

The Leeds & Liverpool Canal Historical Information

Construction and Maintenance

**LEEDS & LIVERPOOL
CANAL SOCIETY**

The cost of building the canal

The details below were set out by the Leeds & Liverpool Canal Company to show investors how much the construction of one mile of canal would cost. They have not included the cost of building locks. It was more difficult to give an average price for a lock as this would depend upon the type of foundation work needed and the accessibility of stone or bricks for the lock walls. All materials had to be brought by horse drawn wagons along the poor 18th century roads. It was to simplify the transport of heavy goods, such as stone or coal, that canals were being built.

Estimate of the expense of making one mile of canal

42 feet wide at top, 27 feet at bottom, and 5 feet water.		
Common cutting - 24 yards @ per yard running 5d.	880	- 0 - 0
Puddling - 2 yards @ per yard running 6d.	88	- 0 - 0
4 bridges per mile @ £400 each	1600	- 0 - 0
Stop gates and flash weirs	100	- 0 - 0
Fencing and gates	100	- 0 - 0
Towing path @ per rood 6/-	78	- 0 - 0
Stubbing fences and trees	44	- 0 - 0
4 culverts per mile @ £60 each	240	- 0 - 0
Forming and soiling banks	44	- 0 - 0
Let off trunks	15	- 0 - 0
Rampart roads to bridges, backing etc.	400	- 0 - 0
Quarries, cranes and barrows	150	- 0 - 0
Facing banks with stone	50	- 0 - 0
Land, eight acres @ per acre £80	640	- 0 - 0
Temporary damages, five years	160	- 0 - 0
Total	4589	- 0 - 0
and 10 per cent thereon	459	- 0 - 0
Exclusive of locks	£5048	- 0 - 0

As is the case today, the cost was often underestimated. The total spent on building the Leeds & Liverpool Canal is itemized below. It was originally suggested that the canal would cost less than £260,000, with the final bill coming to over £1,000,000. The canal took over 40 years to build, and costs rose considerably during this time, which explains the variation to some extent. The costs shown are just for building the canal. Further money had to be spent on buildings, boats, etc. making the total invested in the canal of £1,500,000.

Cost of the construction of the Leeds & Liverpool Canal

1770 - 1777	Works on the Yorkshire side, Leeds to Gargrave.	129,310 -13 - 9
1770 - 1775	Works on the Lancashire side, Liverpool to Wigan.	90,205 -16 - 2
1790 - 1804	Holmebridge (Gargrave) to Henfield (Accrington).	336,753 - 2 - 8
1806 - 1810	Henfield to Blackburn.	54,112 -15 - 2
1811 - 1816	Blackburn to Wigan.	205,682 -16 - 9
1819 - 1824	Leigh branch.	58,559 - 0 - 4
1842 - 1851	Liverpool Dock branch.	42,622 -10 - 0
1772	Douglas Navigation, purchase money.	22,000 - 0 - 0
1785	Expenditure since purchase.	15,322 - 5 - 5
1780	Wigan branch, (Dean Lock to Wigan).	6,750 -11 - 6
1781	Rufford branch, (Burscough to Rufford).	9,361 - 2 - 4
1801 - 1809	Tarleton branch, (Sollom to Tarleton).	<u>10,156 -13 - 1</u>
		£716,596 - 7 - 2

This was the total that had been spent on constructing the canal by 1851. The canal company had spent further money on boats, warehouses etc. and by 1891 this had almost doubled the amount of money invested in the canal. The ownership

of the canal was divided into just under 3000 shares. Not all of them were issued at the same time, and some were also of a lower value. The amount of money paid to the company for each share was about £139.45. Each year the canal company paid a dividend which was estimated as a percentage of this amount. In the 1820s and 1830s this was around 30% and, as this was much higher than the interest rate given by banks, the shares were sold at a premium. This meant that people would pay two, much more than the paid up value (£139.45) because of this high return.

Paid-up Value of Leeds & Liverpool Canal Shares in 1891

2869 and $\frac{37}{120}$ shares on which £139 - 8 - 9 per share has been paid	£400,089 - 3 - 8
12 and $\frac{5}{12}$ shares on which £111 - 19 - 2 per share has been paid	£1,390 - 3 - 0
1 and $\frac{3}{4}$ shares on which £105 - 19 - 4 per share has been paid	£185 - 8 - 10
TOTAL	£401,664 - 15 - 6

Over £1,000,000 was spent on the canal by borrowing and repaying from out revenue (the money received from tolls etc.) making the total value of the canal upwards of £1,500,000.

Contracts for Building Structures on the Canal

When the Leeds & Liverpool Canal was first proposed in 1766, the line of the canal chosen was by way of Padiham and Whalley, missing the towns of East Lancashire completely. A suggestion made by the Liverpool proprietors that it should include them was defeated by the Leeds proprietors. After the section from Liverpool to Parbold and that from Leeds to Skipton had been completed, work was started on the aqueduct across the valley at Whalley Nab. This was soon suspended due to shortage of money. It was not until the early 1790s that work restarted and by that time it was obvious that the canal must serve the rapidly developing East Lancashire towns and the line originally suggested by the Liverpool proprietors in 1769 was closely followed. The engineer for this section of the canal was Robert Whitworth who, prior to his appointment, had been working on the Forth & Clyde Canal. Many of the navvies who had worked for him on that canal followed him to Lancashire to work on the Leeds & Liverpool Canal.

The following are extracts from the Canal Minutes, now in the Public Record Office at Kew (RAIL 846) and formerly part of the British Transport Historical Records, and are specifications for work on the section of canal from Enfield Wharf to Church Kirk. James Fletcher was the engineer at this time, Whitworth having died in 1799, while the contractors named had been employed on other sections of the canal completed earlier. Note that there are no overall dimensions for the work. The Canal Company would have provided a standard wooden frame on which the arch was built, and this would have ensured accuracy in times when measurement was not fully standardised.

Leeds & Liverpool Canal Company Committee Minutes for the 7th May 1807.

Specifications and conditions to be observed by the contractor or contractors for building one public road arched bridge and three culverts in the line of the Leeds & Liverpool Canal betwixt Enfield and Church.

In the first place the Canal Company to dig and prepare the foundations and dig out the space for the inverted arch, if any there should be, to clear the foundations of water, provide centers on the place and allow one carpenter to assist in setting them up and if stop gates be thought necessary, to put down sills, sheet piling and other timber work.

The contractor to bare, quarry, get and lead all stones, lime, sand, etc. likewise to provide and make roads necessary (the Canal Company paying all damages occasioned by quarrying or getting such stones and roads not exceeding fourteen yards in width). The contractor to find all scaffolding, scaffolding planks, bearing and wheeling barrows, trucks or drags and all working utensils whatever.

The work of the before mentioned bridges to be as follows:-

The arches of the bridges, coping, string course and two course under the hauling and opposite side to be of ashlar, also the inverted arch (if any) all the other part to be wall stone work to be built at a certain price per cubic yard specifying the ashlar and wall stone separate (in the estimate) the above to be done agreeable to the plan, elevation and section laid down subject nevertheless to such small alterations as may be thought necessary during the execution thereof.

The inverted arch, if any, to be composed of stones not less than fourteen inches upon the bed truly cut to the radius but may be left rough on the upper side. The joints cut truly square to nine inches, the top arch stones to be eighteen inches of bed truly cut to the different radius's represented in the section. The joints to be cut square to not less than 13 inches at a mean and well jointed together. The coping on the hauling and opposite side to be not less than one foot

thick, if stop gates the hollow posts to be truly cut to the templet and well joined not less than 16 inches of a true joint and fourteen inches thick by three feet long and two and a half broad. The ashlar which must come from Marsden Close to be delivered at Enfield Wharf by the Company at 5.5 per foot or 6/3 per ton. The battlement coping to be cut square, well jointed and dressed to the section, the string course likewise. The wall stone work to be coursed all of good sound stone none less than five inches thick, to have good true beds not less than twelve inches and from that to eighteen to have a through stone in every course at not more than seven feet distant. The joints truly cut square to no less than ten inches. The face to be well dressed to the specimen of the ... to be well backed and filled with good sound backing and mortar in every course as the wall doth rise. The whole to be set in good and well tempered mortar made of the best lime and sand the country affords having not more than double sand to that of lime. The whole to be done to the direction and satisfaction of the engineer and overlooker of the same on or before the first day of October next.

James Fletcher.

Specifications and conditions to be observed by the contractor or contractors of the canal from Enfield Warehouse to the occupation road bridge at the West End of Church Kirk being about 2227 yards in length and may be divided into two lots, viz,

Lot 1st (Let to Robert Wooler)

Lot 2nd. Tis proposed to extend from the last mentioned point B (In lot 1) to E at the road West End of Church Kirk being 1043 yards in length. As a great part of this lot is from two to four feet extra (as appears from the profile) in which will arise a great deal of surplus earth which is all to be boated to Chuch Valley, and the other parts shallow cutting. To give in proposals by the cubic yard for what is carried away in boats, and by the cubic yard for the shallow cutting that is laid to form the banks and also for the back cutting at a certain price for the first 30 yards at a mean and for every 25 yards extra as the greatest part of the earth for Church Valley must arise from the sides.

The contractor to preserve what soil only as may be thought necessary by the Engineer. The puddle gutter to be cut by the cubic yard, the lining and puddling of the canal over the valley and the common puddling (three feet thick) by the superficial yard, engaging to make the canal water tight. The forming and soiling of the banks by the superficial yard. The company to find necessary boats but the contractor to provide himself with planks, barrows, trussels and all other materials for performing the work. The whole of the second lot to be done to the direction and satisfaction of the Engineer and overlooker of the same on or before 1 July 1808.

We, Alexander MacKenzie and James Proctor do hereby agree to take and complete on the conditions and within the time above limited the digging and workmanship specified in Lot 2 on the following terms, namely cutting 4.5d per cubic yard, long wheeling (i.e. for every 25 yards extra) 1.25d, boating 9d and puddling 6d and on failure thereof we do hereby agree to forfeit to the Company of Proprietors of the Leeds and Liverpool Canal the sum of one hundred pounds, Alex. McKenzie and Jas. Proctor

Note that these specifications only mention how the work should be done, with few dimensions given. For bridges, the canal company would have provided the wooden forms used for building the arches. At the time the canal was built, standardised measurement was in its infancy, and providing the patterns would have ensured that every bridge had the same overall dimensions, with just the width of the roadway varying, depending upon whether the bridge was for a main road or just for farm use. The 1790 Act has a clause which prohibits any more swing bridges from being built, except where there was local agreement. There were no drawings or overall design given for lock gates, and the carpenters would know the type used on the canal, varying the dimensions to suit individual locks.

Alexander MacKenzie; a navy

Alexander MacKenzie was one of the navvies who followed Robert Whitworth from Scotland. He lodged at the Chapel Inn, Little Marsden, and on 11th March 1793 he married Mary Roberts, one of the landlord's two daughters. Their first son was born at the Inn and baptised at the Chapel. They returned there to have their subsequent children baptised as well. From their entries in the Register of Colne Parish Church, it is possible to trace progress of the canal through East Lancashire.

	<i>Born</i>	<i>Place of residence</i>
William	20 March 1794	Little Marsden
Alexander	10 February 1796	Oldham <i>(working away from the canal?)</i>
Sarah	12 December 1797	Little Marsden
Daniel	23 December 1799	Burnley
Margaret	5 April 1802	Henfield
John	1 November 1804	Henfield
David	7 March 1808	Rishton
Thomas	25 December 1808	Altham

The family finally settled in Blackburn. By this time Alexander had become a contractor, and on his death in 1836, his eldest son carried on the business. He eventually became the Senior Partner in the firm of MacKenzie and Brassey who were England's most successful railway contractors.

Engineer's Report, 27th February 1800 (Rail 846/6)

The following report is typical of those given by the canal's Engineer to the Canal Committee. The number of men employed varied depending upon the time of year. By this time, there were a core of professional navvies who worked on the canal full time. They were assisted by local workers, but their number varied depending upon the weather and on the time of year, as they were also needed on local farms for seasonal work.

Report upon a survey of the works between Burnley and the west side of Henfield Common [*Clayton-le-Moors*] taken, by order of the committee, the 25 and 26 February 1800.

The intention of making this survey being to examine what parts of the line were unfinished in the extent above mentioned and from thence to form an estimate of the time which would be required to complete the whole. The reporters conceive it to be their duty, in the first place to ennumerate the several parts which are unfinished, beginning at Burnley and proceeding regularly forwards to Henfield Common, and afterwards, selecting those which will take the longest time to complete, endeavour to ascertain the periods in which they may probably be finished.

1) The first work of consequence is Burnley Valley where the part unfinished extends for about 200 yards across the aqueduct over the Calder and which will require about 16,500 cubic yards of earth to finish it. [*This refers to Burnley Embankment*]

2) Part of the cutting from crossing the Padiham Road near Burnley to the east end of the tunnel at Ridge [*Gannow*], length about 500 yards. [*It had been suggested that the canal would avoid the tunnel by passing around the ridge of high ground, and thus serving more coal mines. The tunnel seems to have been built to avoid the long detour, and the Shuttleworth family, who owned some of the land, may have been against the idea.*]

3) Tunnel thro' Burnley Ridge, the whole length about 565 yards, of the excavation and arching of which there remains not more than 20 yards in length to do, but the ashlar front at the west end and part of that at the east end is unfinished, the pits are to fill up and the bottom and sides of the arch in certain places to dress off.

4) From the west end of Ridge tunnel to the road beyond Bentley Valley, a distance of about a mile and a quarter, there are some pieces of earth near Gannow and a few small lengths of half cutting which are intended to be taken to Bentley Valley and are estimated as sufficient to complete it.

5) From the lane on the west side of Bentley Valley to the west side of Castle Clough is about a mile and a third, in this extent are about 150 yards of deep cutting immediately adjoining the lane, intended, in part, for Bentley Valley and the remainder for raising the banks from thence towards Cutsike Clough. [*Note how the canal's engineer had to balance the excavation work against that for embanking. It was expensive to move material, and this had to be kept to a minimum. Today, it is difficult to appreciate the size of the Bentley Wood embankment as the turnpike road was built along on side and the railway on the other. When the railway was built in the 1840s, the bridges over the canal used box-section girders, one of the earliest uses of the design which combines strength and lightness.*]

6) From Castle Clough to the division of Hapton and Altham townships about 850 yards. In this space there is a piece of deep cutting near Shuttleworth Hall of 240 yards in length and about 13½ feet at mean in depth to open, part of the earth will be taken to finish Castle Clough valley.

7) From the place where the line enters Altham township to the west side of Altham Valley, this part is about 1860

yards in length and contains a piece of canal through stony ground, which will require to be puddled, both on the bottom and sides and unfortunately no proper stuff for the purpose arises in the extent of it which measures about 1000 yards the materials for the puddling will be to boat and cart from both ends and will render the process tedious. The Valley at Altham is nearly filled up and the excavation through the deep ground on the east end of it nearly done, but the puddling not yet begun of. *[Note that, in general, only around a third of a canal needs to be puddled as often the soil will retain water naturally, or the water table is sufficiently high to avoid leakage. Puddling sometimes refers to a simple trench filled with clay on either side of the canal, as this can prevent leakage through the join between the natural ground and the earth built up during construction.]*

8) From the west side of Altham Valley to the proposed point of suspension on Henfield Common. This length is about 3080 yards, towards the execution of which very little is at present done, but as it contains no extra work worth mentioning being merely common cutting it may be executed in less time than the preceding lot no.7

The masonry wanting in these several lots is as follows, viz:

In the second; one arch bridge on the deviated road near Burnley and one small culvert.

In the fourth; one occupation swivel bridge.

In the seventh; part of a three feet culvert and a foot bridge near Altham Valley.

In the last lot; two arched public road bridges, one occupation swivel bridge and five small culverts.

A warehouse at the termination. *[Enfield Wharf, now known as Clayton-le-Moors.]*

Another at the crossing of the Bury Road near Burnley.

A few waste wears in different places.

It does not appear that the masonry of the aqueduct over Calder in Burnley Valley has shrunk since it was repaired, but that part of the bank which lies on the southeast side of it end which formerly gave way is not yet quite firm and must be finished off with caution. The earth necessary for completing the valley will now almost entirely be brought by boats and it is supposed that about sixty cubic yards per day might without danger be put in at each end. At this rate it will take nearly six months to finish it and it appears very doubtful if it can be done sooner but this will depend on the stability of the bank.

The seventh lot is the next which will require the longest time in completing, it may however be carried on so as to be ready by the time that Burnley Valley is finished. All the other parts will be easily done before these two are completed; the number of men and the time to finish the whole may be as follows, viz:

	Men	Months
1) Burnley Valley	85	6
2) Cutting on east side Ridge	12	2
5) Ridge Tunnel	20	2
4) Between do. and Bentley Lane	16	2
5) Between Bentley Lane and Castle Clough	15	2
6) Castle Clough and Altham township, deep cutting near Shuttleworth Hall	30	5
7) Thence to west side of Altham Valley, long piece of puddling, etc.	70	6
8) From Altham Valley to the west side of Henfield Common	100	5
Masons and labourers for the masonry	52	5
Smiths and carpenters for various works including nine or ten pairs of stop gates	20	
Total	420 men	

Burnley 27 Feb. 1800

Jo. Priestley

Saml. Fletcher

Ordered that as the earliest completion of the works is most desirable, the engineer do take such measures to complete the canal with all expedition as shall appear to him the most proper and that he build such boats for the purpose as shall be wanted.

BBC Interviews with Canal People, 1939

In 1939, the BBC produced a radio programme of interviews with canal people. Originally it was just to be about the Aire & Calder Navigation, but then the L&LC was included. The interviews were all transcribed, and the copies are still in the L&LC Correspondence files. Presumably management wanted to ensure that the canal was portrayed in the best possible light. The following are the main interviews, which give some insight into how the canal operated at that time. Not all the people involved were identified.

Mr Bateman, Section Engineer, Skipton

For engineering purposes the L&LC is divided into two sections, the Lancashire and Yorkshire sections, under the control of Head Office. I am responsible for the Yorkshire section and my duties are to see that the banks of the canal are kept in good order, the locks (44 of them), bridges and buildings are in good repair, and to see the water level is maintained. I also supervise the erection of new lock gates and bridges.

When lock gates are fixed it is necessary to close the lock to traffic for about 12 hours and during that period the old gates are lifted out and new ones fixed. Great credit is due to the men who do this work for whatever kind of weather, they must carry on until finished. The gates are made from English oak which is selected in the woods after being felled, delivered to one of our yards, stored for about 12 months and then cut to the required sizes. The life of lock gates is 40 to 50 years, in some cases less according to the amount of traffic passing through the lock.

I am also responsible for the dredging of my section, which is always taking place at one point or another, it is surprising where all the mud comes from, in my section we dredge over 1,600 tons per month. It appears to be the case that when anyone has any junk to get rid of they say '*chuck it in thi' cut*'. Anything from old motor tyres to bedsteads, prayer books and love letters.

I remember some years ago we had a short section of the canal emptied for repairs. One of the men found a neatly bound parcel in the canal bottom. He fished it out and when I opened it found it contained a prayer book and a piece of iron to sink the parcel. Between two leaves of the book was a piece of white heather, one of the verses read something like this, '*I waited and you never came*'. We concluded that some young lady had been disappointed in love and thrown the book into the canal. The case of love letters refers to a young lady who approached one of our men and asked him to fish out of the canal a number of letters. She explained that she thought they would sink. He got them out, she said thank you and gave him sixpence. He said thank you and suggested that she should try burning them.

The majority of people never consider how the water level in the canal is maintained. In our case we have to depend on the rainfall, and we have seven reservoirs storing water. When these are full we have in storage about 14,600 locks full of water. We don't speak of gallons of water on the canal, but locks full, and the average lock full is 80,000 gallons. Water is drawn from the reservoirs into the summit pool, which is the highest level of the canal (487.5 feet) and passed over gauges east or west in such quantities as may be required to keep the canal full. In a very dry period during the summer months we use from 800 to 1,000 locks per week. Each Monday morning a record is taken of the state of the reservoirs, and we are able to tell how many locks have been used and the number in stock.

During the winter months we have to keep the canal from overflowing its banks owing to heavy rain. We also have our troubles from ice, when the canal is frozen over to such an extent as to impede traffic, the ice must be broken. This is done by a steam tug and ice-boats drawn by horses.

A Sectional Engineer leads a very active life, he must be ready to turn out at night if necessary to supervise work, and carry on until it is completed. It is also a family profession, in my case my Grandfather was with this company 49 years, and my Father 50 years, and with luck I hope to break the record soon.

A Foreman Bankranger

A bankranger is a man working for a canal and his duties are to assist in maintaining the fabric of the canal. He usually works on a 'Length' which is 6 to 7 miles of canal, and under the supervision of a foreman bankranger. When a foreman bankranger is required, a suitable man is selected from the various gangs and appointed foreman. He now moves into the house which is usually provided by the canal company, and his duties as a foreman commence. He is responsible for his length, instructs his gang as to what is carried out, make up the time sheets, and make his reports.

A foreman's life is not altogether an easy one. Living on the canal side he is often called upon at night, should the necessity arise to carry out urgent repairs, or to regulate water level in the canal during heavy rain. In winter time he must be out early to find out the condition of the canal for ice and the position of the barges, make his

report, and take action to keep traffic moving.

The working hours of a foreman are long and often wet ones, especially when special repairs are in progress, for no matter what the weather, he must continue with work. Altogether it is a very interesting job of work and a class of its own, for he never knows what he will be called upon to tackle, and often working in water, he is on the average a strong healthy man. The foreman living in town is not as good position as the one living in the country, the town man has only the canal to look upon from his front door, whilst the man in the country usually has a plot of land round his house for a small garden.

Life and working conditions of a canalman

As a bankranger my job is to look after the canal banks, culverts, fences and to keep the thorn hedges in order and mow the grass etc. on the canal banks. The canal is divided into sections called 'Lengths'. As a foreman bankranger, I am in charge of Length 34 which extends from Scarisbrick to Orrell on the main canal, and from Burscough to Tarleton on the Rufford Branch, a matter of about sixteen miles. I patrol my length at least once a week to see that everything is in order (Look for leakages in the canal banks and culverts and oil the swing bridges). I have 50 culverts, 8 locks and 8 swing bridges in my length. A burst in a culvert can be very dangerous causing much flooding and damage to crops etc. near the canal. To repair a burst in a culvert it often means putting concrete pipes through. For this purpose we have to drive sheeting dams across the canal at certain places and run off the water and practically work day and night until it is repaired so that the canal traffic won't be delayed any longer than is necessary. A leakage on the canal side is often caused by rats burrowing into the canal banks and are sometimes difficult to trace. To stop these leakages we dig down into the bank and fill up the hole with clay puddle. I have a staff of seven men including myself. We have two barges which we haul up and down the canal with our working material on. (Mr Disley)

Life and working conditions of a lockkeeper

The duties of a lockkeeper are chiefly to keep a record of all boats passing through the locks, giving details of goods carried, where and when loaded, weight and destination, carriers name or firm, issuing permits and collecting pass notes etc. These records are forwarded each week to head office. Also to see that no willful damage is done to the lockgates and cloughs or sluices as they are sometimes called, to see that no wastage of water occurs especially in a dry summer when water has to be supplied from the storage reservoirs. The conditions vary according to the locality you are placed in, the nearer a town you are and more trespassers you have to contend with in the way of interfering with the locks and cloughs and thus causing a wastage of water. It is also a lock keeper's duty to see that the water level in the stretch of canal below his locks is kept in a navigable condition. This he regulates by running water through his locks or byewash as required. Sometimes a dispute arises as to who's turn it is for the lock when a boat arrives for up and one for down at the same time. The lock keeper then decides who has to go first on considering the quickest way of getting the traffic on the move and with the least wastage of water. The canal is like the railway, open for traffic seven days per week and all night if need be, if the cargo is urgently required. There is not much night travelling now, the roads have taken a good deal of traffic which 20 years ago was carried on the canal. A lock keepers working hours are 7 am to 7 pm, with a day off duty during the week, and the usual annual holiday with pay.

(A. Turner, Five Rise, Bingley, 30 July 1939)

William Kendrick, Lock Keeper Bank Newton

When he was lock keeper at Bank Newton, William Kendrick kept a diary of daily happenings. It gives an insight into the life of a canal employee and of life at that time. Personal details are often brief, but tell of the comparative hardship of life then. His wife was dying of cancer and had to go to the hospital in Leeds, making visiting time-consuming and difficult for someone who had to be available for duty 24 hours a day. The following are some notes taken from his diary:

- 1916** Oct 6 I was knocked up at 5.20am, everywhere flooded and Marton Pool very high. I was forced to go to Ulber and raise the slots and take the board off. [Increasing the flow over a weir to help drain the water]At night I dropped the slots and brought the board back for the carpenters.
- Oct 18 Albert Bateman, BCWalls and R Turner called, I was ill.
- 1917** Jan 29 Mr FW and Albert Bateman came up to see the ice.
- Feb 1 Ice bound, bankrangers layed slope thorn edge.

3 Ice bound, broke it to Ulber, 9 horses and 13 men, and had to give up.

15 Mrs John Turner died after a sudden attack of the heart, aged 72, buried at Gargrave.

Mar 1 Dick Turner was raising Holden's sunken boat at Niffany. [Just outside Skipton]

April 11 E Emmott, R Turner and P Dodgson gone to medical board, all passed A1. [To join the armed services]

May 22 Fred Turner came to pay 10/- stabling.

June 23 Fred Turner brought 10/- stabling.

Aug 1 John Turner bad with inflamed appendix, operated on the 2nd but not well for four days.

27 R Turner and men started to repair these locks.

Sept 3 & 4 Repairing 2nd and 1st locks, old Turner up first time.

Oct 22 Miss Watkinson 13th cousin to Turners paid a visit to Scarland Lock House from Eshton and they are delighted to have a cousin and teacher there.

23 Bankrangers come here to stop leak.

29 Dan Turner here to see us and told of Miss Watkinson BA of Eshton having visited them.

Nov 6 Tom Emmott died aged 63 years.

19 Two boats manned by soldiers land here at about 5pm and the steam and other four boats tied up at Marton and passed here this forenoon. Steamer as houseboat, one sergeant and 20 men from Liverpool. But with two other boats tied up they made a hole in Marton Pool as lock water from Greenberfield passed bad. In good spirit and some are fine fellows from London, Hull, Newcastle and Liverpool. [These were men from the Water Transport Battalion of the South Lancs Regiment]

30 Steamer and six soldier boats returned from Leeds for Liverpool.

1918 Jan 7 New apprentice at carpenters shop, Duncan Foster of Gargrave, started today.

8 Mr Bateman and R Turner brought rain gauge tackle to be repaired and painted and then forgot to take it back in the endeavour to get ice broken etc.

21 Kahki squad of 25, 3 steam and 12 boats down, ice all gone. **316** [a boat's number] broke rudder on sill and had to be detained.

22 Ran Crook pool off to repair boat and old John Turner was helping and rolled in off deck on his back in the pool, more frightened than hurt, a mercy.

23 Mr Fred Turner brought stable and postage money, 10/- and 4/-.

26 Repaired Dick Turner's working shoes for him.

April 14 Carpenters commence repairs in locks.

25 R Turner and men repairing top locks.

May 27 R Turner took old beck clough down to renew, then lots of trout under culvert.

July 3 R Turners hay cut.

4 R Turner got all in by 11pm, a light crop.

Sept 28 John Turner's 75th birthday.

Nov 3 **314** [a boat's number] & Ginger and another soldier came for weekend, I never saw them until noon on Sunday & only one then. 3pm Dr Wales came to visit boat and at 4-30pm I noticed the boat tilting and water to gunwhale. Man reported to me that she was making water fast and Ginger very bad with flu and Dr ordered him to hospital. I at once ran for R Turner and with great difficulty we got the sick man onto No **42** steamer cabin and boat into pool and ran it dry and left it for the night after seeing the men right with oil and lamp aboard boats.

4 It was pumped dry and floated and the ambulance car of Red X came and took up sick man. They left at one o'clock.

7 Ice shoot and wash finished concrete work at Hulber, J Turner, Dick T and I was inspecting it.

Dec 11 Mr Bateman had diner here having brought dredger and punt up with men. The paper had an interesting message on Government and the canals of England and their nationalisation. It would be good for us.

30 Dan Turner called to have a chat.

1919 Jan 17 Fred Turner came with 10/- stable a/c and 6/1 postage a/c.

25 Steamer 14 put a new fan on and we ran the 3rd pool off for it.

Feb 27 Harry Turner called to see us after his discharge from army and was well.

Mar 5 Willie Turner got home for good.

Apr 25 D and R Turner came to see us.
 June 16 Steamer 42 gone down to Bingley and Steamer 14 came here 17th and left 18th for Burnley. I hope its the last I see them. (end of soldier boatmen?)
 Dec 22 Harry Spedding started as apprentice carpenter at Bank Newton.
 1920 Mar 23 Boatmen started 7am to 5pm or 8 hour day, 48 per week.
 May 29 A division of bank rangers, 9 miles, Jim Cornthwaite took on Bank Newton from Williamson Bridge to Holme Bridge.
 Nov 20 Boatmen out on strike.
 Dec 7 Boatmen to start work.
 1921 Jan 6 Canal Co are stopping 26 boats of last comers on service.
 13 Fred Turner, Skipton Agent, mother has died in Southport.
 Apr 7 F W Bateman came to speak of the future, was I willing to have 10/- per week pension or stay here at £1/0/0 per week, I chose the latter. Old John Turner to go on pension and live at carpenter's house with Dick and Lizzie.
 8 This may not happen.
 22 I got 10/- stable money by J W Whalley, warehouseman, and £5/12/0 wages.
 May 18 Carpenters repair bottom lock and great airship passed twice, R-80.

The Age of Lock Gates

This information comes from a notebook (now in private hands) kept by someone employed on maintenance in the Wigan area. The two bridges mentioned at at the top of the Wigan flight.

April 30th 1918, Pigeon or Shedfield Bridge to Spring; In fair condition; leak stopped near Springs Bridge after German air raid April 12th, 1918; Bullen's Farm no leakage visible; small quantity of water being returned to canal from WC&ICo recorder, presumably leakage from recorder; about 2 boat loads of clay in stock near Springs Bridge.

Age of Lock Gates at Blackburn (1928)			
Lock No	Head gates	Tail gates	visit on April 16
1	17 years	3 years	good
2	30 years	5 years	good
3	31 years	4 years	
4	33 years	4 years	
5	32 years	3 years	
6	2 years	11 years	
Johnsons Hillock Locks			
No	Head gates	Tail gates	
No 1 Top	35 years	10 years	
2	4 years	26 years	
3	36 years	20 years	
4	26 years	2 years	
5	22 years	18 years	
6	3 years	10 years	
7	3 years	5 years	
Wigan Locks 1928			
No	Head gates	Tail gates	
No 1 Top	3 years	2 years	
2	40 years	16 years	new head gates 1929
3	8 years	24 years	
4	21 years	29 years	
5	6 years	14 years	
6	9 years	24 years	
7	22 years	24 years	
8	3 years	28 years	
9	15 years	27 years	
10	18 years	18 years	
11	7 years	4 years	
12	8 years	25 years	
13	5 years	10 years	
14	1 year	22 years	
15	36 years	22 years	

16	1 year	19 years	
17	30 years	1 year	
18	23 years	1 year	
19	5 years	1 year	
20	4 years	5 years	
21	34 years	1 year	
22	34 years	25 years	
23	34 years	11 years	new head gates 1929
Pagefield Lock			
19 years	19 years		
Ell Meadow			
29 years	26 years		
Dean Lock			
7 years	11 years		inside
	41 years	25 years	outside
Appley Locks			
16 years	19 years		inside road
1	41 years	25 years	outside road
2	41 years	2 years	outside road
Liverpool			
No 1	12 years	21 years	
2	30 years	32 years	
3	2 years	1 year	
4	12 years	24 years	
Poolstock			
No 1	27 years	27 years	
2	14 years	14 years	
Dover 1			
25 years	29 years		
Rufford			
No 1	4 years	44 years	
2	23 years	12 years	
3	19 years	12 years	
4	33 years	2 years	
5	45 years		
6	24 years	24 years	
7	23 years		
8			Sollom?
9	28 years	15 years	

	<i>men</i>	
8	5	Working at new lock gates, B'newton
10	5	Pumping water out of sheeting dam etc at Skipton
11	5	Stooping and railing at Skipton Rock
12	5	Drawing sheeting and putting frame in for do at Skipton
13	5	Drawing and making lime trough for J Broughton at B'newton
14	5	Repairing forebay etc at No.4 Lock, B'newton
15	5	Dressing shafts for Rain Hall Rock at B'newton
17-18	5	Drawing sheeting at Skipton
19	5	Pumping sheeting dam etc at Skipton
20	5	Making jack cloughs ready for repair at B'newton
21	5	Making cloughs and cleats etc at B'newton
22	5	Making clough frames etc at B'newton
24-25	5	Drawing and repairing sheeting at Skipton
26	5	Pumping sheeting dam etc at Skipton
27	5	Repairing Brafley and Hamblethorp Bridges
28	5	Repairing head gates at No.1 Lock, B'newton
29	5	Repairing head gates at No.2 Lock, B'newton
May 1	5	Repairing head gates etc at No.3 Lock, B'newton
2	5	Repairing head gates at No.4 Lock, B'newton
3	5	Repairing head gates at No.5 Lock, B'newton
4	5	Repairing head gates at No.6 Lock, B'newton
5	5	Repairing head gate at Stegneck Lock, Gargrave
6	5	Repairing head gate at Scarland Lock, Gargrave
8	5	Driving sheeting at Skipton
9	5	Driving sheeting and pumping at Skipton
10	5	Repairing head gates at Anchor Lock, Gargrave
11	5	Repairing head gates at Ireland Lock, Gargrave
12	5	Repairing head gates at Eshton Road Lock,
13	5	Repairing head gates at Holme Bridge Lock, Gargrave
15-16	5	Pointing and grouting at Holme Bridge, Gargrave
17	3	Making and putting trunk in at Skipton
	2	planking Hamblethorp Bridge
18	5	Pointing and grouting at Stegneck Lock, Gargrave
19	4	Driving sheeting at Skipton, 6 hours overtime each at 6d per hour
20	4	Repairing wheelbarrows etc at B'newton

	<i>men</i>	
22	4	Hauling boat from B'newton to Greenberfield
23	5	Repairing head gates at No.1 Lock, Greenberfield and hauling boat to B'newton, 3 hours overtime
24	5	Fixing frame for sheeting dam at Skipton
25	5	Driving sheeting at Skipton
26	5	Driving sheeting at Skipton, 2 hours overtime
27	5	Taking stop gates to Brewery Bridge etc at Skipton
29	4	Hauling boat from Skipton to B'newton
30	4	Repairing head gates at No.2 Lock, Greenberfield
31	4	Repairing head gates at No.3 Lock, Greenberfield
June 1	4	Taring low gates and painting milestones at Greenberfield
2	4	Hauling boat to B'newton and lettering milestones
3	4	Making pounders etc for puddling at B'newton
5	5	Sawing and putting sill in at No. [?] B'newton
6	5	Sawing and letting plates in lock gates at B'newton
7	5	Hauling boat to Skipton and driving sheeting at Skipton
8	5	Driving sheeting etc at Skipton
9	5	Planking stage Skipton stable and repairing Bradley Bridge
10	5	Making wheelbarrow trundles for Skipton Rock at B'newton
12	5	Sawing and making wheelbarrow trundles for Skipton Rock at B'newton
13	5	Proping sheeting etc at Skipton
14-15	5	Assisting Mark Cutler at sheeting dam Skipton
16	5	Sawing and changing clough gear etc at Top Lock B'newton
17	5	Sawing and making shafts for Rain Hall Rock at B'newton
19	5	Drawing and repairing sheeting belonging to Apperley Bridge at Skipton
20	3	Taking sheeting to Stockbridge
	2	Drawing own sheeting at Skipton
21	5	Repairing sheeting etc at Skipton
22	5	Loading boat at Skipton
23	5	Hauling boat from Skipton to B'newton
24	5	Discharging boat at B'newton

Some Yorkshire Canal Families involved with canal maintenance

Turner Family

John Turner, born 1844?, died 1928 aged 84, 58 years service as a carpenter, ending up as foreman carpenter at Bank Newton, first living at Paradise Cottages, Marton Road, then moved to the Carpenter's House, Bank Newton, and on retirement to Scarland Lock where he assisted the lock keeper. Grandfather of Daniel.

Alfred Turner, born 1868?, entered service 1878?, carpenter at Apperley Bridge and Bingley, 1903-29, retired circa 1932.

Arthur Turner, born 3-2-1896, entered service 1-9-1910, carpenter at Apperley Bridge 1914-29, in 1915 enlisted in the *Bradford Pals*, embarked for Egypt on 6-12-1915.

Daniel Forshaw Turner, born 21-6-1897, started as half-timer at Tom Wilkinson's Apperley Bridge boatyard in March 1911. Taken on as apprentice, then firm closed. He joins Ramsey's boatyard at Shipley in Feb 1913, but found it too far to travel, so joined the company in June 1913 at Apperley Bridge, where his father was foreman. He worked there for 49 years. He became chargehand in 1928, then foreman for Leeds-Kildwick in place of his father in 1932, and then District Foreman for Leeds-Barnoldswick, ending up as engineer (inspector?) after nationalisation, taking over from F W Bateman. His Great-Grandfather was the 2nd lock keeper on the Rufford line. His Grandfather started work in 1867 and worked with Dan's father on the construction of Winterburn Reservoir.

Richard Turner, born at Bank Newton. John Sugden worked under him and was a member of his Methodist Choir at Gargrave.

William Turner, entered service at Bank Newton as apprentice, carpenter at Apperley Bridge, 1929.

Harry Turner, joined the colours 28-1-1916. May not have worked for the L&LC.

Bateman Family

Peter Walshaw Bateman, born 1806, died 1876, buried in Idle Parish Church in coffin made at Apperley Bridge from 2 in thick oak, worked as carpenter at Apperley Bridge from 1833 for 49 years. Grand father to Fred W Bateman.

Earl Walshaw Bateman, born Apperley Bridge ?, died 1912, buried at Skipton, worked for company for 50 years. Father of Fred W and Albert Bateman. District Engineer. Fell down office steps at Skipton and broke his neck.

Fred Walshaw Bateman, born Skipton 1880, died 22-7-1948, aged 68, started as apprentice at Apperley Bridge, succeeded his father as District Engineer in 1912, retired in 1945, and even then worked in advisory capacity. Was third member of the family to be District Engineer. Under his care were 72 locks, 7 reservoirs, and 2 tunnels. ie Blackburn to Leeds. His coffin was made at Apperley Bridge, the last to be made by the canal company. After 25 years service you could get a small pension and a free coffin.

Albert Bateman (brother of F W) worked in Engineer's Dept at Skipton until retirement.

Walshaw Bateman, started as apprentice carpenter at Apperley Bridge but then went into aircraft industry, lived at Skipton after retirement. Son of F W Bateman.

Walls Family

Grandfather started on the canal around 1843.

Benjamin Curry Walls, born 1878, married 1899, died 1947. He followed his father as lock keeper at Gargrave in 1893, was Traffic Inspector from 1903, and set up own business in 1921. (guarantors of business G S Green of Bradley, J R Openshaw, Basil Green of Gargrave and John Bownass of Hellifield) Four sons (all played for Skipton Rugby Club) and four daughters?, including Mrs Lucy Betts (née Walls) and Benjamin Earle Walls (eldest son), T Norman Walls, and R M Walls (youngest son). These three sons were employed by Canal Transport Ltd as Agents, their father being Boat Superintendent. (Earle was responsible for restoring waterway traffic on North German canals after the Second World War.

Pemberton Family

Bill Pemberton, brothers Edward and Dick. Great grandfather Henry Gill, mason on Liverpool section of the canal. Grandfather Robinson owned three boats, gave one to each daughter. His mother married Edward Pemberton. Bill started as apprentice carpenter at Finsley Gate in 1919 aged 13, then transferred to Apperley Bridge aged 27.

The following is an interview about his life and work:

My grandfather worked on the canal. My great-grandfather and his son were masons called Henry Gill and they helped to make Liverpool Locks, and my great-grandfather was supposed to be the first chap that went down Liverpool Locks. (When was that, Mr. Pemberton?) Going to the River Mersey. (Yes, and what date?) Roughly it would be 1775 [That was when the canal opened to Liverpool, the locks opened in 1854].

My grandfather Robinson - he was a joiner and wheelwright - bought his own boat and came to work on the canal as private carriers. He had three boats running, and when his daughters married, he gave all his daughters a horse and a boat as a wedding present. My mother married Mr. Edward Pemberton and he came on the canal. Mr. Pemberton's sons are Edward, Dick and myself; we all came on to the canal and I came on as apprentice carpenter at Burnley Yard. (That was your first job? And what date would that be then?) 1919, I was 13, and from then I worked there until I was 27 and then I was transferred to Apperley Bridge. I worked at Apperley Bridge until I was 65 and I only had one week off in that time. It was an accident; it was not sickness; I never had no sickness at all. And I enjoyed every minute working on the canal and I always enjoyed going to work.

I met lots of good people such as Bateman who was the inspector, and Albert Sugden, and Turners - Alf Turner - he just retired when I went to Apperley Bridge and Dan took foreman's job on. Uncle Dick we called him! Dick Turner, then there was John Sugden. After old Dick, Frank Burton, but he was not a canal man; he was an outside joiner. Dick Turner he was born at Bank Newton and he stopped there until he was 80.

When I was at Apperley Bridge, we made a pair of lock gates every year and a turn bridge every year. They said that if we missed one year, you were behind in the programme for maintenance, and then when Government took over, they stopped making gates at Apperley Bridge and had them all mass production, like. [The new repair yard at Wigan opened in the 1950s for making gates] (So your job was taken from under your feet?) That's right, and a lot of redundancy happened then. (How many carpenters had they at full strength?) They had 13 at one time at Apperley Bridge and then it got down to two. Those two carpenters went just before I finished. A young chap called Stanley Bradbury worked with me. We were the last two carpenters, and we were supposed to be just nailing plates on and fixing and repairing, but it got as we were putting gates in at finish. Where there used to be about 24 of us putting gates in, it ended up with two. (A question about 3 legs [a portable crane used for lifting lock gates]) I was glad to finish with three legs because it was getting horse work. It had been a pleasure previously as we always had plenty of help, but all those new men that were coming on - you couldn't find them and they were no good at all, and if we wanted a lift they were somewhere else if they knew there was a job coming off. (So that left you with two?) When I left there was one and he finished ten months after me did Stanley Bradbury. His father had been a lock keeper at Esholt [Field] Locks. They were canal people, and his father came from Leeds. When I was there they used to bring about 100 boats a week up to Kirkstall Power Station you know. It was going night and day that power station.

(Apperley Yard had, at one time, 17 men working there — carpenters, 2 masons, a sawyer, sawyer's labourer, engineman, blacksmith and striker.)

Notes re staff from the Apperley Bridge maintenance yard time books

c1900 Apperley Bridge time book noted those in service:

<i>name</i>	<i>position</i>	<i>born</i>	<i>entered service</i>	<i>salary</i>	<i>increase</i>	<i>date</i>
Samuel Beck	foreman	1863	1878	£85/16/0	£7/16/0	1896
Joe Baines	carpenter	1860	1874	£72/16/0	£5/4/0	1892
Tom Brooke	carpenter	1865	1881	£72/16/0	£5/4/0	1892
Jno Sunderland	carpenter	1872	1885	£72/16/0	£15/2/0	1893
Frank Ford	carpenter	1879	1894	£72/16/0	£23/8/0	1900
Arthur Buck	app. carpenter	1885	1899	£23/8/0	£5/4/0	1900
Joe Hird	blacksmith	1870	1893	£72/16/0	£5/4/0	1897
Ben Goodall	striker	1868	1895	£52/0/0		
Seth Sellers	sawyer	1863	1893	£52/0/0		
Wm Marston?	engineman	1874	1899	£60/8/0		
Jno Briggs	sawyer	1828	1878	£72/16/0		
Wm Briggs	sawyer	1852	1878	372/16/0		
A Turner	carpenter	1868	1882	£72/16/0		
A Sunderland	pensioner	1837	1866			

H Moorhouse	carpenter		1873			
E Moorhouse	Newlay lock kpr.	1814	1829	£50/0/0		
Jno Whipp	Forge lock keeper	1837	1879	£50/0/0	£5/0/0	1883
Jno Aunt?	Field Lock	1828	1872	£50/0/0		

Apperley Bridge Pensioners in 1932:

T Taberner, 10/- per week; R Farnell, £1 per week until he is 65, then 10/- per week; J Jolley, 5/- per week, services about to be terminated; 1935, F Tempest given 10/-pension; 1936, George Sugden given 10/- pension on reaching 65, had been 15/- per week.

Canal Company Houses circa 1921

Houses were provided for canal workers alongside the canal at many places. Bank Rangers were the men who did the day-to-day repairs, such as keeping the vegetation cut back and stopping leaks. The Lockkeepers helped boats through the locks and recorded their passage, sending details daily to the canal's head office, so that tolls could be estimated. Houses were also provided for the agents in charge of the operation of the warehouses, such as at Blackburn, Burnley and Bingley.

Pall Mall: four houses	Wigan 8 th Lock (L)	Bank Newton, 3 houses
Lightbody Street (L)	Aspull (L)	Gargrave (2L)
Litherland Bridge	Adlington (B)	Skipton (B)
Aintree, Hancock's Bridge	Chorley, house	Stockbridge, house
Maghull (B)	Chorley (B)	Bingley, agent's house
Lydiate (B)	Whittle, Johnsons Hillock (2L)	Bingley (2L)
Burscough: two houses	Heapey, Top Lock (L)	Bingley, house
Tarleton (L)	Brindle, cottage	ShIPLEY (B)
Tarleton: seven houses/cottages	Hoghton (B)	ShIPLEY, two houses
Lathom, Top Locks: four cottages	Nova Scotia, agent's house	Apperley Bridge (L)
Spencer's Bridge (B)	Highfield (L)	Apperley Bridge, three cottages
Appley Bridge (L)	Eanam, two houses and cottage	Rodley, two cottages
Dean (L)	Rishton (B)	Newlay (L)
Dean; two cottages	Clayton, toll house	Kirkstall (L)
Crooke (L)	Rose Grove, warehouseman's cottage	Armley (B)
Ell Meadow (L)	Burnley, three houses	Wortley (L)
Wigan: six cottages	Barrowford (L)	Leeds, two houses
Henhurst Bridge, toll house	Barrowford, agent's house	Leeds (L)
Abram, house	Foulridge, agent's house	Total 99 houses
Leigh (L)	Foulridge (B)	
Leigh: two houses and cottage	Salterforth, two cottages	L=lock house (25 off)
Wigan, 16 th Lock (L)	Barnoldswick, agent's house	B=bank ranger's house (12 off)
Wigan 11 th Lock, marines hut	Greenberfield (B) (L)	62 houses for other staff

Canal Constables, 1841-1851

From 1840, canal companies were allowed to have their own police force. These are extracts from Leeds & Liverpool Canal Company Committee Minutes regarding Canals (Constables) Act, 1840. Note: The dates shown are those of the Committee meetings, not the dates from which actual events took place. Many events were confirmed retrospectively and as the Committee met only every other month a time delay may have ensued.

17-4-1841. A list to be drawn up by the Water Sub-Committee (which looked after a number of other things besides water supply) of '... which of the Company's servants as they may think fit to be employed as a Police force who are to be directed in their duties by printed instruction'. under the recent Act authorising special canal constables.

7-4-1842 Water Committee authorised to spend up to £300 per year as an experiment in use of special constables 'to prevent depredations and robberies', if they consider it an efficient measure.

26-7-1842 Thomas Batho, of Manchester Police appointed Superintendent of Police on canal at £150 per year, plus

‘reasonable travelling expences’.

17-11-1842. Police Inspector Batho instructed to hire *‘three suitable men to act as his Assistants...to attend this meeting to receive the sanction of the Committee and be sworn in as Constables under... Vict.3 & 4, Cap.50. Their wages to be 18 shillings per week and when they are called so far from home as to be necessarily detained all night, to have one shilling a day allowed for expenses.’* The following orders laid down.

1. The Inspector to keep a *‘regular Journal of his transactions and record particularly what may take place in his Department’* with a copy to the Principal Agent (General Manager) every Thursday and a full copy to be laid before each Committee meeting.

2. All Agents (i.e. wharf clerks etc.) lock keepers, and bank rangers to be instructed to report any act of pilferage or robbery within their knowledge and to give the inspector every assistance.

7-2-1845. Superintendent Batho has made regular reports, which have been approved.

15-3-1843. Report from Batho of pilferages by lock keepers Joseph Priestley (Bank Newton), George Priestley (Barrowford), Archibald Muir (Nova Scotia) and William Hartley (Blackburn). They are to be discharged unless they can prove the charges unfounded. Water Committee’s decision to be final.

5-5-1843. Above lock keepers discharged by Water Committee, Approved.

19-7-1843. Batho reported that mill hands at Burnley in the habit of using the towing path and warehouse yard as a ‘common road’ which he had ‘suppressed’. Mill owners asked committee for right-of-way along path and through yard to be granted for a small annual fee. George Priestley, one of the discharged lock keepers, had been with the Company 45 years, so it was decided to find him another position.

14-9-1843. George Priestley appointed to Bingley Three Rise locks.

‘Mr Batho reported that a great nuisance was created by the running of Mr. Charles Crabtree’s Packet from Blackburn to Burnley many persons running after the Packet along the Towing Path and injuring the swivel bridges end fences and he permitting drunkenness and bands of musick and riotous behaviour on board the Packet during the Sundays, and Mr. Nicholson having reported that on the late survey (by the Committee) Mr. Crabtree was called before the Committee at Burnley when he promised that no more music should be allowed on board his Packet, and that it should be kept more orderly in future. Resolved that... Mr. Batho... to see that the mangement of the boat is kept more orderly and to inform Mr. Crabtree that unless they see some improvement the Company will take ulterior proceedings against him’.

12-4-1844. Batho submitted report re Cragg of Salterforth, trespassing on the canal banks by ‘leading lime’ (i.e. carting lime). Law Clerk instructed to write to Cragg threatening prosecution. More complaints re drunkenness on Crabtree’s Packet between Burnley and Blackburn. Law Clerk to ask Commissioners of Excise to withdraw Crabtree’s licence to sell ale and spirits on board. (Commissioners declined to do so not within their province.)

10-7-1844. Reservoirs becoming low. Police to detect leakages or *‘non-return of water used for the supply of mills’*.

20-9-1844. Batho ordered to send two of his assistants temporarily to assist the lock-keepers at Blackburn during the present dry season, to conserve water.

8-7-1845. During evidence in the House of Commons Committee re Liverpool & Bury Railway Bill which L&LC opposed, Lord Balcarres agents stated that pilferage of coal during transit on L&LC amounted to 10% of total tonnage shipped. Canal Committee when informed of this, instructed police to give attention to this. (Lord Balcarres owned a number of pits in the Wigan area, and almost his entire output was shipped on to the Lancaster Canal (South End) and the L&LC. He was supporting the Railway Bill.)

2-2-1848. Batho reported robbery on 14-1-1848 at Dean Lock, when Molyneux, a company servant, was ‘violently attacked’. Three men committed to Lancaster Assizes, to be prosecuted by the Company.

13-4-1848. Company’s prosecution dropped, owing to other, prior, charges against one man, and lack of identity for other two. The first man sentenced to 15 years transportation.

14-9-1848. Batho dead. Successor to be considered by Committee.

16-1-1848. Abraham Beanland appointed Police Superintendent at £100 p.a.

18-9-1851. *‘...services of Head Constables (sic) employed by this Company to be dispenced with at the end of the present year, and their Assistants at the expiration of a month’s notice...’*

N.B. In 1850 the Company had leased its carrying business to the Midland, L&NW and L.& Y. Railways for 21 years, retaining only the coal and mineral traffic, and the actual upkeep of the canal in its own hands. Presumably it was felt that the railway companies could provide their own police.

Ice Breaking on the Leeds & Liverpool Canal

Every canal had its own individual identity and methods of operation. This included ice breaking, with many different designs of ice boat to be found around the country. The horse-drawn ones on the Leeds & Liverpool Canal were particularly unusual in that they were roughly triangular in cross section. Their keel was made from a long baulk of hard wood, with vertical side planks that were slightly barrel-shaped, finishing in a square triangular transom at either end. The triangular shape may have made them easier to handle should they be pulled out of the water onto the ice. This was not that uncommon as the bow of the boat was ballasted to be out of the water, the weight of the keel, together with rocking, then breaking the ice. Obviously, the wood was also covered in thin iron plate to protect it from the sharp edges of the ice which could easily remove the oakum from a horizontal seam or even wear through the wood.

The Leeds & Liverpool had a large number of horse-drawn ice boats, and these were kept sunk during the summer. Amongst the locations were the wide 400 yards from the top of Greenberfield, and in various of the larger winding holes. Remains can still be found at Armley warehouse, Niffany (near Skipton), and on the disused Lancaster Canal below Johnsons Hillock. One went to the Boat Museum where, although it deteriorated badly, it was fully recorded.

Besides horse-drawn ice boats, there were also three steam tugs, Nos **56**, **57** and **58**, which were adapted for ice breaking by bolting an iron frame onto the stem post. All steam and motor boats were expected to be able to work through thinner ice, with the ice boats brought out when it became too thick.

The higher sections of the canal, between Barrowford, Bank Newton and Bingley, were most prone to ice, though traffic on the other sections could also be affected during prolonged cold weather. Control of ice was helped by the extensive use made of the canal's water by mills for condensing the exhaust steam from their engines. This made the engines much more efficient and provided additional income to the canal. Charges were related to the horse power of the engine, with a requirement for returning all the now-heated water to the canal. Through industrial Lancashire and down the Aire Valley below Bingley, the many mills warmed the canal water, and those who grew up near the canal's banks often recall the benefit to youthful swimmers.

The water from reservoirs also tended to be warmer, such that ice on the canal below where a water supply fed into the canal was often thinner. This effect was used to control ice between Greenberfield and Bank Newton following the opening, in 1893, of Winterburn Reservoir and the pipeline to Greenberfield. Four branch pipelines were installed in 1907, the slightly warmer water from the pipeline helping to reduce ice thickness on this section.

The problem of ice on the canal goes back almost to the opening of the first sections of the canal. It was mentioned by the canal's committee in November 1779, when it was noted that John Hustler, an important canal shareholder and Bradford committee member who also had coal mines in the Douglas Valley, was using an iron plate fixed in front of the bow for ice breaking. The following month, the canal's Engineer at the time, Richard Owen, produced several drawings and models of ice breakers, and it was agreed to build a pair of 'sallying' boats as well as an 'engine' on a raft as arranged in one of the models. Were the 'sallying' boats the first of the canal's unique style of ice breaker? Unfortunately, we will never know.

Three years later it was noted that, during a period of ice, boats operating on the Liverpool length were to be divided into three groups, one loading, one unloading, and the third following the ice breaker. The type of ice breaker was still not fully developed as, in 1785, Hustler reported that the ice boat used between Bingley and Holme Bridge was rendered entirely useless, and that a new one was to be built to the plan of John Harrison. Methods of operation were also still being formulated for the Liverpool length. In 1797, ice breakers were to be sent out only if there were at least 20 boats waiting. Early in 1803, they could go if six boats followed as they were needed to relieve the shortage of coal, but the following winter, 12 boats had to be waiting before the ice breakers were sent out.

With road traffic at the time, it was probably quite easy to decide when wagons were capable of moving. Canals brought a new problem in balancing the demand for cargoes and the need to keep boats moving against the cost of keeping the canal open, if possible. It was a problem that was to remain until the carriage of cargo ceased.

Ice closed the canal on a regular basis, though not as often as for drought. It is difficult to give precise details because the closure often affected just the length from Greenberfield to Skipton. The various figures mentioned in reports are also difficult to assess. One states that in the 21 years between 1884 and 1905, the canal was closed throughout by ice from 21 December to 26 January in 1890/1, from December 27 to January 18 in 1892/3, and from January 12 to 14 and February 5 to March 6 in 1895, a total of 12 weeks. In same period it was closed for about 61 weeks because of drought. A second report noted that the canal was also closed for a couple of days in 1887, a couple of days in 1897, six days in 1900, three in 1910, eight in 1912 and eighteen in 1917.

The carpenters' day books for the workshop at Bank Newton gives a further insight into how ice was handled. In

November 1882, they spent several days fixing the ice racks at Eshton Road, Irland, Anchor, Scarland and Stegneck Locks. These were shoots fitted over the bywash down which broken ice was passed. Others were fitted at overflows to allow the ice to be deposited into nearby rivers or streams. They got rid of the broken ice which could cause problems for passing boats if it got into a lock chamber and behind lock gates. The carpenters also made ice pounders for breaking the ice by hand, and they would also assist with passing boats through the locks, or even ice breaking. At such times, everyone had to help in keeping traffic moving.

During and after the First World War, Robert Kendrick was lock keeper at the top of Bank Newton, and his diary gives further details of how ice was dealt with. From the 1st to 16th February 1917 he noted that they were ice bound, but then, with nine horses and 13 men, managed to break the ice as far as Ulber, about a mile, before giving up. They finally broke through on the 20th allowing three boats to pass. Later that year, on December 4th, they set off with ice boat No.9 for the first time following 9 hard nights of frost. The ice was three-eighths of an inch thick and they used one horse with three men. By the 23rd the ice was too thick and the steamer had come to assist in keeping the canal open. 1925 was also a bad year as on the 12th November he noted five-eighths of an inch of ice, with one of the local carpenters, Richard Turner, coming to remove the wash boards at Hulber and the 2nd lock, presumably so they could act as ice shoots. He described December 4th, as the worst day he had had at Bank Newton for snow, ice and boats, with 30 boats passing on the 8th after the canal reopened.

Winter was not all hard work on the canal. Lucy Betts, daughter of Ben Walls at Higherlands Lock, Gargrave, interviewed around 1970 by one of her brothers, recalled that ... *the ice boats had to be constantly going from one end to the other to keep a way open for special cargoes, which may be for urgent shipment to Hull or Liverpool.*

At times, it took ten men to swing the triangular boat from side to side, with 12 horses pulling away in the forefront. Of course, the boat was made of oak and its front and sides plated to battle with the sometimes 6 inch or even 8 inch of ice.

When the worst happened, and we could do no more, that portion of the canal was closed. Then, of course, came the excitement for the children. Skating, There were devious ways of learning to skate on the canal. In those days the skates were mostly wooden, with steel runners and leather straps. This was the hay time for the saddlers, who not having collars to renew or harness to fettle, found his income in making skates, which were in great demand. Father used to flood the pool between Anchor Bridge and Higherland Lock, and the frost soon made it beautiful for skating on. If it snowed, we were asked to sweep it clean, and thus charge 6d for an evening skating. We also supplied roast potatoes. I remember once skating to Skipton, to school, getting off at Dewhurst's Mill. Of course, we had also to climb out at the bridges, in addition. It was a sad day when we saw the tug, or ice boat, finding itself able to break the ice, breaking up our 'playground'...

Many people used reservoirs for skating, and this could be a hazardous. Such was the case at Rishton in 1870, when the reservoir was being used by a large number of skaters. A day or so earlier, two had fallen through the ice, but had been able to get out. But on this day a 'string' of skaters were enjoying themselves when the ice broke, with nine people falling into the water. Four of them drowned.

The difficulty in keeping the canal open was further explained by Dan Turner, who was in charge of the Yorkshire section of the canal from the 1940s:

... during very frosty periods, when the ice was so thick, even if we could manage to break it, the horses could not pull the boat through the loose ice, and the locks were full of ice also; you could not open or close the gates or manoeuvre the cloughs in any way, and there were times when the traffic was stopped until there was a break in the very severe weather.

During the early 1940s, when we had two very severe winters, the only little bit of canal that I managed to keep open during the whole of the time was from the terminal lock at Leeds up to the Kirkstall Power Station. We managed to keep that going, but with great difficulty; but from there right over the summit and into Lancashire, Wigan and beyond, it was all closed ... the Electricity Department were very very keen to keep the waterway open. In fact, every man I put on, they put one on of their own to help with the boats - an extra man on every boat. If I had 20 men working on the ice breaking, they had 20 extra men on helping, and with a little bit of team spirit, with great difficulty, we managed to keep the canal open. We worked 7 days a week, and we were averaging 14/15/16 hours a day sometimes, but we carried on. It was very hard, and I was very grateful when there was a thaw, I can assure you...

The hard work necessary for keeping the canal open in winter was recognised during the war, with those employed on ice breaking receiving additional rations.

With so much done to counter the effects of ice, it is perhaps ironic that it was the freezing winter in 1963 which led to the end of traffic on the canal's main line. Coal from Wigan to Liverpool Gas Works, and from Burnley to Whitebirk Power Station were the two major traffics at the time, though both were suffering as well from a deterioration in the quality of the coal supplies. The closure of the canal because of ice was just the last straw.

The cost of managing work on the canal was always being reviewed. The following report looks at Wigan Repair Yard, and gives an idea of who worked in the office and how their jobs were organised.

LEEDS AND LIVERPOOL CANAL COMPANY.
Secretary & Accountant's Office, Liverpool, 20th April 1926.

Dear Sir,

I have visited Wigan in regard to the Clerical Work at the Inspector's Office, and also as to the method adopted in dealing with Stores and Materials. The Office Staff is as follows:

Herbert Barnes.	Chief Clerk.	Salary	£240-0-0	per annum.
E. Ashcroft.	Clerk.	do	£180-0-0	do
G. A. Hitchen.	Junior clerk	do	£150-0-0	do
T. Barrow.	Store Keeper.	do	<u>£154-18-4</u>	do
			£ 724-18-4	do

Their chief duties appear to be as follows:

H. Barnes. Attends to correspondence. Keeps Petty Cash and pays weekly Pensions. Checks all tradesmen's Accounts and apportionments same. Prepares accounts for work done for outside firms and Local Bodies. Keeps Fitting Shop Books. do Saw Mill and other Workshop Books. Draws cash from Bank, and pays wages to Wigan Yardmen, and also other men when necessary. Makes out all orders under the supervision of Mr Moss. Obtains prices of materials required, and prepares quantities in conjunction With Mr. Moss. Collects Tolls from Wigan Lock Keepers and pays same into Bank. Pays sundry Accounts monthly. Collects Rent Accounts for District, half-yearly.

E. Ashcroft. Makes out Office and Lock-Keepers Wages Sheets, also 7 Bankrangers &c. Lists. Compares Paylists and apportionments with Time Sheets. Posts apportionments in detail in Wages Book, and transfers weekly totals into a Classification Book. Posts up Wages in Book for Income Tax purposes Makes up Wages Cash Statement, and puts money into pay envelopes for each man. Stamps Insurance Cards.

G. A. Hitchen. Typist to Inspectors. Enters Accounts in Invoice Ledger before they are sent to Liverpool Posts Tradesmen's Ledger from Invoice Ledger and indexes same. Posts appropriations of Materials into Classification Book. Enters up Stock Book from accounts marked Stock (names and total amounts) Enters details of Boat Repairs in Foolscap Book, and transfers totals to Boat Repairs Ledger. Summarises details of accounts for work done for other firms in Personal Ledger. Writes out Monthly Stock Appropriation Lists. Attends to Telephone, and does General Office Work.

T. Barrow. Has charge of Stores other than Timber. Makes issues from Orders received from Office. Furnishes Office with Returns of Issues. Makes out Blacksmiths, Sawyers & Yardmen's Paylists. Takes all Stock Half-yearly, and after being priced by Mr. Barnes, writes out the Stock list.

There is a multiplicity of Books, and more than is necessary for the efficient conduct of the business of an Inspector's Office. A lot of time is taken up in making records which are already kept at the Liverpool Office, and therefore quite superfluous. Take for instance Ashcroft's work: the major portion of his time is occupied in connection with summarising wages appropriations. It is stated that the records are required for ascertaining the cost of certain Works, but that information can be supplied by Head Office. Briefly, I make the following suggestions:-

1. That Barnes and an Assistant are sufficient to do all the clerical work necessary.
2. That the Store-keeper should be retained, and that he take charge of all Stores including Timber. That he continue to make out the Yard Wages Lists, and undertakes any copying work which Barnes considers desirable.
3. That orders from the Office for the issuing of Stores, and also written instructions to foremen be discontinued.
4. That the Gangers of all Bankrangers make out their own Paylists at least as regards names, time and rates of pay.
5. That the packeting of Wages into envelopes be discontinued.
6. That the record of Wages paid for Tax purposes be done at Liverpool.
7. That superfluous records be done away with.

I will take an early opportunity of going more minutely into the matter of the Book-keeping, with a view to putting it on a more simple basis, and also to see if more of the work cannot, with advantage, be done at Head Office.

With regard-to the question of Stores, the consideration of the best system had better be deferred, pending an investigation of the procedure adopted at the Yorkshire end of the Canal.

Yours faithfully, W Sawyer

The following list gives some idea of the changes to the top company employees. The position of Engineer was sometimes taken by the Manager. Initially there were Law Clerks, to look after legal matters, but eventually this work was given to specific solicitors. Vint, Hill, Killick were the ones in Bradford from the latter half of the 19th century, Mr Killick taking a great interest in the canal and writing a long article on its early history.

Engineers

1770, 20 July, James Brindley (did not take up the post)
 1770, 31 Aug, John Longbotham
 1770, 16 Nov, Joseph Priestley (also Manager)
 1775, 20 July, John Longbotham resigns
 1777, 5 June, Richard Owen (for 5 years)
 1782, 31 May, Richard Owen dismissed
 1782, 31 May, John Harrison in charge of maintenance
 1788, 10 Oct, Robert Whitworth reports to the committee
 1790, Robert Whitworth employed as engineer
 1795, 17 Dec, Whitworth's salary halved
 1796, Mathew Harrison, Lancashire end engineer
 1799, 11 April, Whitworth dies, Whitworth junr and Samuel Fletcher engineers
 1804, 24 Feb, Samuel Fletcher dies, Joseph and James Fletcher take over
 1820, 21 Sept, Walmesley Stanley to survey the canal
 1846, 22 Mar, James Fletcher dies and Walmesley Stanley appointed
 1860, 12 April, Walmesley Stanley dies
 1861, 15 Jan, Dymond appointed engineer
 1865, 18 Jan, Dymond resigns
 1866, 13 April, Vignoles engineer
 1870, 1 Mar, Charles White engineer
 1897, 18 Nov, Charles White retires and R H White appointed engineer

Managers, Law Clerks, etc

1801, 10 April, Hardy resigns and Hailstone appointed Law Clerk
 1810, 12 Oct, Peckover dies, son and nephew appointed Treasurers
 1826, Bottomley dies? and Robert Nicholson becomes Chief Agent
 1833, Hailstone dies and replaced by son??
 1850, Robert Nicholson dies and replaced by Tatham (dies 1870)
 1869, Tatham replaced by Thorley
 1888, Hailstone retires after 55 years and replaced by Killick
 1890, Alf Williams appointed General Manager
 1892, Alf Williams resigns and A W Stansfield becomes Managing Director
 1903, Robert Davies takes over from Williams as Secretary
 1904, A W Stansfield becomes General Manager
 1923, Robert Davies retires
Manager and Engineer
 1907, 28 May, R H White dies, A W Stansfield appointed General Manager & Engineer
 1925, 18 Nov, Robert Davidson appointed