Summer 1981

THE LOG OF MYSTIC SEAPORT



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The Log of Mystic Seaport (ISSN 0024-5828) is published quarterly by Mystic Seaport Museum, Mystic, Connecticut 06355. Subscriptions are by membership only. Contributions of previously unpublished articles and pictures are welcome. Editorial guidelines for prospective authors are available from the Publications Department. © 1981 Mystic Seaport Museum, Inc. *The Log of Mystic Seaport* is abstracted in *America: History and Life* and *Historical Abstracts*. It is also available in microform from University Microfilms International, Department F. A., Ann Arbor, Michigan 48106.

COVER: *A summer day on the beach at Watch Hill, Rhode Island, photographed by Edward H. Newbury of Mystic, ca. 1900.* (80.41.416)

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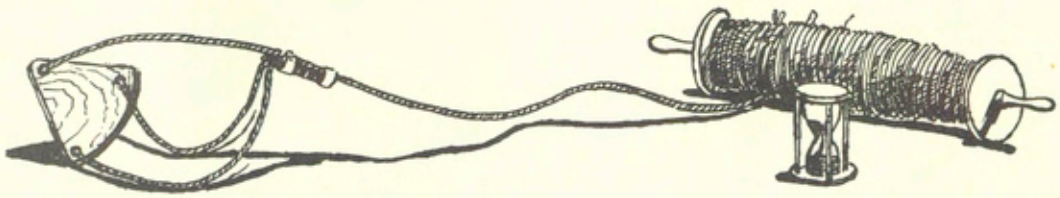
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SIGHTINGS



Everyone who appreciates Mystic Seaport is aware that it exists only because of the people who have worked so hard on its behalf. There is a vague awareness of past efforts and a consciousness of the work that goes on now to operate the Museum, but the personalities involved are frequently little known.

The recent death of our Trustee Alexander O. Vietor has caused me to focus on the Board of Trustees as a group and to reflect on how much they give of themselves for Mystic Seaport. It is not my purpose here to eulogize Alec Vietor; rather, by looking at his work on behalf of the Museum I hope to heighten our awareness of the role trustees play. Alec was a member of the Seaport for thirty-seven of its fifty-one years, and he served as trustee for a quarter of a century. It was my privilege to know and work with him for half of that time, which I found a delightful fringe benefit to museum work.

Each trustee brings a different blend of training, education, and experience, providing a complementary and well-rounded Board. Since Alec was Curator of Maps at Yale University, he was principally involved in the Seaport's museum functions rather than in its finance or administration. He expressed his views, his concerns, and his hopes for the Museum while serving on the Executive, Education, Curatorial, and Library Committees. I worked closely with him when he served on the Curatorial Committee, and I gained great respect for his interest in the collections and his eye as a connoisseur. He once told me that as a young college student he bought a portrait of a ship "outward bound," and forty years later discovered and purchased the matching "homeward bound" view of the same vessel. Persistent collectors of this caliber are rare. He was constantly mindful of the Museum's needs and alerted us when he found something important for us to acquire.

For years the G. W. Blunt White Library absorbed much of Alec's interest and energy. Its well-being has been strengthened by the founding of the Library Fellows, which he organized and which will be a continuing symbol of his support.

The overall health of the Seaport was also Alec's concern. Realizing the need to establish a sound financial base for the future, he became closely involved with the establishment of the Museum's development office a decade ago.

Alec Vietor was not a typical trustee; I don't think there is such a person among the diverse group which composes the Board of Trustees. It is through the efforts of these men and women that the Museum receives its guidance. Their role over the years has been enormous and their only compensation has been satisfaction in the Museum's attainments. We are all in their debt.

J. Revell Carr

Embargo by Ice

The Philadelphia Steam Tow Boat Company, 1832-1840

BENJAMIN A. G. FULLER

On Tuesday, 15 March 1836, in the early afternoon, the steam tow boat *Pennsylvania* got underway from Philadelphia. By dawn on Thursday, she had forced her way down the frozen Delaware River to Chester, twenty miles below Philadelphia, where a large fleet had built up since 24 January when the river froze. The trip was not easy. Trials had begun 7 March, but the boat was plagued by breakdowns. Pressure ridges six feet thick and more complicated the job. But by Sunday following her success at breaking the ice, over seventy vessels had arrived in Philadelphia, with more on their heels. *Poulson's Advertiser* of 18 March boasted that the means were now at hand to "bid defiance to the ice upon one hand and calms on the other..." The annual embargo by ice seemed to be at an end.[1]

The story of the Philadelphia Steam Tow

Benjamin A. G. Fuller, Curator at Mystic Seaport since 1978, received his B.A. in History at Princeton University in 1967 and his M.A. at the University of Pennsylvania in 1975. He was Curator at the Chesapeake Bay Maritime Museum, 1976-78. This article was adapted from his master's thesis.

Ice Skating on the Delaware, during the severe winter of 1856. This scene, near the Philadelphia Navy Yard, demonstrates Philadelphia's ice problem. Lithograph by James Queen. (Courtesy of Historical Society of Pennsylvania)



Boat Company is a story of the difficulties inherent in getting new technologies and services underway, of intercity trade rivalries and rival merchants coming together for mutual benefit, of the confusion between public service and private profit as a goal, and of the effect that events beyond the control of a businessman have on economic decisions. The company counted among its directors and stockholders Philadelphia's most powerful merchants and manufacturers. They had the power to influence public policy on local and state levels, but they could not control the private decisions of those trading in Philadelphia. Thus they failed. Exploring their failure provides us with insight into the ways of getting an enterprise underway a century and a half ago.

Tow boats were new to Philadelphia. *Pennsylvania,* owned and operated by the Philadelphia Steam Tow Boat Company (P.S.T.B. Co. or Company), had been launched on 10 September 1835. The Company itself was launched three years earlier but had trouble getting underway.

Tow boats and "ice boats," however, were not new to the United States. New York had at least one regular tow boat by 1828, and several by 1832. New Orleans, as far from the ocean as Philadelphia, had tug boats to assist vessels over the bar and up the meandering Mississippi as early as 1827. Baltimore, Philadelphia's bitter trade rival, suffered also from ice. There the ice boat *Relief* was built in 1833 and by 1835 was running regularly.[2] Indeed, Philadelphia's newspapers often used reports of her efforts to goad Philadelphia's merchants into action.

Philadelphia's representatives introduced petitions into each house of the State Legislature on 20 February 1832, asking for the chartering of a tow boat company. Transformation from petition to law was smooth and swift. "An Act Authorizing the Governor to incorporate the Philadelphia steam tow-boat company" was signed by Governor George Wolf on 9 April. The act set an upper limit of capitalization at $75,000, authorizing the sale of 750 shares, with a minimum subscription of 250 shares to incorporate. The charter included taxing dividends over 6 percent, and set limits on towage rates in order to limit the maximum dividend.[3]

The books were opened 7 May 1832, but response was not enthusiastic. Only 140 shares were subscribed; 110 below the minimum needed to incorporate. Stock subscriptions stagnated until January 1835, when 279 more shares were taken up in less than a month.[4] Stock sales continued, with the full 750 subscribed by the year's end. Subscribers were called upon to pay in installments.

The decline of initial interest in the Company is probably linked to uncertainty; in this case, uncertainty brought about by a bitter battle between President Andrew Jackson and Nicholas Biddle, president of the Second Bank of the United States in Philadelphia, over the Bank's rechartering and the future of banking in the United States. Biddle's response to Jackson's veto of the rechartering bill was to curtail credit, a move that sent vibrations throughout the business community.[5] This fight was won by Biddle, whose bank was rechartered until 1836.

But more importantly for the Company, Philadelphia's merchants were beginning to act cooperatively, to further the business of all. On 15 October 1833, at a large meeting of merchants, an association was proposed "by means of which the Commercial and Trading Communities of this city may be enabled to act with united effort on all subjects relating to their interest." This meeting seems to have been instigated by Thomas P. Cope, who chaired the meeting and was elected president of the newly formed association, the Philadelphia Board of Trade, a position he held until his death. Cope was one of Philadelphia's most influential merchants at this time, having started a Liverpool packet line in 1822 which, by 1824,



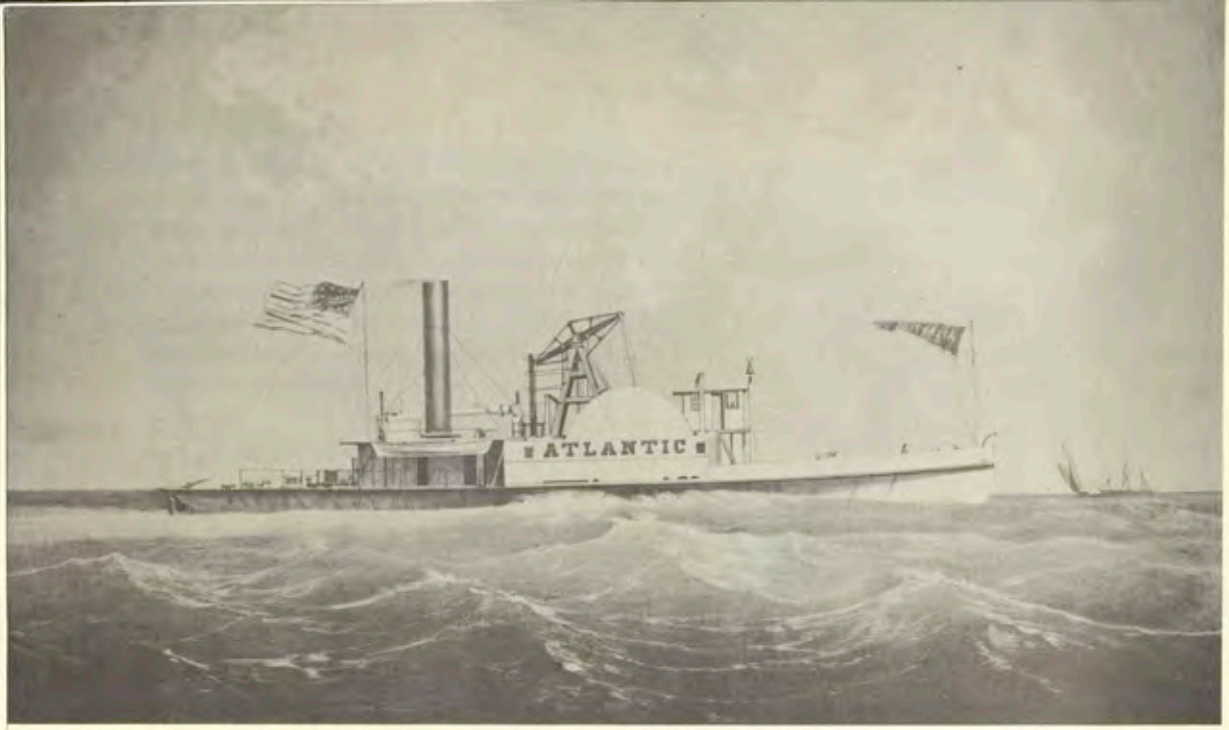
Thomas P. Cope (1768-1854), Quaker merchant and philanthropist, established the first Philadelphia to Liverpool packet line in 1822. As president of the Philadelphia Board of Trade he supported establishment of the Philadelphia Steam Tow Boat Company. His son Henry was president of the company. (Abraham Ritter, *Philadelphia and Her Merchants* [Philadelphia, 1860])

rivalled New York's Black Ball in quality of vessels. He had turned over active management of the line to his sons, Henry and Alfred, in 1824.[6]

In 1834 and '35, the Board of Trade turned its efforts in the direction of the Company. The Board heavily promoted the Company in its annual report of January 1835, pointing out that the narrow, twisting Delaware put Philadelphia at an extreme disadvantage in competing with her neighbors for trade. Geography certainly posed a major problem for Philadelphia's traders, located, as they were, some 120 miles from the open sea. New York, of course, had an excellent harbor, close to the sea. The Erie Canal gave her superb interior communications at this time of the railroad's infancy. Baltimore, which had grown rapidly during the early 1800s, had a considerable advantage in trade to the south, for voyaging up the Chesapeake put southern vessels in Baltimore at the same time Philadelphia-bound vessels arrived off the Delaware capes. Besides the sales talk, the Board may have assisted in the 1834-35 revision of the Company's charter, removing limits on profits and abolishing taxes, making Company shares a more attractive investment.[7]

With the meeting of the stockholders, 26 February 1835, and election of directors, the Company began operation. The first meeting of the directors, two days later, saw Henry Cope elected president and Davis B. Stacey secretary. Stacey was a partner in the operation of Philadelphia's first New Orleans packet line. The first order of business was to acquire one or more boats. To this end, a building committee was appointed.[8]

Technical problems of establishing a towing service seemed few. By 1835, steamboats were common on the Delaware, with at least twenty-four boats plying the river, some already fifteen years old or more. Most were low-powered ferries running between Philadelphia and Camden, or small tow boats used to take barges to the Lehigh and Schuylkill canals. At least seven, however, had engines over 60 horsepower, the largest being a Philadelphia-Bordentown packet with a 222-horsepower engine. Although Philadelphia was the home of Oliver Evans, inventor of the high-pressure engine, only two very small local boats had them. Only on the western rivers, where shallow draft made small, light engines necessary, were high-pressure engines the most common type. There they had been introduced by Evans's son at Pittsburgh, in 1811. Only one boat on the Delaware burned coal, the small tow boat *Pennsylvania,* owned and operated by the Lehigh Coal and Navigation Company.[9] Proven technology on the Delaware pointed then, towards wood-burning, low-pressure-engine boats.



Steam tug *Atlantic,* formerly the *Pennsylvania,* ca. 1857. The 299-ton *Pennsylvania* was the first of the Philadelphia Steam Tow Boat Company tugs. She was renamed *Atlantic* in 1857 and remained in active service until 1877. The *Atlantic,* 151′ x 49′ (including paddleboxes) x 10′, may have had a new engine, but otherwise closely resembled her original appearance as the *Pennsylvania.* Lithograph by W. H. Rease. (Courtesy of the Library Company of Philadelphia)

If the Company's directors had looked for information elsewhere, they would have found wood virtually a universal fuel. However, feelings on engine type were mixed. High-pressure engines were relatively new. Baltimore's ice boat, the *Relief,* had a 150-horsepower, high-pressure engine. The New Orleans tow boats all used high-pressure engines.[10] High-pressure engines had a better power-to-weight ratio than did low-pressure types, a desirable quality for shallow draft river steamers and small, high-powered tow boats.

Two strategies were open to the building committee: purchase of an existing boat, or construction of a new, specialized vessel. Advantages of the former lay in immediate availability of a working boat, but the boat would have to be adapted for winter work. Advantages of the latter lay in specialized design, but would require a delay before operation could begin. Success of the former also depended on the state of the market. The only possibility considered was the *Ohio,* with two engines totaling 169 horsepower, to be auctioned on 10 March and "said to be one of the strongest boats on our river, and perhaps better calculated for the towing business than any boat the company could immediately obtain." The authorized bid of $16,000 was $2,200 too low.[11]

In pursuing the second strategy, the building committee drew up specifications and received separate bids for boat and engine. At the directors' meeting 4 May, contracts were let to John Vaughn of Kensington to build the boat and to Rush and Muhlenberg to build the engines. The latter was an especially critical selection, as the building committee, departing from usual Delaware practice, specified high-pressure engines, and anthracite firing.[12]

John Vaughn, shipbuilder, and Rush and Muhlenberg, engine builder, were two of Philadelphia's more prominent companies. Vaughn had built a number of Cope Line

packets as well as numerous steamboats. He was selected after four or five designs, including one from Baltimore, were inspected. Rush and Muhlenberg were the city's most prominent stationary steam engine builders. They had built one small high-pressure marine engine, but were quite familiar with the technology, being successors and sons-in-law to Oliver Evans. Two engines were needed, each of seventy-five horsepower employing steam at seventy-five pounds of pressure. They were mounted horizontally over three iron boilers fitted to burn anthracite coal. The 150-foot boat cost the Company $37,911.72, with Vaughn's charges $9,496.70, and engines costing $18,000.[13] Although the boat, named *Pennsylvania*, was launched four months later, on 10 September, construction of the engines lagged behind schedule. Promised for mid-October, they were not completed until March of 1836, because of problems in fitting the boiler tubes to the boiler.

The first trials of the *Pennsylvania* in mid-March were, as we have seen, a resounding success, meeting with enthusiastic acclaim. "*Hundreds of thousands* of property was ice bound; and in all probability would have remained so for two weeks longer," pointed out the editor of *Poulson's Advertiser*. He continued:

> When we are subject to this sort of *embargo* and can by the means of steam power raise it, should we not always be provided with it?... We will therefore take the liberty of suggesting that *one* ice boat is not sufficient. There should be *two* at least. If it is good policy in peace to prepare for war; it is no less good policy in summer to prepare for winter. Let not, then, the approach of spring thaw our purposes...[14]

The Company agreed. At a stockholders' meeting 26 March 1836, the construction of a second boat was authorized. Specifications for a new boat, called *Delaware*, were similar to *Pennsylvania*. Again, bids were received for boat and engines. John Vaughn repeated as shipbuilder, but dissatisfaction with Rush and Muhlenberg's engine delays led to the selection of a new engine builder, Daniel Large.[15]

Based on experience with the *Pennsylvania*, the *Delaware* was reinforced more heavily, including partially iron-sheathed paddle wheels and a retractable rudder guard for backing in ice. She was to have a small extra engine to supply boiler feedwater, instead of powering the pump from the main engines.[16]

Although Daniel Large had been building engines since 1808, he seems to have been much less experienced than Rush and Muhlenberg who had in 1837 at least twenty-six stationary engines operating in Philadelphia. Large had only five. The *Delaware*'s were his first marine engines. The selection of Large is puzzling, but may have lay in the fact that no Philadelphia builders had much experience with marine high-pressure engines, with only five on the river in 1838. Vaughn charged $9,930.65 for the boat. Large was paid $13,431.29 for his engine work, bringing the total cost of the second boat to $34,629.63.[17]

Contracts were let in May 1836. By October, the *Delaware* was nearly ready for launch, but the launch was delayed pending completion of engines. Again, the engines promised for October were delayed "in putting the tubes into the Boilers, owing to the difficulty of finding a person who understands how to braise the tubes," as the building committee pointed out in September. Finally, work progressed enough to allow the boat to be launched on 20 October. The engines were tried on 21 November, but the boilers leaked. Failure after a third trial convinced the building committee to attempt a temporary repair. At least six weeks would be needed for a permanent repair. The temporary expedient, caulking the leaks "by mixing suitable substances for the purpose, with the water in the boiler," worked sufficiently well when tried on 20 December to allow the boat to be put into operation Christmas Eve, 1836.[18]

While the boiler battle was being fought, capital raising continued. To fund the *Pennsylvania,* by the end of 1835 four installments of $10 on the initial share issue had been called in. An attempt to increase the Company's capitalization to $100,000, begun in 1835, finally passed on 26 March 1836, just after the *Pennsylvania*'s first success. By January of 1837, all installments had been called in; only 50 shares of the new issue were unsubscribed. Installment payment was, however, not prompt; only about three fourths of the capital, or $75,000, had been received.[19] Almost all of it was tied up in the boats, whose cost totalled $72,541.35, leaving the Company few reserves to combat any problems.

The *Pennsylvania* had been operating regularly after a short interval in March to repair damages suffered in her first trial. By the end of 1836 she had towed some 247 vessels, earning $14,300. This, however, fell about $4,000 short of meeting her running and fuel expenses. The directors, reporting on the events of 1836, attributed this to lack of sufficient compensation for opening the navigation in March, feeling that a large bonus might have been warranted; to the initial trial period of any new enterprise; and to the Company keeping rates low to attract new business.[20]

The Company's situation at the beginning of 1837 was not unpromising. Both boats were in operation on the river, allowing continuous service to be maintained while one boat was repaired. Support, as signaled by stock subscriptions, seemed strong. But two problems clouded the horizon. The boiler problems of the *Delaware* had not been permanently solved and the *Pennsylvania*'s first year of operation was at a loss.

These problems persisted. The *Delaware* was laid up most of the spring of 1837 for final attempts by Large at stopping the boiler leakage. Reporting on progress in June, the executive committee was "by no means sanguine that Mr. Large's attempts will prove effectual." Their pessimism was justified. During trials in July the leakage continued. Hope in a solution by Large was given up; the directors began to consider legal action.

In addition, after seventeen months of continuous operation, the *Pennsylvania* required an immediate overhaul. She was laid up for three months beginning in August 1837 for work by Rush and Muhlenberg. Thus, the *Delaware,* despite leaking boilers, was forced to operate. Rush and Muhlenberg's estimate for repairing Large's boilers, including one new boiler, was minimally $6,000.[21]

Unfortunately, boats out for repair generate bills, not revenue. *Pennsylvania*'s required repairs of both hull and engines after her debut in 1836, and her major overhaul in the fall of 1837, cost $12,000. *Delaware*'s problems were finally solved by the replacement of one boiler and repair of two by Rush and Muhlenberg in late fall of 1837, and the later replacement of one of the repaired boilers by Moses Starr at a total cost of over $10,000.[22] Thus, an additional $22,000 was required to produce sound boats.

Mechanical problems may not have been entirely the fault of the engine builders. They may have been due to the use of anthracite.

In 1835, the use of anthracite as steamboat fuel was still experimental, though it had been used in some stationary engines since the 1820s, when scarcity and high cost of wood began to worry steam engine operators. High power and sudden demands for steam made keeping up steam in marine engines far more difficult than it was for stationary types. The hard coal of the Lehigh Valley had been used since 1831 in the tow boat belonging to the Lehigh Coal and Navigation Company, which had converted their thirteen-year-old, wood-burning boat *Pennsylvania.* She was slow

both underway and in time needed to get up steam. Her fuel costs, however, were half that of wood.[23]

Problems with anthracite were two: the coal flame was lower than that of wood, and it was also hotter. Early attempts at using it by means of a grate, placing it close enough to the boiler tubes to heat them, apparently melted the joints of the horizontal water tubes, causing leakage. The first successful boilers were designed by a New Yorker, Dr. Eliphalet Nott, who placed his furnace alongside vertical tubes instead of under horizontal ones, with blowers to inject air into the fire box, creating sufficiently high flames. He first experimented with the ferry boat *Essex* in March 1835. Success encouraged him to equip a large packet boat, *Novelty*, with twelve boilers. On her maiden run to Albany in June 1836, she spent half as much on fuel as her wood-burning competitors, while equaling their speed. Philadelphia's newspapers commented favorably on *Novelty*'s run, but noted that it was not a first, calling attention to both the old and new *Pennsylvania* tow boats.[24]

Economy and space may have been the reasons the Company's directors decided on an unproven technology. With half the fuel cost and much smaller space requirements, coal would be attractive to a tow boat owner who aimed at a compact and powerful vessel. The sense of rivalry with New York may also have been a consideration. In New York, the Delaware and Hudson Coal Company had been sponsoring coal experimentation using Lackawanna coal from Pennsylvania's fields. Success was limited in the 1830s, and it was not until the 1840s that anthracite was firmly established as steamboat fuel both in New York and Philadelphia.[25]

The repairs would have presented no problems if in ordinary operation the boats were earning a profit. But they were not. In fact, they ran consistently at a loss, earning more than expenses only in the winter. Fuel costs, including coal, wood, their stowage and handling, averaged $900 per boat per operating month. Food and portage bills (wages) averaged $300 for the *Pennsylvania* and $350 for the *Delaware*. Miscellaneous running expenses, which included oil, cordage, sails, ship chandlery, routine repairs, and laundry, ran about $100 per month for each boat, as did overhead: agent's and treasurer's salaries, wharfage, advertising, etc. Thus the average monthly expense per boat was about $1,750. But monthly earnings of each averaged $1,400, $350 short of breaking even.[26]

Increasing revenue by increasing rates was one way of combatting this continued loss. But it was risky, for rate increases could also drive away business. Since they were the pioneer Delaware towing service, the Company had no information on which to base their rates. Initially, rates were based on boat expenses per hour, with an estimated eighteen hours to tow a large 500-ton vessel from the Delaware Breakwater at Cape Henlopen, the 120 miles to Philadelphia. The initial rates offered by the Company were kept low deliberately to encourage year-round patronage, according to the January 1837 annual report. Revised rates reflected a summer-winter difference, with those of the winter (25 December-10 March) being higher. A 500-ton ship paid $220 outbound, and $240 inbound. Preference in towage was given to those who ordered their vessels to "take steam, down and up, summer and winter." In March 1837, the summer rates were published, raised 10 percent over those of the summer of 1836. During the ice-free season, the rate for a 500-ton vessel was $165 each way. For a 100-ton vessel, $46 was charged outbound in winter, $51 inbound, and $39 in summer. The rates were never again raised, only revised in January 1838 to take into account partial distances; winter rates were lowered when the river was ice-free. Outbound vessels, summer and winter, also paid for the

time it took the tow boats to return to the city if they did not pick up a tow.[27] Raising rates, after the initial year of operation, was not a tactic used by the Company to increase revenues. The rates were kept low, despite general inflation. This prevented loss of patronage, but did not bring in enough to make the boats self-sustaining.

With rate tinkering rejected as a solution for continued operating losses, *Pennsylvania* just coming out of a major overhaul, and *Delaware* needing one, the Company's affairs in the fall of 1837 presented severe problems. A special stockholders' meeting was called for 20 November.[28]

The stockholders appointed a committee to investigate the situation and recommend a course of action. This report was made on the first of December and published in the newspapers on the ninth. It emphasized the utility of the service to the entire community of Philadelphia, both rich and poor, in keeping the commerce open year round. But the project was faced with abandonment.

> The sum necessary to be raised, to make the service of the Company effective, besides any annual arrears from running their boats is about 17,000 dollars. A proper participation of this expense, between the City and County authorities, would liquidate our debts, and enable us to renew or repair the boilers of the *Delaware*, and make the services of both boats available during the coming season.

The committee recommended that the city take up the unsubscribed stock and make an annual appropriation of $5,500 for each boat. In additon, the stockholders resolved to memorialize the State Legislature for aid.[29] These resolutions mark a clear break in the Company affairs. Under pressure from inadequate use and technological problems, the Company shifted strategy from relying on private support to soliciting the public.

Two factors complicated their efforts to look for public support. The first was a national problem, suspension of specie payments by the banks – the Panic of 1837. The second was a local development, the creation of a city ice boat.

The Panic of 1837 began in New York when, on 10 May 1837, the banks suspended payments of outstanding notes and obligations in specie.[30] Its origins lay in England, when rapid specie outflow in 1836 caused concern in the Bank of England. The Bank blamed the credit outstanding in the American cotton trade for this, and proceeded to raise discount rates, curtailing credit. With credit unobtainable, meeting outstanding obligations called for all available resources. Certainly no excess funds were available for new investments; in an effort to cut costs, use of towboats could be regarded as a dispensable luxury.

Locally, the city itself had become actively involved in keeping the Delaware open, by appropriating funds for the construction and operation of a city ice boat. Impetus for this came from the ineffectual performance of the Company's tow boats in January 1837. The newly-launched *Delaware* had picked up the Cope packet ship *Monongahela*, with a half-million-dollar cargo on board, on New Years Day at the breakwater. But on the way up the river, increasing ice, wind, and leaking boilers forced Captain Schellinger of the *Delaware* to drop the tow. The packet, helpless in these conditions, was driven ashore near Cohansey Creek, about seventy miles below Philadelphia on the Jersey side of the river. She managed at the cost of her anchors and chain to get off, but was again driven ashore, this time on the flats near Mahon's Ditch Light. The underwriter's agent, sent down on horseback at the first report of trouble, was able to charter some small vessels and began lightering the packet's valuable cargo to the lighthouse by 6 January.

Facing page: Philadelphia Steam Tow Boat Company winter rate schedule, 1838. Cope Collection, vol. 214, Historical Society of Pennsylvania.

PHILADELPHIA

Steam Tow Boat Company.

RATES OF TOWAGE,

From December 25th to March 10th.—Adopted by the Board of Directors, January 9, 1838.

OUTWARD BOUND. From PHILADELPHIA to	Miles Dist.	Miles Dist.	Vessels of 400 tons and upward.	Vessels from 100 to 400 tons.	Vessels under 100 tons.
Chester,	20	20	17 cts.	19 cts.	20 cts.
Marcus Hook,	4	24	19 „	21 „	23 „
Grubb's Landing,	4	28	21 „	23 „	25 „
Wilmington,	7	35	24 „	25 „	27 „
New Castle,	5	40	25 „	26 „	29 „
Delaware City,	8	48	27½	28½	31½
Reedy Island,	7	55	29 „	30 „	33 „
Morris Liston,	5	60	31 „	32 „	35 „
Duck Creek,	10	70	34 „	35 „	38 „
Bombay Hook,	5	75	35 „	36 „	39 „
Buoy of Middle,	12	87	38 „	39 „	42 „
„ Ledge,	4	91	39 „	40 „	43 „
Lower End 14 feet Bank,	10	101	41 „	43 „	47 „
Brandywine,	6	107	42 „	44 „	49 „
Brown,	4	111	43 „	45 „	50 „
Breakwater,	9	120	44 „	46 „	51 „

INWARD BOUND. From the BREAKWATER to	Miles Dist.	Miles Dist.	Vessels of 400 tons and upward.	Vessels from 100 to 400 tons.	Vessels under 100 tons.
Lower End 14 feet Bank,	19	19	19 cts.	20 cts.	23 cts.
Buoy of Ledge,	10	29	23 „	24 „	26 „
„ Middle,	4	33	26 „	27 „	29 „
Bombay Hook,	12	45	30 „	32 „	34 „
Duck Creek,	5	50	32 „	33 „	36 „
Morris Liston,	10	60	34 „	35 „	38 „
Reedy Island,	5	65	35 „	36 „	39 „
Delaware City,	7	72	36 „	38 „	41 „
New Castle,	8	80	37 „	40 „	43 „
Wilmington,	5	85	39 „	41 „	44 „
Grubb's Landing,	7	92	41 „	43 „	46 „
Marcus Hook,	4	96	42 „	44 „	48 „
Chester,	4	100	43 „	46 „	51 „
Bar,	11	111	46 „	49 „	54 „
City,	9	120	48 „	51 „	56 „

Vessels under 50 tons to be charged for 50 tons.

No vessel under 100 or 400 tons to be charged more than vessels of those sizes respectively.

1st. The above rates will be charged for the time estimated to be necessary to tow a vessel to the Breakwater, viz:

500 tons and upwards,	18 hours.	200 to 300 tons,	13 hours.
400 to 500 tons,	16 do.	100 to 200 tons,	12 do.
300 to 400 tons,	14 do.		

The time to be counted from the hour when the Boat is ready, with steam up, to comply with the order.

2d. After the above number of hours shall have expired, fifteen dollars per hour will be charged for each and every hour that the Boat shall be employed *with fires on*, until her return to the city; but the number of hours charged for after the Boat has been cast off from the vessel, shall in no case *exceed twelve hours*. If the Boat on her return, is engaged in towing, or any other service, the time so occupied shall be deducted from that charged to the outward bound vessel.

Where a vessel discharges the Boat short of the Breakwater, and the Boat does not return to the city, but proceeds down the Bay, the time to be charged for the Boat's return shall be fixed at three-fifths of the time occupied in towing the vessel to the point of discharge.

3d. Where more than one vessel is taken at the same time, the aggregate tonnage shall determine the number of hours to be allowed as above, before the charge per hour shall commence, and each vessel shall pay of the charge per hour, in the proportion of her tonnage to the aggregate tonnage. No deduction will be made if the time used in towing to the Breakwater is in any case less than the above number of hours.

4th. When a Boat is discharged short of the Breakwater, the time allowed before the charge per hour shall commence, shall be as the distance from the place of discharge is to the distance from the city to the Breakwater; which distances shall be computed as follows—

To Chester, 1-6th of the whole distance.		To Delaware City, 2-5ths of the whole distance.	
To Christiana Creek, 2-7ths	do.	To Morris Liston, 1-2	do.
To New Castle, 1-3d	do.	To Bombay Hook, 3-5ths	do.

5th. For all transient employ, the charge will be $20 per hour; and all service, commencing at or below the city and terminating above Chester, shall be charged as transient employ, and also all other employment where the actual towage is less than 20 miles. The number of hours charged for shall be for the whole time the Boat is employed, whether in going to, towing, (or in case of discharge) returning without the employing vessel.

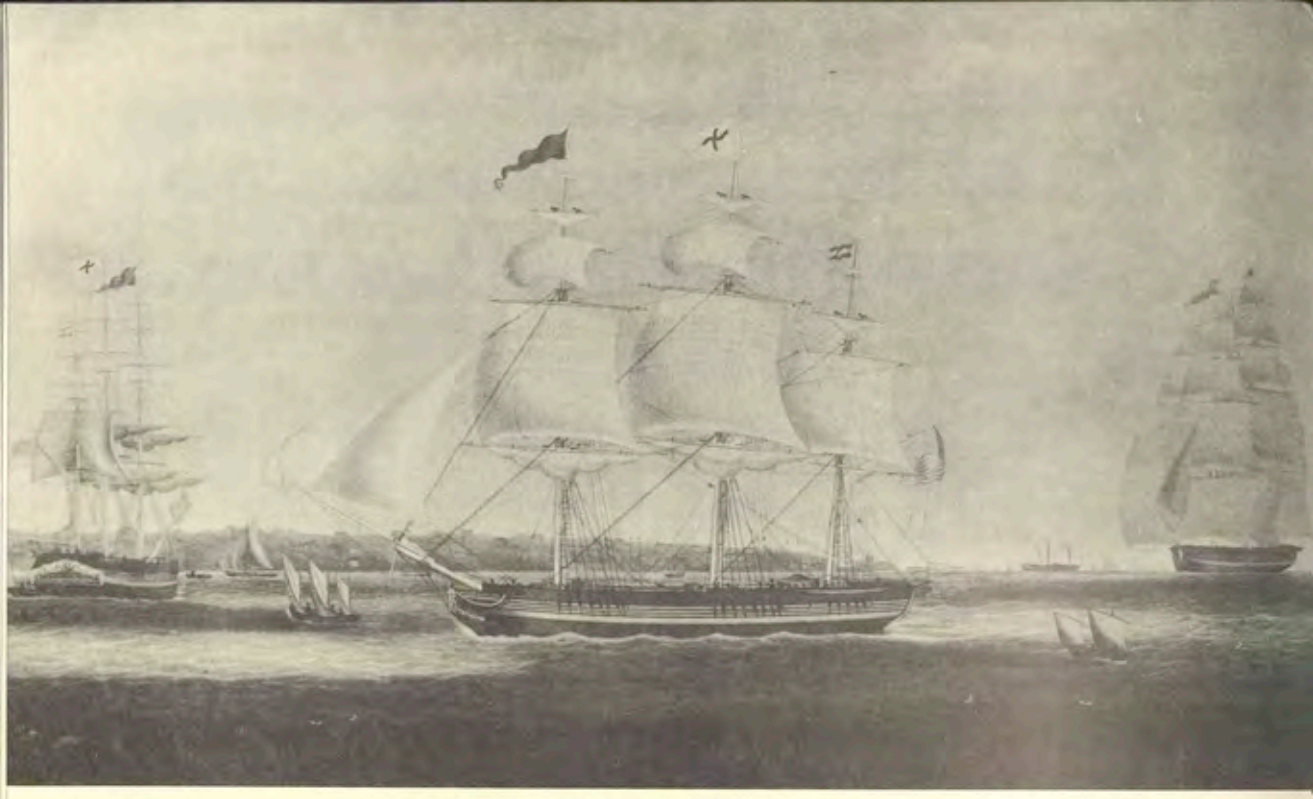
6th. When the Boat's hawsers are used for towing vessels, the charge to be ten per cent. on the amount of tonnage. In extraordinary cases the charge to be made accordingly.

7th. In all cases requiring the Boat to lay by a vessel with fires down, the charge to be two dollars per hour.

Published by order of the Board.

D. B. STACEY, *Secretary.*

JAS. M. AVERELL, *Agent, 86 South Wharves.*



The Cope Line packet *Monongahela* is shown in three views at Liverpool in this painting by Miles Walters & Son. The 509-ton *Monongahela,* built at Philadelphia in 1828, provided an embarassing episode for the Philadelphia Steam Tow Boat Company in January 1837. (Photo courtesy of the Peabody Museum of Salem)

Meanwhile, Schellinger lay in Cohansey Creek repairing his boilers, finally managing to come alongside the grounded packet on 13 January. The *Pennsylvania* had broken her supply pump levers on 22 December and had been taken off the river for repairs when the *Delaware* began operation. With neither boat keeping the channel open, the river completely froze over. By 10 January, the *Pennsylvania* was again under way, forcing a passage down river through ice rafted eight to ten feet high. It took her five days to steam twenty miles to Chester. After coaling, she reached the *Monongahela* on 17 January and, together with the *Delaware,* towed the ship to Reedy Island, about fifty-five miles below Philadelphia. The *Delaware* then began to ferry the cargo offloaded at Mahon's Ditch to the packet. Finally, on 29 January, both tow boats, with the *Monongahela* and her cargo, reached Philadelphia.[31]

The *Monongahela* incident brought immediate demands from the letter-writing public for action. One of Poulson's readers noted that Baltimore's *Relief* was working well and asked what had happened to the *Pennsylvania.* Another implied that the tow boats were a public trust, and not a private company. "Clinton" proposed a solution. "We must separate the ice breakers from the towing power." Vessels specially designed to break ice should be built and operated in the winter. Action on this suggestion came rapidly.[32]

Five days after publication of "Clinton's" letter, the first of a series of meetings of merchants was held. A committee was nominated to memorialize the City Council for construction and operation of an ice boat and assistance for the tow boats. Petitions were submitted on 16 February, and on 2 March, and the city passed an ordinance appropriating $70,000 for an ice

boat. Building commenced on 26 April and she was launched on 9 August. Her engines were tried 27 December, and operation began in January 1838. The boat was expensive, costing some $66,000, about double the initial cost of the *Pennsylvania* or *Delaware*. The trustees of the *Ice Boat* estimated her running expenses at about $9,000 per year for two months' operation,[33] compared with about $3,500 for two months' operation of the *Pennsylvania* or *Delaware*.

The Company's directors fully supported the desire for a city ice boat. Of the nineteen "merchants and others" appointed to draft memorials to the City Council, only five were not Company stockholders.[34] An ice boat made sense, for it would relieve the tow boats of much of their burden in opening the channel. Tow boats would still be necessary to cope with the drift ice in the bay and to tow vessels up the narrow, ice-free river channel. But the expenses involved certainly could not have helped the Tow Boat Company in getting direct assistance from the City Council in November.

The campaign for city aid took the form of organizing "very large and respectable meetings of the Citizens of . . ." Philadelphia and the surrounding districts. Each meeting produced a memorial or petition pointing out that open commerce benefited all classes of citizenry, merchants, laborers, and poor. Both tow boats and the new ice boat were necessary to keep navigation open, and it was unreasonable to expect the Company to run their boats at a loss in an operation of benefit to all.[35]

The City Council, at the receiving end of the petitions, decided to test support by authorizing, in late December, a purchase of stock and an appropriation of $10,000 as soon as a matching sum was raised by outlying districts or by private sources.[36] Unfortunately, this required more than meetings and memorials, and the funds were not forthcoming.

The campaign was renewed in January 1838, asking that support be unconditional. One editor suggested "if nothing else presents, we shall think of postponing the erection of fountains in Washington Square a year, to give the appropriation to the towboat." Letters followed supporting the request, and efforts to keep the river clear despite an unusually harsh winter were fully reported.[37] On 7 March, the thaw began; the following day the City Council approved a $20,000 loan to the Company. But the loan had strings. The city was to receive title to the boats; if payments or rent were sixty days in arrears, the boats were the city's.[38]

The stockholders lost no time in considering the offered assistance, accepting it on 21 March. The loan was in the form of securities. By June, $13,300 had been raised, and the rest was withdrawn to meet contingencies. Immediately, *Delaware* was laid up for repair. Moses Starr got the contract for a new boiler, Rush and Muhlenberg, a contract for repair of the other two. Work began in July and was finished by October.[39]

But the city loan only postponed the Company's collapse. By November, work needed on the *Pennsylvania* forced the directors to call another special stockholders' meeting. This meeting on 17 December authorized the directors to sell the boats if a buyer could be found. More positively, a resolution to press for state aid by imposing a tonnage tax on all vessels over 100 tons not taking steam was proposed. The campaign was carried forward by newspapers and petitions, and in March the state appointed a committee to consider the problem.[40]

Fortunately for the Company, the winter of 1838-39 was harsh, giving the directors and newspapers ample ammunition, and created strong demand for the two boats' services. New York writers helped out, reporting that while business was done in winter Philadelphia,

> the commerce of that port is subject to considerable obstruction from the ice in the Delaware . . . On the contrary, our own fine harbor is

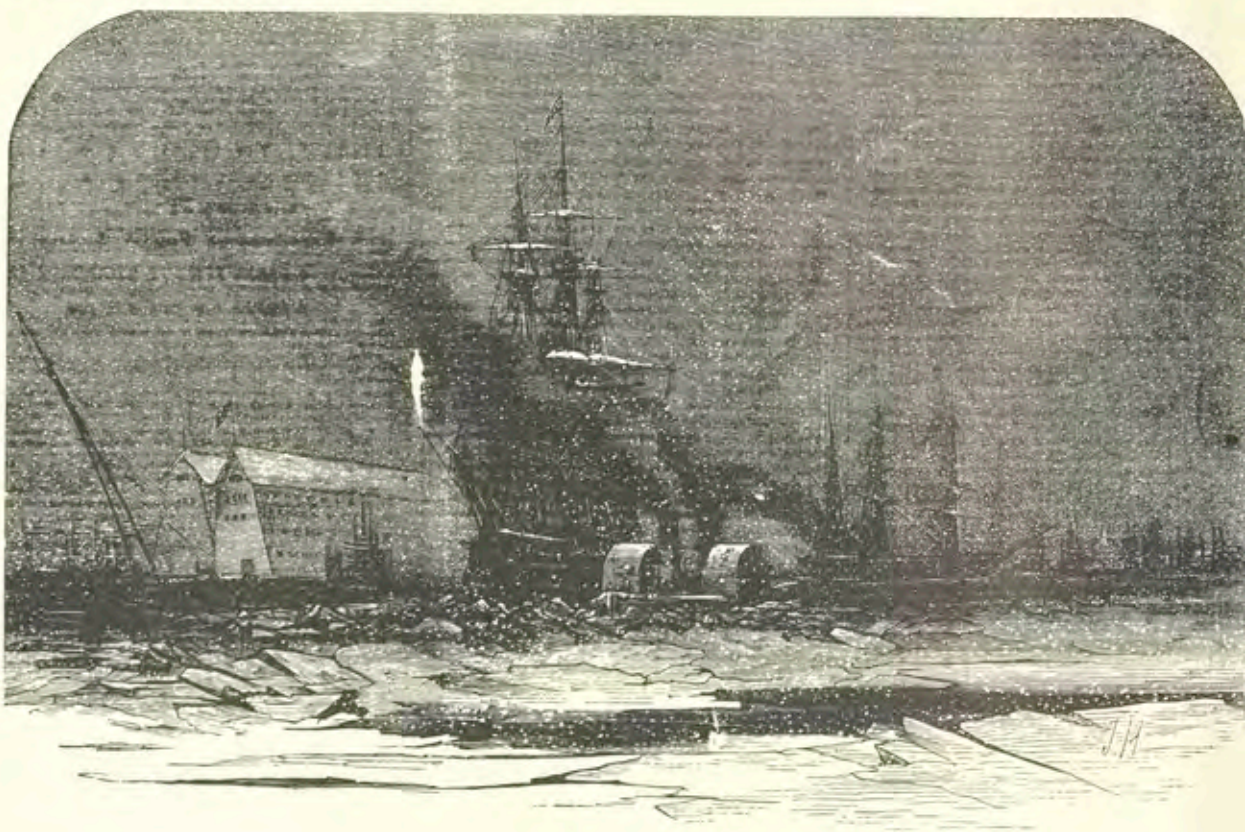
navigable every day of the year, and navigation meets with little or no interruption. We are not quite sure but Philadelphia cargoes would sell better here than there.[41]

Both boats worked until slackening demand in March caused *Pennsylvania* to be laid up 1 April and *Delaware* two weeks later. Payments on the city loan, in arrears since January, were impossible. Meetings in May, after the boats were no longer in operation and in imminent danger of being taken over by the city, produced more petitions and editorials which were duly sent along to Harrisburg. Two major arguments were made: the commercial benefit to the state in keeping the Delaware open, and the trade rivalry with Baltimore and Maryland.[42] These produced legislative action. In June a bill was passed authorizing part of taxes collected on foreign imports to be turned over to the port warden for ice and tow boats. But in January 1840 Governor D. R. Porter vetoed the bill, citing his program to relieve the state's indebtedness, one made difficult by a severe recession in the fall of 1839 and another bank suspension.[43] This economy was long overdue in Pennsylvania's affairs, but ended the Company's hopes for revival.

For meanwhile, on 23 May, the Philadelphia City Council resolved to take over the boats. Their surrender on 31 May signaled the Company's end as an active agent on the Delaware. Affairs were gradually ordered, debts collected, and bills paid. In 1848, the final claim against the Company was settled and the books closed.[44]

Pennsylvania remained inactive until 1841, when she was sold for $5,000. The city con-

The *Ice Boat* tows a ship through the ice floes during a snowstorm, near the Philadelphia Navy Yard. Built in 1837, the 526-ton *Ice Boat*, 174.2′ x 26.3′ x 12′, had wood-fired boilers until conversion to anthracite in 1844. Renamed *City Ice Boat No. 1* when a sister ship was added in 1868, she was rebuilt with an iron hull in 1866 and remained in service until 1917. The *City Ice Boat No. 2* was built in 1868 and *City Ice Boat No. 3* was added in 1874. The *City Ice Boat No. 2* and the *John Weaver* of 1906 were active until the city ice boat service was discontinued in 1952. (*Gleason's Pictorial*, 25 February 1854)



tinued to operate *Delaware* in conjunction with the *Ice Boat* through the winter of 1841-42 and then sold her for $9,000 to the Fredericksburg and Washington Steam Boat Company. Apparently she ended as a barge after her conversion in 1847. *Pennsylvania* was renamed *Atlantic* in 1857 and was in use until 1877.[45]

Two things brought about the Company's failure. First, it was financially unstable. For an operation of its size it was relatively undercapitalized, and it expanded too rapidly, using up cash reserves on vessel construction without contingency funds to deal with machinery problems. While the selection of anthracite fuel may have contributed because it was unproven, the resulting mechanical problems were ultimately solvable given sufficient cash reserves.

More serious was the Company's failure to convince the most economically important of its constituents to use its services. Arguments, public and private, brought forward stockholder and both local and state support for the Company, but they failed to persuade enough merchants to "take steam." In short, the Company could not pay its way.

Lack of business was not due to lack of traffic. For the 1836-38 period, Philadelphia averaged 35 foreign and 600 coastwise arrivals per month. Yet each boat averaged only 18 tows a month, on a highly seasonal basis. August of 1837 saw only *Delaware* towing 6 vessels. From June 1837 to April 1839, in only five months (all winter) did the boats come close to or exceed their break-even point of 23 to 24 tows each.[46]

It seems that Philadelphia's merchants generally proposed strong support for the Company and were happy to help pressure for governmental subsidies. But when it came time to dig into their own pockets, their actions were quite different.

The Company's directors had strong personal interests in the success of the Company. Henry Cope ran the Liverpool packets. Joseph Hand had one of the larger



The Cope Line packet *Saranak* is shown under tow in the Delaware in this watercolor by D. J. Kennedy, August 1851. The 855-ton *Saranak*, built in 1844, is being assisted by one of the second-generation Philadelphia tow boats, with screw propeller rather than paddle wheels. (Courtesy of the Historical Society of Pennsylvania)

packet operations to New Orleans in addition to a schooner line to the Chesapeake. D. B. Stacey represented the other major New Orleans line. Together, directors accounted for a third of the Company's gross receipts.[47]

Cope's Liverpool packets were large, averaging 500 tons; the New Orleans vessels were smaller, around 250 to 300 tons. Towage bills show this. Cope's packets averaged $145 per tow, while Hand's vessels averaged $72. Overall, tows averaged $76, enough to move a 250-ton vessel downstream to Reedy Island in the winter, and a little less than that needed to bring it upstream. Cope's $145 per tow average would bring their 509-ton *Monongahela* thirty

miles upstream from Wilmington in winter. With these kinds of averages, it was a rare vessel that took steam all the way to the Delaware Breakwater. This accurately reflects the geography, for the Delaware begins to become a navigational problem in the Newcastle-Wilmington area.

Of the Company's patrons, only Cope, Joseph Hand, and Stacey used steam with regularity, Hand on the average of four times per month, Cope and Stacey between once and twice a month. Together their usage accounted for two-thirds of all the packet operators. Yet looking at newspaper advertisements and sizes of fleets, they did not operate two-thirds of the vessels. Competitors like Armer Patton, Barclay and Bernadou, and James Hand certainly did not seem to suffer by not taking steam frequently. If packet operators, who advertised ship sailings on schedule, could afford to do without steam, year-round use by less time-conscious merchants was not likely.

The unwillingness to take steam unless seriously delayed by ice makes sense. The 120 miles up the Delaware added relatively little to a voyage to New Orleans or Boston. Even with contrary winds, strong tidal currents and judicious anchoring could get a vessel up or down stream in most conditions. Not until vessels grew to 700 to 1,000 tons or more, the range of the packets and clippers of the 1840s and '50s, did they become unhandy enough to require tow boat assistance routinely. Indeed, by 1846 at least, private tow boats had again appeared on the Delaware.[48]

Although the Company anticipated by a few years the need for year-round towing, it successfully solved a major problem, the winter's icy closing of the port; but not in the way the directors had in mind. The attempt at establishing the tow boats led to Philadelphia's city ice boat service, which included the building of the first known vessel designed as pure icebreaker, the *Ice Boat*. The city ice boat service operated from 1838 to 1952.[49] Now the Coast Guard has taken the job. Will winters like the one just past and a shrinking Coast Guard budget lead again to a city ice boat to break the embargo by ice?

NOTES

Abbreviations

J.C.C.	Journal of the Common Council of the City of Philadelphia.
J.S.C.	Journal of the Select Council of the City of Philadelphia.
J.H.R.S.P.	Journal of the House of Representatives of the State of Pennsylvania.
J.S.C.P.	Journal of the Senate of the Commonwealth of Pennsylvania.
P.S.T.B.Co.	Philadelphia Steam Towboat Company.
D.M.	Directors' Minutes of the Philadelphia Steam Tow Boat Company.

[1] *Poulson's Advertiser*, 18, 19 March 1836; *U. S. Gazette*, 18, 19 March 1836.

[2] Robert G. Albion, *The Rise of New York Port, 1815-1860* (New York, 1939; reprint ed. 1970), pp. 147, 409; William M. Lytle, *Merchant Steam Vessels of the United States, 1807-1868*, ed. Forrest R. Holdcamper (Mystic, Connecticut, 1952), pp. 84, 167; *The Merchant's Magazine and Commercial Review* (Hunt's) 2 (1840): 326; Albion, p. 33; Lytle, p. 161. See also Carl C. Cutler, *Queens of the Western Ocean* (Annapolis, 1961), pp. 98, 126 134-38.

[3] *Journal of the Senate of the Commonwealth of Pennsylvania* (hereafter cited as *J.S.C.P.*), 1831-32, vol. 1; *Journal of the 42nd House of Representatives of the State of Pennsylvania*, (hereafter cited as *J.H.R.S.P.*); 1831-32, vol. 1; *Laws of Pennsylvania of the Session 1831-32*, no. 138.

[4] Philadelphia Steam Tow Boat Company (hereafter cited as P.S.T.B.Co.), List of Stockholders and Pledges, 7 May 1832 and January 1835, vol. 109, Cope Collection, Historical Society of Pennsylvania, Philadelphia, Pennsylvania; Stockholder List 7 May 1832 and January 1835, vol. 155, Cope Collection.

[5] See P. Temin, *The Jacksonian Economy* (New York, 1969) for the Bank War.

[6] See *Register of Pennsylvania* (Hazard's) 12 (1833): 255, 1326, for founding of the Board of Trade. T. P. Cope is credited with its founding in *Dictionary of American Biography*. Cutler, pp. 162-64, covers the beginning of the Cope Line, while changes in its management can be traced through the Cope Collection.

[7] F. P. Cheyney, *Commerce, Navigation and Shipbuilding on the Delaware River* (Harrisburg, 1891), p. 46, gives the Board of Trade credit for reawakening interest in the Company; its 1835 annual report appears in *U. S. Gazette*, 19 January 1835. See *Laws of Pennsylvania of the Session 1833-34*, no. 71, for the revision of the Company's charter.

[8] P.S.T.B.Co., Directors' Minutes (hereafter cited as *D.M.*), 28 February 1835, vol. 71, Cope Collection; Cutler, p. 538.

[9]U. S. Congress, House, *Letter from the Secretary of the Treasury, Transmitting . . . information in relation to Steam-Engines, &c.*, 25th Cong., 3d sess., 1838, H. Doc. 21 (hereafter cited as Woodbury Report); F. M. Binder, "Pennsylvania Coal and the Beginnings of American Steam Navigation," *Pennsylvania Magazine of History and Biography* 83 (1959).

[10]Woodbury Report; Binder.

[11]*Poulson's Advertiser,* 9 March 1835; P.S.T.B.Co., D.M., 9, 16, 23 March 1835.

[12]P.S.T.B.Co., D.M., 4 May, 6 April 1835, 12, 16 January 1836.

[13]*Ibid.*, 16, 23 March, 6 April 1835, 12, 16 January 1836; Woodbury Report, pp. 149-53, 156 give engine builder statistics. Prices derived from P.S.T.B.Co., Cashbook, vol. 60, Cope Collection, and Ledger, vol. 93, Cope Collection.

[14]*Poulson's Advertiser,* 18 March 1836.

[15]P.S.T.B.Co., D.M. 26 March, 2 May 1836.

[16]*Ibid.*, 7 November 1836.

[17]C. W. Pursell, *Early Stationary Steam Engines in America: A Study in the Migration of a Technology* (Washington, D.C., 1969), pp. 43-44; Woodbury Report, pp. 156, 149-53; P.S.T.B.Co., Cashbook, Ledger.

[18]P.S.T.B.Co., D.M., 2 May, 5 October, 7 September 1836, 14 January 1837.

[19]*Ibid.*, 12 January 1836, 16 March 1835; *J.S.C.P.*, 1834-36, vol. 1; *J. 45th and 46th H.R.S.P.*, 1834-36, vol. 1; P.S.T.B.Co., D.M., 16 January 1837.

[20]P.S.T.B.Co., D.M., 16 January 1837.

[21]*Ibid.*, 1 May, 12 June, 20 July, 14 August, 13 September, 6 November 1837.

[22]Compiled from P.S.T.B.Co., Cashbook and Ledger.

[23]Binder. pp. 427-28; *Register of Pennsylvania* 8 (1831): 15; 14 (1835): 144.

[24]Binder, pp. 424-31; *U.S. Gazette,* 1 July 1836.

[25]Binder, pp. 429-32.

[26]These figures were compiled by cross-checking the Company's Ledger and Cashbook.

[27]P.S.T.B.Co., D.M., 7 December 1835, 16 January 1837, 23 December 1836, (printed rates are in *DeSilver's Philadelphia Directory* (1837), 6 February, 10 March 1837, 9 January 1838.

[28]*Ibid.*, 6 November 1837.

[29]*U. S. Gazette,* 9 December 1837.

[30]See Temin, chapter 4.

[31]P.S.T.B.Co., D.M., 16 January 1837; marine columns of *Poulson's Advertiser* and *U. S. Gazette,* 3-31 January 1837.

[32]*Poulson's Advertiser,* 5 January 1837; *U. S. Gazette* 10 January, 10 February 1837.

[33]*Poulson's Advertiser,* 17 February 1837; *Journal of the Select Council of the City of Philadelphia* (hereafter cited as *J.S.C.*), 1836-37; *Journal of the Common Council of the City of Philadelphia* (hereafter cited as *J.C.C.*) 1836-37; *J.C.C.*, 1836-37, Appendix 25, pp. 27-35; *J.S.C.*, 1836-37, Appendix 19, pp. 38-40.

[34]*Poulson's Advertiser,* 17, 28 February 1837.

[35]*U. S. Gazette,* 10, 11, 13-15, 20 December 1837.

[36]*J.C.C.*, 1837-38, 21 December 1837; *J.C.C.*, 1837-38, Appendix 13.

[37]*J.C.C.*, 1837-38, 18 January 1838; *U. S. Gazette,* 6 February 1838. See marine and editorial columns of *U. S. Gazette,* 7 February-13 March 1838, and marine columns of *Poulson's Advertiser,* 5 February-12 March 1838.

[38]*J.C.C.*, 1837-38, 1, 8 March 1838; *J.C.C.*, 1837-38, Appendix 38.

[39]P.S.T.B.Co., D.M., 2 April, 8 May, 4 June, 9 July, 5 October, 5 November 1838.

[40]*U. S. Gazette,* 19 December 1838; Minutes of the Philadelphia Chamber of Commerce, 17 December 1838; *J. 49th H.R.S.P.*, 1838-39, vol. 1: 7, 11 March 1839.

[41]*U. S. Gazette* 14 January 1839.

[42]*Ibid.*, 14, 17, 22, 23 May 1839.

[43]*J. 49th H.R.S.P.*, 1838-39, vol. 1, May, June, Passim; vol. 2, no. 200. G. F. Reed, ed., *Papers of the Governors,* 4th ser., vol. 6 (Harrisburg, 1901), p. 668 gives the text of the veto message. See C. M. Snyder, *The Jacksonian Heritage: Pennsylvania Politics 1833-1848* (Harrisburg, 1958), chapt. 8, for the political background.

[44]P.S.T.B.Co.,D.M., 26 November, 7 December 1838, 4, 21 January, 19 March, 29 May, 1 July 1839; 8 June 1848.

[45]*J.S.C.*, 1839-40, Appendix 6; 1840-41, Appendix 38, 1841-42, Appendix 31; 1842-43, Appendix 37; Lytle, pp. 13, 150.

[46]*Hazard's U. S. Commercial and Statistical Register,* 1 (1839): 45. These are not totally reliable but seem to be reasonable approximations. See Albion, appendix 6. P.S.T.B.Co., Towage Register, vol. 214, Cope Collection.

[47]Compiled from P.S.T.B.Co. Ledger, Cashbook, and Account Book (vol. 190, Cope Collection), as are the statistical data following. Data on packet lines are from Cutler and *O'Brien's Wholesale Business Intelligencer & Southern and Western Merchant's Pocket Directory,* 1838, 1839. Towage rate bill bound in P.S.T.B.Co., Towage Register.

[48]John H. Morrison, *History of American Steam Navigation* (1903; reprint ed., New York, 1958), p. 540; *J.S.C.*, 1846-47, Appendix 23.

[49]E. O. Clark, "The Philadelphia Ice Boats," *Steamboat Bill,* no. 28 (1947): 8-11; J. Pohjanpalo, *The Sea and Man,* trans. Diana Tullberg (New York, 1970), pp. 138, 197.

Kingston II

Mystic Seaport's Tugboat

MARY R. MAYNARD

Kingston II, the forty-five-foot tugboat which shepherded nuclear submarines in Connecticut's Thames River for General Dynamics-Electric Boat Division, is now an integral part of the fleet at Mystic Seaport Museum. The jaunty diesel-powered tug, which had maneuvered vessels for forty-two years, was deemed by Electric Boat officials as too small to work with the largest modern nuclear submarines. She was declared surplus early in 1979, and donated to the Seaport.

Ceremonies 1 May 1979, at the Seaport's North Dock marked the occasion. Representatives of EB, officials of Mystic, Connecticut, volunteer fire companies, Stonington and Groton government leaders, and Seaport officers, trustees, and friends heard P. Takis Veliotis, EB General Manager, transfer ownership of the tugboat to Mystic Seaport. Clifford D. Mallory, Jr., President of the Seaport Board of Trustees, made the acceptance.

Kingston II was built in four months during 1937 at the former Electric Boat Company in Groton, Connecticut. She is believed to have been named for an employee named Kingston, who designed the flood and vent valves used in submarine main ballast tanks during World War I. The valve design was so widely known that the "Kingston valve" became a generic term in both the British and American submarine navies throughout World War II, a company spokesman said. The mechanically-operated Kingston valve was replaced with hydraulically operated valves in submarines constructed after World War I. *Kingston II* replaced an earlier *Kingston* at EB. The first *Kingston*, a Spanish-American War vintage hospital boat from Boston, was used by EB from 1924 to 1937.

Kingston II was designed by E. B. Wheeler, manager of the shipyard, and Robert C. Simpson, chief naval architect. She is thought to be one of the first all-welded hull vessels. The technology for welding rather than riveting steel hulls was then being perfected, and contributed to the design of modern, deep-diving submarines. The keel for the tug was laid in what was then an old forge shop, and economy was the by-word. Scrap steel from submarine construction was used for material. Novice welders built the hull as part of their apprenticeship, before being allowed to work on submarine hulls. The use of apprentices and of scrap steel kept the cost of the vessel down to $15,000.

Kingston II's deckhouse has a standard layout: steering station and instrument panel under the forward windows, a comfortable bench to starboard, a chart table, and plenty of storage. *Kingston II* is equipped with three marine-band radios, a loud hailer, depth sounder, electric and direct drive bilge pumps, and a direct radio link with the Mystic Fire Department. She also has a high capacity, diesel-powered salvage pump with hoses ready at all times for emergency use.

Mary R. Maynard, Public Information Supervisor at Mystic Seaport, was formerly a reporter and boating editor for the *New London Day*. In 1973-78 she and her husband took their three children on a round-the-world voyage in *Scud*, a replica of Capt. Joshua Slocum's *Spray*, built in their Noank, Connecticut, backyard. Her articles have been published in national boating magazines.

During the spring of 1980 the *Kingston II* was outfitted with new radios, loud hailer, compass, pump, and other gear, and new varnished cypress panelling was installed in the pilothouse. The equipment and pilothouse restoration was a gift from the family and friends of the late Charles S. Lowry of Essex, Seaport Trustee from 1973 to 1978.

A companionway ladder leads from the pilothouse down into the galley, which has a sink and a large four-burner diesel range to port, with shelves and a head to starboard. Forward, under the deck, are settee-berths and a folding table. A hatch in the forward bulkhead leads to a fo'c'sle gear locker.

The engine room, where the fuel tanks, batteries, and pumps are located, is accessible from the after end of the galley and also through an overhead hatch from the deck.

Deck equipment includes several strong towing bits fore and aft, a capstan driven off the engine, two hose connections, and a mast with a cargo boom capable of lifting two tons. On top of the deckhouse are two more hose connections and a 1,000-gallon-per-minute monitor nozzle for firefighting. Her bow and chines are fitted with rubber bumpers, for pushing and towing alongside.

In the lazarette locker beneath the after deck is ample storage room for spare propellers, lengths of hawser and rope, fire hose, spare anchors, and other gear.

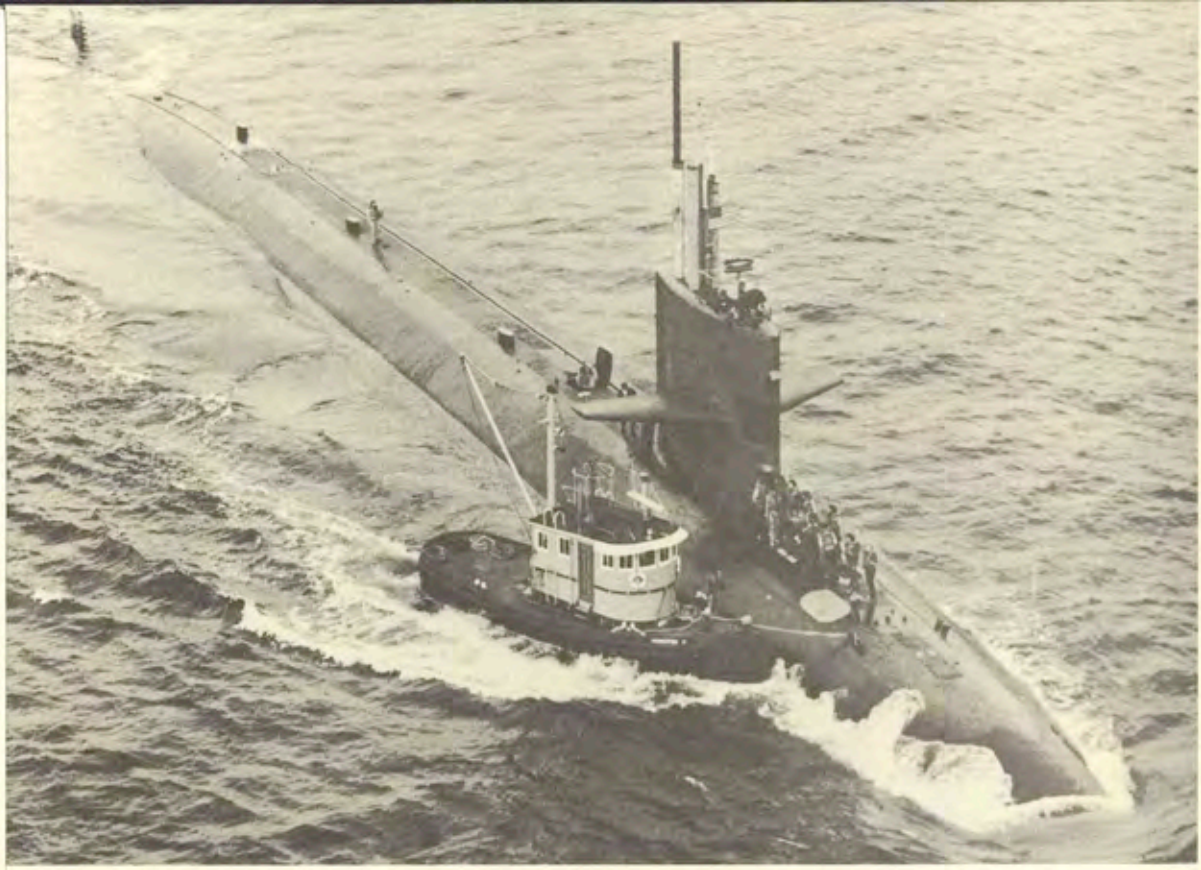
Registered at twenty-nine gross tons, and displacing twenty-five tons, *Kingston II* is forty-five feet long, with a fourteen-foot beam, and six-foot nine-inch draft. Since 1973, she has been powered by a General Motors 12-71 500-horsepower diesel engine. A four-blade, forty-four-inch propeller pushes her at approximately ten knots. Two 690-gallon tanks carry a total of 1,380 gallons of diesel fuel. The pivot point on the rudder and the rudder shape have been changed during the past ten years, giving her much better maneuverability, according to Thomas Majewski of Preston, Connecticut, her captain from 1964 to 1979. "She used to take a river and a half to turn around in; now she can turn in her own length," he commented. Hydraulic-assist steering was also added.

Thomas Payton of Groton was captain of the *Kingston II* from her launching in 1937 until his retirement in 1964. Majewski commanded her from 1964 until her arrival at Mystic Seaport Museum 1 May 1979. Donald P. Robinson, Curator of Ships, is now in charge of the vessel, with Dana Hewson, Supervisor of Ship Maintenance, overseeing her maintenance.

Before coming to Mystic Seaport, *Kingston II*'s most spectacular job was assisting at the launching of nuclear submarines. She also routinely guided the submarines *Sea Wolf, Skate, Triton, George Washington* and others into and out of the EB repair docks.

Kingston II on the Seaport lift dock, shortly after her arrival at the Museum in 1979. Her welded plating is clearly evident. (Photo by Donald P. Robinson)





Kingston II assists a submarine maneuvering in the Thames River.
(Photo courtesy of General Dynamics–Electric Boat Division)

The civilian tug was well-respected among the navy submarine skippers in the area. Many times they would ask to have *Kingston II* escort them into their berth, Majewski said, rather than call a navy tug.

Only once did the tug return to the shipyard without her submarine in tow. That time, while assisting with tests on the *Nautilus,* the *Kingston II*'s newly-rebuilt engine failed. The submarine then returned to port with the tug in tow!

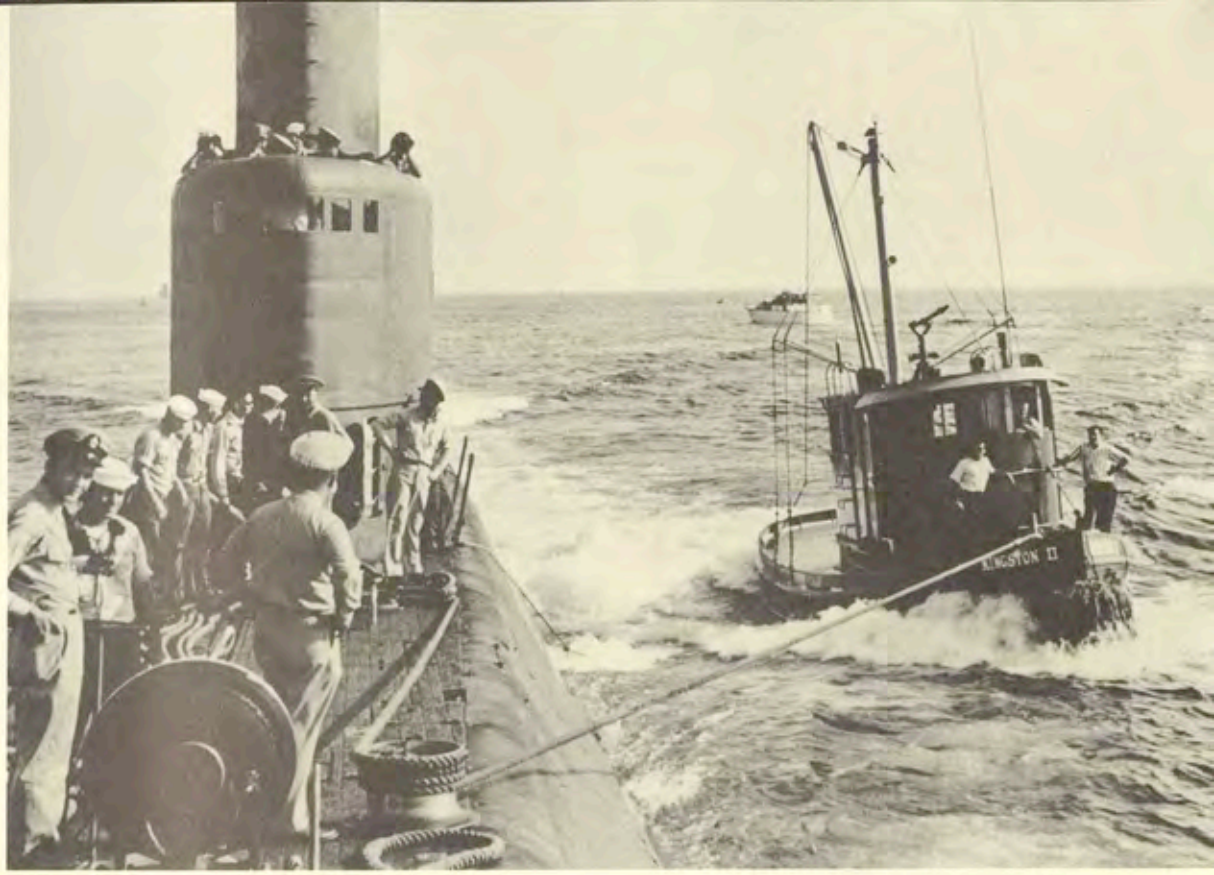
The basic work day for the *Kingston II* was from 7:00 A.M. to 3:00 P.M., although both Majewski and Mrs. Payton (Capt. Thomas Payton's widow), said it was not unusual to receive a call to report to the *Kingston II* at any time of the night. Sometimes the little tug ran more than 100 hours a week.

Kingston II was called many times during the construction of the new span of the Gold Star Memorial Bridge over the Thames River. The new bridge sections were brought in by barge and had to be lifted into place from the barges by cranes. The *Kingston II*'s job was to keep the barges steady against the current and the wind.

The tugboat also spent considerable time shuttling men and equipment across the Thames River, Majewski said. EB crews working upstream at the Submarine Base, or across the river at the Underwater Sound Lab and Navy Pier in New London, often rode back and forth aboard the *Kingston II* rather than driving the longer road route.

The tug also carried equipment from one end of the shipyard to the other, pushed barges and tenders from one dock to another, took divers to work on submarines in the repair docks, and, in recent years, was often dispatched to retrieve dummy torpedos for submarines practicing off Long Island.

As oceanographic work expanded, *Kingston II* became involved with small one- and



Disabled, *Kingston II* is towed back to port by a submarine.
(Photo courtesy of General Dynamics–Electric Boat Division)

two-man research submarines, carrying them out to a deep hole in the Atlantic Ocean outside Fishers Island, and then acting as a tender while the scientists explored the depths in the tiny subs.

"We also picked people out of the water," Majewski said. "Once we rescued a guy at 3:00 A.M. He was trying to swim across the Thames River, but he had lost his thick glasses, so he couldn't see where the shore was. Luckily we were passing by from another job and heard him calling."

"Life was never boring on the *Kingston II*," said Majewski, who is now one of a five-member crew on a 110-foot workboat. "I always had something to look forward to, to get up in the morning for. Things were different every day."

Ice breaking was another important part of the *Kingston II*'s work, for the docks had to remain accessible year-round. Majewski remembers moving one large flow by pushing with the *Kingston II*'s stern because reverse was the most powerful gear.

In 1977 the tug almost sank. "We were breaking ice, and apparently knocked something loose but didn't know it at the time," Majewski said. "The galley deck was floating when I finally went below for something and noticed the problem. I ran the bow up on the riprap, but the stern was still in twenty feet of water. It was one of those times when everything goes wrong. We called a diver who came immediately, but his air bottle was empty. We couldn't keep ahead of the water, even with pumps. I was standing with my foot over a hole in icy water up to my armpits, freezing to death. When the diver finally put a blanket over the broken sea connection the water was four feet deep in the bilge. But we saved her."

As a fireboat, the *Kingston II* was asked to help on both the Thames and Mystic Rivers.



Kingston II (left) helps deliver the 1899 ferry *Brinckerhoff* to Mystic Seaport in 1950. (Seaport Photo Archives)

"We answered one fire alarm and almost swamped a fire truck," Majewski remembered. "The *Kingston II* had been called to a fire at a local maraschino cherry bottling plant. When we arrived, we turned on the pump and directed a stream of water over the burning building, and, unknowingly, onto a fire truck parked on the other side. Someone had to tell us not to be so enthusiastic."

The *Kingston*'s captains, Payton and Majewski, developed a proprietary interest in *Kingston II*. With a crew of only three (captain and two deckhands) they were a close group. "Tom thought of the *Kingston* as his boat," Mrs. Payton said, with a wistful look. "He would go anywhere anytime to do any job with that boat. After he retired and it was no longer his tug, he couldn't even drive along the street where he could see the *Kingston*."

Majewski also considered the *Kingston II* his boat during the thirteen years he was skipper. He kept a log and did little things to fix up the boat. He scraped and painted the vessel himself if he felt *Kingston II* needed sprucing up. He even bought his own yacht paint and varnish for the interior, considering the company paint inferior.

"She was a great little boat," he said. "She was a small boat with a lot of power, and it was fun to do harbor work with her. Harbor work is fast, quick, with no time to fool around. Towing barges hour after hour up the coast is boring."

Even before becoming part of the Seaport fleet, *Kingston II* had assisted the Museum. In May 1950 she helped to bring the 118-foot sidewheel ferryboat *Brinckerhoff* up the Mystic River. The *Kingston II* also towed the *Joseph Conrad* to the Thames Shipyard in New London where she had repairs made to her hull plating in 1962.

Kingston II's first assignment as an official Seaport vessel was to move the *Charles W. Morgan* from the Museum's lift dock, where she had been undergoing restoration, to her berth at Chubb's Wharf, a half mile upstream. Despite the rainy, windy day the task was accomplished in less than an hour, to everyone's pleased amazement.

"Obviously we got along without her for

almost fifty years," said Robinson, "but the risks of moving the *Morgan*, the *Conrad* and the *L. A. Dunton* with the underpowered work boats we had was more than we were confortable with. Previously, we tried to wait for ideal weather conditions plus the necessary high tide, sometimes a difficult combination to achieve. Having *Kingston II* allows us more latitude to move the ships safely."

Now the tug is a familiar sight along the Seaport's busy waterfront. With her powerful winch she has lifted and reset hurricane moorings, replaced broken dolphins on Chubb's Wharf, and removed pieces of the *Morgan*'s after house during the restoration work there.

Her ice breaking capabilities were utilized early this winter to clear the area around the *Dunton, Sabino,* and *Emma C. Berry*; to keep a channel open as long as possible from the shipyard to the Route 1



Kingston II at work on a snowy day at the Seaport, winter 1980. (Photo by Mary R. Maynard)



Proving her value among the Museum's ships soon after her arrival, *Kingston II* helps berth the *Charles W. Morgan* at Chubb's Wharf. (Photo by Kenneth E. Mahler)



The lazarette beneath the after deck has ample storage space for *Kingston*'s spare line, anchors, and fire-fighting equipment. (Photo by Mary Anne Stets)

bridge in Mystic; and to clear an area near the shipyard so bottom samples and core borings could be taken prior to obtaining an Army Corps of Engineers dredging permit.

Now moored alongside the Seaport lift dock, where the *Morgan* is undergoing restoration, *Kingston II* stands ready to flood the *Morgan*'s lower hold with water if an unusually high tide is expected. The extra weight in the whaleship's hold will prevent her from floating off her supports on the lift dock.

The Seaport bulkhead restoration project also employs *Kingston II* in many ways. She towed both barges used in the project to the Seaport: a four-day round trip to Jersey City, New Jersey, to bring back the eighty-foot "big" barge, and a trip to the Submarine Base in Groton for the sixty-foot "little" barge. *Kingston II*'s fire hose was used to "jet out" the pilings behind the shipyard main shop as part of the bulkhead rebuilding project. The force of the water directed against the base of the pilings loosened them for easier removal. *Kingston II* also moves the barges carrying steel pilings, granite stones, and the pile driver to sites along the seawall.

Still in reserve is her capacity as a fire fighting vessel. It is hoped that she will never have to fight fires at the Museum or anywhere along the Mystic River, but the protection is essential. Five Seaport employees are now qualified to handle *Kingston II* and more are being trained, so that in the event of an emergency, a trained skipper will be available immediately. *Kingston II* and her crew have participated with other fireboats in the 1980 Fire Prevention Week boat parade on the Thames River and drilled with Mystic area fire companies fighting a mock fire at the Mystic Shipyard.

Less serious, but more colorful, activities also employ *Kingston II*. She escorts the annual Antique & Classic Boat Parade, assists at the Schooner Race and other Seaport waterfront events, and was among the welcoming flotilla when the Danish training ship *Danmark* visited New London in 1980.

Kingston II is a unique part of the Seaport's fleet of historic vessels, and another example of living history. From maneuvering nuclear submarines, she has stepped back in time and now maneuvers sailing ships from America's maritime past.

A bronze plaque has been mounted in the vessel's deckhouse stating the *Kingston II*'s new purpose:

KINGSTON II
Built 1937
Presented to Mystic Seaport Museum
by General Dynamics
Electric Boat Division
To Preserve and Protect
the Maritime Heritage of New England



Right: Kingston II salutes the Antique and Classic Boat Parade with her fire monitor. (Photo by Rick Booth)

Steamer *Bristol*

Contemporary accounts hailed her as the "Mammoth Palace Steamer," the height of traveling luxury. *Bristol,* for most of her career a Fall River Line steamer, symbolized the increasing wealth and power of the nation.

An 1866 product of William Webb's New York shipyard, the *Bristol*'s 3,000 ton wooden hull measured 373 feet in length, 83 feet in width, and 16 feet in depth. Steam for the 2,800-horsepower vertical beam engine was provided by three coal-fired boilers, each 35 feet long and over 12 feet in diameter.

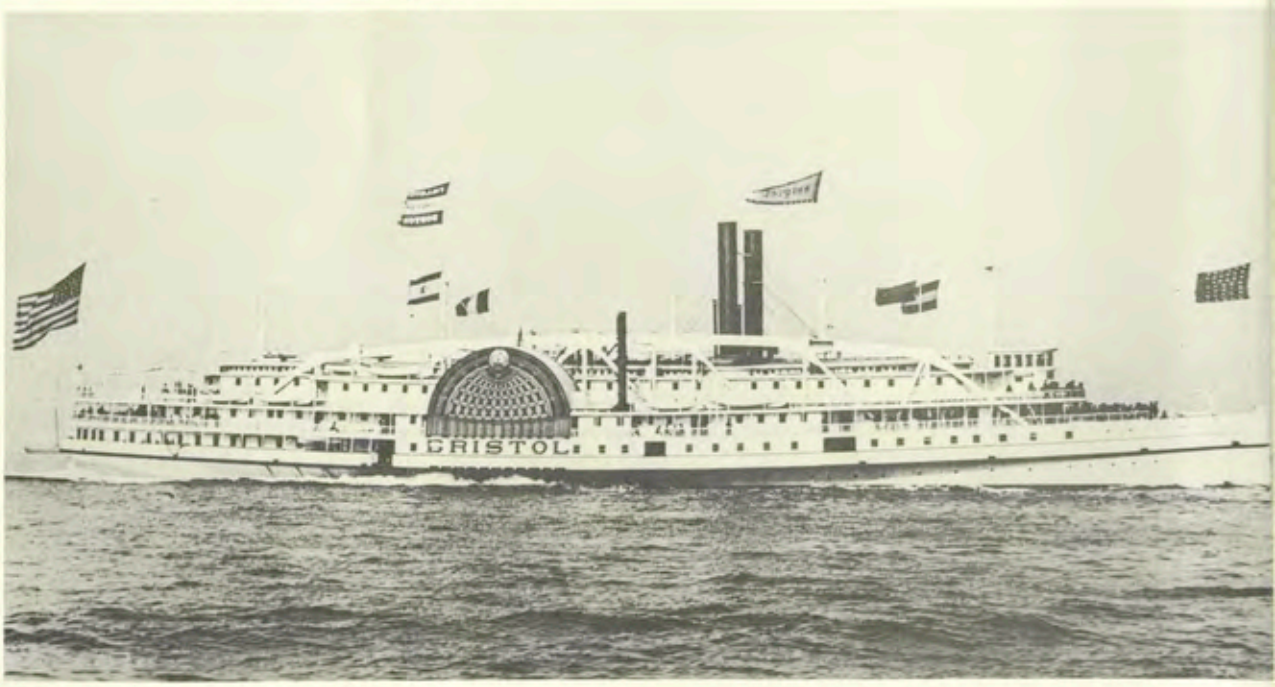
Bristol boasted 240 staterooms, over 300 additional berths, the largest steamer saloon in the world, and over 120 uniformed crewmen. Besides such obvious creature comforts as velvet carpets, mahogany staircases, and crystal chandeliers, the *Bristol* also provided fine meals and entertainment. New York's *Nautical Gazette* reported in April 1872 that "Hall's celebrated brass, reed, and string bands will add their attractions to the pleasures and enjoyments of the trip . . ."

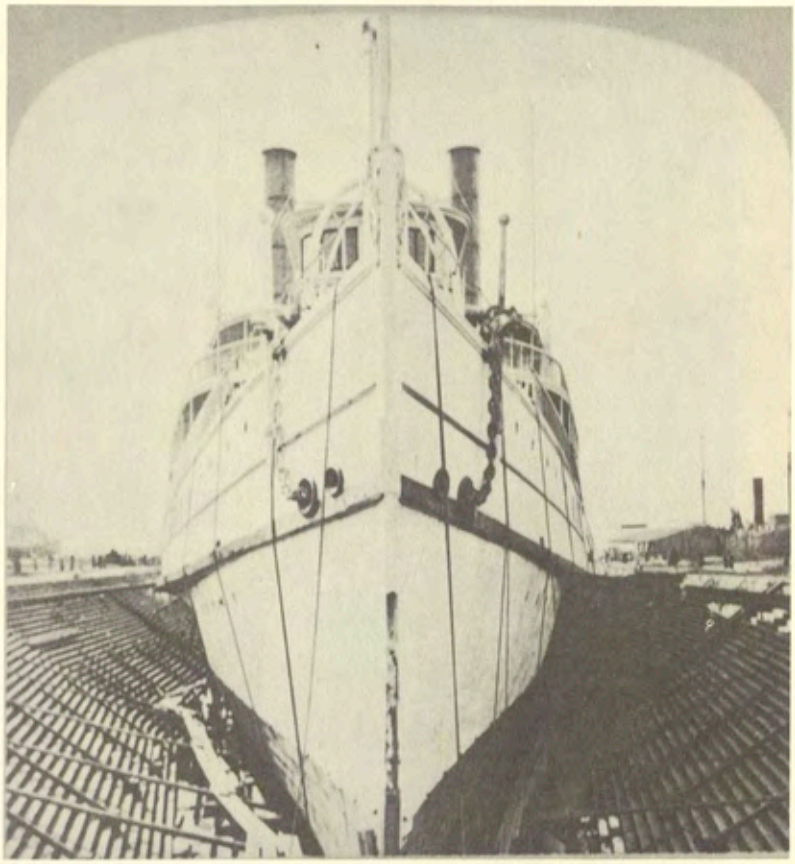
Together with her twin, *Providence, Bristol* carried hundreds of thousands of travelers between New York City, Newport, Rhode Island, and Fall River, Massachusetts, where thru-trains to Boston connected. Established in 1846 the Fall River Line, under various owners, provided this vital service until 1937. *Bristol*'s career, however, ended the morning of 30 December 1888, when a fire of undertermined origin gutted the vessel at Newport.

The following photographs, most of them recently acquired stereographs, illustrate well the power and grace that was the *Bristol.*

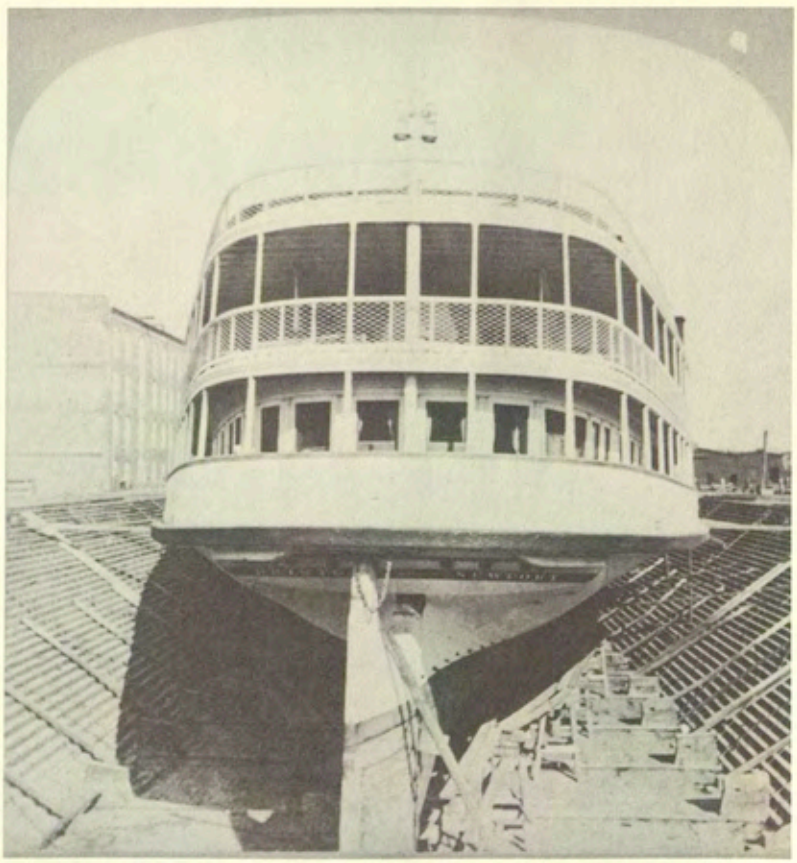
Selection and research by Richard Malley of the Curatorial Department

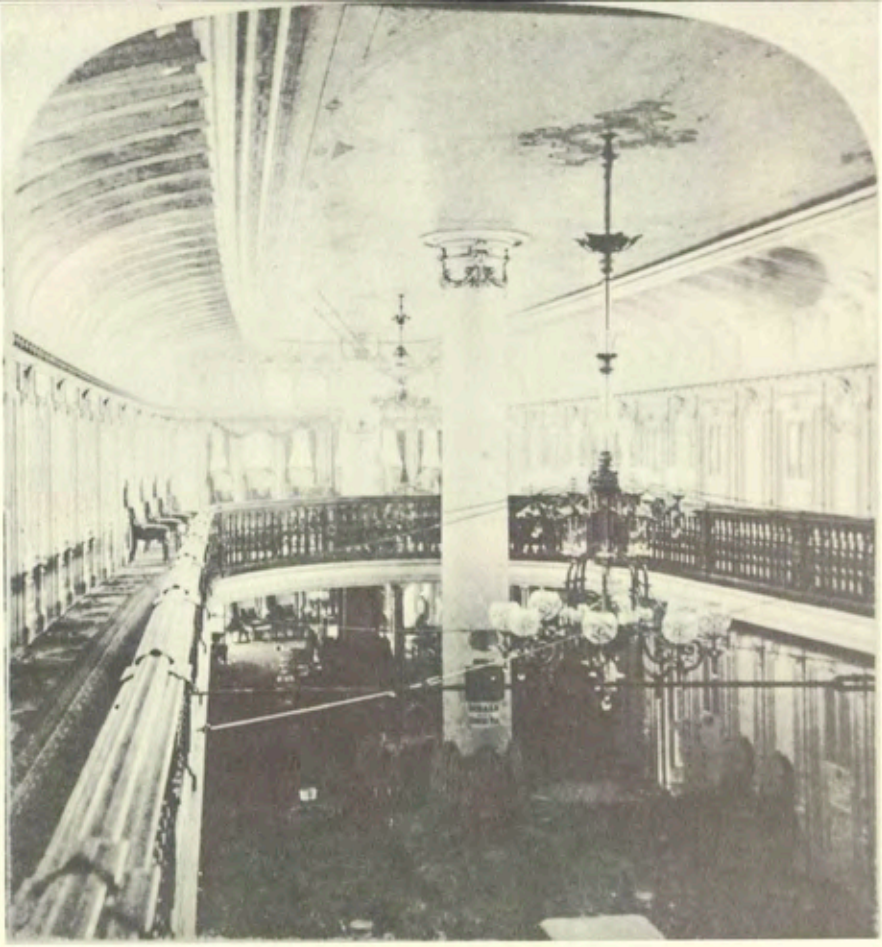
Bristol in her heyday on the Fall River Line. The flag reads "Fall River/Line For/ Boston." (47.241)





Matching stereographic views of *Bristol* in a New York drydock, ca. 1880. (78.244.1-2)



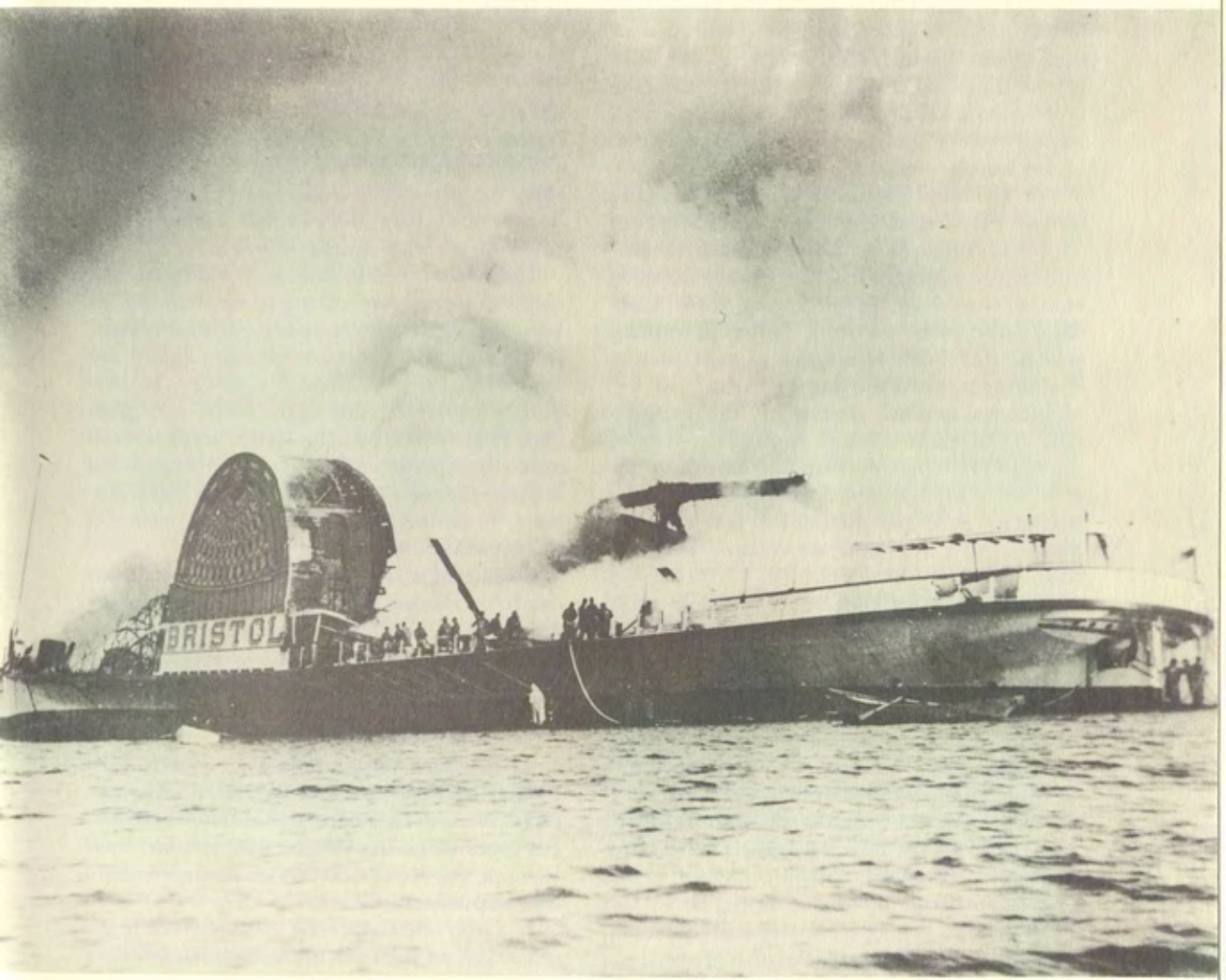




Facing page, top:
View of *Bristol*'s 275-foot-long grand saloon, from a contemporary stereograph. A poster announces meals on the European Plan. (78.244.5)

Facing page, bottom:
Stereograph, closeup of *Bristol*'s palatial interior appointments. Note the spitoons. (78.225.2)

Bristol's inglorious end, 30 December 1888. (48.225)



BOOK REVIEWS

On the Hawser, A Tugboat Album. By Steven Lang and Peter H. Spectre (Camden, Maine: International Marine Publishing Company, 1980. 522 pp. Photographs, glossary, appendix. $30.00.)

Since they're almost always seen docking much larger vessels or towing high capacity barges, the popular impression of tugboats as small and rather insignificant vessels carries on. Although Lang and Spectre have hardly created the *Supership* of tugboat books, i.e., it's unlikely to enjoy more than a limited readership, *On the Hawser* does an excellent job of evoking the feeling of life aboard the boats and the business of towing, and shows very nicely the evolution of designs and characteristics, all of which help dispel the "Little Toot" image prevalent among the uninitiated. Actually, some of the larger ocean towing vessels illustrated are in the 200-foot, 10,000-horsepower range.

The style and format of the book compare well with William H. Bunting's *Portrait of a Port: Boston.* As described in the title, this is an "album" of over 500 pages, nearly half of which contain full- or half-page photographs, most from Lang's own collection of tug portraits, working photos, and a limited number of crew photos. The prose is instructive and insightful, with lots of attention to detail in evidence. Technical details are discussed when appropriate to the photograph. This information is obviously the result of thorough investigation and is for the most part accurate. Although a few misstatements are present, these are certainly insignificant.

In the chapters concerned with the boats themselves, the presentation of photos is chronological. For example, the evolution of steam tugs is traced from the mid-nineteenth century through the mid-1970s, and in separate chapters diesel, salvage, and foreign tugs are similarly treated.

While the historical nature of the book is evidently foremost among the authors' purposes, it's good to see the others treated. The working shots of both the boats and the crews are, to me, among the most interesting in the book, and altogether too few. I only hope Lang is planning another book of the same fine quality, which will deal with such things as layout, towing techniques and equipment, engines, and the hierarchy on board.

To put a book like this together on any subject is obviously difficult, and when a subject such as tugboats is chosen, it becomes more so. These are working machines, without the kind of beauty popularly associated with sailing vessels or big ships. Above all, this book does a superb job of overcoming the mundane, and focuses our attention on the specificity of purpose and consequent functional beauty and character of tugboats.

Richard Farrell
Sea Education Association

Robert A. Weinstein, *Tall Ships on Puget Sound, The Marine Photographs of Wilhelm Hester* (Seattle and London: University of Washington Press, 1978. 144 pp. Photographs. $19.95.), and *Grays Harbor, 1885-1913* (New York: Viking Press, 1978. 190 pp. Photographs. $16.95.)

These two books by Robert A. Weinstein certainly deserve more than passing mention, as Weinstein is probably the chief maritime historical photograph expert on the west coast of the United States. Over twenty years ago, he personally examined the eight-by-ten-inch glass plate negatives of Wilhelm Hester's collection as agent for a private philanthropist who planned to make the collection available to the San Francisco Maritime Museum (now the National Maritime Museum).

In *Tall Ships on Puget Sound,* Weinstein has carefully selected 102 superb prints from the more than 1,000 glass plate negatives in the collection. The sharpness of each scene is excellent. The photographs and accompanying text initially present the day-by-day working life of Hester and his subjects. Two of the geographical areas in which he photographed vessels, Port Blakely and Tacoma, Washington, receive special attention. There are also sections on different types of sailing vessels, the captains, their families, the crews, and last of all, the magnificent shipmasters' cabins.

Probably the most eerie crew portrait is the one taken on the deck of the four-masted bark

Andelana. On 14 January 1899 Hester's lense caught fifteen crew members and their two dogs posing just forward of the quarterdeck of the big "lime-juicer" as she lay at anchor in Commencement Bay at Tacoma. She was completely empty of ballast and was awaiting her turn to take on grain. Later that night, a furious gale came up. The *Andelana* heeled over sharply, snapping the chains of ballast logs alongside. In minutes, she turned turtle and sank silently. Not one of those fifteen men Hester had photographed so expressively hours before was to survive.

The book *Grays Harbor, 1885-1913* is more than a book about the ships and maritime men of Grays Harbor, Washington. It is the story of the woods, the logging camps and railroads, the lumber mills and commercial buildings at Aberdeen and Hoquiam, as well as the smaller communities nearby. The sensitivity of the scenes captured on glass plates helps one appreciate how amateur photographer Charles R. Pratsch (who took virtually all of the photographs) succeeded in preserving pioneer life as it really was. Every walk of life is depicted, from the bouncers, bartenders, and dancehall girls of "Ed Dolan's Eagle Dance Hall and Casino," to a view featuring an outdoor church service attended by many of Aberdeen's most respectable citizens.

The selection of maritime scenes is especially tasteful. Weinstein has selected varied views of west coast lumber schooners, and wooden ships under construction. Also, harbor craft and steam towboats are well represented.

Both of Weinstein's books offer a rich visual text in the photographs themselves. To appreciate the photographic history of the northwestern United States at the turn of the century, both books are a must.

Michael Jay Mjelde
Bremerton, Washington

Shipwreck. Text by John Fowles, photos by Gibson of Scilly (London: Jonathan Cape, Ltd., 1974. Reprint 1979. 50 pp. Photographs. $8.95.)

Every maritime country can claim its death trap for ships, but Britain can safely claim one of the most dangerous areas for maritime shipping: the Scilly Isles and the coast of West Cornwall. Along these treacherous shores, four generations of Gibsons have compiled an outstanding photographic record of shipwrecks. While this sample of their work is small (just thirty-six photographs), I am confident that it is just the tip of an outstanding collection, photographed from sailing days, through steam, and into modern shipping.

John Fowles, the acclaimed novelist, has captioned the photos and written an introduction. He offers some interesting points on how the Gibsons "touched up" the photos and negatives, adding people in the rigging or on board, or perhaps a little false foreground.

The design is pleasant, with enough variety to maintain interest. The reproduction of the photos is very good, though based on the small number of photos, I find the price a bit steep. Enthusiastic viewers of maritime documentary films and ship disaster books will instantly recognize a number of the photos. The earliest scenes were photographed around 1872 and the most recent is of the infamous 1968 *Torry Canyon* disaster, when a massive oil tanker grounded in near perfect conditions, causing devastating pollution.

We all know that accidents draw spectators, and maritime disasters are no exception, but I find a complete book on the subject, even a small one, a bit depressing. A helpless ship, pounding on the rocks, with surf or tide taking its toll, is a scene most mariners find hard to put into words.

Kenneth E. Mahler
Supervisor, Photo A-V Services, MSM

Nautical Antiques For the Collector. By Jean Randier (Garden City, New York: Doubleday & Company, Inc., 1977. 221 pp. Color and halftone illustrations, bibliography, appendix. $14.95.)

With the growing interest in maritime artifacts, there is great need for a comprehensive book for would-be collectors. This handsomely illustrated volume will be a nice addition to other, more authoritative sources on models, navigational instruments, ship portraits, etc., but it hardly fills the bill as the definitive work.

Written in France and translated in Great Britain, it seems to have a European bias, although United States maritime museums are represented in both the text and photographs. The bibliography seems to be well balanced but it is difficult to reconcile some of Randier's conclusions with his reference sources. For example, one footnote states: "The fact that Yankee whalers were painted white for their entire maiden

voyage is only known from a painting by Charles S. Raleigh." Perhaps there is a ship portrait by Raleigh showing a white-hulled whaleship but to enlarge that to refer to all whaleships is illogical and, as we know, untrue. There are other questionable statements in areas where I have some knowledge which lead me to be suspicious of the information in chapters about firearms or navigational instruments where I know very little. In addition, there is no index and it is difficult to correlate the text with the illustrations. The literary style is easy and readable but is more speculative than authoritative as in, "From this last, is it not reasonable to assume...?" On the whole this is a disappointing book but it might interest other qualified authors to attempt a volume covering the same subject areas.

Peggy Welch
Education Department, M.S.M.

Spritsails and Lugsails. By John Leather (London: Adland Coles Ltd.; New York: Charles Scribner's Sons, 1979. 392 pp. Photographs, drawings, glossary, index. $30.00.)

Inshore Craft of Norway. By Bernhard and Øystein Faerøyvik. Edited and translated by A. E. Christensen (Oslo: Grøndahl & Søn, 1979. 143 pp. Photographs, drawings, maps, glossary, appendices. $35.00.)

Wooden Boat Designs. By Christian Nielsen. Translated by Erik J. Friis. (U.S. edition, New York: C. Scribner's Sons, 1980. 162 pp. Photographs, drawings, maps. $18.95.)

Three books have recently been published on European watercraft – from Britain, Norway, and Denmark. For those interested in the history of small craft and fisheries they are quite valuable, providing material comparable to that in print on American small craft.

For British small craft, John Leather's book *Spritsails and Lugsails* helps fill the gap left when Edgar March's two-volume *Inshore Craft of Great Britain in the Days of Sail and Oar* went out of print. The book is divided into two main sections, one practical, the other historical. The first section covers the working and setting up of sprit and lug rigs. The lug-rigged section is the most detailed, and of the most interest to the American reader, since lug rigs are rarely found on this side of the Atlantic. Good drawings by the author show the details necessary to rigging, and the discussion covers how the lug sail is handled.

The historical section surveys first British, then North American craft. Naturally enough, since Leather is British, that section is longer and better. Both summarize much that has appeared scattered in books and articles, but unfortunately no bibliographical citations are included. The British section ranges around the coast, covering everything from sixty-foot open boats with two or three dipping lug sails to fifteen-foot crabbing skiffs. Considerable emphasis is placed on what the boats were designed to do, and how they were used. For the American reader, the North American section is less satisfactory. Its organization is less regional, and there are some quite odd omissions: e.g., "peapods" do not appear in the Maine spritsail section, nor do the horizontal sprit rigs of the Chesapeake. It almost seems as if Leather used all secondary sources except Chapelle's studies. Indeed, picking at the author's sources is an interesting and challenging puzzle for the American small craft student.

The book is well illustrated with both photographs and drawings, and its horizontal format is well suited to reproducing largely horizontal boat plans and photographs. But the book is marred by a conspicious number of proofreading errors and broken lines in drawings.

The two recent English-language volumes on Scandinavian small craft are similar in size and format, and both are based on primary research and field work done by their writers. *Inshore Craft of Norway,* edited by one of Norway's foremost watercraft scholars, Arne Emil Christensen, from a longer manuscript by Bernhard and Øystein Faerøyvik, presents some forty-seven boats starting in the south and working north. Based on drawings and manuscript notes left by Bernhard Faerøyvik beginning in the 1920s, the author discusses Norwegian clinker boatbuilding methods and the uses of the craft, and in addition shows nicely how the same basic boat type was adapted to various geographical and working environments. Included is a complete list of Faerøyvik's plans and ordering information for them.

At the same time Faerøyvik was at work in Norway, Christian Nielsen was working in Denmark recording the traditional sailing and rowing watercraft which were fast disappearing before the onslaught of motorized boats. His book, *Wooden Boat Designs,* presents forty-one of his

studies. As in the Norwegian book, each boat is documented with photographs, drawings, and sketches. Its organization is topical, by fishery and by use. Especially interesting is the section dealing with the adoption and impact of gasoline motors, a topic of great importance in the story of working craft design as it fundamentally altered the fisherman's way of life. Nielsen's drawings are as meticulous as those of Faerøyvik, but the printer or book designer was kinder to them, making them quite clear. The English translation is smooth and idiomatic, extending even to the information on the plans. Both the Norwegian and Danish volumes should be part of any collection on working small craft.

Uffa Fox's Second Book. By Uffa Fox (London: Peter Davis, 1935. Camden, Maine: International Marine Publishing Co., 1980. 376 pp. Photographs, drawings, index. $65.00.)

The reprint edition of *Uffa Fox's Second Book* is quite good; only the publisher's page gives it away as a reprint. But, printed in a small edition, it is expensive, not much less than an original. Nevertheless, if you can't find an original edition, sit back with this and enjoy Fox's coverage of the yachting scene in 1934. Among other things, he summarizes the history of the Royal Yacht Squadron, and covers performance advances in classes like "J" Boats, International 14's, and Canoes. His discussion of the state of masting and rigging shows how the double headsail introduced by L. Francis Herreshoff on his "J" boat *Whirlwind* led to today's large overlapping jibs. General articles include a historical section which contains a 1697 journal, a discussion of *Bounty*'s launch, and an excellent piece on what belongs on the bookshelf of a small cruising yacht. A detailed piece on the design and construction of a welded steel yacht leads off his cruising section and is followed by pieces on the Canadian racing fishing schooner *Bluenose*, and on famous–then state of the art–yachts like *Edlu*, designed by young Olin Stephens to the then-new Cruising Club of America measurement rule and built by Nevins, and *Stormy Weather*, another Stephens/Nevins yacht. His concluding piece on the Sailing Ship of the Future describes a 7,500-ton wishbone ketch, built in Heaven to race *Normandie* using, among other things, something that sounds like today's computerized drawing machines. It's inspirational reading for those contemplating a return to working sail in today's oil-short world.

Building the Maine Guide Canoe. By Jerry Stelmok (Camden, Maine: International Marine Publishing Co., 1980. 257 pp. Photographs, drawings, materials list, index. $20.00.)

Wood-canvas canoes were the first mass-production recreational boats. Beginning with E. M. White in 1889 and Old Town in 1900, many thousands were built in the years through the end of World War II, when they began to be superseded in popularity, first by aluminum and then by fiberglass canoes. But the art of wood-canvas canoe building hasn't died, and one of its practitioners, Jerry Stelmok, has shown in detail how it's done in *Building the Maine Guide Canoe.* Unlike most "how to" books, he concentrates on professional production techniques, showing how these can be adapted to home or one-off building. Illustrations, both drawings and photographs, are excellent, and the book is sprinkled with appropriate and spicy comments from canoe builders and users. Whether you are interested in building a wood-canvas canoe, restoring the one hanging in your garage, or how the canoe you paddled at summer camp was built, the book will suit you.

Sail and Power. By Richard Henderson. 3rd ed. (Annapolis, Maryland: Naval Institue Press, 1979. 284 pp. Illus. $18.95 cloth, $13.95 paper.)

When I was in the navy, there was the right way, the wrong way, and the Navy way. The right way is the Navy way in the case of Richard Henderson's *Sail and Power.* The book is designed to teach incoming midshipmen the skills of boat handling and seamanship, but it is a valuable reference for anyone. While specifically oriented towards Naval Academy craft, perhaps too much so for some tastes, it is a good place to start when looking for information on topics like small boat racing, mechanical systems, piloting, and powerboat handling.

From a Fiberglass Hull. By Michael Collins (New York: C. Scribner's Sons, 1979. 132 pp. Drawings, index. $10.95.)

Fiberglass boats, both power and sail, are ubiquitous today. But few owners know how their boat is put together, and even fewer potential owners have considered building or finishing

off a fiberglass boat. The general information on fiberglass building techniques presented in Michael Collins's *From a Fiberglass Hull* is perhaps the greatest value of this book to American readers, since few partially-completed or do-it-yourself hulls are available in this country. Collins's book is by no means exhaustive, but it does cover all main points, dwelling mostly on fitting out problems peculiar to fiberglass.

Seabag

While British naval history is not often discussed at Mystic Seaport, mention should be made of three recently published or reprinted books in the field. Between them they cover three centuries of British naval vessels. *Great Ships: The Battlefleet of King Charles II*, by Frank Fox (Greenwich, England: Conway Maritime Press Ltd., 1980. 208 pp. Half-tones, color plates, appendices, index. $51.60), provides in-depth coverage of the vessels of the British Royal Navy, 1660-1685. A wealth of information is offered on individual vessels and on vessel design and decoration, both British and continental. The van de Velde paintings and drawings, used to illustrate much of the book, are exceptional.

The British three-deck ships of the Napoleonic War period receive attention in *The Anatomy of Nelson's Ships*, by C. Nepean Longridge (Annapolis, Maryland: Naval Institute Press, 1977. Reprint of Argus Books Ltd. editon. xii + 283 pp. Photographs, drawings, six foldout plans, index. $23.95). This is primarily a model maker's book, designed to guide construction of a minutely-detailed model of H.M.S. *Victory*. Nevertheless, along the way many details of construction of the great "wooden walls" of the eighteenth and early nineteenth centuries are touched upon.

Finally, the early ironclads which entered the British Navy in the second half of the nineteenth century are introduced in *The Black Battlefleet*, by Admiral G. A. Ballard (Annapolis, Maryland: Naval Institute Press, for the Nautical Research Society, 1980. 261 pp. Photographs and drawings, appendices, index. $38.95). These forty-five vessels, commissioned between 1861 and 1877, form a colorful, experimental link between the great wooden ships-of-the-line of the early nineteenth century and the steel dreadnaughts of the early twentieth century. Admiral Ballard served in several of these armored auxiliary warships early in his career so he writes from experience.

The text is reprinted from Ballard's series on the Black Battlefleet published in *The Mariner's Mirror*, beginning in 1929. The Society for Nautical Research has edited the material and fully illustrated it with photographs, engravings, and diagrams. Six appendices provide specifications on the vessels. This hefty twelve-by-ten-inch book should be of great interest to students of naval history and design.

The Wherry Oarsman

LETTERS

I have been for many years a member of the Mystic Seaport and was fascinated by your article on *Nixie* in the Spring 1981 *Log*. I also hasten to admit to being the grandson of the "obviously neat" Beverly Farms resident who laid *Nixie* up at White's yard in Manchester.

My grandfather, Stephen J. Connolly, had *Nixie* outfitted and at her mooring in Manchester for his sons, Gregory P. Connolly II, my father, and Eugene T. Connolly for their return from Exeter in perhaps 1908 and 1909.

Eugene Connolly has just celebrated his ninetieth birthday, and I have asked him to clarify the details of *Nixie* as he remembers them. Gene was a Shields sailor until five years ago and presently is Chairman of Eastern Yacht Club's Historical Committee.

My grandfather, according to long standing family information, did not order *Nixie* smashed up. He did have her hauled and she fell from her cradle when a team of horses, frightened by a train (the Gloucester branch passed through the

White yard) struck the cradle. The lead keel was removed by Captain Smith, brought to Marblehead on a truck and the *Nixie,* minus her keel, was towed to Marblehead. My father, brother and I watched Captain Smith rebuild *Nixie* in the mid 1930s.

Very sincerely,
Stephen J. Connolly III
Beverly Farms, Massachusetts

I greatly enjoyed your piece on *Nixie* in *The Log.* It is unfortunate that when things are just a part of the contemporary scene, one fails to realize that they may one day be considered of historic interest and importance.

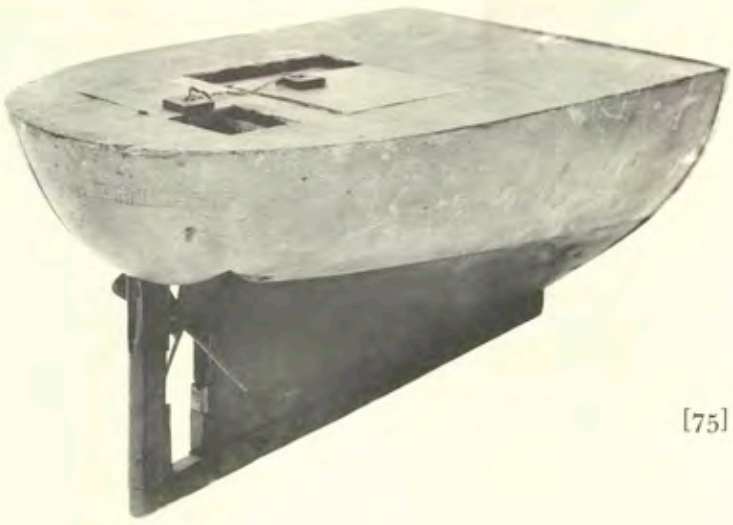
In the picture of *Nixie* racing at Beverly, it looks to me as if the mast is farther forward than in the "second incarnation" photo, even though the latter shows a single headsail. I may be mistaken; on the other hand, Cap Smith could have moved the mast aft. In the reincarnation shot, I wonder if she isn't lying off Crocker Park, rather than Fort Sewell.

I well remember *Nixie,* both under and in Cap Smith's shop. Not long after she was rebuilt, Fred Wakelin and his father chartered her for an overnight cruise to Gloucester and took me along. We had a fine sail each way, but in the night I was seized with claustrophobia in the forward berth.

Sincerely,
Fenwick Williams
Marblehead, Massachusetts

ACQUISITION

The Seaport has recently purchased a patent model made by Richard Fanning Loper (d. 1880). The invention, patented 9 October 1844, was a device for lifting a screw propeller out of the water to reduce drag and wear when an auxiliary vessel was under sail. The inventor was a man whose life spanned the nineteenth century, and this invention, one among a number of solutions to the problem, saw the transition from the age of sail to steam. Capt. Loper was born in Stonington, Connecticut, and spent most of his adult life in Philadelphia. He was a sailor, shipbuilder, businessman, yachtsman, and inventor, with more than a dozen patents to his name. His daughter-in-law was the niece of Nathaniel Brown Palmer, one of the discoverers of Antarctica, and as a youth Loper himself accompanied Palmer as second mate on the sloop *Hero* to the South Shetland Islands. Dim: l.o.a. 18", width 10¼", height 8". [81.30]



AN INVITATION
TO JOIN MYSTIC SEAPORT MUSEUM

We should like to extend a cordial invitation to like-minded individuals to join with us in programs dedicated to the preservation of our national maritime heritage. Annual dues materially strengthen Mystic Seaport Museum. At the same time, a member receives tangible benefits and privileges, including:

Unlimited Free Admission to Mystic Seaport Museum during regular hours. (In all classifications above Individual, this applies to parents, children and grandchildren under the age of eighteen).

Receipt of THE LOG OF MYSTIC SEAPORT, a quarterly magazine devoted to articles on maritime subjects.

Receipt of the WIND ROSE, the Seaport's newsletter, reporting on current museum activities and personnel.

A Ten Percent Discount on boat dockage for Individual, Family, and Participating Members. Sustaining Members and above are accorded free dockage for two nights each visit.

A Ten Percent Discount on purchases at the Mystic Seaport Museum Stores, Inc.

Purchase of Guest Ticket Books at substantial savings.

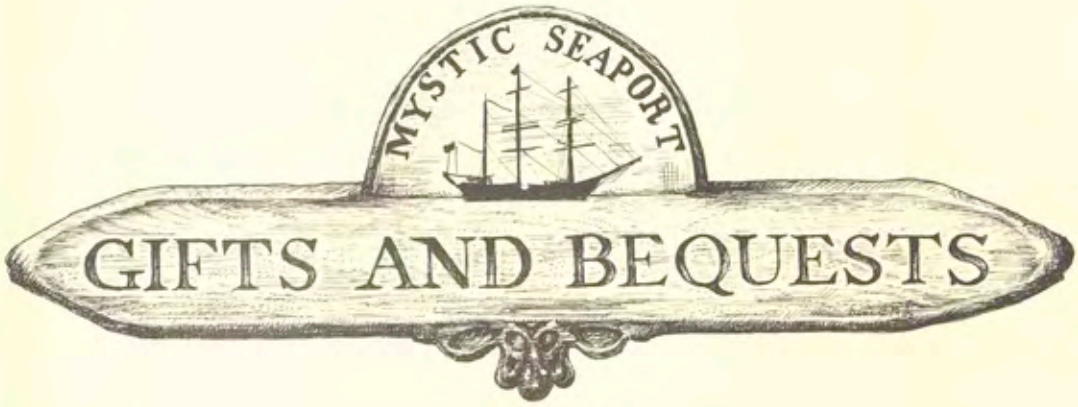
Eligibility for Subscriptions to the Adventure Series, illustrated lectures for armchair travelers.

Memberships are available in the following categories:

Individual	$ 20.00	Associate	$ 250.00
Family	30.00	Benefactor	500.00
Participating	50.00	Life	1000.00
Sustaining	100.00		

Contributions to Mystic Seaport Museum are deductible within legal limits for U.S. income tax purposes. Please make your check payable to Mystic Seaport Museum, Inc. and send to: Membership Office, Mystic Seaport Museum, Mystic, Connecticut 06355





GIFTS AND BEQUESTS

The development of the museum–the buildings, ships and wharves, the exhibits, books and manuscripts–give eloquent testimony to the generosity of members and other friends of Mystic Seaport Museum. There are continuing opportunities for gifts and bequests which will help assure its future strength and development.

Members of the Seaport who have not already done so are urged to perpetuate their interest in the work of the museum through a bequest. Some members will want to make a specific bequest while others may want to designate Mystic Seaport Museum as a residuary or contingent beneficiary of all or a portion of their estate.

Mystic Seaport Museum is a nonprofit institution publicly supported by gifts and grants. Contributions are deductible within legal limits for Federal income tax purposes. Inquiries regarding gifts and bequests are encouraged and may be directed to the Director of Resource Development.

SUGGESTED FORMS FOR BEQUESTS

General

I give and bequeath to Mystic Seaport Museum, Inc., a corporation existing under and by virtue of a charter granted by the State of Connecticut, and located in Mystic (Town of Stonington) in said State, $ . . . . . , to be used (or the net income to be used) at the discretion of the Trustees of said Corporation.

Residuary

All the rest, residue, and remainder of my real and personal estate I devise and bequeath to Mystic Seaport Museum, Inc., a corporation existing under and by virtue of a charter granted by the State of Connecticut, and located in Mystic (Town of Stonington) in said State, said estate to be used (or the net income to be used) at the discretion of the Trustees of said Corporation.

THE LOG OF MYSTIC SEAPORT

Mystic, Connecticut 06355

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Mystic, Connecticut
Permit No. 1

[redacted]

