

Cumberland, Md., 30th December 1879

Hon. A. P. Gorman
President Ches. & Ohio Canal Co.

Dear Sir,

I have the honor to submit the following report of my experiments with the different systems of boating on the canal in regard to cheapening transportation &c. during the season just passed. Agreeable to instructions received April the 5th I purchased two Boats at a cost of nine hundred dollars each and fitted them with a double steering apparatus of the pulley power patented by I. McCreary of Middletown, Pa., loaded them to a depth of four feet nine inches the usual draft allowed Boats navigating the canal and made the trip downstream to Georgetown D.C. running them both coupled together over all the levels towed by one team and steered by one steersman with the use of the double steering apparatus. At first in rounding some of the short bends I experienced some trouble by the stern of the hind Boat rubbing against the bank. This was overcome by propping the rudder of the hind Boat against it. This done I had no further difficulty in steering around all of the short bends that of Catocin which is known as the crooked aqueduct and Monocacy bend which are the shortest on the canal were rounded with all ease and safety.

Upstream light I found no difficulty whatsoever in towing both boats with one team having the apparatus fastened stationary so as to keep them in line one ahead of the other. They were steered in the usual way by one steersman with the rudder of the hind Boat with as much control and safety as a single Boat could be steered. Except at some few points where it became necessary to use the apparatus on account of the length of the two Boats to bend them into shape in order to round a short curve. I continued this system of boating nine round trips without the slightest mishap, which clearly proves beyond a doubt the practicability of navigating the canal by double Boats manned by one crew. But they have to be taken apart at the locks and passed through single which necessitates the carrying of a double crew and team for use at these points. The benefits or economy of this system of boating over that of running them apart cannot with the present condition of the locks be taken advantage of. Although it shows a gain of about fifteen percent in the earnings of the Boatmen over that of running a single Boat with the same team and crew.

I also made some tests with a steamer towing a Boat behind in which I found no difficulty whatsoever in passing over the levels, but for the same reason as with the double Boats all the economy of this system cannot be taken advantage of as a team and crew has to be carried for use in passing the tow through the locks, but as some of the steamer's engines now on the canal are of twenty-five to thirty horsepower which cannot be used to advantage on a single Boat in ordinary canal on account of the resistance in displacing the water which cannot be done by a loaded Boat to acquire a greater speed than three miles an hour. Therefore by having a tow, all the power of the steamer can be used to advantage which shows a gain in the earnings in favor of this system over that of running a single Boat of about twenty percent. On the Pennsylvania Canal from Have de Grace to Wilkes-Barre, where the lock chambers are of sufficient length to admit the passage of two Boats at once this system of double steering is in general practice. Thereby two horse Boats or a steamer pushing a Boat ahead with cargo of 270 tons is run with

the same cost of labor with a small increase of power than is required to run a single Boat on this canal with cargo of 115 tons.

The freight paid during the last season to Boatmen was generally seventy cents a ton to Georgetown or Alexandria, except by one company the Hampshire & Baltimore, which only paid sixty three cents to Alexandria and some individual shippers as low as sixty cents until the last two or three trips when it was raised to eighty cents from which the Boat trippage was deducted being twenty or twenty five dollars leaving the earnings of the Boatmen very small which was not at all sufficient to justify the investment in stock or pay for the labor of the crew, besides the dispatch was very slow some trips Boats being delayed eight or ten days waiting to get their cargoes discharged besides being idle nearly two months by the Miners [sic Boatmen's] Strike. Therefore the boating was mostly confined to parties having their own help, as the business would not justify the hiring of hands at fair wages. Several Boats were tied up a month before the close of the season for want of crews. Besides the stock on the canal is reducing very fast there not being sufficient profit in boating at the present rates to replace the loss by death or otherwise, several Boats were compelled to run daytime having but a single team. Should this condition of things be continued the business of the canal must necessarily fall off unless the trade will justify the paying of higher freights or not. It is very clear that some improvement of the canal is necessary in order to increase the tonnage so that coal can be freighted at the present rates. All the advantages that can be well taken in navigating the canal with the present condition of the locks has been done by several tests of steamers towing and otherwise but when the investments are considered with the trouble and delay of coupling and uncoupling at the locks there has been but little gained over the regular method. The tonnage being limited by the size of the lock chambers and the draft of the boat, as this limit can only be remedied by improvement of the canal and as it is clearly shown by experiment that two Boats can be boated with the use of the double steering apparatus by one crew, therefore if the lock chambers were lengthened so as to admit the passage of two Boats at once, double the tonnage could be transported at the same cost of labor, or if the banks and walls were raised so that the canal would hold one foot more water and thereby increase the draft of Boats to nearly six feet which would give an additional carrying capacity of twenty tons to each Boat then with a slight increase of power two hundred and seventy tons could be boated on this canal with the same number of hands and at the same cost of labor that is now required for one hundred and fifteen tons.

In order to operate the double Boat system successfully, it would be well to have all the seventy two locks that Boats pass through from Cumberland to Georgetown lengthened but if the thirty three that are known as the single locks were lengthened then this system of double boating could be profitably operated. Next if the twelve that stand in pairs known as the two locks, were lengthened, then in my opinion this system could be generally adopted as it could be so arranged to Boat single through the twenty seven locks that stand in groups by the Boatmen ending their stations at these points or by having a team stationed to pass the steamers through.

Respectfully, &c,
E. Mulvany

Statement showing the average time of Boats passing over levels and through locks.

Average time made by double Boats on levels down stream, loaded towed by four mules $2\frac{1}{4}$ miles per hour. Passing through locks downstream, loaded including coupling and uncoupling, 25 minutes. Upstream, light 15 minutes.

Average time made by a single Boat on levels down stream, loaded towed by three mules, $2\frac{1}{2}$ miles an hour. Up stream, light $3\frac{1}{4}$ miles an hour. Passing through a lock downstream, 8 minutes. Upstream, light 5 minutes.

Average time made by a steamer with tow down stream, loaded on levels $2\frac{1}{2}$ miles an hour. Up stream, light 4 miles an hour. Time passing steamer and tow through locks down stream. loaded 20 minutes. Up stream, light, 12 minutes.

Average time made by a single steamer downstream, loaded on levels $3\frac{1}{4}$ miles an hour. Upstream, light $4\frac{1}{2}$ miles an hour. Time passing through lock downstream, loaded 7 minutes. Upstream, light 5 minutes.

Coal used as fuel by steamer, one ton a day.

Respectfully &c.
E. Mulvany

Statement showing the amounts collected and returned as Boat Trippage for 1879.

Date	Manifest	Name of Boat	Trippage		Deduction		Amount coll.			
May 14 th	41 Md. Co.	C	\$25	00			25	00		
June 2	70 " "	"	29	27	Repairs Rossworm & B	67	29	27		
June 16	105 " "	"	28	25			28	25		
July 2	134 " "	"	29	56			29	56		
July 19	163 " "	"	28	32			28	32		
Aug 6	199 " "	"	27	78			15	67	12	11
Aug 25	229 " "	"	28	22					28	22
Sept. 6	257 " "	"	29	26					29	26
Nov. 24	282 " "	"	19	59					19	59
May 14	40 " "	D	25	00			Repairs Rossworm & B		25	00
June 2	69 " "	"	29	43					29	43
June 16	106 " "	"	28	43	28	43				
July 2	133 " "	"	29	25	29	25				
July 19	162 " "	"	27	47	27	47				
Aug 6	200 " "	"	27	55	27	55				
Aug 25	230 " "	"	27	98	27	98				
Sept. 6	256 " "	"	28	19	28	19				
Nov. 24	281 " "	"	19	63	19	63				
Dec. 6	309 " "	"	19	29	18	20			1	09
			\$507	47	\$33	87	\$473	60		
Sept. 3 1879	Paid Treasurer by check						280	00		
Nov. 8	by credit on bill						153	30		
Dec. 31	by credit on bill						40	30		
Total Amount Returned							\$473	60		

Respectfully, &c.
E. Mulvany

Statement showing the monthly earnings and expenditures of Boats run by the different methods
at 70 cents a ton freight based on reasonable dispatch.

Boats run double with four mules				Boat run single with four mules	
2 trips 4 cargoes of 115 tons each		322	00	3 trips 3 cargoes of 115 tons each	
460 tons delivered at 70¢ freight				345 tons delivered at 70¢ freight	
Expenses				241	50
hands wages	58.00			Expenses	
board	30.00	hands wages		52.00	
mule feed	30.00	board		30.00	
lines, shoeing, &c.	15.00	mule feed		30.00	
way bills & trimming	21.52	154	52	lines, shoeing, &c.	15.00
Amount		way bills & trimming		16.14	
Deduct Boat Trippage		167	48	Amount	
Net Earnings		80	00	Deduct Boat Trippage	
		\$87	48	Net Earnings	
				\$38	36
Steamer and tow with 2 mule team				Steamer run single	
3½trips seven cargoes 100 tons 115 tons		526	75	4½ trips four and a half cargoes 100 tons	
752½ tons delivered at 70¢ freight				450 tons delivered at 70¢ freight	
Expenses				315	00
hands wages	119.00			Expenses	
board	50.00	hands wages		119.00	
Fuel	35.00	board		30.00	
mule feed	16.00	Fuel		35.00	
oil & packing	12.00	oil & Packing for machinery		8.00	
lines & incidentals	20.00	lines & incidentals		10.00	
way bill & trimming	37.66	289	66	way bill & trimming	24.21
Amount		Amount			
Deduct Boat Trippage		237	09	Deduct Boat Trippage	
Net Earnings		140	00	Net Earnings	
		\$97	09	\$54	97

Respectfully, &c.
E. Mulvany¹

¹ Transcribed from the original at National Archives, RG 79, Entry 190, 150/36/7, Box 59, 1879, by William Bauman, C & O Canal Association Volunteer, July 2011. Contact: wdbauman@visuallink.com