

1875-2-4, RAIL846/20, Mr William Alsop, engineer of Preston, offers to build a steam tug, iron and wooden boats at £690, £360 and £260 respectively. The engineer to purchase on the best terms he can one tug and six of each type of boat.

1877-10-15, Rochdale Canal letter books, GMRO

21 Clarinel Road
Birkdale, Southport
15 Oct., 1877

R Eadson, Esq [RCC]

Sir,

Since I had the pleasure of writing you July 11, 74, on the subject of steam towage on canals, I have abandoned the patent I then had in hand. I have since patented propellers which are specially adapted for canal work; they were tried recently, attached to an ordinary coal boat, with a ships winch of about 5 H.Power, in presence of the Manager & Engineer of the Leeds Canal, who highly approved of the plan formed on the idea of utilizing much of the existing plant of boats, the engines, propellers etc being placed in the centre of the length of boat leaving capacity (in a 40 ton boat) to carry 25 to 30 tons of cargo with power also to tow a loaded boat from 2 to 2½ miles per hour according to the state of the canal. This it was thought would obviate the loss of lock water & delay caused where a tug & train of boats were employed for traffic.

I have a small working model whic I will gladly forward for your inspection & trial. This would shew at once what I propose.

The cost of engines & alteration of boat would be under £250.

Hoping to be favoured with a reply,

I am Sir,

yours most respectfully,

E Deakin.

1880-9-17, RAIL846/21, Four steam flyboats to be built.

1883-4-13, RAIL846/21, Committee set up to compare cost of steam and horse haulage.

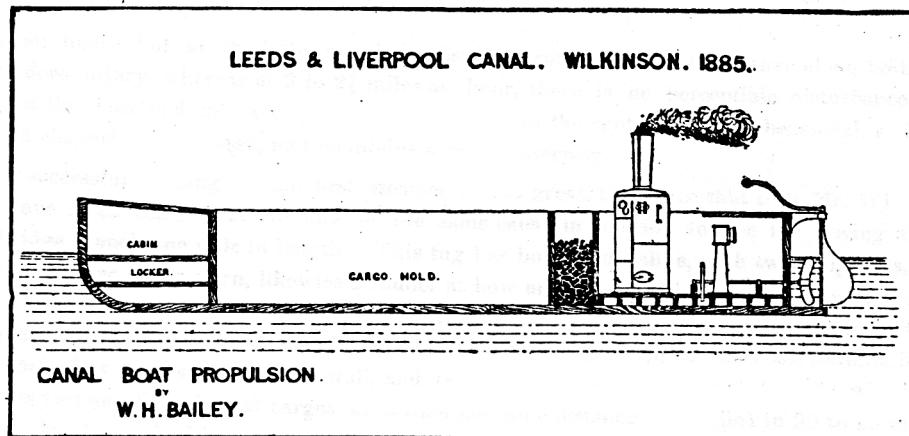
1884-7-2, RAIL846/22, John Gibson of Glasgow appointed Superintendent of steam engines at £150 per annum. Superintendent of horses to be William Byron of Moulton, near Northwich, at £120 per annum, with £150 per annum from next January if services good.

1885-12-16, RAIL846/22, Steam tug *Warrior* for use on Mersey delivered.

1886-1-22, *The Engineer*

STEAM ON CANALS,

Much is being said just now about extending the utility of canals, and employing them in competition with railways for the carriage of goods. On Saturday last Mr. Alderman Bailey, of Salford, delivered his address on taking the chair at president of the Manchester Society of Engineers, and he selected as his subject, the use of steam for canal boat propulsion. The demands, on our space preclude us from reproducing this interesting paper in full. The following extract, however, will be found to contain much suggestive and valuable, information. It refers to haulage by steam on the Leeds and Liverpool Canal.



CANAL BOAT, by Mr. W. WILKINSON, of Wigan, Leeds and Liverpool Canal.

From the year 1855, several attempts have been made on the Leeds and Liverpool Canal to introduce steam towage, and in the year 1879 the company tried a screw steamer with compound condensing engine, to tow six 40-ton barges on a river or deep canal; this was a tug-boat and carried no cargo. It was very quickly discovered that it was next to useless on a shallow canal, the section of that particular waterway only averages from 40 to 50 ft in width at the surface, with flat sloping sides under water tapering down to a mid-channel or gutter with an average depth of only $4\frac{1}{2}$ ft inasmuch as with that depth—in mid-channel only—a screw propeller of sufficient diameter could not be used to utilize the power of the engines, without a very great amount of "slip" and churning of the water instead of doing useful work, it was also found that when the least obstruction took place by meeting other barges near bridges, or sharp curves, causing the slowing up or stoppage entirely of the tug, the barges in tow would—to use the words of my informant—insist on running pell mell into one another, for the simple reason that they could not apply a brake, and further, they used to get zig-zagged across the canal in every direction, which often caused a delay of fifteen or twenty minutes before all could be marshalled and got under weigh again. Another attempt has since been made, which utilised the power of the engines with more success. Two narrow boats of about 5 ft beam were braced side by side under one deck, with a longitudinal space of about 3 ft. between each, and in this space was one paddle-wheel with a long stroke horizontal engine on deck over each boat—two engines—driving a crank on each end of the paddle-shaft, set at right angles, and across the deck stood a locomotive boiler, each boat carrying its own proportion of the weight of the boiler; the funnel had to be placed at an angle of 45 deg., so as to get under the very low bridges. This steamer towed fairly well five barges of coal, but caused a greet wave in the canal, to the manifest injury of the banks, and was subject to the steering difficulties whenever any obstruction took place, which in this canal are frequent, owing to its very tortuous character, some idea of which may be formed when it is stated that although the distance between Liverpool and Wigan is only 19 miles by railway, it is no less than 34 miles by canal, and between Liverpool and Leeds by rail is 80 miles; it is 128 miles by canal. In towing a train of five or six barges there was enormous delay in getting through the locks, of which there are no fewer than ninety-three between Liverpool and Leeds. Mr. W. Wilkinson, of Wigan, having given considerable attention to these difficulties, suggested the utilising of the ordinary barges as tugs by putting in small engines just of sufficient power to drive a screw propeller as large as could be made available without a large percentage of positive "slip" and further, to make each tug carry a paying cargo. In conjunction with Mr. Charles White, the company's engineer, Mr. Wilkinson fitted up one of the barges with engines. When tried it was found that it would tow two others very nicely at two miles an hour, and in some parts of the canal where the depth is a little greater, the speed would rise to

2½ and 2¾ miles an hour; and under similar conditions, with only one barge in tow as high as 3¼ to 3½ miles an hour, but at the latter speed the displacement sets up a rolling wave along both banks, which does injury, whereas at 2 to 2½ miles an hour there is no perceptible disturbance of the water at the sides, and only a very slight disturbance in the centre, which is beneficial, as it keeps the mid-channel well dredged and maintains a good waterway. The successful working of the first steamer was so great that since that time Mr. Wilkinson's firm have fitted up fifteen or sixteen more for the same canal, in addition to one for towing through Foulridge Tunnel, one mile in length. This tug has both ends alike, with two propellers one at the bow and one at the stern; likewise a rudder at bow and stern, so that the boat does not require to be turned about at each journey. Prior to the adoption of this tug all barges had to be worked through the tunnel by the men, who laid on their side on the gunwale of the boat, pushing it along with their feet against the tunnel wall, and taking 2 to 2¼ hours to travel the mile, whereas the tug tows two and three loaded barges at a time the same distance—one mile—in twenty to twenty-five minutes, the only hands required being the engineer and helmsman. The engine and boiler are placed as far aft as possible. The illustration on the wall is from a drawing kindly sent to me by Mr. Wilkinson. The form of propeller is the result of a very exhaustive and costly series of experiments; with full-sized ones in actual work, it gives the best results in shallow waters. It would not, however, be well adapted for deep water towage. The helmsman can perform the following duties without leaving his helm, viz.: start, stop, or reverse the engines, lower the funnel at bridges, blow the whistle, and use the auxiliary steam jet for funnel; he can also observe the condition of his boiler, for he has the water gauge and steam gauge in full view before him. As to the carriage rates charged by the Leeds and Liverpool Company, they vary from ½d. to 2d. per ton per mile, the lower rate being for minerals, coal, &c., and the higher for manufactured goods. The steamers have conducted much to the punctuality and regularity of working on the canal. When compared with horse towage, they have accelerated the speed some 40 per cent. The use of steam has also somewhat raised the status of the bargee, it being his ambition to be promoted from a horse barge to a steamer. It may not be unimportant to state that there is a moral aspect in the change from the old to the new, for thanks to the definite and regular conditions, the bargee lives in a house along with his wife and family, instead of having to live on board, so that the disgraceful and wretched conditions of canal boat life, so earnestly and ably exposed by Mr. Smith, of Coalville, have been removed.

Cost of Steamer for Twenty-four Hours' Work, Towing two Barges
fully loaded on the Leeds and Liverpool Canal.

Steamer.

	£	s	d
One captain	0	4	8
One mate	0	4	4
Two ordinary hands	0	8	0
Gas coke for engines-24 cwt. at 6s. 8d. per ton	0	8	0
Tallow-2 lb. at 5d.	0	0	
	10		
Oil-2 quarts at 10d.	0	1	8
Stores, waste, and lights	0	1	0
Two Barges			
Two captains at 4s. 4d.	0	8	8
Two ordinary hands at 4s.	0	8	0
Five per cent. Interest and 10 per cent, depreciation on first cost of steamer and barges (£1000) for one day	0	8	3

Fifteen per cent, of steamer and barges for repairs per day

0 8 8
£3 1 8

Distance averaged in twenty-four hours, including locks, forty miles. Weight carried: Steamer, 35 tons; barges, each 40 tons; total, 115 tons. Carried forty miles for £3-1s.-8d., or for 100 miles, £7-14s-2d., which gives a cost of about one-sixth of a penny per ton per mile. If 1d per ton per mile is charged, this will give a profit of £30 on this cargo on 100 miles. I am much indebted to Mr. Wilkinson for his great courtesy in giving me facilities and information about these experiments.

1886-1-29, Rochdale Canal letter book 6894, GMRO

L&LC
Traffic Manager's Office
Liverpool, 29 January, 1886

To C R Dykes Esq, RCN, Manchester

Dear Sir,

No report has been issued from this Co. as to the result of steam towage on this canal, in fact no report has even been made to our Committee upon the subject. I am therefore at a loss to understand where the information contained in the supposed report has been obtained from. If we should at any time issue a report, I will take care that you have a copy.

Yours truly, John Lee.