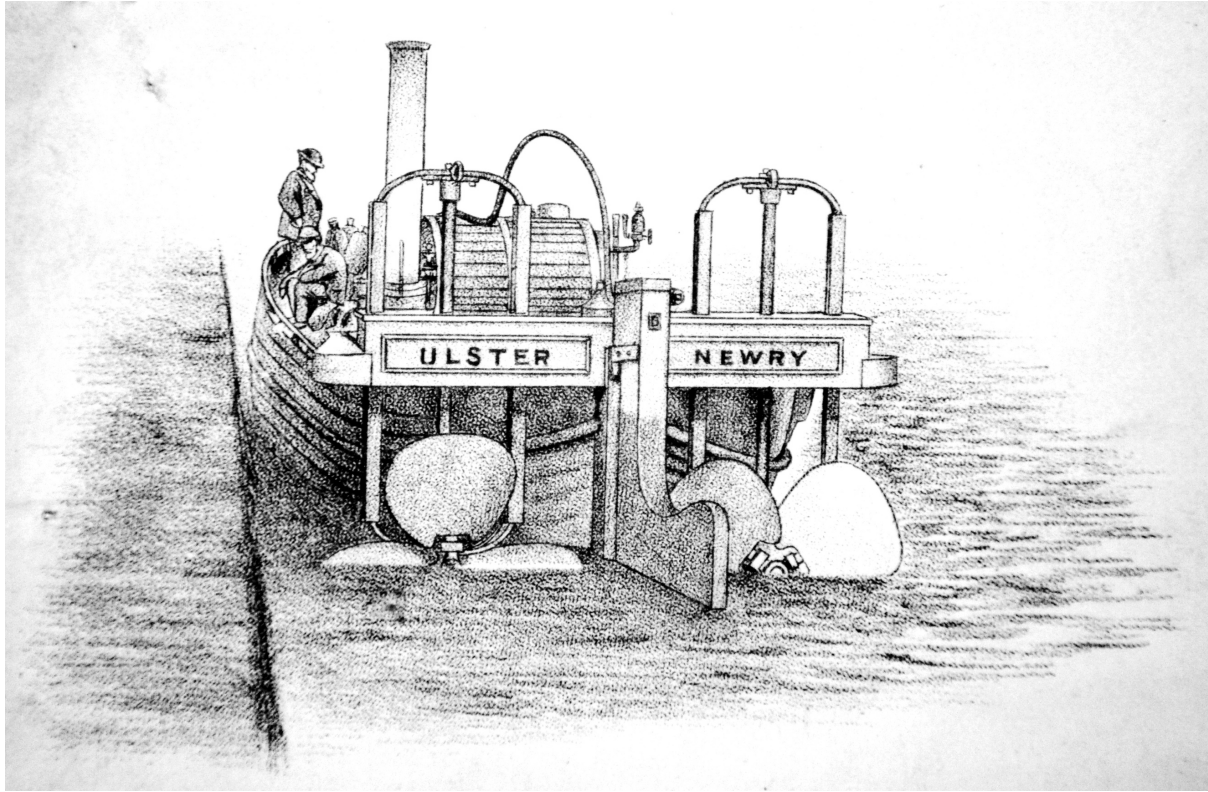


Mr Barcroft's Patent System of Propulsion: Trial on the L&LC

Accounts of the system can be found in *Engineering* in 1894 and 1897, and in the Proceedings of the Inst. Mech. Eng., 1897.



The barge upon which the above system has been applied, belonging to the Grand Canal Co., Ireland, is about 58 feet long and 13 feet beam. At the time of inspection it was carrying about 8 tons of cargo with a barge in tow also carrying about the same weight.

The two propellers, 4 feet 10 in dia. and about 5 feet 3 in pitch, are suspended on an iron or steel frame which may be adjusted to suit the varying draught of the barge. The engines are a pair of horizontal 4.5 in dia cylinders, with a stroke of 8 in., the crank shaft of which is connected to a shaft at each end upon which is keyed a bevelled or helical pinion, geared into a vertical shaft, which again gears into a bevelled wheel on the propellor boss. Steam is supplied to the engines by means of a locomotive type boiler placed on deck fore and aft, alongside of which (also on deck) are the bunkers for carrying fuel. The engines run at a speed of about 180 rpm and the propellers are geared probably at 152 or 90 rpm.

The system is certainly novel, but very unlikely to commend itself to carriers or steam ship owners. As soon as the engines are started there is a violent commotion in the water owing to the propellers being only half immersed, and the vibrations as each blade strikes the surface of the water are carried through all the gearing and the engines. The boat is of course suffering at the same time from the excessive strains which are set up by the same cause, and is certain to sustain much damage by the continuous shaking. The propellers are, from being so much exposed owing to the great area required by their large diameter, always in danger of damage by running on the slopes: in fact on the first trip one was broken, and a narrow escape of another whilst the writer was on board, although in the nine miles steamed under inspection, only one boat was met with or passed. Although the steamer and boat was only, comparatively speaking, light, and the pull on the tow rope so slight that most of the time

under way it was lying in the water, the consumption of fuel was more than any new boat which we have had engaged since I have been in the company's service.

I might by going into details of construction make a rather voluminous report — enough that I mention that the design and construction of the whole is of such a nature that it would be totally unfit for use for any lengthy period, either on this or any other canal in its present state.

Yours faithfully

John Moss, Wigan, April 24th, 1894

Sept 9th, 1895, To R H White Esq

Dear Sir,

Steam boat 'Armagh'

On Saturday the 7th met the above at Greenberfield and came through Marton Pool with the following notes:

Arrival at Top Lock Greenberfield 5-20pm

Left Bottom -do- 5-57pm

Stopped at Change Line Bridge turn

Passed milepost 87 from Liverpool 6-10

-do- 87.25 6-15

-do- 87.5 6-20

Stopped engines to shove her head off ? turn

-do- 87.75 6-27

-do- 88 6-32

-do- 88.25 6-37.5

Stopped Langber turn

-do- 88.5 6-44.5

-do- 88.75 6-50

-do- 89 6-56

-do- 89.25 7-1.5

-do- 89.5 7-7

-do- 89.75 7-13

-do- 90 7-19

Keldwell turn stopped twice

-do- 90.25 7-27

Hulber turn stopped

-do- 90.5 7-33

stopped

-do- 90.75 7-42

-do- 91 7-47

Ran on side and stopped

Arrival Top Lock Bank Newton 7-57

Note. Round the turns and curves there were 2 and sometimes 3 men at the tiller.

Yours

G W Bateman