been demolished as factories closed or changed to electric power. In earlier years, air pollution was a problem, with the hills surrounding the town only clearly visible during Wakes Week, the town's annual holiday, when many mill workers went to Blackpool or other seaside resorts. During this week the town's mill chimneys ceased smoking while the mill boilers received their annual inspection.

The mills were also silent during periods of industrial depression. The worst time was, indubitably, during the American Civil War when most mill workers were laid off because of the interruption to the supply of cotton. At this time, most raw cotton came from America, and this ceased to be imported because of the Unionist blockade of the ports in southern America. The price of raw cotton rose rapidly, and some was even sold back to mill owners in northern America. The only other sources were expensive Egyptian or inferior Indian cotton. Between 1862 and 1864 most of the workers in Lancashire textile industry were in terrible distress as mills closed down from lack of raw materials. In Burnley, during the winter of 1862-3, over 9,000 weavers and other textile workers were unemployed in Burnley, and there is no doubt that many were virtually starving. It was a national disaster, and funds were set up all over the country. General Scarlett, with a donation of £500, was amongst those to support the Burnley Fund, and the Leeds & Liverpool Canal Company gave a similar amount to the central fund in Manchester. Schemes were introduced to provide work; sewing schools for women where they made shirts for the army, and, for the men, road and drainage improvement work. Eventually, by the middle of 1865, things began to return to normal as cotton was once more supplied from America.

There were many mills alongside the canal in Burnley, and several historic ones still remain. Perhaps the most interesting is Clocktower Mill on Sandygate. It was first built in 1840 by local mill owner, George Slater. Fires tended to be regular occurrences in cotton mills as the cotton dust was highly inflammable, and following one in 1863, the mill was rebuilt and the well-known clock tower added. It included Burnley's first public clock, purchased at a cost of £20. Across the canal is Slaters Terrace, a unique building, built around 1850. It consisted of eleven terraced houses built

over a warehouse at canal level. Access to the terrace was from the road along an iron veranda. The building stood empty for many years, but has just been converted into an hotel, a new use for an old industrial building.

During the 19th century, the working hours of the workers who lived in the terrace would have been extremely long, sometimes over 90 hours per week. Such times were even worked by children until 1832, when an Act of Parliament restricted children from 9 to 13 years of age to 8 hours per day. Many mill owners were quite happy to have their employees working these long hours, but some were more benevolent. One in particular was John Fielden, whose family owned several mills in Todmorden, just a few miles from Burnley. He began working for the improvement of working conditions in 1816, and became MP for Oldham in 1833. It was he who was the foremost promoter of the Ten Hour Act, introduced in 1847. By this Act, the working hours of children under 18 and women to ten hours per day with a maximum of 58 hours per week. Children continued to work in mills well into the 20th century, and even between the Wars some worked half-time, in the mill attending school for the other half of the day.

Although the majority of people living in Burnley worked in factories or down the pit, there were several old established families who lived on their estates. The two best known were the Townleys of Townley Hall and the Kay-Shuttleworths from Gawthorpe Hall. Today Gawthorpe Hall is owned by the National Trust, who acquired it from the Kay-Shuttleworths in 1970. The hall was erected by the Shuttleworth family just after 1600, though traces of an earlier tower remain as part of the building. The Shuttleworths were Protestant, and Colonel Richard Shuttleworth was commander of the Parliamentary Army in East Lancashire during the Civil War. Subsequently, the Hall was not used much by the family until Janet Shuttleworth inherited it in the mid-19th century. After her marriage to Dr James Kay in 1842, they had the Hall remodelled by Sir Charles Barry, the well-known architect. James took the family name which was to become closely associated with educational improvement. He was the country's first Secretary of State for Education and promoted education for all. The Hall eventually passed to the Hon. Rachel Kay-Shuttleworth in 1953, and it was she who collected the internationally renown textile collection, selected items of which are on display at the Hall.

The Townley Estate can be traced back to feudal times, around 1200, and the oldest part of the house could have been completed 200 years later. It was extensively altered in 1628 and again at the start of the 19th century. The house was sold, together with 62 acres of land, to the townspeople of Burnley in 1901. Today several rooms have been restored and the rest of the house is used as a museum. The grounds include a nature trail and golf course. In Tudor and Stuart times, the Townleys were staunch Catholics, and were often punished for this. One member of the family, Colonel Francis Townley was executed for his part in the second Jacobite Rebellion. As would be expected, the house includes a priest's hole, where they could hide to avoid detection.

Religion was not the only reason for persecution. When the canal was built through Burnley, many of the navvies came from Scotland. The canal's engineer was Robert Whitworth, and when he came to Lancashire in the 1790s to continue the construction of the Leeds & Liverpool Canal, he had just finished the Forth & Clyde Canal in Scotland. He brought with him many of the navvies who had worked with him on that canal. One of these Scots navvies was Alexander MacKenzie. When he first arrived in Lancashire, he stayed at the Chapel Inn in Little Marsden, now part of Nelson, and married the landlord's daughter. Locals in East Lancashire were upset at this influx of North Britons, and there was a riot in Colne. No doubt they were angered by the rise in prices caused by this influx of workers, to say nothing of those marrying local lasses. Things have always been difficult for immigrants in such close-knit local communities.

Alexander MacKenzie went on to greater things. As the canal was built through East Lancashire, he began to take on work as a contractor. He retained links with the village of Little Marsden, returning there for the baptism of his children. In fact, you can follow the progress of the canal by looking at his address in the church registers. He and his family eventually settled in Blackburn where Alexander continued as a civil engineering contractor. His eldest son took over the firm and began work on the construction of railways. When he died, in the 1860s, he left over half-a-million pounds, not bad for someone whose father had started life as a navvy.

It was important for those organising the building of canals to have the support of the important local families. In Burnley, this meant that the canal company needed the support of the Townleys from Townley Hall. Originally, the canal through Burnley was to cross the River Calder higher up its valley, just below Townley Hall. The Townleys complained, saying that it would adversely affect the driveway up to their hall, requesting that the line should be altered. The canal company agreed, even though they had to build a much larger, and costlier, embankment. It also accounts for the sharp right-angled bend at Finsley Gate, as in the earlier plan the canal would have continued straight up the valley from here.

Chronology of events in Burnley

23 March 1798	Burnley Union Co to remove coals lying upon the wharfs adjoining Burnley warehouse and in the wood yard.
1800	Joseph Hill, carrier, allowed space at Burnley.
19 Feb 1801	Warehouse to be built on Bury Road, Burnley.
24 April 1801	John Hall and John Garnett to built Bury Road warehouse, to be completed by 1 August next.
22 Oct 1801	Turning place for vessels to be built at new Burnley warehouse.
7 Jan 1803	William Chaffers appointed warehouse keeper at Burnley, to keep a regular account of the boats which pass and the goods which are taken in and delivered out of such warehouse at 7/6 per week and to have adjoining house rent free.
25 Feb 1803	Advert re unclaimed goods in Burnley warehouse to be put in the Blackburn Mail.
19 Jan 1804	Croft near old warehouse in Burnley to cease being used as wood yard and sold.
29 Nov 1804	John Moore of Burnley wants extension to warehouse for corn trade. He agrees to lease this at 9% of cost price of extension for 7 years.
14 Feb 1805	Bernard Crooke undertakes stone work for new warehouse, with William Hopwood as carpenter.
6 May 1806	Warehouse keeper at old warehouse to be dispenced with.
3 March 1808	Robert Hargreaves asks to make use of water for a steam engine in a mill intended to be built at Habergham Eaves. Allowed at a charge of 1/- per annum.
17 Sept 1813	Burnley old warehouse let to Messrs Dockray & Co for 14 years.
18 Sept 1816	Silvester Bracewell allowed to run packet from Blackburn to Burnley for £6 per month.
1817	rate for packet reduced to 5/- per trip.
17 June 1818	Mr.Haddock to have an assistant at Burnley warehouse due to increased traffic.
1818	New house at Burnley for carpenters
1819	New house Burnley, cost £60-6-5
4 Dec 1822	John Dugdale and Sons to build warehouse at Gannow.
20 Sept 1823	George Haddock, warehouse keeper at Burnley, says James Clegg of Yew Tree Colliery has delivered false bills of lading.
21 Sept 1827	Haddock of Burnley owes Company £657-15-3 and is dismissed for inefficiency.
3 Feb 1831	Col.Hargreaves buys the old warehouse and cottage at Burnley.
16 June 1831	Mr.Robinson asks for the shed at the basin near Burnley to be raised one storey, agreed by committee
10 June 1835	From 1 Jan water for steam engines to be 10/- per annum per HP.
19 Sept 1835	Tyrer, Rigby and Co to have new stable at Burnley.
13 Jan 1836	Letter re cost of water for Hargreaves steam engine since 1808.
10 July 1837	Robinson's workshops at Burnley destroyed by fire.
19 July 1843	Canal police stop people using the towpath in Burnley as a footpath to mills. Owners of factories allowed the use of towpath after payment of an annual acknowledgement.
15 Sept 1843	New warehouses to be built at Burnley and Blackburn.
8 Jul 1845	Smoking in warehouses banned.
12 April 1849	90 feet high cones to be built over the Burnley limekilns to reduce smoke nuiscance.
15 Sept 1853	Burnley Improvement Commission complain about lack of height under Aqueduct.
5 May 1854	John Beeston, agent at Burnley, has absconded leaving a deficiency in his accounts. Supposed to have gone to Australia.John Goodchild appointed in his place at 100gns.per annum.
16 Sept 1859	Burnley Improvement Commissioners granted small piece of land near aqueduct provided no urinals built there.
13 April 1860	James Goodchild, Burnley agent, suspended for repeated irregularities. He is discharged and replaced by Thomas Goodchild who moves from Barrowford at £80 per annum.
18 June 1860	Mr.Slater to build shed on Company's property in Burnley for warehousing cotton. Mr.Butterworth of Burnley wants bank leveled to facilitate unloading vessels.
6 Feb 1862	George Haworth to build saw mill and joiners yard on land by aqueduct, timber imported through Liverpool.
16 Sept 1864	George Slater allowed to fill in small basin near his mill.
2 Aug 1870	Shaft to be re-opened in Gannow to improve ventilation.

15 Sept 1870	Wharfage charges:- merchandize 6d per ton after 14 days timber 3d per ton after 1 month.
4 Aug 1873	Report on warehouses recommends no expansion of those at Burnley.
1878	New house and office at Burnley, cost £901-17-7
3 Dec 1884	Telephone installed between Blackburn and Burnley.
1885	Additions at Burnley warehouse, paving etc, cost £4159-2-11
1 Dec 1886	James Hoyle, boatman, dies in Gannow tunnel, steam tug ordered to assist boats through.
18 Mar 1891	Thomas Goodchild retires at Burnley after 43 years as agent, allowed 10/- per week pension. John Turner appointed in his place at £100 per annum.
19 Jan 1893	Burnley warehouse to be enlarged.
15 Feb 1894	L & Y R complain about canal entering baled cloth traffic from Burnley.
1894	New warehouse at Burnley, cost £439-13-10
1895	New warehouse at Burnley, cost £1364-9-9
1896	New warehouse at Burnley, cost £1350-13-9
20 Aug 1896	Three youths summoned at Burnley for bathing in canal, fined 2/6 each plus costs.
1898	Stables at Burnley, cost £893-18-3
19 June 1901	Boat DIDO sinks at Burnley. Had been used as warehouse boat, loaded with grain for Messrs Greenwoods, allowing water through seams which had dried out.
20 July 1904	Fire at Walker Hey warehouse Burnley on 14 July, caused by spontaneous combustion of cotton stored there.
19 July 1905	Carting at Burnley taken over by Company at a cost not to exceed £500.
1907	Extension of Burnley office.
21 Sept 1922	Walker Hey warehouse destroyed by fire, compensation £8139.

Foulridge notes

From the Canal Company minutes:

1790	Sept 17	Work to start on canal deviation through to Burnley and Blackburn
	Nov	25 persons employed Matthew Oddie, Clerk of Works, 100gns James Fletcher, Overlooker of Masonry, £100 John Harrison, Overlooker of Repairs in Lancs and Overlooker of Carpentry on new works, £100 Samuel Fletcher, Overlooker of Digging, £90 William Shaw, Overlooker of Tunnel, £90
1791	Feb 14	Building locks at west end of tunnel and open part of tunnel to be advertised. The little tunnel and sinking the pits was let to Christopher Smithson and others. Four pits to be sunk, and the little tunnel 3 feet high and four feet wide.
	Feb 15	James Fletcher and Wm Shaw consider wagon way from quarry at Miles Smithy Hill to the tunnel.
	April 15	Smithy built (at Foulridge?) for repairs to proposed steam engine, tools, shoeing horses
	April 16	Public highways from Colne to Gisburn and Colne to Thornton, in Foulridge area, to be indicted as their poor condition impedes work on the canal: ten centres to be made for the tunnel
	June 8	£50 advance to Parkin & Co for the tunnel
	Aug 8	John Tickle and John Wood to complete 200yds at E end of tunnel and 450 yds at W end at 11gns/yard, with 9d/yd bonus at end if agreed. Peter Lead to do carpentry work about the tunnel at 17/- per week
	Sept 16	Much of the cutting at either end of the tunnel completed, with two pits, one for the engine, completed on the tunnel proper. To the east of the engine pit is mud and running sand, to the west hard scaley matter. 130 yards of the little tunnel completed, and about 30 yards of the cut and cover at one end.
	Oct 24	The west end of the tunnel was required to protect the canal from the streams when they flood. Much of the ground in the valley is mud or running sand, and the tunnel tends to follow the harder material which is easier to work.
1792	Mar 23	John Tickle slow in driving the small tunnel, company could employ more men and charge him
	April 23	Samuel Fletcher takes over John Tickle's work
	June 1	John Harrison, Overlooker of Carpentry, Charles Pickmore, Overlooker of Tunnel, and John Hammond, lock keeper at Bingley, are told to stop drinking to excess or they will be discharged.

	June 2	Work to start westward of the tunnel. 80 yards of the tunnel completed (by Murray and McIlquaham), and 600 yards under way. To the west, the little tunnel is driven and the work contracted to John Parkin, '*a conceited ignorant old man that would not be guided, and John Leyburn who run away, so there was no great progress made*'. This work, 450 yards, is now contracted by John Tickle and J Wood, with about 150 yards at the east end.
	July 27	Estimate for tunnel, 800 yards of underground tunnel at £16 per yard, and 650 yards cut and cover at £14 per yard. £21,900
	July 28	Tickle & Wood have driven little tunnel improperly
	Aug 23	Tickle & Wood give up contract, and to pay half their money for rectifying faults. Whitworth to complete the pit sunk for the tunnel and to set up a fire or horse engine as he thinks fit for drawing the water. Separate workmen to be employed on shifts on the little tunnel.
	Nov 8	Earth keeps falling in on the mouth of the little tunnel driven by Tickle & Co; they are to remove it.
	Dec 4	Samuel Fletcher takes over overlooking at the tunnel.
1793	July 8	On the tunnel, 350 yards completed, 90 yards to finish. Excess water causing problems as little tunnel will not be completed for 3 months. Water equivalent to 14 ten foot locks per day and increasing. Four years needed to complete the tunnel.
	Sept 13	Canal at either end of the tunnel almost complete, temporary canal over the tunnel could be built for £1500 which should enable traffic now leaving the canal at Kildwick for road carriage to Colne etc to continue to destination. Land owners to be asked.
	Oct 17	Temporary canal to be completed.
1794	Aug 22	Canal to be opened to Foulridge asap. Company's horses to be used for hauling goods to Burnley etc when available.
	Nov 7	Whitworth and Fletcher to look for a site for a reservoir at Foulridge. Colne residents ask for help in repairing road from Colne to Kirk Bridge. No relief given as reduction in traffic between Colne and Kildwick will compensate for increase on road to Foulridge, which is in poor state.
1796	April 28	Tunnel to be opened Tuesday next.
	May 4	Times for entering the tunnel, from East, 12-1, 4-5, 8-9 am and pm, from West, 2-3, 6-7, 10-11 am and pm.
	June 2	Tunnel times reduced from one hour to a half hour, 20/- fine for not complying.
	Sept 2	Tunnel faulty, so crane moved from Foulridge Wharf to Daubers Bridge to accommodate traders.
1797	Feb 16	James Priestly appointed at 70gns/annum to look after tunnel, feeders, reservoirs and lock keepers at Greenberfield and Barrowford, Rain Hall Rock and warehouse at Foulridge.
1815	Mar 1	Engineer to make a plan for a two storey warehouse at Foulridge
1818		Summit level deepened
1824/5		Major tunnel repair

The Tunnel

Robert Whitworth had surveyed new routes for the Leeds & Liverpool Canal in 1788, and he was appointed Engineer in 1790. He started work after completing the Forth & Clyde Canal, and he brought several Scots navvies with him. At that time, the plan was for locks rising thirty feet at Foulridge to reach the summit. He lowered the level, but the tunnel had to be built instead.

John Rennie, soon to become famous as a canal engineer, visited Foulridge in 1791, and described how the cut-and-cover section was built: The soil I saw is mostly a soft loamy kind and is obliged to be supported with wood on each side. But when sudden rains come, it often, in spite of the wood, slides in and the expense of getting it out again is very great. They have hitherto taken out too much earth at one time so that the masons could not follow them as fast as should have been done, but now they take it out by 8 yards at a time which is the length made for the arching. The top of the work is covered with large logs of timber and there are gins erected for lowering the stones and lime for the building as it is wanted. The centres of the arches are ingeniously enough constructed.

Work on the tunnel began early in 1791. Each end was built on the cut-and-cover system, where the ground was excavated, the stone lining of the tunnel erected, and the earth replaced. Only the central section was dug through rock as a true tunnel. Contractors undertook the work, but in August, 1792, they gave up, and the tunnel was finished by Samuel Fletcher, an employee of the canal company. He became the Canal Engineer from 1800 until his death in 1804, this role then passing to his brother, James. By mid-1793, 350 yards of the tunnel were completed, but work was

slow and difficult. The canal opened to Foulridge Wharf in August, 1794, though it was almost two more years before the tunnel was completed.

The tunnel was described as: '*1630 yards in length, and 23 yards below the highest point of the hill; the soil of which proved so loose, that only 700 yards could be worked underground; the remainder was obliged to be opened from above, from ten to twenty yards deep, and twenty to thirty yards wide at the top. The sides of the excavation were supported by timber, at an immense labour and expense, to prevent the earth falling in, until the tunnel arch was constructed. This is eighteen feet high, and seventeen feet wide within side, and is formed of stone. This tunnel was completed, and the line opened to Burnley, May 1st, 1796.*'

No deaths were reported in the company minutes during construction, and no burials of canal builders took place at Colne Parish Church during the period, apart from Matthew McCleary, 27, who died in August 1793 of a slow fever. Another navvigator may have been buried at Gill Church. Over the same time, several children of navvies were buried, living conditions of the time being just as dangerous as work. However, in August, 1791, George Clark, Hugh Frazer, Alex Frazer and James Frazer were recorded as injured by a scaffolding fall in the tunnel. Perhaps the framework holding back one cut-and-cover section had collapsed. A local surgeon paid for attending to them, and compensation was given to the men, so their injuries must have been serious.

By 1879, around 90 boats were passing through the tunnel each week, and the leggers were replaced by a steam tug. The tug was built at Hodson's boatyard at Whitebirk, and was double-ended so that it did not have to turn around after each journey. The wooden hull was replaced in 1909 by a steel hull built by Yarwoods of Northwich. Traffic decreased, and by 1930 there were just 13 boats using the tug each week. The service ended on the 3rd March, 1934.

When the tunnel was first opened, boats could enter for half an hour at 12, 4 and 8 o' clock from Foulridge, and at 2, 6, and 10 o' clock from Barrowford. There were always rules for going through the tunnel, and boatmen often sought ways around them. Even after the steam tug had been introduced, some boatmen legged their boat through in order to save the cost of a tow. Boatmen were also supposed to put their cabin fires out in order to reduce the possibility of suffocation but, despite this, there were a few such accidents.

The original tunnel tug was built at Hodson's boatyard at Whitebirk. It was double-ended, so that it did not have to turn around after each journey. The tug's wooden hull was replaced in 1909 by a steel hull built by Yarwoods of Northwich. Traffic decreased, and by 1930 there were just 13 boats using the tug each week. The service ended on the 3rd March, 1934. When the tunnel was first opened, boats could enter for half an hour at 12, 4 and 8 o' clock from Foulridge, and at 2, 6, and 10 o' clock from Barrowford. There were always rules for going through the tunnel, and boatmen often sought ways around them. Even after the steam tug had been introduced, some boatmen legged their boat through in order to save the cost of a tow. Boatmen were also supposed to put their cabin fires out in order to reduce the possibility of suffocation.

After the tug stopped, permits were issued to control passage. A motor boat was allowed to tow another boat, but there were problems if that was also a motor boat. Boatmen on the second boat started their engine as soon as they were inside the tunnel, saving perhaps a minute on the time to pass through the tunnel, but increasing the fumes in the tunnel. Traffic lights were used in the 1950s. They were re-installed recently as boats had sometimes became stuck trying to pass in the tunnel. Maintenance of the tunnel was always a high priority, as its closure required cargoes to be carried by road between Foulridge and Wanless or Barrowford.

The tunnel was closed for major repairs in 1824, 1843, 1850, 1856, 1898, 1901, 1902, 1910, 1934, 1984, and 1987. In 1824, water was seeping through the roof of the tunnel, in 1843, a cast iron bridge being carried by boat struck the tunnel lining causing severe damage, while the 1902 stoppage was required after the Foulridge to Barnoldswick road collapsed into the tunnel.

By 1879, around 90 boats were passing through the tunnel each week, and the leggers were replaced by a steam tug in 1882 after legger J H Widdup was suffocated, either from the smoke from the boatmen's fires or, according to legend, during a fight aboard one of the boats in the tunnel. Some boatmen still preferred to leg their boat through the tunnel, as it saved them paying for the tug's services. The leggers, who moved the boats through the tunnel, had to be registered with the canal company to ensure that they were of good character. It was the sort of job which could attract itinerant workmen of poor morals, and their employment would reflect badly on the canal company. The leggers were paid by the boat owners and not by the canal company.

Foulridge became quite an important centre on the canal, and in 1851 five boatmen were resident in the village, as was Joseph Hodgson, who legged boats through the tunnel, and Robert Nelson, a canal policeman. The canal police

force had been set up in 1841, the year after the Canal Police Act had been passed. They were not just interested in theft from boats and warehouses, but also controlled trespassing on canal property and ensured that canal life ran smoothly. It was Robert who probably looked after the leggers, ensuring that only registered men were employed.

The Warehouse

When the canal opened from Gargrave to Foulridge in 1794, a wooden warehouse was provided at Foulridge. The present warehouse was built in 1815 at a cost of £378-18-11.

James Priestley was appointed in 1797 to look after trade at the warehouse at 70 guineas per annum. He was in charge of the tunnel, the lock keepers at Barrowford and Greenberfield and the limestone quarry at Rain Hall, as well as the reservoirs and the canal's water supply.

Goods, such as textile raw materials for local mills and general merchandise and food stuff for shops in Foulridge, were handled at the warehouse. At first, goods to and from Colne would also use the wharf at Foulridge, though later, after a warehouse had been built next to the locks at Barrowford, most Colne traffic was handled there.

Water

For many years, Foulridge Wharf was where weekly records were compiled, showing how much water had been used and how much was in the reservoirs. Water also came from streams feeding into the summit level, and it was estimated that twelve locks-full daily came from water leaking into the tunnel. In 1818, the summit level deepened to provide an extra reservoir.

Comparatively few boats passed over the summit level, the main canal traffics being between Liverpool, Blackburn and Burnley, and between Leeds and Shipley. Water from Foulridge supplied the locks lower down the canal, and replaced water lost by evapouration and leakage, which could amount to a third of the total water used.

Salterforth-Greenberfield History

The canal between Greenberfield and Salterforth was opened in 1794. At first the locks comprised a single lock and a two-rise lock, where the upper gate of the lower lock was also the lower gate of the upper lock. You can still find the original road bridge, lock cottage and a short section of the old canal just to the north of the present locks. The locks were replaced because riser locks use more water than single locks. To save water, three single locks were built in 1820, four years after the canal had opened throughout. The water for the canal came originally from streams and reservoirs at Foulridge. Water supply had to be improved as traffic on the canal increased, and a new reservoir was built at Winterburn in 1893, a pipeline linking the reservoir with Greenberfield. Just beyond the lock keeper's house, is the water outlet into the canal, inscribed with its opening date, 17 August 1893.

Near the present middle was Gill Rock quarry which had a tramroad from the quarry to a wharf next to bridge. Most remains were removed when the new Skipton Road was built around 1930, but the parapet of the road bridge over the tramway still survives. It was expected that limestone would be a major canal traffic, and there are several limestone quarries close to the canal, besides the one at Greenberfield. The most interesting is the Rain Hall quarry at Barnoldswick which was owned by the canal company. A branch canal left the main line and passed through a tunnel into the quarry, with stone being loaded directly from the quarry face into waiting boats. There were three more quarry wharfs between Barnoldsick and Salterforth, with tramways bringing stone down to the canal side for transhipment.

At the top of the locks, the Settle Canal, proposed in 1772, would have joined the Leeds & Liverpool Canal. It was never built, but its route would have made its way up the Ribble Valley to Settle. Only one lock was needed, close to Settle, the canal following the 150 metre contour, the same height as the Leeds & Liverpool Canal's summit level from Greenberfield to Barrowford.

Although it is a trans-Pennine canal, most traffic used the sections from Liverpool to Burnley or from Leeds to Bingley. Compared to the rest of the canal, there was never a large trade over the summit, though it was significant. Boats loaded with cargo continued to pass through Greenberfield locks until the early 1960s, by then mainly sugar and wool from Liverpool to Yorkshire. There were even a few trial loads in the 1970s, when enthusiasts tried to resurrect traffic on the canal. However, it was the hard winter of 1963/4 that effectively brought an end to trade over the canal's summit and main line. In the '60 and '70s pleasure boat numbers increased rapidly, and today this is one of the most heavily used sections of the canal.

The road above Greenberfield Locks: an historical survey

The construction of canals was the first time that large-scale works over a long route had required management. Planning, including assessing land requirements, was purely outline, with the actual land used being itemised and paid for after the works had been completed. Detail land usage problems had to be addressed on the spot, and this did occasionally cause problems. Canal Acts included clauses which authorised Commissioners to adjudicate on arguments between land owners and the canal company with regard to land valuation and compensation for damage. It says much for the way society operated then that such Commissioners were rarely required. For other problems it was possible for land owners to go to court, but again this was unusual. However one place where this did happen is Greenberfield where the local land owner, John Bagshawe, had to go to law to try to settle his arguments with the Leeds & Liverpool Canal Company. A major part of the argument concerned the construction of accommodation bridges, to serve pieces of land isolated from the estate by the construction of the canal, and the diversion of a public highway.

Although the canal at Greenberfield was built between 1791 and 1794, the legal arguments over the bridges and road were not completed until 1800, the final payments for the land not being made until 1825. A legal judgement was made in 1799 against the diversion of the highway, but this was not complied with, possibly because the death of John Bagshawe in 1801. He lived on one of his other estates in Derbyshire and was not in a position to oversee matters at Greenberfield as his health failed. His heirs had little interest in the estate and did not press for the damages caused by the canal's construction to be restored.

Many roads were crossed by canals, and the problem of bridges was recognised by standard clauses being inserted into canal Acts. The first Act for the Leeds & Liverpool Canal gave the right to build bridges over the canal and to alter their approaches. Such clauses must have been found to be insufficient to cover all aspects of roads crossing the canal as the second Act contained the following clause:

1783 Act, 23 Geo III, cap 47. XXII And whereas some of the bridges erected and made by the said Company of Proprietors over the said cuts or canals, and the approaches to such bridges, in several of the public highways and roads leading thereto, have been found to be very inconvenient and dangerous to persons passing and repassing over the same; and it is expedient that a summary method of remedying such inconvenience should be provided; for which purpose, be it enacted by the authority aforesaid, that the Company of Proprietors shall from time to time, and at all times hereafter, well and sufficiently amend and keep in good repair all and every the bridges already erected and made, or which shall hereafter be erected or made in any public highway or road, by virtue of or under either of the said recited Acts, or of this Act, or any of them, and also shall amend and keep in good repair all and every the wing walls belonging to such bridges, with the road over, and so much of this road or approach leading to or from such bridges, as shall either lie or be within such wing walls, or the land adjoining thereto, which hath been or hereafter shall be taken by or on behalf of the said Company of Proprietors, for the use of the said cuts or canals; but if such bridges, wing walls, or such part of the roads or approaches thereto as aforesaid, have not been or shall not be effectually made, or shall not at all times hereafter be kept in good repair and condition, it shall or may be lawful to and for any two or more of His Majesty's Justices of the Peace for the County, Riding or District, in which such bridge, highway or road shall lie, upon complaint thereof being made to them, to cause the treasurer or clerk of the said Company of Proprietors residing next to such bridge, highway or road, to be summoned to appear before such Justices at such time and place as they think fit (of which twenty days notice shall be previously given to such treasurer or clerk) to shew cause why such bridge, wing walls, highway or road shall not be effectually made or repaired…

The third Act continued the defining of the rights and responsibilities of the canal company. Until this time, many of the bridges across the canal had been built as swing bridges, with all their associated problems in operation. This Act restricted swing bridges to locations where local people approved their use. Many which had already been built, particularly in the Liverpool area, were converted to over bridges, and few new swing bridges were built on the canal following this Act. The gradient of the approaches to over bridges were also defined to ensure that horse-drawn vehicles could pass such bridges without too much effort. The relevant clauses were as follows:

1790 Act, 30 Geo III cap 65, XIII And whereas doubts have been raised whether the Company of Proprietors of the Canal Navigation from Leeds to Liverpool are liable to be indicted for not making or keeping in repair bridges, wing walls and ramparts in highways over and across the navigable cut or canal from Leeds to Liverpool now erected in or belonging to the said Company, by virtue of or under any Act of Parliament now in being, and whereas the wooden and swivel bridges at present erected in many highways over the said cut or canal are dangerous and accidents

happen, and great obstructions to the passage, by the frequent want of repairs of the said bridges, and by neglect in turning and fastening the same, and the very great difficulty of detecting and punishing by laws now in being the persons neglecting to turn and fasten the said swivel bridges, be it therefore enacted that the said Company of Proprietors shall make stone or brick bridges in all highways not otherwise provided for by this Act over and across the said cut or canal already made by virtue of any former Act, together with the wing walls, ramparts and side banks belonging or approaching to, over, and from such bridges, such approaches not to be steeper than two inches and a half in a yard length, and so in proportion of ascent in all places not otherwise provided for by this Act…

XIV And be it also declared, that the said Company of Proprietors shall be liable to be indicted at Common Law for not making stone or brick bridges in all highways over and across the said cut or canal already made and opened where they can be made by approaches not steeper or of greater ascent than two inches and a half in every yard in length, and so in proportion, within two years next after the passing of this Act.

XV Bridges to be kept in repair

XVI Justices to decide if swivel bridges can be used.

The requirement for over bridges caused problems for the canal's engineer. Canals are usually built on contour lines, so where the slope was great, the bridge approaches on the lower side of the canal needed much embanking. Such approaches often lie parallel to the canal, the road turning sharply through ninety degrees to cross the canal. From the engineer's point of view, and from the canal company's in view of the extra cost, over bridges at sloping sites were best avoided. This was the case with the old highway at Greenberfield which it was decided to divert so that an easier location for a bridge could be used.

Construction of the canal had stopped after the sections from Gargrave to Leeds, and Wigan to Liverpool had opened by 1781. Money was in short supply, probably because of the American War of Independence. The economy had improved by 1790 when work began again on building the canal from Gargrave up to the summit level. Robert Whitworth was taken on as the engineer, and he brought many Scots navvies down from Glasgow where he had just finished the Forth & Clyde Canal.

He made several alterations to the route. The original route had been through Padiham and Whalley to Leyland and Parbold. The 1790 Act authorised a line from Barrowford to Whalley to the south of the River Calder and thus avoiding the large aqueduct at Whalley. At this time he also lowered the proposed summit level by about thirty feet, avoiding locks at Foulridge and extra locks at Barrowford, but requiring Foulridge Tunnel. The lower summit level improved the possible water supply to the canal. The following 1793 and 1793 Acts authorised a complete change in the route to the present line through Burnley and Blackburn to Wigan.

The canal immediately above Greenberfield locks was to pass through the lands of Benjamin Ferrand and John Bagshawe. The existing highway crossed the line of the canal twice, and Whitworth first suggested just building one bridge, below the two-rise summit lock, at this time. A new road alongside the canal would be built to the bridge. Part of the new road was through Benjamin Farrand's land, and he complained vigorously about this. As a result, the length of road through his land was halved and a second bridge over the canal above the locks was to be included. The bridge, located on relatively level ground, was at a much better site than where the old highway was crossed by the canal. There the land sloped down sharply and this would have required extensive approaches on the lower side. Bagshawe was not consulted about the new road. Work on setting out the line of the canal through Bagshawe's Greenberfield estate began in September 1790, with Whitworth trying to deal just with the tenants, Thomas Thornber at Greenberfield and Peter Hartley at Cotes Flatt, possibly because Bagshawe did not visit Barnoldswick very often.

The Bagshawe family had owned Coates Hall Estate, Barnoldswick, for several generations. The owner when the canal was being built was John Bagshawe junr (1758-1801). He was the son of Col. Samuel Bagshawe (?-1762). His guardian after his father's death, William Bagshawe (1713-1785), owner of Coates Hall, died in 1785 and William's estates passed to his brother, John Bagshawe, (1715-1791). John junr inherited the estate, which included Cotes Flatt farm, Greenberfield farm and Hall farm, and the nearby mill, in 1791 from John Bagshawe senr. The various wills associated with John Bagshawe's Coates inheritance were not well written and this was to cause problems with the sale of land used for the canal to the canal company.

On Feb 2nd, 1791, notice was issued by the canal company that they wanted to purchase lands now set out for the canal. Work was begun, but by the end of May Bagshawe, through his agent Mr Starkie, delivered a Discharge requiring the workers to vacate his land. Agreement had not been reached over the price of the land, partly because the canal company were not happy with its legal ownership after looking at an abstracts of the William Bagshawe

will. Work on the canal was to continue, with the company saying it would defend in court any attempt by Bagshawe to remove the workers. Bagshawe responded by sending a further abstract of William Bagshawe's will, though this was not to solve the problem. However, on 17th October, 1791, the canal company paid £350 on account for Bagshawe's land to Micah Hall, the surviving Trustee named in William Bagshawe's will.

Also in February, 1791, construction of the eight Barrowford locks and the open part of Foulridge Tunnel was to be let, as well as work at Gargrave. By June. work in the Greenberfield and Holme Bridge areas was let, and in September, Whitworth reported that James Hudson, the contractor for bridges on the summit level, had only built the Salterforth aqueduct, the County Brook aqueduct, and two road bridges. Preparations were in hand for the other bridges, with 20 masons, 20 quarriers and labourers, and eight carts at work. He was expected to finish the contract by the end of the year.

In, December, 1791, a revised line of canal, through Burnley and Blackburn, was authorised to be surveyed, and on the route already confirmed work westward from tunnel started in June 1792. (The two routes diverged towards the bottom of Barrowford Locks) By this time work at Greenberfield was well underway and in October John Bagshawe junr first complained to the canal committee about the construction of the road across his lands and other matters. As Robert Whitworth had suggested in 1790, during construction of the canal a deviation of the old highway had been built to avoid the erection of a bridge. Unfortunately this road was between land where Bagshawe was developing a limestone quarry and the canal, and would have caused him problems with moving and loading the limestone.

Difficulties with Bagshawe continued, the canal committee discussing his memorandum regarding his demands for extra accommodation bridges, culverts and payment for damages in October 1792. Most of the culverts were in hand, but the bridges were still thought unnecessary as the bridges being built were considered to be sufficient. In, June, 1794, Bagshawe put his proposals as to how the various problems caused to his property by the canal's construction could be alleviated to the canal committee. Work on the canal in the Greenberfield area was now almost complete as it opened to Foulridge in August, 1794. In that month the committee suggested that they pay £120 to Bagshawe per occupation bridge instead of constructing them (This was more than the cost of building the bridges) and also rent the fields which had been isolated. Regarding the road, they suggested either building a bridge where the old highway crossed the canal or building an arm into Bagshawe's quarry with a bridge for the road to overcome the problem of access to the canal across the road. Bagshawe would have none of this, and he asked his solicitor to give notice for a Commission to look into his problems with the canal's construction as allowed by the canal's Acts.

Two years later Foulridge Tunnel opened in May, 1796, though the canal company's dealings with Bagshawe were still not finalised. In June they had raised their offer to £160 per bridge as compensation for not building them. The committee accepted his proposals in July, 1796, and some of the problems were addressed. The company agreed to make a bridge over the arm into the quarry if Bagshawe should make this. But Bagshawe was still not happy. In June, 1797, he said the road would be stopped up and destroyed unless agreement was reached. By this time the bridge above the locks would have been built and the road opened to the public despite Bagshawe issuing notices about trespass on his land.

There were new tenants at Greenberfield farm, John Waite and his sons, and they set about closing the road with gates and brushwood which were removed by canal workers. Damages were sought by Bagshawe at York Assizes in April, 1798, but the court found against him suggesting that the road was a public highway. The Waites continued to erect gates, and just a regularly canal workers removed them, once with John Waite junr still clinging to a gate. As set out in the Act, he eventually called for Commissioners to be brought together to make a decision on the various uncompleted works on his lands. They reported, giving the following legal orders to the canal company, on the Nov 9th, 1798.

Culvert from Bowker Ing, no order necessary; Back drain on lower side of canal, no order necessary; Arch tunnel or passage in the Butts occupied by Thos and James Thornber, no order necessary; Arch tunnel or passage in Benj Ferrand's estate occupied by Thos Cockroft, no order necessary; Two watering places for cattle to be made in fields called the Banks and the Croft; Dividing and separating the towpath adjoining the canal other than as now done, no order necessary.

Two bridges to be made, one in the Croft at the west side of Coates Hall, and one in the Banks within 200 yards of the old road at a place decided by Thos Cockroft of Bracewell to serve lands tenanted by John Waite and Henry Parkinson.

It seems that between July, 1796 and the summer of 1798 the canal company had completed most of the necessary works, with just several watering places and the two accommodation bridges linking fields in Bagshawe's estate requiring construction. Both these bridges, called Banks Bridge and Hawcroft's or Eastwood Bridge, were removed in the twentieth century.

The diversion of the old highway continued to cause problems. On 8th March, 1799, Joseph Priestley, the canal's

manager, wrote to Bagshawe asking for terms regarding the continued use of the diverted road until such time as a bridge could be built on the line of the old highway. Ten days later he wrote again on the same subject. Bagshawe may have been waiting for the result of another meeting of Commissioners at Barnoldswick who were looking into compensation for damages caused during canal construction requested by his tenants.

Bagshawe would not be appeased, and he took the canal company to the York Assizes where, in April, 1799, he was vindicated in his attitude to the road. An Order was made at the Quarter Sessions for a wooden or swivel bridge with an ascent of four and a half inches in the yard and no more to be built on the line of the old highway. However, all his opposition to the canal company had taken its toll on Bagshawe, and he died in 1801. It seems unlikely that a bridge on the line of the old highway was built as no such bridge appears on the 1826 survey of the canal, though the bridge narrows are indicated. Perhaps just the foundations had been installed. A list of canal bridges compiled in 1843 also does not show a bridge for the old highway. Perhaps, with Bagshawe's death, his heirs were not too concerned with the development of the Coates estate. Financial matters over the purchase of the land and the damages were not settled until 1825, some thirty-five years after work on the canal at Greenberfield had begun.

The road seems to have continued as a public highway, despite legal judgements against this. The two canal bridges caused problems for traffic, particularly with the increase in motor vehicles, and a diversion opened, through Farrand's former limestone quarry, in October, 1934. Who was responsible for the maintenance of the road and its canal walls? This must have been a continuing problem until 1940 when an agreement was reached with West Yorks CC over repair of the road and burr wall.

L&LC Lengthsmens Book, Bank Newton

A book in Liverpool Museum gives the three-monthly returns for the three men, probably carpenters, employed at Bank Newton, Oct 1860-Feb 1870, with a daily description of work done, and an account of money spent each 3 monthly period by the foreman. The men were employed from Amblethorpe to Rain Hall Rock

Oct-Dec 1860	*days*
Lock work	22
Sawing timber	14
Bridges	10
Fencing	10
Blacksmith's work	£3/17/11
Paint and oil	9/7
Ale for unloading wood	2/6

Oct-Dec 1860	
unloading oak	2
wheelbarrows	6
lock clows	8
bridges	10
lock striking pieces	2
coffin making	2
sawing	14
forebay	1
fencing	10
tidying yard	2
taring new lock gates	2
new gates	9
repairing wheelbarrows	1
flood gate	2
stowers etc	2
other	1

Jan-March 1861	
new wheelbarrows	12
sawing	15
ice breaking	2
new bridge	12
bridges	9
new lock gates	7
new clow	1
locks, general	5
loading wood	2
old wheelbarrows	8
warehouse	1

April-June 1861	
Lock work	26
Sawing	13
loading wood	1
bridges	14
new building	12
fencing	4
new bridge	3
wheelbarrows	1
lock house	3

July-Sept 1861	
lock house	13
locks	16
sawing	20
fencing	3
bridges	9
dredging	1
crane	1
other	14
new lock gates	2

Oct-Dec 1861	
sawing	29
other	9
lock houses	5
locks	21
bridges	7
new lock gates	5
repairs to ice boat	1
warehouse	1

Jan-March 1862	
ice boat	1
other	10
sawing	21
locks	24
bridges	14
fencing	3
wheelbarrows	5

April-June 1862	
(June 16-27 for lock maintenance)	
bridges	18

locks	38
wheelbarrows	1
sawing	10
other	11
fencing	1

Sept 1862 (July-Aug missing)

bridges	8
sawing	12
locks	4
other	1

Oct-Dec 1862

sawing	15
other	21
locks	10
bridges	13
lock houses	11
wheelbarrows	2
fencing	6

Jan-March 1863

fencing	2
wheelbarrows	3
bridges	20
locks	14
sawing	18
other	10
lock houses	10

April-June 1863

bridges	29
locks	24
fencing	2
sawing	16
other	6

July-Sept 1863

locks	33
other	8
bridges	14
lock houses	4
wheelbarrows	8
sawing	

July was the usual month for lock maintenance.

Wages, foreman 4/- per day
Carpenter 3/6 per day
Apprentice 1/- per day, rising originally by 2d each year
1866 November, flood at Springs Branch, 5 weeks to repair 12

Some notes on the Leeds & Liverpool Canal in Skipton

It was the construction of the Aire & Calder Navigation, opened in 1700 to Leeds and Wakefield, that marks the start of the Industrial Revolution. Never before had merchants and mill owners invested in the local infrastructure to improve the local economy. Their success led to other river navigations, those around Liverpool mirroring the success of the Aire & Calder.

In Yorkshire, there were proposals to make the River Aire navigable further up the valley, from Cottingley Bridge, near Bingley, to Inghay Bridge, close to Skipton, in 1743. he main reason behind the proposal was the carriage of coal from pits around Stockbridge up to Skipton where it was to be used in lime kilns. Both lime and limestone were to be carried back down the navigation. Lime was an important commodity at the time. It was used as a fertiliser to improve agriculture, such as the grass for sheep production. The increase in wool led to an increase in textile manufacture, where the two-storey weavers cottages required lime for mortar and for decoration. The developing iron industry around Bradford also used limestone to purify the iron before casting.

The proposed navigation failed to get its Act of Parliament, but the idea for a waterway up the Aire Valley remained. It was taken up by John Stanhope, a Bradford attorney whose family were involved with textiles. He asked John Longbotham, a Halifax engineer, to draw up a scheme for a canal to link Leeds with the Irish Sea. At first the western terminus was to be Preston, but this was soon changed to Liverpool where merchants had already seen the benefit of inland navigation, and they were much more willing to invest in the project.

The Bradford investors retained their central role in developing the scheme, proposing a route up the Aire Valley, across the Pennines at Gargrave and then via Padiham and Whalley to the Ribble Valley, finally crossing the West Lancashire plain to Liverpool. This enabled the canal to reach the maximum area of limestone production, as well as a short route to Liverpool for general cargoes. However, the Liverpool investors wanted to improve the supply of coal to the town, and suggested a route through Wigan, Blackburn and Burnley to Gargrave. Because of this, the two groups fell out, and the project only continued because John Hustler, another attorney from Bradford who had taken over control after Stanhope's death, was able to reconcile them. It was agreed to follow the Yorkshiremen's line, but to build from either end simultaneously. In Lancashire there was to be a branch giving access to the Wigan coalfield. Limestone was still considered to be the most important traffic, with a promotional leaflet of 1768 suggesting that 17,000 ton miles of lime and limestone would be carried against 3,500 ton miles of coal and 5,333 ton miles of general cargo.

Although they expected to carry five times more limestone than coal, the promoters had not realised the effect that the canal would have on industry. Coal quickly became the major traffic, and by the late-nineteenth century more than ten times more coal was being carried compared to limestone. However, the limestone traffic was important, with a maximum of 150,000 tons per annum being carried, more than the total tonnage of goods carried on some small English canals. The Leeds & Liverpool Canal obtained its Act of Parliament in 1770.

Local involvement

Skipton was one of the main centres for initial investment in the canal in 1770. Some £29,400 was raised in the town, only Liverpool, with £59,900 raised more. Bradford raised £26,600, less than Skipton despite being the centre for the canal's promotion. Leeds, Sheffield and Colne all raised less than £14,000, with Keighley raising just £8,800. This suggests that Skipton people were wealthy and that they were prepared to invest in new enterprises to a much greater extent than many larger towns. Two factors could have affected this. One was the desire to exploit limestone resources on local estates, and the other was to improve trade links as Skipton was one of the more remote towns from which subscriptions to the canal was sought.

The main classes of people investing in the Leeds & Liverpool Canal were 'capitalists and merchants' 36%, 'tradesmen' 19%, 'landed gentlemen' 16%, and 'professional men' 13%, all percentages higher than for canals in the Midlands and south of England. The figures show that the canal was most important for those wanting to develop their business. However, it would not have received its Act of Parliament without the support of local land owners through whose property the canal was to run. In the Skipton area, these land owners were probably looking to the benefits brought by the canal for the transport of limestone, both for quarry owners and agriculturalists. For the latter, the canal would provide not only lime fertiliser, but also cheaper foodstuffs for stock in winter.

There were three canal schemes associated with the Leeds & Liverpool Canal: the Settle Canal, the Bradford Canal, and the Earl of Thanet's Canal. The first was to run from Barnoldswick to Settle for the carriage of limestone and to serve coal mines near Settle. There was considerable opposition from local land owners and its Bill was thrown out by Parliament in 1774. The Bradford Canal was promoted by the Bradford group on the Leeds & Liverpool Canal, and it obtained its Act of Parliament at the same time as the main canal. Limestone from the Craven district was one of its major traffics. Limestone was also the reason for the Earl of Thanet's Canal, its Act of Parliament dated 1772. Its other name, the Springs Canal comes from its original terminus, The Spring, near Skipton Castle. This was on the site of the current Mill Bridge, the canal being extended to its present terminus in 1794. When the branch opened, limestone came from Mercer Flatts Quarry, now known as Massa Flats behind the Girls Grammar School. This quarry was connected to the branch terminus by a tramway. It may have closed in 1794 when the branch was extended and Haw Bank Quarry developed.

The Leeds & Liverpool Canal opened from its junction with the Bradford Canal, at Shipley, to Gargrave in 1773, the Liverpool to Parbold and Wigan section opening the following year. In Yorkshire, the extension down to Leeds opened in 1777, with construction virtually ceasing afterwards due to lack of finance. War with France and the American War of Independence cause problems with the British economy, and it was not until 1790 that construction from Gargrave began again. However, with the two isolated sections of the canal completed, the investors had achieved much of their requirements; limestone from Craven to Bradford, and coal from Wigan to Liverpool could now be carried cheaply by water. In fact these sections were so successful that much of the construction of the rest of the canal was paid for by the profits they were making. Foulridge was reached in 1794, Burnley in 1796, Clayton-le-Moors in 1801, Blackburn in 1810, and the canal opened throughout in 1816.

When canals were built, they almost invariably were built on cheap land on the outskirts of existing towns. Built by private investment, there was rarely money for elaborate or expensive construction. The route of the canal around several towns is typical, with Silsden, Blackburn and Burnley being good examples. In Skipton the canal also skirted to the south and west of the existing town. Some relatively expensive land was used, such as that belonging to Skipton School on Belmont Street, for which over £110 per acre was paid. Outside of the town, values were more like £20 to £60 per acre. This gives some idea of the additional costs required for building a canal close to the centre of existing towns, and why they were avoided. The same factors affected the location of railways. Once a canal was constructed, towns tended to develop towards the new facilities, particularly factories and their associated housing.

The canal provided Skipton with a new supply of water, the towns own water supply not being authorised until 1823, fifty years after the canal opened. Two particular benefits the canal water brought were an adequate supply for fire-fighting, and a supply for industrial uses. After the high pressure condensing steam engine was developed for mills in the mid-nineteenth century, nearly all the new mills in Skipton were built alongside the canal. The main reason for this was the availability of a large supply of water for condensing the engines' exhaust steam. This created a vacuum and made the engines much more efficient. The canal was also regarded as useful for sewage disposal, the 1857 Report on the health of the town stating: *'The branch (Springs Canal) is the receptacle for filth etc, from houses and yards, and is thus rendered little better than an open sewer.'* (In 1856, a Shipley firm asked for 300 galls/day for

washing wool. This was to be allowed if the water was returned filtered, *'the canal water is bad enough as it is'*.) In the early twentieth century, an increased water supply from the beck at the end of Springs Branch was suggested as beneficial to the condition of the water. The flooding of the Belmont and Coach Street area in 1908 was a direct result of the beck breaking through into the branch canal.

The original Act for the canal, 10 Geo III cap 114 regulated the construction and usage of wharfs and warehouses. Land owners were authorised to build warehouses on their own land and they could charge for their use over and above the tolls charged by the canal company. If the canal company wanted a warehouse they could apply to the land owner in writing. If he did not erect one inside twelve months then the canal company were allowed to build one. No charge could be made for goods which only remained on the wharf for six hours. If they remained longer, wharfage of 1½d per ton could be charged for coal, stone or brick, and 3d per ton for other goods. Six days was the official maximum time goods could remain on a wharf. Cranes or weighing machines could be erected by the canal company.

The warehouse at Skipton was built by the Earl of Thanet, and remained private property until purchased, together with Silsden warehouse, in 1958. Although not owning the property, the canal company did improve facilities, such as by the construction of stables in 1894, and an office for the local canal Inspector the following year.

Goods handled at the warehouse is difficult to identify as few records survived. Fortunately, for six months after the canal opened to Blackburn in June 1810, the goods arriving by canal were notified by the local paper, the ***Blackburn Mail***. The following are some of the goods mentioned over the first two months: Beans, Bran, Brandy, Butter, Calico pieces, Canvas, Cast iron, Cast iron pillars & boskins for stables, Clog soles, Cloth, Cotton, Currants, Flags, Flax, Flour, Glass, Gunpowder, Linen cloth and yarn, Nails, Ovens, Paint, Pine timber, Rushes, Soap, Sugar, Weft, Whiting, Woollen cloth and yarn. Similar goods would have been handled at Skipton, and some, such as building materials, would have had an effect on the buildings of the town. The completion of the canal to East Lancashire would have allowed bricks to be imported into Skipton, with companies such as Burnley Brick & Lime having a fleet of boats into the mid-twentieth century. Stone flags from Rossendale could also have been carried, and there were certainly wharfs for handling Welsh slate alongside the canal in Liverpool. The canal certainly gave local builders a wider choice of materials. It also improved and extended the range of foodstuffs and clothing available for the general population.

The canal continued to be an important carrier of general cargoes into the twentieth century, and was well able to compete with railways. From the 1870s many facilities for handling goods were improved, and fly boats ran from Liverpool every day, reaching Skipton about two and a half days later. This was little slower than railways could achieve. Around 1910 the warehouse was handling between 800 and 1000 tons of goods monthly, about three-quarters arriving in Skipton. The tonnage was similar to that at the larger towns of Keighley and Nelson, and the impact of the canal on the economy in Skipton remained high until the First World War. It was the expansion of road transport from 1918 and the decline in traditional industries which lead to the decline in the importance of canal transport.

The limestone quarry at Haw Bank provided regular traffic for the canal company, who also leased the quarry and provided the steam locomotives, railway and incline which brought the stone from the quarry to the end of the Springs Canal. In 1862 some 127,928 tons (about ten boats daily) were delivered to the canal from Haw Bank, the tonnage declining after the quarry was connected to the Midland Railway. Three main types of stone were carried. Foundry stone was taken to Bradford for use in the iron industry in the area, limestone was carried to the many canalside lime kilns for conversion into lime, and broken stone was carried for use in road repairs. There were around a dozen canalside lime kilns between Skipton and Bingley (most still surviving), and many more elsewhere on the canal, which gives a further insight into the importance of the limestone traffic both to the canal and its environment.

In 1857, limestone ex Skipton was sold at 1/2d per ton for foundry stone (10,516 tons), 1/- per ton for limestone (14,708 tons), and 10p per ton for roadstone (5,172 tons). William Harrison took the largest amount, then Clarkson & Smith, Crowther & Dixon, and Hird, Dawson & Hardy.

As mentioned earlier, the canal provided an essential service to the textile industry through the use of its waters for condensing mill engine exhaust steam. Raw materials and spun yarn also arrived by canal, though it was less important for woven goods as these had to be sent to print and dye works for final treatment, and such works were often at the head of valleys, where water was at its purest, and so well away from the canal. Initially some spun yarn may have come from the European mainland via Hull, the canal being large enough for boats capable of sailing down the Humber. Yarn would also have come from the Keighley area where many cotton mills were located in the early nineteenth century. The fact that Skipton had a significant number of cotton factories could well have been because the canal provided good links to the other cotton manufacturing areas locally. However, its relative isolation may have

encouraged mill owners to diversify into specialist areas, such as sewing yarn. The canal would still have been an important factor in the development of local textile industries.

Coal was initially supplied to Skipton by canal from the Riddlesden area and from the rest of the West Yorkshire coalfield. The Barnsley Canal area became more important over time as the shallow mines around Riddlesden and Leeds closed. The pits in East Lancashire, particularly around Burnley, were also important suppliers to the town, and Skipton certainly benefitted from the competition which the canal was able to provide. Being between two coalfields also allowed customers to choose the exact type of coal required, mines producing various different qualities.

As in many northern towns, Skipton's Gas Works was built alongside the canal. By the time gas was introduced, the town had grown to encompass the canal, and by putting the gas works in the middle of the town, the length of piping could be kept to a minimum. Coal for gas making had to be of a particular quality, and this could be supplied by canalside collieries in West Yorkshire. It was delivered directly to the works, this being one of the last coal traffics on the canal, only ending in the 1950s.

Skipton was not an important centre for the administration of the canal until the 1890s. An Agent, based in the house next to the warehouses, looked after the promotion of the canal's interest, seeking goods for carriage through local businesses. The recording of trade passing through the town by canal was undertaken by a second employee, based in a canal cottage alongside Gallows Bridge. This was originally called Tonnage Bridge, and the tonnage carried by each boat would be recorded here, the details passed to the canal's head office and invoices for tolls sent out to the relevant boat or cargo owner. This system may have lasted until the 1870s when business on the canal was reorganised, and the cottage became the home of the local bank ranger, the man who looked after the day-to-day maintenance of the canal in Skipton.

The main workshops for making lock gates and other structures was at Bank Newton, but in 1894 the local canal Inspector took up residence in an office in the canal yard in Coach Street. He was, in effect, the area engineer, controlling all aspects of maintenance on the canal from Barnoldswick to Kildwick. It was only circa 1980 that the job was transferred to the canal workshops at Apperley Bridge. Some archive material from the Skipton office is now at The National Waterways Museum, Ellesmere Port.

For some years in the late nineteenth century, a private boatyard operated from the canalside area of the current car park site in Coach Street. Known as Firth Boatyard in the 1870s, the then occupants were the Fawcett Brothers. The nearby rope walk marked on some maps around this time may also have supplied canal users. Today it is possible to see a few remains of the boatyard, such as the ends of the slips up which boats were pulled sideways out of the water for repair. Just beyond, closer to Brewery Bridge, was a boathouse, used from the 1890s by the canal company's small inspection boat ***Alexandra***. The hull of this boat is preserved at the National Waterways Museum, Ellesmere Port.

Some boatmen were based in Skipton, as on the Leeds & Liverpool Canal they were able to earn enough to have a house for their family. Few families lived aboard boats on this canal. The Brewery Bridge area seems to have been the main location for boatmen's houses, though they could be found elsewhere in the town. Other canal employees lived in Skipton. For example, the Rennard family lived at 18 Aireview Terrace in 1922. Jonathan Rennard had started work as office boy at Skipton warehouse in 1902, aged 13, and later moved to Leeds to run the warehouses there. He eventually settled in Shipley to run his own canal carrying business. Agents, maintenance men and clerical staff on the canal often moved around as they were promoted, and people born anywhere along the canal could come to work in Skipton. Trade conditions could also encourage movement. During the cotton famine caused by the American Civil War, some boatmen from Lancashire came over to Skipton to try their hand at the limestone traffic from Haw Bank. 500 tons a day was being shipped, about 13 boat loads, and at one time there were 31 boats waiting. Once loaded, the boatmen worked day and night, only sleeping on returning to the line of waiting boats at Skipton. There is also anecdotal evidence that some emigrants from Eastern Europe used the canal to travel between Hull and Liverpool, and a few may have settled along the canal instead of continuing to America.

Notes about Skipton from the Canal Company minutes and other sources

1786 Springs Branch and lime quarry leased from Lord Thanet for 11 years. Mercer Flatt Lime Co also to be taken over, including waggon way, staith, dock, etc.

1787 Lord Thanet consulted about plan for conveying limestone from Haw Bank, the canal to be lengthened by 240 yards. Valuation of Messrs Garforth & Cos equipment for railroad, waggons etc at Skipton comes to £140.

1792 Permission requested for waggon way through the Castle yard at Skipton to improve the supply of limestone. Mr G Pearse's packet boat extended to Holme Bridge and can now carry 110lb parcels, but not allowed a

second packet to work from below Bingley to Horsforth Bridge.

1799 Messrs Whitakers, carriers on Yorkshire side, occupy Skipton Warehouse.

1801 Mawson, the warehouse man at Skipton gives preference to the Union Co.

1802 Haw Bank tramroad to be rebuilt using iron as required, truck size to be 2 tons.

1803 Haw Bank, limestone 11d/ton for getting and delivering, 7d/ton for baring the rock.

1809 Craven Navigation Co ask for counting house, etc, on the line. Allowed at Leeds.

1810 Reports of overcharging at private wharfs and warehouses, company to set out authorised charges. Craven Co complain of partiality by warehouse men re sending on goods.

1834 Old tramroad line to be closed and incline built to create lower level wharf.

1835 £10 given towards Skipton Church Clock as it is of great use to the men in the limestone works.

1836 Limestone users complain that they have to wait at Skipton due to lack of stone. Users are James Hopper (Shipley), Thos Sugden & Co, John Cole, James Green, and Hird, Dawson & Hardy. Supply to be improved.

1849 Wharf for coal transshipment to North Western Railway at Niffany or Gargrave agreed.

1870 Mr Widdop of Skipton allowed water for the engine at his boat building yard there.

1889 Haw Bank Quarry connected to the railway at Embsay.

1892 Steam locomotives introduced on the 4 feet gauge line.

1896 Skipton Rock Company formed.

The breach at Keighley Golf Club, May 1952.

For the last couple of years the Leeds and Liverpool Canal has been closed over the winter near Riddlesden for relining. Perched precariously on the hillside, the canal has always been prone to leaks here and forty years ago repairs had just been completed staunching several of them. The spoon dredger "Armley" was tied up against the bank while Cyril Stapleton, the Leeds length foreman, with Charlie and Alf Clarkson were inspecting the work on 17th May 1952. All of a sudden the boat heeled over as an undiscovered leak finally gave way, washing away a large section of the embankment. Keighley Golf Course lies adjacent to the canal here, and four greens were severely damaged. Close to the canal a channel nine feet deep and twenty feet wide was scoured out, washing several large boulders down onto the course.

Fortunately during the war the stop planks had all been repaired in case of bomb damage and they were quickly inserted at Elam and Lodge Hill Bridge, leaving a section one and a quarter miles long dewatered. The level on the rest of the seventeen mile length was lowered by two feet, which gives some idea of the quantity of water lost. As the breach occurred on a Saturday many people came to see the damage, and four policemen were needed to control the crowds.

Assistant area engineer Hunter and section inspector D.F.Turner, whose family had long connections with the canal, soon had repairs underway. Temporary dams 100 feet apart were erected either side of the breach and a wooden trough installed to keep a supply of water to the Armley length where it was important not to interupt coal deliveries by boat to the power station. The water supply amounted to five locks, about 400,000 gallons, per hour.

Immediately opposite the breach was an old quarry, and trees which had grown here were quickly felled to provide road access to the site. This would be more difficult today as the trees along the canal here are now protected. A large concrete mixer was brought, and the embankment rebuilt with sacks filled with concrete. The "Armley" was dragged across the canal by winches which then allowed the breach to be filled in and the canal bed re-puddled. Men were brought from Burnley, Wigan and Northwich to help with this part of the work.

By the 6th June the canal was ready to be refilled the following day, just three weeks after the breach. However, vandals damaged the work that night, and it was not until the 12th June that the canal finally reopened. This allowed traffic to recommence, the main cargoes at the time being coal from toff he Aire and Calder to Skipton, and wool and sugar from Liverpool to the warehouses at Riddlesden, Shipley and Leeds. Work still needed completing on the repair of the golf course and reinstating the embankment, but these were mainly cosmetic. Over thirty men were employed on site which allowed the repairs to be carried out so quickly.

Stockbridge Warehouses

The land for the canal and warehouse at Stockbridge was purchased from Edmund Starkie of East Riddlesden Hall. His land was valued at between £55 and £75 per acre which was about average for this area. The purchase price was paid in 1777, some four years after the canal had opened and three years after other local landowners had received their money. Perhaps this indicates discussion over the construction of a warehouse, as the original warehouse at Stockbridge was built by Starkie, and the warehouse and wharf site remained in the ownership of his heirs until the twentieth century.

The original warehouse was built by Edmund Starkie, owner of East Riddlesden Hall and owner of part of the land through which the canal passed at Stockbridge under the first Act for the canal, 10 Geo III cap 114, clauses 62-64 . It is built from stone and has water-shot stone-work on its northern face, a feature more commonly found on buildings dating from around 1800-1820 in East Lancashire. However, this warehouse was certainly in existence by the 1780s and appears on the canal survey of 1827. By this time ownership had passed to Messrs Bence and Bacon who had married the two Starkie daughters. Both Bence and Bacon came from Suffolk.

After the canal company had taken back the lease of their general cargo traffic from the railways in 1873, they immediately set about improving facilities. Stockbridge warehouse, the wharfs between the two Riddlesden swing bridges and the lime kilns opposite the Marquis of Granby pub were leased for 21 years in 1874. The lease was between the canal company and Henry Alexander Starkie Bence of Thorington Hall, Suffolk (he had a half part from 1848), Katherine Elizabeth Thomas of Windmill Hill, nr Hailsham, Sussex, widow and Capt. William Travers Forbes Jackson RN, Torquay, Devon for an annual rent of £340 plus a water supply to estate fields below the canal. The lease was extended in 1895 for seven years at a rental of £285 per annum, with eight family members listed, and it was extended for a further five years in 1902 for £165 per annum.

Further land at Stockbridge was purchased in 1897/8 at a cost of £4,2378-0-0, with part of this land sold to Captain Greenwood for £3,500-0-0 in 1898. This was probably land to the west of Stockbridge swing bridge where Morton Banks Colliery had stood. Wharfs were subsequently established here and a new warehouse built in the mid-1930s.

One year after the canal company had leased the former Starkie land and warehouse in 1874, a new warehouse was built at a cost of £930-13-9. An extension was built in 1880 at a cost of £590-12-7, and then a shed was erected in 1898 at a cost of £115-16-0. This may have been the wooden extension to the stone-built warehouses. A further shed was built in 1902 at a cost of £589-9-5 for machinery traffic. This was on land to the west of the swing bridge which had been purchased the previous year. It was used for textile machinery for export which was an important traffic on the canal and an important local industry in Keighley. A new 15 ton weighing machine and office replaced the old office in 1908 and was built for Wm Sugden, one of several coal merchants who used wharfs near the warehouses.

There was some decline in traffic following the closure of the canal company's carrying business in 1921. In Yorkshire, this was taken over by Ben Walls who had worked in the traffic department at Skipton, and who had started as a lockkeeper at Bank Newton. He ran a fleet of boats serving Yorkshire destinations on the canal throughout the 1920s, the fleet being amalgamated with three other general cargo fleets in 1930 to form Canal Transport Limited which was partly owned by the canal company. Walls continued to be involved as well as setting up as a wool merchant in Keighley. In the 1930s, as well as developing Canal Transport, the canal company invested in new facilities, particularly for the wool trade. Although wool was a major cargo, there was insufficient warehousing in Liverpool, its main port of entry, and it was decided to build warehouses specifically for this trade at Shipley and Stockbridge. Two warehouses at Stockbridge were erected between 1934 and 1937. In 1962/3, carriage of goods ended on the canal, though by then most goods arrived at Stockbridge by lorry, the warehouses having been designated 'approved' by the London Wool Terminal Market and the British Wool Federation. Electrical equipment and machinery were also handled at this time. The warehouses were then leased to Peter Black, the Keighley leather goods manufacturer, in 1968. By the 1980s they were used by small businesses, the last one moving premises in the late 1990s.

Workers at Stockbridge

Directories give some indication of those involved at Stockbridge in the nineteenth century. In 1828, William Slingsby is shown as Agent for the Union Company, who were also named in 1837, but without identifying an Agent. In 1847, Robert Bradley was listed as wharfinger, and he presumably worked for the Union Company. Throughout the railway lease, no-one is listed as Agent at Stockbridge, but in 1853 J. Goodchild is noted at Skipton and Crowther & Dixon for Shipley Jeremiah Crowther & Samuel Dixon operated a carrying fleet from the relative isolation of the Bradford Canal, so could continue to carry merchandise traffic to and from that canal. They had agents at several Leeds & Liverpool Canal warehouses in this period. By 1884, when the canal had been carrying general merchandise again

for ten years, John Hammond is listed as at Stockbridge, with C A Calverley based at North Street and James Taylor at Ferncliffe. The later two were probably agents in Keighley itself. By 1900 there was a Keighley Agent who was seeking traffic in the district. C. A. Calverley was appointed at £140 per annum, and his place was taken around 1905 by G. H. Cooke, formerly at Skipton warehouse, at £130 per annum. At Stockbridge, William Hammond was the Agent at £57 per annum, and his clerk was B. Hammond, his son, on £45 per annum.

A company inquiry into traffic in 1900 gives some idea of William Hammond's work. He had been 17 years in the company's employ, three years as an Agent. His duties included controlling the boats, traffic at the warehouse and cartage. At the time there was a shortage of accommodation, and the hoist arrangements were poor. They were horse powered, and the horses sometimes fell into the canal. Hammond thought a gas engine would be better, and one was supplied soon after. Previously it took on average 4.5 hours to unload, and this was reduced to 2 hours by machinery. The textile machinery traffic, from Smith's and Hattersley's, was easy to handle, though the former had almost ceased. Two tons was the heaviest cargo handled. To improve matters, Hammond suggested a temporary shed built on the company's land for the wool and machinery traffic. The existing warehousing would then be sufficient for the other trades. The stable had room for five horses, and three were kept for working the Bradford boats. Presumably the other stalls were for delivery horses.

After the canal company gave up their carrying department in 1921, Stockbridge Warehouse came under the control of G. H. Cooke who also had a coal and coke business operating from the nearby wharf. Cooke had previously been Agent at Skipton warehouse. When Canal Transport Limited was formed in 1930 they took over responsibility; in effect under the control of the canal company. The warehouses were then under company control until nationalisation, and they were then operated by the Docks & Inland Waterways Executive and their successor, British Waterways.

In 1960 the staff consisted of eight men. E. McKenzie was Depot Superintendent, J. Staveley, Clerk, J. B. Rhodes, Foreman, and E. Booth and W. Hollingdrake were Porters. Albert Mayman, already Depot Superintendent at Shipley, took responsibility for Stockbridge around 1960 (He was awarded a BEM a couple of years after), with Albert Cowderey as Clerk.

Bingley 5-Rise Locks

The Leeds & Liverpool Canal was the first of the Trans-Pennine canals to be started - and the last to be completed. The length and complexity of the route meant that the canal took an astonishing 46 years to build at a final cost that was five times the original budget. The canal originates from a proposal in 1765 by Bradford merchants to construct a canal from Preston to Leeds to carry woollen goods from Leeds and Bradford and limestone from Skipton. Because of the cost, investors were sought in Lancashire, and the terminus became Liverpool, where merchants were prepared to finance the venture. The original line of the canal, over 108 miles long, was approved by James Brindley, one of the greatest of the canal builders. He was offered the post of engineer but he declined because he had so much other work, and John Longbotham of Halifax, who had done the first survey, became its engineer. The route was altered in 1794 to pass through Burnley and Blackburn, and the canal was 127 miles long at its completion in 1816.

With the Pennines being so hilly, many locks had to be built to raise or lower the level of the canal. At Bingley, the canal had to rise 90 feet to the long level to Skipton, and this was achieved by two sets of 'riser' or 'staircase' locks, the five rise and a three rise. Such locks had first been used on the Canal de Briare, in France, around 1640. A seven rise flight is preserved at Rogny, but those at Bingley offer a more spectacular view, even if they were dated technology when built. Bingley Five Rise lock, which alters the height of the canal by almost 60 ft, is the most impressive in Britain. A spectacular engineering structure, it opened on 21st March 1774, and the first boat down took 28 minutes. An 18th century engineering masterpiece, these five locks operate as a 'staircase' flight in which the lower gate of one lock forms the upper gate of the next. When completed, thousands gathered to watch the first boats make the 18 m (60 ft) descent.

Staircase locks are wasteful of water since all five must be 'set' before beginning a passage. For a journey upwards, the bottom lock must be empty, with all the others full: the reverse is the case for a boat descending. Consequently, when a boat going down follows a boat going up, five lock-fulls of water are used, compared to just one lock-full needed for five single locks. Today, it takes about an hour for a boat to work through the flight. The five-rise is the steepest flight of locks in the UK, with a gradient of about 1:5. The intermediate and bottom gates are the tallest in the country. Because of the complications of working a staircase lock, a full-time lock keeper is employed. Only a few hundred yards downstream is another staircase - this time a three-rise flight, with a fall of 9 m (30 ft).

Saltaire and Shipley

The Leeds & Liverpool Canal was opened from Shipley to Bingley in 1774, a year after the canal from Bingley to Skipton, and in 1777 the length down to Leeds was added. The Bradford Canal, an independent concern built by Bradford merchants, also opened in 1774.

The new canal served several water mills on the River Aire, such as Hirst Mill and Dixon's Mill in the Shipley area. It was near the latter that Titus Salt built his new mill and village, moving out of Bradford because of the insanitary living conditions in the town in the 1850s. The pollution of Bradford Beck forced the Bradford Canal to close in 1867, but it reopened in 1871, with water pumped up from the Leeds & Liverpool Canal, and only closed completely in 1922. Titus Salt decided to build his new Saltaire village because the mill would be served both by the canal and the new railway, their competition ensuringthat he got the best price for transport. The canal was particularly important for carrying the raw alpaca wool from Liverpool Docks, the carriage of raw wool being a major traffic.

Just beyond Saltaire is Jane Hills, the old houses here being occupied by boating families for many years, with the nearby fields, now recently built over, used by their boat horses. Jane Hills remained a rural outpost in Shipley, with mills beginning to line the canal nearer the town.

The original Shipley warehouse was next to Gallows Bridge, one of several with the name on the canal, all being wooden framed originally, like a gallows. The warehouse was used by small canal carrying companies, and then by non-canal businesses after the new warehouses opened. There were stables here, but others were also built at the new site in Wharf Street, last used by canal horses around 1950, when Canal Carriers Ltd were still carrying coal on the canal. New canal warehouses were built in the 1930s to cope with the volume of wool carried by canal. The first large wool warehouses were built in Shipley around 1880, and these were extended over the years. Those built in the 1930s were needed because the Bradford Canal had closed, making the large canal warehouses in Bradford impossible to reach by canal boats. The first of the new warehouses was built in 1875, to cope with the expansion in Shipley's trade encouraged by the short closure of the Bradford Canal. It was extended in 1888 as local trade increased, with the warehouses becoming one of the main storage sites for wool in the Bradford area. The last cargo of wool to arrive by canal was around 1963, though the warehouseswere used by wool brought by road transport until around 1990.

Between the warehouses and the junction with the Bradford Canal, the canal is carried on a high embankment across the valley of Bradford Beck. The gas works were built on either side, convenient for deliveries of coal by boat. Many mills also received coal by boat, the last delivery of coal to the Aire Valley from collieries around Wakefield being around 1962.

Shipley once had its own boatyard, which is recalled by the name of Dock Street. There was a covered slipway and a dry dock, close to the end of the Bradford Canal, and it was operated by George Ramsey in the mid-20th century. He built wooden boats, both for cargo carrying as well as for leisure. The site is now occupied by flats.

Leeds

In the 17th century, the industrial growth of Leeds was suffering more from poor transport to the coast. To overcome this the Aire & Calder Navigation was formed by an Act of Parliament in 1699 and soon linked Leeds to the sea. Trade flourished, and the cloth market, which was previously held on Leeds Bridge, moved to impressive new surroundings with the opening of the White Cloth Hall in 1711 and a Coloured Cloth Hall in 1758. The present White Cloth Hall on Crown Street was built in 1775, though it was much altered by railway construction in 1865.

Increases in the textile industry led to a greater demand for coal, The nearest pits were at Middleton, and in 1758 an Act was passed allowing the construction of a railway from the collieries down to Leeds. The railway was used, in 1812, by one of the earliest steam locomotives. Designed by Blenkinsop, it was built by Mathew Murray, a textile machine maker and designer who thus laid the foundation for the town's locomotive building industry. The Middleton Railway still survives, and enthusiasts have set up a museum which runs steam trains during the summer.

In 1777, the Leeds & Liverpool Canal was opened from Shipley to Leeds. The route in Leeds took some time to set out, as there was the possibility of joining the Leeds & Selby Canal. However, that canal failed to get an Act of Parliament, so the Leeds & Liverpool Canal was built to meet the River Aire just below a ford crossing the river. Canal boats then sailed down to Leeds Bridge where they joined the Aire & Calder Navigation.

Was the canal warehouse next to River Lock built before the canal? There is certainly a possibility as it is unusual to have a warehouse alongside a lock, and other features, such as mounting steps on the lock side, are difficult to fit in

with canal operation. The arm into the warehouse, now filled in, could have been added later. The warehousing was extended when the railway was built, with the arches beneath the station being used for storage by the canal company, one way of getting benefit out of a competitor.

Calverley and Horsforth

Below Apperley Bridge locks the scenery is surprisingly rural as the canal meanders down the Aire valley past Calverley Woods. On the hillside to the south, is the charming old village of Calverley. The Parish Church is of Norman origin, though subsequently rebuilt, and it has an interesting graveyard, one tombstone commemorating Benjamin Cromack who needed a coffin 7 feet 11 inches long!

Calverley Bridge, an ancient pack horse bridge spanning the Aire, is north of the canal, just before Leeds Ring Road. The village of Horsforth, often described as England's largest village, lies on the hillside beyond, and its history can be traced in the Village Museum. Down in the valley is Low Hall, now offices, but once the home of John Stanhope, the first person to suggest building the Leeds and Liverpool Canal. Horsforth is also the ancestral home of the poet Longfellow, though his antecedents emigrated to America in the seventeenth century.

Rodley

Rodley, a small village on the edge of Leeds, is close to the ring road. Well served by pubs, one, the Rodley Barge, is right alongside the canal where it used to be possible to be served from a boat. Rodley Boat Centre alongside the swing bridge nearby provides all the usual services for boaters. A couple of miles away is Pudsey, where a Moravian community was established, whose history is unfolded in the Moravian Museum. From Rodley the centre of Leeds is just five miles distant, the canal providing a quiet and pleasant way into the city, through trees or open land almost all the way.

At Newlay, near to the Fallwood Marina, there is a spindly cast iron bridge over the Aire, erected in 1819 by Richard Micklethwaite. He charged a toll of one half-penny for the privilege of using it. The valley bottom between here and Kirkstall was ideal for growing rhubarb, and around fifty tons were harvested weekly during the season at the turn of the century. Nearby, next to the canal, are the Bramley Fall quarries. Kirkstall Abbey was built with stone from here. It was also used for the construction of Martello Towers in Kent. Built to protect the country during the Napoleonic Wars, the stone for them must have started its journey south by canal.

Kirkstall

Two three rise locks, set amongst Bramley Fall Woods, start the canal's final descent into Leeds. Kirkstall Forge, near the lower set of locks, was founded in the twelfth century by monks from the Abbey. Today heavy duty back-axles are made here, though a water powered helve hammer has been preserved to remind workers of the site's historic past.

One more lock and Kirkstall is reached. A short walk away are the ruins of the Abbey, surrounded by a pleasant riverside park where a narrow gauge railway operates on Sundays. Opposite the ruins is the Abbey House Museum where three Victorian Streets have been recreated in the old Abbey Gatehouse. A chemists, ironmongers and pipemakers are among the shops, full of long forgotten items. There is also a display of toys and working slot machines, while the gardens outside have been designed especially for the blind.

From Kirkstall the canal skirts Gott's Park and Golf Course, formerly the home of the Gott family, owners of the earliest woollen mills in Leeds. The valley bottom on the opposite side of the canal has long been under valued, and is littered with the remains of old industry. The area is now being revitalised, with the creation of new housing and industry, though the main development will be a nature reserve. Situated alongside the canal and river, it will provide a haven of peace where all sorts of wildlife can flourish. Footpaths will be laid out to enable people to enjoy a relaxing stroll away from the bustle of modern life.

Armley

Armley Power Station was one of the buildings demolished to make way for the development, but the loop off the canal, where coal supplied by barge was unloaded, still remains. Not far beyond is Armley Mills, a working museum of Leeds industries. Amongst the exhibits are restored woollen machinery and replicas of clothing sweat shops and a coal mine. At Armley the canal's surroundings finally become industrial for the last mile or so into Leeds, though it still provides a peaceful way to enter the city, little influenced by the roar of modern traffic. Just visible on the hillside above is castellated Armley Gaol, built in 1847. Below, the factory lined River Aire runs parallel to the canal. It will become the Aire & Calder Navigation in the city centre, and there are only six more locks before the canal ends and the navigation begins.

Leeds City Centre

Leeds Basin is just above the lock into the river and is the base for a trip boat. The adjacent railway station was built on canal company property, the 'Dark Arches' underneath originally being used by the canal for storage. Today they have been revitalised to create 'Granary Wharf', where over twenty craft and gift shops can be found. Entertainments and street theatre add to the scene at weekends, making a unique environment just yards from the City Square. Leeds is a superb shopping centre, with a tremendous variety of shops, from the traditional Market Hall, through the recently renovated Victorian arcades, to the Corn Exchange, all providing a varied and exciting atmosphere.

Further from the city centre, alongside the Aire & Calder Navigation, is Thwaite Mills. Putty used to be manufactured here, the machinery powered by two water wheels. Not just for the mechanically minded, there are displays on social history in the millowner's house. Not far away is Temple Newsam, a large Tudor and Jacobean house, where Lord Darnley, husband of Mary Queen of Scots, was born. Inside is a world famous collection of English furniture, decorative art and paintings, while outside there are large gardens and a farm specialising in rare breeds. With such a variety of attractions and opportunities, Leeds is an exciting place to finish your journey across the Pennines, 127 circuitous miles by canal from Liverpool.