# THE LOG OF MYSTIC SEAPORT®




*Please Remove Protective Cover*

# *Pull Together to the Songs of the Menhaden Chanteymen*



*The Menhaden Chanteymen sing the work songs of the North Carolina fishery. From left to right, front row: John Henry Pritchett, John Jones (group leader), and Howard Wilson. Second row: Raymond Taylor, Ernest Davis, and Leroy Cox. Third row: Wesley Ingram, Garland Fulcher, and John Simmons, Jr. Fourth row: Buddy Parker, Garfield Ellison, John Bell, and William Henry.*
(Photo by Deborah Luster)

Kicking off Mystic Seaport Museum's thirteenth annual Sea Music Festival on 11 June will be a very special Members' Preview Concert, by the Menhaden Chanteymen of Beaufort, North Carolina.

This unique group of men came together in 1988, some 50 years after many of the members first sang the work songs of the menhaden fishery so fundamental to the North Carolina economy. With songs like "I'm Going to Roll Here," "I Wish I Was Single Again," "My Way Seems So Hard," "Mule on the Mountain," and "Mama Liza Jane," these 14 men relive and share the songs that saw them through their struggles. The menhaden is a foot-long, oily, inedible fish that is highly prized for its commercial applications, which include the making of fertilizers, feeds, paints, and cosmetics. The fish is caught in large schools with a big "purse net," so called because it draws shut beneath the fish.

Once the fish have been trapped, the excess netting is pulled in, to "harden" the set. While today this heavy task is made simple with the use of hydraulic lifters, 30 years ago it relied on man-power, and specifically on crews of some 26 black men in two small purse boats, forming a triangle with the side of the big main boat.

Inside the triangle were trapped hundreds of thousands of pounds of fish, brought together by the synchronized pulling of hands and backs. To better synchronize and harmonize their work, the men sang. These chanteys were similar to other nautical work songs, but with a decidedly African-American flavor. Sometimes salty, sometimes sacred, the songs were sung call-and-response style and told of missed homes, missed loves, punished bad men, and heavenly rewards. They echoed the sounds of the blues, church singing, glee clubs, and barbershop harmonies.

In its brief history of sharing the songs of an earlier life, the group has gained considerable recognition. The men have been heard on National Public Radio's "Performance Today," on NPR's Black History Month special "Make a Joyful Noise," and on "All Things Considered," as well as on the public television series "The Great American Music Company."

They appeared at Carnegie Hall in November of 1990 as part of the Folk Masters series, which was taped for rebroadcast by American Public Radio, and a portion of their performance was used in a segment on CBS's "Sunday Morning with Charles Kuralt." In the spring of 1990, the group released its first cassette, "Won't You Help Me to Raise 'em," which has been selected by the American Folklife Center of the Library of Congress for the annual publication, *American Folk Music and Folklore Recordings: A Selected List*.

The Seaport proudly welcomes these men to its popular Sea Music Festival, and encourages members to take advantage of the opportunity to share in the songs of the menhaden fishermen.

The cost of the Preview Concert, which will begin at 7 P.M., is $7 ($10 for nonmembers). Children under 12 are admitted free, but they must have a reservation. The grounds will open at 6:00 P.M., and the Galley will provide refreshments. The concert will be held rain or shine. To secure your reservation, please send a check covering the amount of tickets you need, to Membership Reservations, at the Seaport address. Sorry, no refunds. For more information, please call (203) 572-5339.

WINTER 1992 THE LOG OF Vol. 43, No. 4

# MYSTIC SEAPORT®






*An exhibit on the America's Cup will open on 14 March in the Seaport's P.R. Mallory Building. Timed to coincide with the 1992 Cup competition in San Diego, the exhibit will feature items from past Cup campaigns, such as this poster by Keith Reynolds, published by the Seaport Stores for the 1988 series.*

Silkscreen poster. "©1988 Sail America Foundation Official 1988 America's Cup© Poster © 1988 Mystic Seaport Museum Stores." (Photo by Claire White-Peterson)

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Cover: *belching coal smoke and personifying the essence of marine steam power, the battleship* Connecticut *(456x77x25, commissioned 1906), generates 19,819 indicated horsepower in her triple-expansion engines as she races by at 18.78 knots. During that era of steam-powered military expansion, the* Connecticut *served as flagship of the Great White Fleet of 1908–09. The bow wave swamped his boat, but photographer Theodore Miller saved this picture.*
(M.S.M. 59.1275)

# SIGHTINGS

Fortunately, it is fairly common to hear someone say "Mystic Seaport is a great place." Though offered casually, such comments are sincere, and made with enthusiasm. Almost 25 years ago, when I was seeking to enter the maritime museum field, Ernest Dodge, the long-time Director of the Peabody Museum of Salem, advised me, "get a job at Mystic Seaport – it is a great place to learn." He was right, and the others are correct too; in many ways Mystic Seaport is a great place. But if we look at the essence of this statement we find a worthwhile goal for all of us associated with this institution. We should work to *make Mystic Seaport a great place – to visit, to learn, to do business with, to work, and to support.*

Our visitors, when surveyed, universally respond positively about their experience here, but we cannot rest with the satisfaction of their praise. We need to make it our goal to provide a great experience for the wide range of visitors. Maritime historians should find aspects of our exhibits and programs that enlighten and intrigue them. A family with several children should be fascinated and entertained by what they encounter. Visitors from the Midwest or midtown Manhattan with no nautical knowledge should be captivated as they discover the maritime past through our roleplayers, interpreters, and skills demonstrations. Young adults should find their imaginations stimulated by exposure to details of life aboard the *Morgan* or the drama of our figurehead exhibit.

Mystic Seaport has been a great place to learn for millions of visitors over the years, and for hundreds of thousands of others involved in our many formal education programs. We should work to insure that all, from scholars to school kids, are assisted in their efforts to learn here. The atmosphere needs to be conducive for the study of history, literature, marine science, and maritime policy within the Williams College-Mystic Seaport undergraduate program. Visiting scholars should find the library and our collections accessible, and the staff responsive to their needs. For our own staff, we need to promote formal and informal opportunities to learn. Museum professionals from other institutions in this country and abroad should be able to study our operations and learn what does not work, and what mistakes we have made, as well as what succeeds.

Although we are a preservation and education institution, we are also, with the Museum and the Stores combined, a 20 million-dollar-a-year business. We must make it our goal to be a great place to do business. A television network or magazine seeking licenses to use our film or photographs should find us professional and businesslike. A purveyor of office supplies to the Museum or products to the Seaport Stores should look forward to the business dealings with confidence in our business and accounting systems. A printer negotiating with the Seaport over a publication should share our pride in what will be jointly produced.

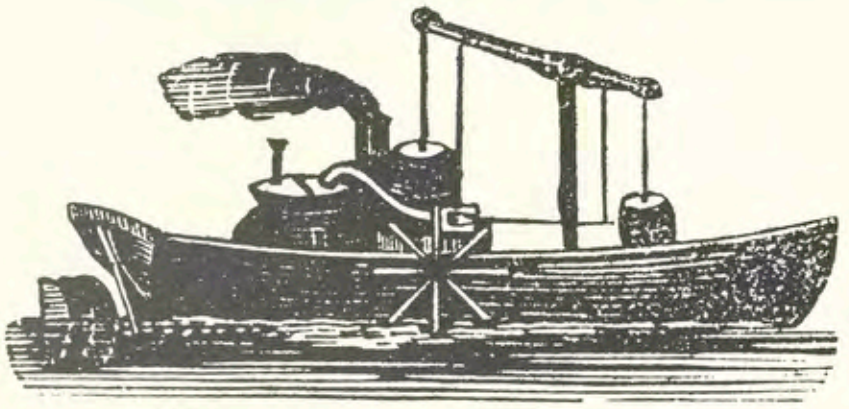
Behind all this activity is a strong and diverse staff of employees and volunteers, and we must make this a great place for all to work. As staff we should be able to draw satisfaction from the way we care for our ships, or document their restoration, or preserve our paintings and our ships' plans. We should be proud of our maintenance of the Museum's buildings and grounds. We need to recognize the value of this work with appropriate compensation and benefits for employees. The environment we create for our regular Volunteers, Gung Ho Squad, hard-working Pilots, and dedicated Trustees must welcome their much needed effort and offer them the gratification that comes from a job well done.

None of this can be achieved without a solid base of enthusiastic support. We should incorporate our more than 20,000 members into our endeavors so they can share in our accomplishments. Corporations, foundations, government agencies, and other donors should have the confidence that their generous investments will benefit society so they too will be eager supporters of our efforts.

Our ships, collections, buildings, and facilities give us the potential for a great future, and the people involved with this institution are contributing to the realization of that potential. In many of the areas mentioned we are truly succeeding, yet ample work remains to be done. Indeed, we must never say we have done enough. Our objective should always remain in front of us, to *make Mystic Seaport a great place.* ■

J. Revell Carr

# *The Evolution of Seagoing Steam: Stages in a Maritime Revolution*



EDWARD W. SLOAN

*I'd sooner put my head in a bucket of tar than allow myself to board a slimy, stinking craft of that sort. I'd sooner live in a coal-pit than in one of them devil's own craft. . . . Them dirty craft, with their holds full of greasy cranks, and their decks full of foul stinks, be nothing but the devil's invention. You will notice, for I have watched it, that they goes on increasing year by year, in size and number, just as sin and wickedness is getting more rampant year by year ashore; the two things runs together, like twins. . . .*[1]

–William Harding, an old boatswain

Steam power's intrusion into a centuries-old maritime world of sail was, by any reasonable definition, revolutionary. Such human-controlled mechanical propulsion made a fundamental change in the seafaring world, for vessels now could be operated without having to depend on the wind for motive power. To compare the sail-powered vessel, with its necessary reliance on favorable winds and currents, to the steamer, with its ability to move *against* these natural forces, involves a distinction not just in degree but in kind.

Thus while now, with the judicious detachment of historical hindsight, we may talk about the "transition" from sail to steam, and correctly observe that it took nearly a century before steam entirely supplanted sail on the world's sea-lanes, something more than a transition had happened. To those of the nineteenth century who lived through this experience, who felt the full, disruptive impact of steam, who saw fundamental changes in their working and living conditions and their own identities as seafarers, it was a change of revolutionary proportions.

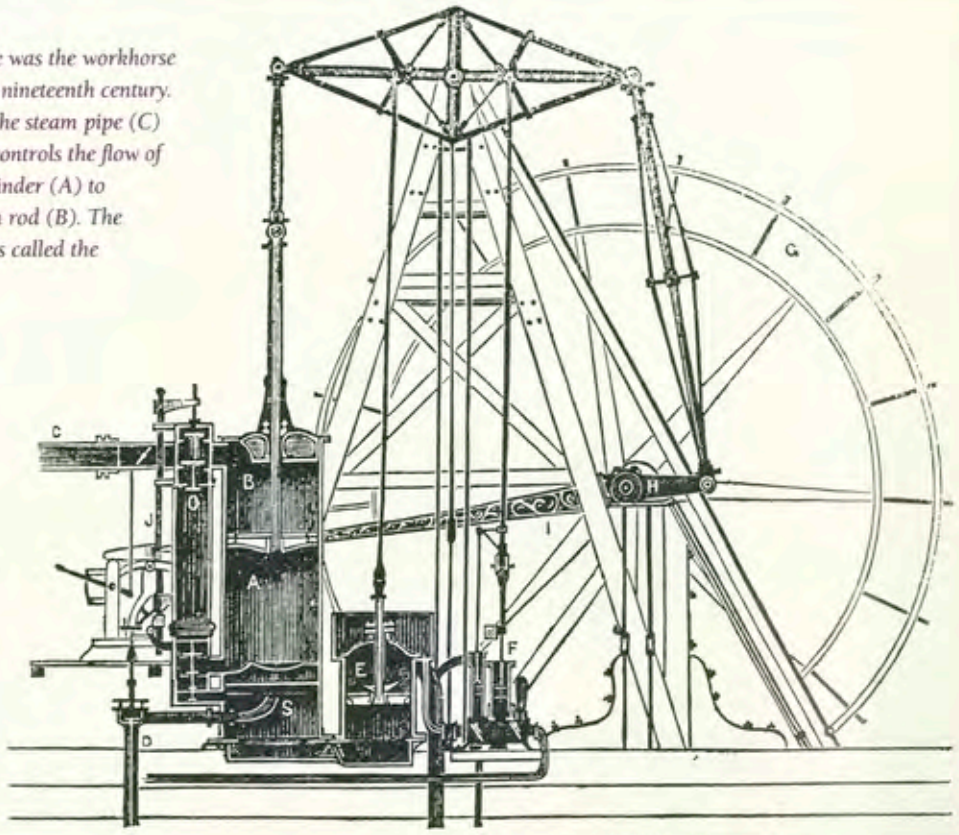
Spanning many decades, this change was no overnight wonder; properly, it should be seen as a process rather than as an event. Yet while it was neither sudden in genesis nor abrupt in the transformation it wrought, the emergence of seagoing steam ultimately was cataclysmic in its effects. Accordingly, the impact of steam power on the nineteenth-century world of sail should be acknowledged for what it was: a maritime revolution.

*Drawn from memory in 1846, this rendering suggests one of John Fitch's steamboats of the 1790s, none of which were commercially successful. In an 18-foot longboat, Fitch placed a 12-gallon pot boiler and two wooden cylinders to activate the crank mechanism. Powered with both paddle wheels and a screw propeller, the boat performed well during tests on ponds in New York.*
(MacFarlane, *History of Propellers and Steam Navigation*, 1851)

Marine steam propulsion relies on the fact that water can be converted from its liquid state to a vapor–steam–at a relatively low temperature. By heating large quantities of water to the boiling point, the tremendous expansive property of steam can be applied as a source of power for waterborne vessels. For virtually all of the nineteenth century, steam for marine machine propulsion was used to drive pistons back and forth in a closed-cylinder engine. Mechanical linkages in the engine translated this back-and-forth, or reciprocating, motion of the piston into a rotary motion. The motion thus produced was conveyed by a rotating cylindrical bar, or shaft, to wheels or propellers of various sizes and configurations. When rotated at sufficient speed and in an appropriate direction, such steam-powered wheel or wheels could propel a vessel through the water. The ideas and devices developed to fulfill this purpose certainly were not unique to the nineteenth century; yet, not until after 1800 did marine steam propulsion became practical, let alone accessible for general use.[2]

In searching for the origins of maritime steam, one might identify various seventeenth-century inventions. For all the imagination of David Ramsay, of Denis Papin, or of the Marquis of Worcester, however, none of their creations ever got off the drawing board far enough to propel a vessel. The same can be said for equally imaginative early-eighteenth-century inventors. Perhaps the honor for producing the first working steamboat should go to the American industrialist,

*A single-cylinder, walking-beam engine was the workhorse engine for American steamboats in the nineteenth century. Steam from the boiler travels through the steam pipe (C) to the steam chest (O). A set of valves controls the flow of steam from the steam chest into the cylinder (A) to expand and drive the piston and piston rod (B). The piston rod connects to the pivoting truss called the walking beam, which in turn is connected to the crank (H) of the paddle wheel shaft. Also attached to the crank is a rocking rod (I) to operate the valve stem (J) that controls the flow of steam. From the cylinder, steam is evacuated into the condenser (S) where a jet of cold water from the injection pipe (D) condenses it back to water. The water and air are removed from the condenser by the air pump (E) and fed back to the boiler by the force pump (F), both of which are driven by rods from the walking beam.*
(MacFarlane, *History of Propellers and Steam Navigation*, 1851)




William Henry. In 1763 Henry put a steam engine in a small boat, equipped with paddle wheels, which he had launched on the Conestoga River near Lancaster, Pennsylvania. However, historical immortality eluded William Henry; his engine worked, but the boat sank.[3]

While several Frenchmen in the early 1770s were developing a paddle steamer that worked and, as importantly, stayed afloat, we must look to England for the technological breakthrough that produced the modern reciprocating steam engine. It was James Watt who in 1782 finally developed the engine design that such American steamboat entrepreneurs as John Fitch and Robert Fulton would bring into practical application by the beginning of the nineteenth century.[4]

Improving greatly on the limited stationary pumping, or "atmospheric," engine design of Thomas Newcomen, Watt developed an engine with a cylinder closed at both ends, with apertures only for the piston rod and for the steam, so that steam could be injected and expelled alternately at each end of the cylinder. As Watt designed his engine, the force of the injected steam would drive the piston back and forth in the cylinder; having done its work for each piston stroke, the steam would be condensed (cooled back to its liquid state) and evacuated from the cylinder, then recirculated back to the boiler.[5]

Crucial to the success of Watt's design was a separate steam condensing system, which he had developed in 1769. His steam condenser largely solved the problem of resistance, or back pressure, to the piston on its return stroke. The ability to condense and evacuate the steam after it had done its work not only dealt with the problem of resistance; it also created, through the condensation process, a partial vacuum as the volume occupied by the steam in the cylinder suddenly shrank when it became a liquid again. This vacuum pressure actually assisted in the movement of the piston through the cylinder. As the piston moved through the cylinder it would be both *pushed* by steam pressure and effectively *pulled* by the partial vacuum produced by condensation and evacuation of the steam from the previous stroke.

This reciprocating, or "double-acting," principle of steam engine design also employed the expansive properties of steam, so that the steam injection could be cut off before the piston stroke was completed. If expanding steam were used to push the piston unaided through a portion of its stroke, rather than depending on steam being injected constantly through the entire piston stroke, then a significantly smaller total amount of steam would have to be generated for the work desired. Using less steam while still obtaining an acceptable amount of pressure against the piston meant burning less fuel; and the cost of fuel was the major determinant when comparing the relative costs of transportation by steam against those by sail.[6]

But theory was one thing; application was quite another. When steam expands its pressure drops, as does its temperature. Too much expansion results in too low an average pressure against the piston. Additionally, too much expansion results in such a temperature drop that the steam may start to condense into water, and thus lose all of its elastic, or expansive, properties. Consequently, in the early decades of the nineteenth century, a period of very low steam pressures for seagoing steamships, there was no general agreement on how much of an initial injection of steam was needed to maintain an average pressure against the piston sufficient to produce the necessary velocity in the piston stroke. Some theorists – the "short cutoff" enthusiasts – were convinced that very little steam needed to be injected for each stroke, so that marvelous economies could be realized in steam-engine operations. Others, usually practical engineers who had

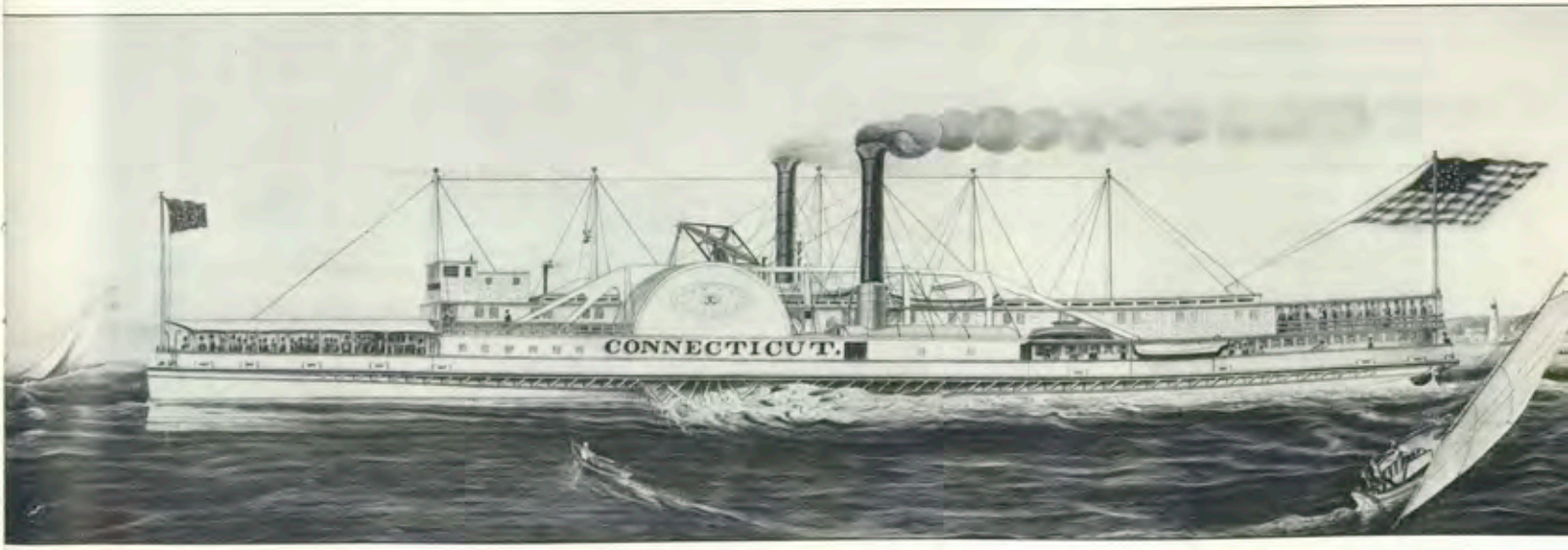
to operate the machinery and get the necessary power out of their engines, were pessimistic; they argued for at best a modest use of steam expansively – and thus a very modest saving in the cost of operations. A lively debate persisted well past mid-century before advances in steam machinery technology produced the desired results from the use of steam expansively.[7]

For many decades, though – well into the second half of the nineteenth century – marine steam engines and their associated machinery would remain relatively crude in design, heavy and cumbersome in structure, unpredictable if not dangerous in operation, and formidably expensive to construct, operate, and maintain. Much of this was the result of limitations in metallurgy; much more, however, resulted from ignorance, inexperience, and a discouraging gap between theory and application in the design and construction of this machinery.

The earliest steam-propelled vessels were river and bay steamers, which were widely in use by the 1820s. With their distinctive and ever-mounting superstructures, these vessels were designed for operation in sheltered waters, such as the Hudson River and Long Island Sound, as well as many other major navigable rivers and bays along the East Coast and even into the Gulf of Mexico.[8] Soon proving themselves as more efficient (and considerably more reliable) carriers than the coastal sailing vessels they rapidly replaced, these shallow-draft steamboats depended on large, relatively high-pressure "walking-beam" or "steeple" engines, with vertically-mounted cylinders, to power their huge and slow-moving side or rear paddle wheels.[9]

When oceangoing steamships tentatively emerged at the end of the 1830s, they relied for quite some time on the now well-established riverboat machinery and wheel designs. However, to contend successfully with the severe demands of an ocean voyage, or even to survive the enormous racking and pounding strains imposed on both machinery and vessel by the ever-moving sea, these steamers had to operate under extraordinarily low steam pressures. Moreover, the steam engines and boilers had to be heavily braced within the vessel's hull and protected as much as possible from smashing waves. Accordingly, early seagoing steam engine designers tended to avoid the towering steeple beam engine, with its vulnerability to the elements, and to favor "direct-acting" engines that had horizontally-mounted cylinders, thus permitting the placement of machinery in a much less exposed position.[10] A frequent alternative choice was the "side-lever" engine; here, the cylinders remained vertical but the working beam, instead of being exposed in a steeple framework high above the deck, was placed as low as possible in the hull.[11] More remarkable, although quite popular in the early decades, was the "oscillating," or vibrating, engine that was designed to avoid problems with long connecting rods. The novel solution was to have "the piston rod . . . coupled direct to the crank, the cylinder rocking back and forth on tunnions to accommodate the crank rotation."[12]

Regardless of the particular design – and there was a remarkable variety – steam machinery in both appearance and performance betrayed the primitive state of the art. Waterborne steam technology, in fact, would remain in a formative and limited stage for the larger part of the century. Seagoing steamships normally operated only where cost considerations were overshadowed by other factors – especially noneconomic ones – or where alternative and competing forms of transportation had yet to make an effective challenge.




*The Long Island Sound steamboat* Connecticut *(303x37x10) represents thousands of side-wheel coastal steamboats that operated in American waters from 1807 into the 1930s. Working in sheltered waters, these vessels were long and shallow, with narrow hulls to allow short paddle-wheel shafts. To accommodate passengers and freight, and for the sake of safety, the boilers were often placed on the guards – the outboard hull extensions that protected the wheels – as they were on the* Connecticut. *From the two boilers, steam was piped to her single six-foot diameter cylinder. The truss-work visible above the superstructure was the hog frame, which equalized the stresses on the long wooden hull. Above the paddle box can be seen the "walking beam" that transmitted the 12-foot stroke of the piston to the shaft of the 35-foot paddle wheels. Launched in 1848, the* Connecticut *worked on the Sound through the 1850s, running variously from Hartford, Norwich, or Stonington to New York. After Civil War service as a transport, she ran on the Hudson River. In 1872 she was rebuilt as a Hudson River towboat. Following a boiler explosion in 1890 she was retired and later broken up after more than 40 years of service.*

Watercolor, attributed to Jurgen Frederick Huge. (M.S.M. 38.246, photo by Claire White-Peterson)

Early marine steam engines were comprised of one or two cylinders. They were made of heavy cast iron with rough tolerances and little or no insulation, so that there was great heat loss – and thus a corresponding drop in steam pressure – just through conduction (transmission of heat through the cylinder walls) and convection (transfer of heat in a fluid of nonuniform temperature, such as steam within a poorly-insulated cylinder).

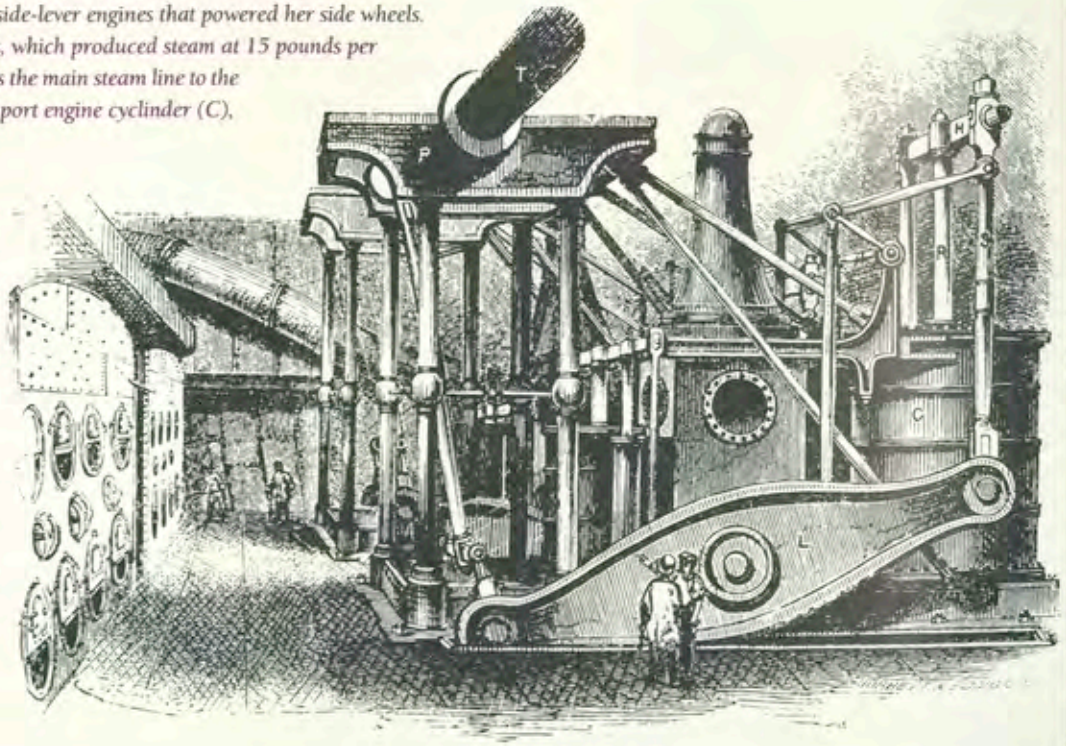
The first seagoing vessels were paddle wheelers, so that when the screw propeller proved its efficiency in the late 1830s it was run off an engine that had been designed to operate the huge and comparatively slow-moving paddle wheels. Thus, many of the first screw-propelled steamers had their engines geared up to the small and rapidly-revolving screw. This was accomplished by an elaborate gearing mechanism that, in these early years, consisted of rows of stepped wooden teeth meshing with iron pinions on the propeller shaft. Not surprisingly, the result was that after an ocean voyage, as one engineer reported, "the bilge was carpeted with wood shavings."[13]

The idea of screw propulsion for vessels goes back well into the eighteenth century, but practical experimentation began only after 1800, with the first major trials not taking place for three more decades. Highly controversial and strongly resisted by many naval and marine engineers until the late 1850s, screw propulsion – along with so many other innovations in marine steam technology – offered obvious advantages, at least in theory. Yet, notwithstanding its more efficient design and its more economical use of fuel as well as of space in a steamer, screw propulsion for oceangoing steamers failed to supplant the paddle wheel for several decades.[14]

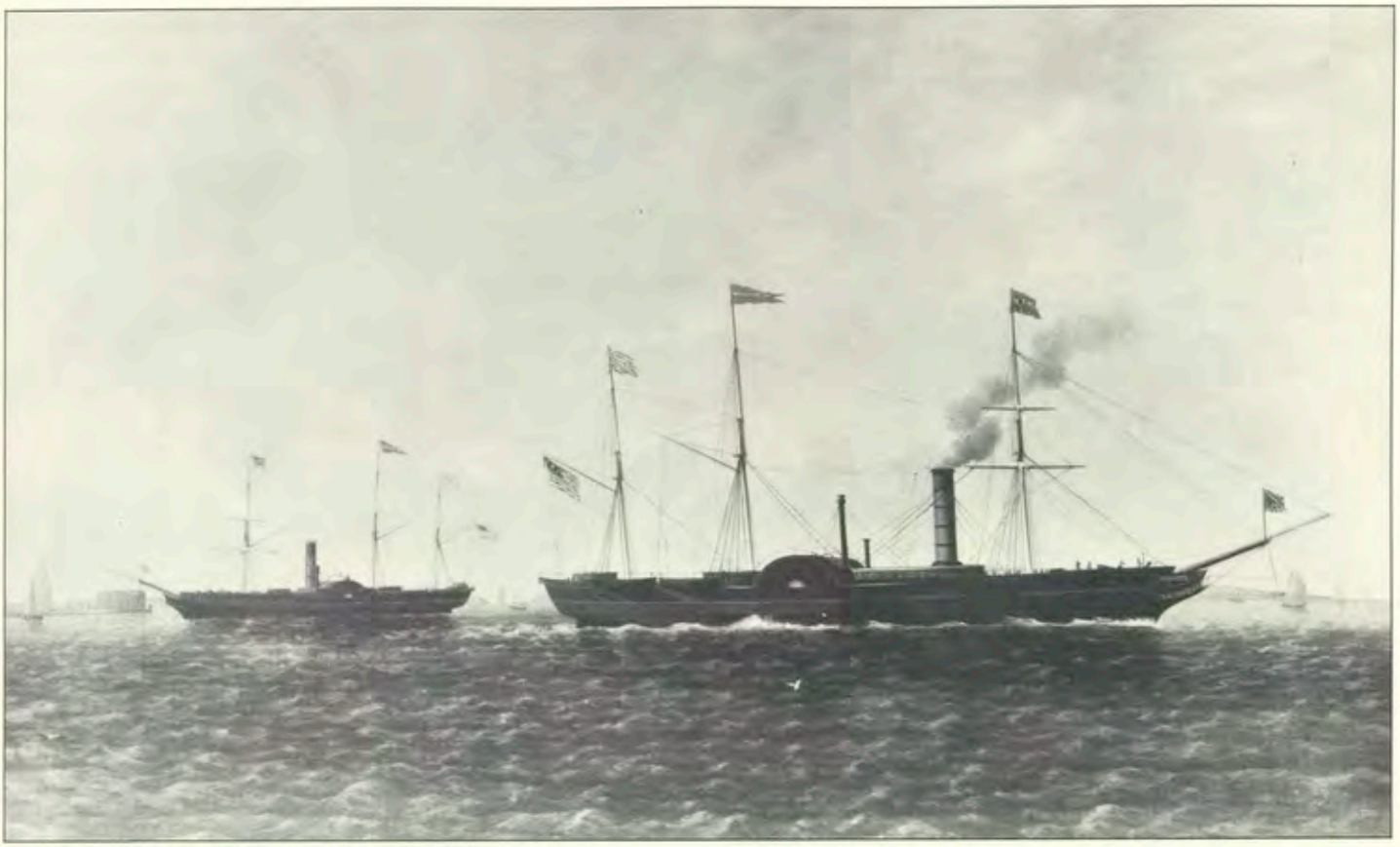
During that period passengers as well as seamen vigorously argued the merits of paddle versus screw, with many travelers insisting that on the ocean the paddle-wheel steamer rolled far less even though it might pitch more. Screw-propelled vessels were notorious for their extreme vibration and the appalling racket they produced for passengers unluckily situated in the stern cabins. As it was, neither form of propulsion was enjoyable: "as to the question whether 'pitching' or 'rolling' is the less miserable," one weary traveller decided, "it must probably be settled by saying that the form not immediately present is the more tolerable of the two."[15]

Boilers for heating the water into steam were equally primitive. The first ones were rectangular boxes of bolted wrought-iron or copper plates, connected to large furnaces designed to burn wood. Coal soon became the conventional fuel for steamships, although the relative merits of bituminous and anthracite coal, let alone British versus American coal, inspired heated debate along with extensive scientific experimentation well past mid-century. Boilers for early seagoing steamers operated at such low pressures that they were designed to resist vacuum collapsing rather than steam bursting, and they were often equipped with a reverse safety valve to equalize the pressure and avoid implosion.[16]

The normal working pressure for a seagoing steamship in 1835 was only 5 pounds above atmospheric pressure. By 1850 the average had increased slightly, to 13 pounds; and in 1865, at the end of the Civil War, average working pressures were still only 25 pounds.[17] Pressures remained low partly because of metallurgical limitations, partly because of design. Until the 1860s, steam was condensed by using jets of cold seawater. This salty water would then circulate through the boilers and form mineral scale that clogged the boiler tubes and interior surfaces, so for seagoing steam engines low pressure was a prudent, if not essential, policy.[18]




*Looking across the engine room of the Havre Line transatlantic mail steamer* Humboldt, *one can see the two side-lever engines that powered her side wheels. At left are two of the four boilers, which produced steam at 15 pounds per square inch. In the background is the main steam line to the starboard engine. At right is the port engine cyclinder (C), nearly eight feet in diameter. Expanding steam drives the piston rod (R) through its nine-foot stroke with 100 tons of lift. The cross head (H) connects the piston rod to the side rods (S) that pivot the side levers (L). The forward ends of the two side levers are linked by the cross tail, in the middle of which is attached the connecting rod to turn the paddle wheel shaft (T) by means of a crank hidden behind the pillow block (P). In the center is the steeple of the steam chest, surrounded by levers for the air and force pumps.*
(*Harper's New Monthly Magazine*, May 1851)



*The sister ships* Washington (right), *1,640 tons (230x39x27), and* Hermann, *1,734 tons (234x40x27), were the first practical American ocean steamships. Designed to comply with the mail subsidy provisions of the Postal Act of 1845, they were built by Westervelt & McKay at New York for the Ocean Steam Navigation Company to carry passengers, high-value freight, and the U.S. Mail in competition with the British Cunard Line, which had been running transatlantic steamers since 1840. Both ships had 470 nominal horsepower engines, using 15 pounds of working steam pressure in a single six-foot-diameter cylinder to drive the piston through its ten-foot stroke. Rather than exposed walking beams, the ships had side-lever engines to rotate their 34½-foot paddle wheels. At 9½ knots, the ships were not as fast as the Cunard liners, but they operated successfully between New York, Southampton, and Bremen until the U.S. Mail contract expired in 1858. Uneconomical without a subsidy, the two ships were sold to West Coast owners and ended their service in the Pacific. The* Washington *was broken up in 1864 and the* Hermann *was wrecked off Japan in 1869.*

Oil painting by J.E. Buttersworth. (M.S.M. 38.561, photo by Louis S. Martel)

Steam engine efficiency with such low pressures was very poor. It made steam quite uneconomical compared to the costs of travelling under sail – so much so that steamships for many decades were equipped with a full array of masts, yards, sails, and rigging – along with a large deck crew to handle them. Until the mid-nineteenth century ocean-going steam was considered an auxiliary to sail, and in the post-Civil War United States Navy there was a wholesale limitation on the use of steam until well into the 1880s.[19]

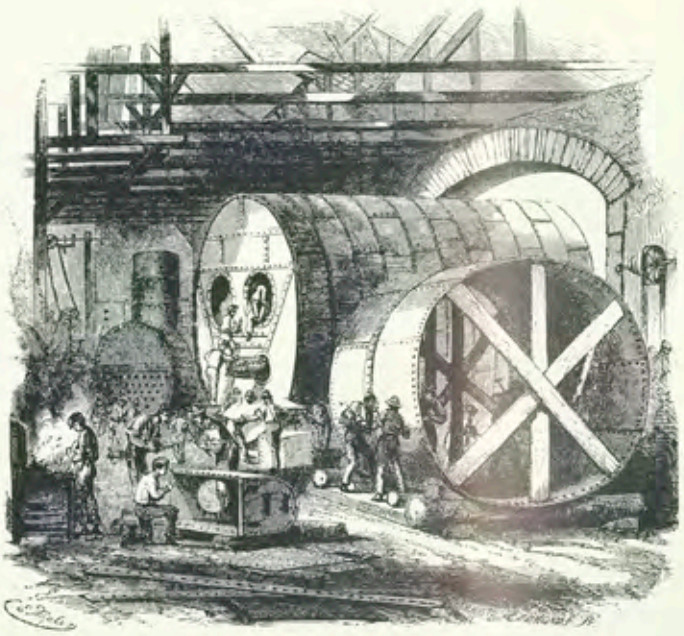
Since the cost of fuel was such a significant consideration, steam normally was to be used only when there was no wind or a contrary one, or when currents or other factors required steam propulsion. Throughout the early decades of steam propulsion steamers were designed to be sailing vessels as well, to the extent that a characteristic order for a steamship getting under way during this era was "Up funnel, down screw" – referring to a funnel that was telescopic, so that it could be collapsed when the deck crew was handling the sails, and to a detachable and hoistable screw propeller, which could be conveniently eliminated as a drag when the vessel was under sail power.[20]

Even when there was no problem with the engines, speed under steam was modest, so that sail and steam often were used together when the wind was favorable and of sufficient velocity. As it was, most transatlantic merchant liners of the 1850s managed to average just ten or eleven knots, even with a favorable wind and with full steam power throughout the voyage.[21]

For the men who worked in steam, conditions were grim. Engine rooms were lit by sperm candles or oil lamps until well after mid-century. There was no artificial ventilation except by windsails. As for heat, there was either too much or too little. In tropical waters, one engineer reported, the engine room temperature averaged 115 degrees and the stench from the bilge was so overpowering that men going on duty had to hold their noses until they were sufficiently acclimated.[22]

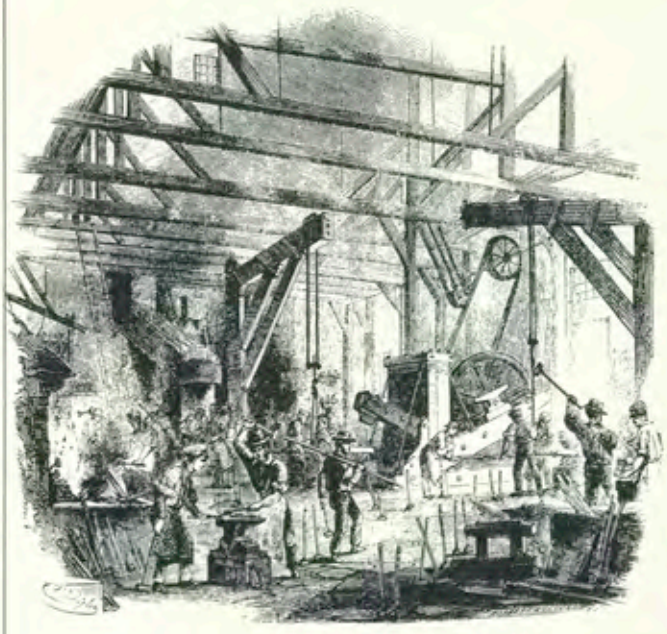
Engineers used tallow to lubricate the moving parts of the machinery; with the grease simmering away on the hot engines, travelling in a steamship in the early decades was rather like living in a perpetually filthy frying pan.[23] Leaks in the boilers were common, and it was customary for steamers to stop periodically during their voyage so that the engineers could "blow off," or loosen and then expel through steam injections, the mineral encrustations that had accumulated

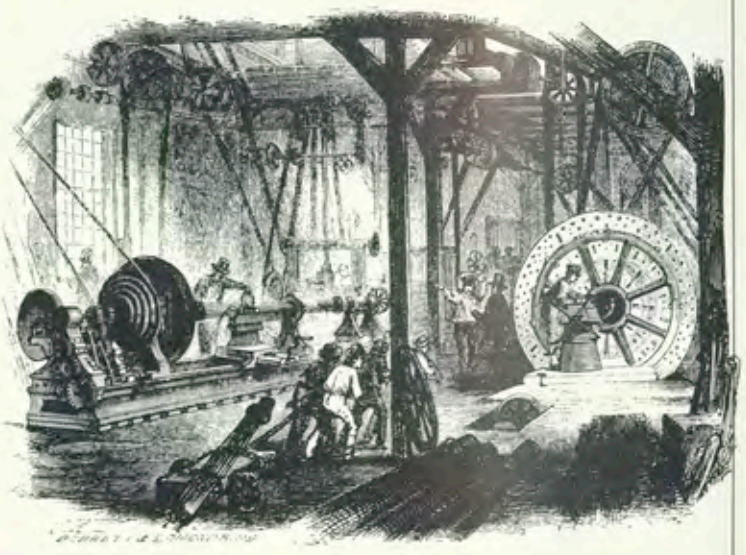




*The steam engine revolutionized shipbuilding as well as marine propulsion. Engine builders were among the most innovative nineteenth-century industrialists, and their methods could be as influential as their products. It was not just that they were creating a new way to power machinery or move ships or trains. The technology required for designing, cutting, bending, and fabricating boiler plates, as well as casting, forging, and machining engine parts, would later translate to many other industries, including iron ship design and construction.*

*Here in New York's Novelty Iron Works, boilermakers* (top) *rivet the plates for a set of large boilers, perhaps for a transatlantic steamship. Molders* (left) *pour molten iron into the sand mold for a giant engine cylinder, buried deep in the foundry floor. In the smiths' shop, an army of blacksmiths forge components at anvils or on the blocks of powerful trip hammers. In the finishing shop* (bottom), *powered by a web of belts from the steam-driven overhead shafting, lathes allow machinists to cut precision shafts and fittings. More than 1,000 men worked at the Novelty Iron Works in the 1850s.*
(*Harper's New Monthly Magazine*, May 1851)





in the boilers. For "fire-tube" boilers, the engineers faced a particular challenge. These boilers produced steam by having the water heated by tubes through which the hot gasses from the furnace were passed, so that the water surrounded these fire tubes and filled most of the metal boiler.[24] At times, the encrustations resulting from mineral deposits from the seawater used in the boilers became so substantial that the steamer had to heave to in the middle of the ocean while the engineers climbed into the boilers—when they were sufficiently cooled off—and scraped off the scale by hand. Minor leaks in the system were so common as to be taken for granted, especially since it was generally assumed that any leak would be plugged quickly by rust. Major leaks were filled in a variety of ingenious ways: it was common to pour a couple of sacks of oatmeal into the boilers before filling them with water; for unexpected leaks at sea the engineers might throw in rice or potatoes; and if the ship had a cow, then the engineers often used cow dung as a tried-and-true stopper.[25]

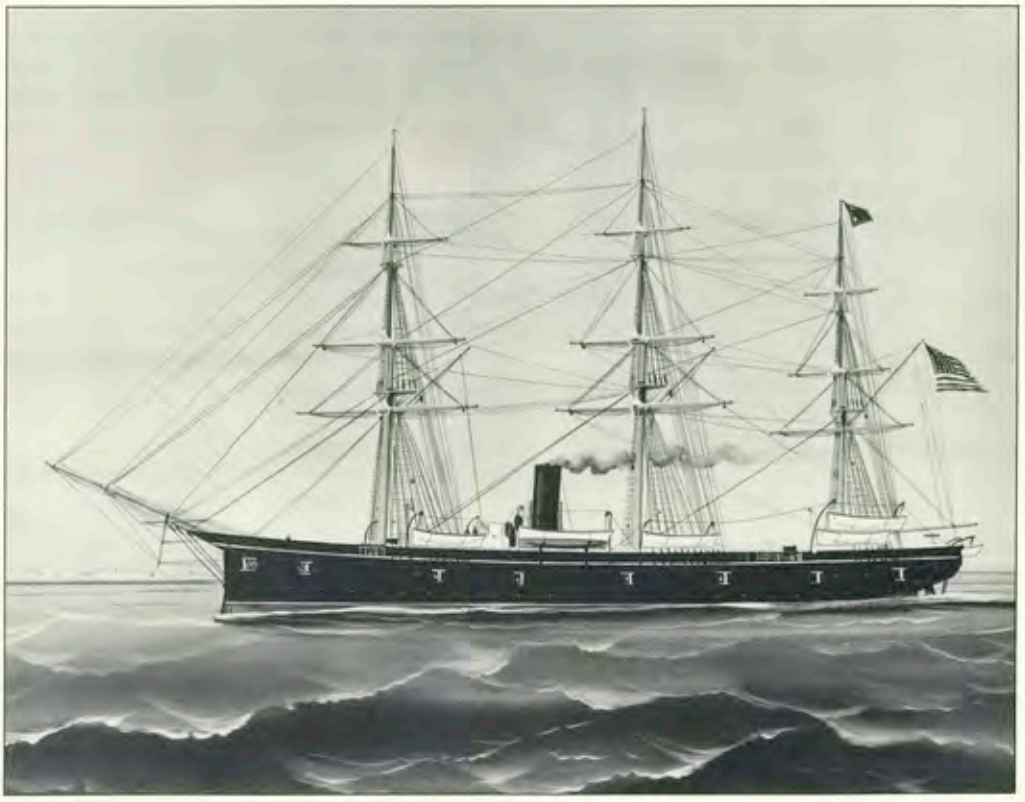
Many men—often a third or more of the entire ship's complement—were needed to tend the engines, boilers, and furnaces. A few of them were the skilled engineers who operated the machinery. Most of them comprised the notorious "black gang" of engine-room operatives. At the top of this group were the firemen, or stokers, who tended the furnaces. Least skilled of all were the coalheavers, or trimmers, who brought the coal, dumped the ashes, and generally did the most menial work below. Theirs was a life of mind-numbing drudgery and frequent danger; and whether engineers or black gang, their presence was resented, resisted, and reviled by the men of sail who worked on deck.

Neither engineers—those officers who managed the machinery—nor the large crew that fed the furnaces and tended the engines and boilers were trained as sailors. Most marine engineers came to their seafaring work by way of earlier experience in locomotive shops or on stationary engines ashore. From the outset, then, there was a basic and often hostile separation based on experience as well as function between the two groups who populated a steam-powered vessel: the men of sail and the men of steam.[26]

To say that, for the men trained in sail, steam propulsion was an alien presence is no exaggeration. For the man of sail everything seemed out of place in a steamer. "The agony of it, to the deck officers," recalled sometime marine engineer William McFee, "was that they had to command from a bridge amidships, a most unsuitable location for a sailing ship man." And with a following wind, when it was customary to proceed under sail and steam together, the deck officer amidships could be "smothered in soot from the funnel" while "sparks burned holes in the sails."[27] How, then, could the men of steam—the engineers and the black gang—be any less of an intrusion? These machine tenders, after all, controlled the innovation that compromised the sailing officer's traditional exclusive authority, his absolute command of his vessel. As Stephen Decatur, a naval hero of the Age of Sail, bitterly remarked, "Yes, it is the end of our business; hereafter any man who can boil a tea-kettle will be as good as the best of us."[28]

Yet, intrusive as it was, steam by the latter part of the nineteenth century was no longer a novelty, nor just auxiliary to sail. By the 1870s and 1880s a new era had arrived, for this was the period when steam became competitive with sail.

The problem for marine steam machinery all along had been one of efficiency and the corresponding economy of operation. Steam engine efficiency was determined by the amount of coal it took to produce a given amount of work over a period of time. Throughout the nineteenth century, the



*The most advanced vessel in the post-Civil War U.S. Navy was the flagship* Trenton *(253x48), launched at New York in 1876. She had a traditional full square rig and a wooden hull updated with a nine-foot bronze ram on her bow. The* Trenton *was powered by a compound steam engine with one high-pressure and two equal low-pressure cylinders, supplied with steam from eight boilers. She developed 3,100 indicated horsepower, burning about three pounds of coal per indicated horsepower hour. With a maximum speed of 12½ knots, she had a range of less than 2,500 miles under steam alone. The* Trenton *served in the Mediterranean as flagship of the European Station, 1877–81. In the 1880s she was stationed in Asian waters. She sank at Apia, Samoa, during a typhoon in March 1889. By then she had been rendered obsolete by the "new" steel navy of the 1880s.*

Watercolor and gouache, attributed to Luigi Roberto of Naples, ca. 1880. (M.S.M. 78.32, photo by Mary Anne Stets)



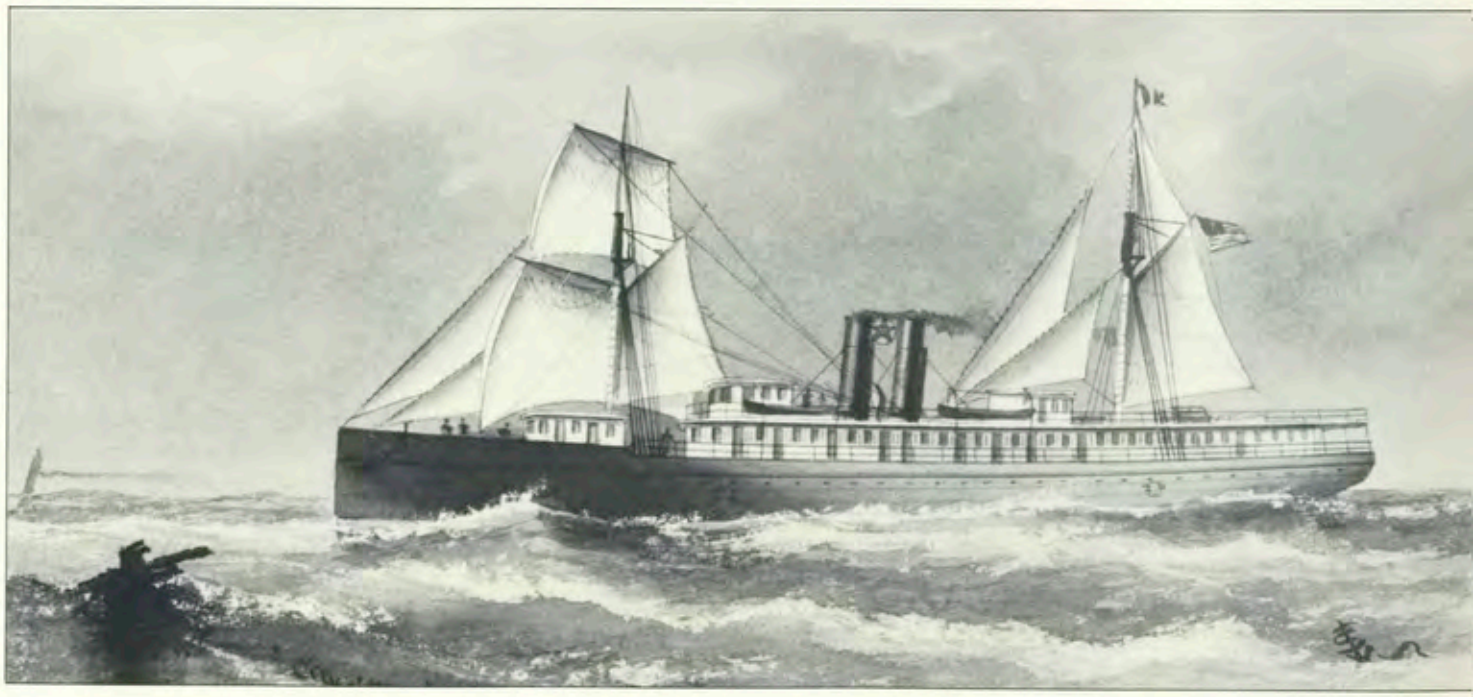
*Experiments by Robert Smith and John Ericsson in Great Britain produced practical screw propellers in the mid-1830s. The Ericsson towboat* R.F. Stockton *(1838) introduced the design to America, and the* Archimedes *(1839) popularized the propeller in Great Britain. In practice, it was found that a stationary propeller produced appreciable drag when a vessel was under sail alone. Among numerous solutions to this problem was Richard F. Loper's design for a propeller that could be disengaged from the shaft and lifted into the stern, clear of the water. Loper was a Stonington native living in Philadelphia, and his model, patented in 1844, was used in many Philadelphia-built steamships. The principle was widely used in auxiliary screw steamers, including the Seaport's* Joseph Conrad *(ex-*Georg Stage*) of 1882.*
(M.S.M. 81.30, photo by Claire White-Peterson)

*Even a modern American steamship of the 1870s would use her auxiliary sails when the wind allowed. Here is the Mallory steamer* City of Waco, *1,486 tons (240x35x27), motor-sailing on her Galveston-New York run. Representative of the new generation of American steamships, the* City of Waco *had an iron hull (which was lighter than a comparable wooden one), a compound steam engine, and a screw propeller. Launched by John Roach at Chester, Pennsylvania, in 1873, she performed well until she caught fire at Galveston on 9 November 1875, burning to the waterline with the loss of cargo, crew, and all 21 passengers.*
Pen and wash drawing by Alexander Charles Stuart.
(M.S.M. 43.798, photo by Claire White-Peterson)

efficiency of a marine steam engine was measured conventionally by the pounds of coal required to produce one indicated horsepower per hour. An "indicated horsepower" was determined by an indicator, a device that measured in pounds the average, or mean, pressure on the piston during its stroke. This average pressure then would be multiplied by the velocity of the piston, stated as the number of feet per minute the piston travelled. The product of average pressure (in pounds) and velocity (in feet per minute) then would be divided by 33,000, since one horsepower equals 33,000 foot pounds per minute. When multiplied by 60, this would produce the amount of horsepower, as measured by the indicator, produced in an hour; that is, an "indicated horsepower hour." Efficiency was a function of the number of pounds of coal burned to produce one indicated horsepower hour.[29]

In the early 1850s, desirable efficiency for a marine steam engine working at a relatively high 20 pounds of steam pressure was four pounds of coal per indicated horsepower hour.[30] This meant that a steamship with engines rated at 500 indicated horsepower would use a ton of coal every hour of steaming continuously, even at a moderate rate of speed – and this was quite uneconomical when compared to the costs of sail propulsion, especially when one calculates the limited amount of space available for passengers and cargo on a steamer after deducting the space in the vessel required for machinery and fuel.

By the 1870s, however, the compound reciprocating steam engine came into general use. The idea for this improved engine had orginated as early as 1781, but it not brought to fruition until John Elder of Glasgow, Scotland, built one in 1853. The compound engine was of a "double-expansion" design,



which permitted more effective use of a given quantity of steam. Steam at fairly high pressure—such as 60 pounds per square inch—was injected first into a small high-pressure cylinder. Having done its work there, the steam would move into a large, low-pressure cylinder where it was allowed to expand further against a second piston before being condensed and recirculated into the boilers. This tandem arrangement produced up to 60 percent fuel savings for the horsepower produced by a given amount of steam. There were problems, especially in operating at the substantially higher steam pressures required by this engine design; yet in time these were solved by better metals, better boiler and engine design, more precise fabrication of machinery, and the use of fresh water (rather than salt water) in the steam condensation process.[31]

The results were impressive. Using a compound engine with 60 pounds working pressure and a closed, freshwater system that drastically curtailed the accumulation of mineral scale, the rate of fuel consumption dropped below two pounds of coal per indicated horsepower hour.[32] This improved engine, combined with coincident advances in iron, and eventually steel, shipbuilding—which produced hulls lighter, stronger, and with more cargo capacity than a comparable wooden hull—embodied the next stage of the steam revolution. Beginning in the 1860s in Europe and the 1870s in America, large iron- and even steel-hulled oceangoing merchant steamers could compete for low-value, bulk cargoes with sailing ships—notwithstanding the considerable increase in size and operating efficiencies of later-nineteenth-century sailing vessels.[33]

Steam might become competitive with sail, but it certainly did not replace sail overnight. In fact, from 1870 to 1885 sail was thriving on the oceans, especially on the long-haul routes where large, iron-hulled sailing vessels with crews only a third the size of pre–1860s sailers were able to lower their costs of transportation substantially. Ironically, there were considerable profits for these sailing vessels by carrying cargoes of coal to far-flung ports that were rapidly developing as major coaling-stations for ocean steamers.[34]

But in the mid–1880s another stage of technological development was reached, one that swiftly brought an end to the age of sail. As the logical next step in steam engine design there emerged the triple-expansion engine, wherein the much higher steam pressures that now could be produced safely permitted a three-stage application of steam, working expansively. The triple-expansion engine was introduced practically aboard the *Aberdeen* in 1881, and it proved to be about 25 percent more efficient than a compound engine. By 1888 the height of the technology was represented by the 10,500-gross-ton, 527-foot transatlantic steamer *City of Paris*. Her boilers produced 150 pounds of working steam pressure, and her two triple-expansion engines had cylinders 45, 71, and 113 inches in diameter, in which the steam drove the piston rods through a five-foot stroke. With a maximum 20,100 indicated horsepower, she could operate at an efficiency of slightly more than 1½ pounds of coal per indicated horsepower hour while crossing the Atlantic at 20 knots. She still burned 13⅓ tons per hour, or nearly 2,700 tons during a six-day passage, but, given her size, this was a rate that permitted steamships to carry far less fuel than before in relation to cargo capacity, and to steam at a speed that, on a general average, resulted in one steamship being able to do the work of three sailing vessels.[35]

By the end of the century the gap had widened; sailing vessels were now just a marginal factor at best in a world trade dominated by increasingly large, powerful, and more economical steamers that operated at higher speeds than before, carried larger cargoes, and burned scarcely more than a pound of coal per indicated horsepower hour at steam pressures of several hundred pounds. Indeed, the triple-expansion engine was developed to such a level of efficiency and reliability that it became, and for many decades remained, the standard design for merchant fleets and navies alike.[36]

Yet, at this very time a fundamentally different form of marine steam machinery appeared; it was not the quadruple-expansion engine, impressive as that design might be, but the steam turbine that not only underlined the triumph of steam over sail but also promised a significantly superior performance to that of the reciprocating engine. A turbine took up much less space and weighed far less than the massive triple- or quadruple-expansion engine. It produced far less vibration. Its initial cost was much lower, and its cost of maintenance was significantly less.[37]



*A large steamship of 1890 might require as many as 170 men in the engine and boiler rooms, working in three four-hour shifts. Most were coal trimmers, who trundled coal from the bunkers and then carted away the ashes, and stokers (firemen), who fed the ravenous boiler furnaces. Usually two trimmers served one stoker while learning to tend the fires. In the searing heat and deafening roar of the stokehold, the stokers stared into the blinding light of the fires, shoveling in coal, probing with a slice bar to trim the fire, and shaking out the ashes.*
(*Ocean Steamships*, 1891)

The idea of a steam turbine was not new; it apparently had its origins in pre-Christian Greece where Hero of Alexandria, writing about a number of mechanical devices, mentioned a primitive reaction turbine. It then was looked on merely as a toy, yet it demonstrated the attributes of a prime mover by its ability to convert natural energy into mechanical power.

But many centuries had to elapse before there appeared a practicable marine steam turbine. In this form of engine, a jet of steam is directed at high velocity against a series of fan blades fixed to a rotating propeller shaft. By the 1890s the marine steam turbine was under development on both sides of the Atlantic, but surely its most dramatic demonstration occurred in England. Since 1884, the English inventor Charles A. Parsons had been developing his concept of marine propulsion; in 1897 he had his opportunity to demonstrate it.[38]



*Watched by an audience of passengers, the captain of an oceangoing steamship takes a noon sight. Silhouetted by the sail, another deck officer looks down from the bridge amidships. These men may have been born into a world of ratlines and rigging, but the driving force of their ship is located deep in the hold, below the funnels at left.*
Albumen print by B.W. Kilburn, ca. 1890. (M.S.M. 86.55)

Such remarkable changes and innovations in so short a time may make the longer and relatively more gradual developments in steam appear less revolutionary, less dramatic in their impact. It does, indeed, require a certain effort of historical imagination to apprehend the full dimension of steam's intrusion into the maritime world. Yet there *was* a revolution in maritime life – in the design and construction of vessels, in their use, in the personal and material costs of this human-designed and human-controlled source of waterborne power. And as the century wore on, the revolutionary impact of maritime steam power became apparent in the structure of national economies and the conduct of foreign affairs. In this regard, it may suffice merely to note that by the 1880s the need for coaling bases to serve the steam warships and steam merchant fleets of the world heralded the age of imperialism and helped to shape the international rivalries, both economic and military, that culminated 30 years later in the first major world conflict in one hundred years. ■

The sixtieth anniversary of Queen Victoria's coronation produced a grand assemblage of naval and merchant vessels at the British naval base at Spithead late in June of 1897. In front of what has been called "the greatest armada the world had ever seen," Parsons's *Turbinia* made a dramatic appearance, steaming back and forth before the fleet at a speed of more than 34 knots – several knots faster than any other warship afloat. The lesson was not lost on British and foreign observers. Other than the *Turbinia*, every warship there in 1897 was fitted with reciprocating steam engines. In striking contrast, at the Naval Review of 1914 – just 17 years later – all of the major ships in attendance were driven by steam turbines.[39]

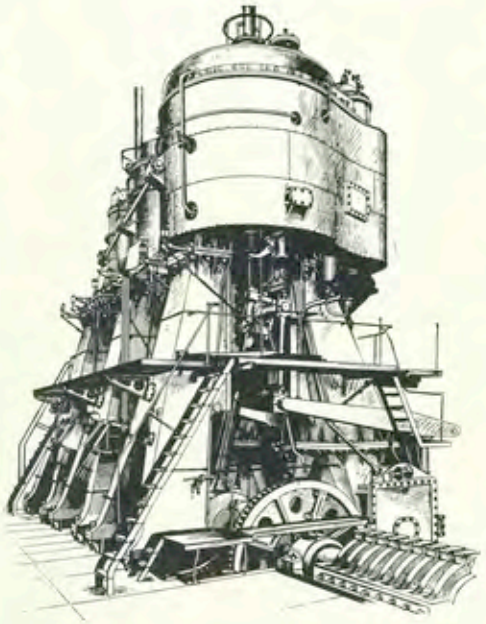
The turn of the twentieth century was a period of wholesale technological change in so many areas of transportation that the developments in marine engineering often are minimized or are subsumed into other, more familiar technological advances. This, after all, was the era of the Wrights and the airplane, of Henry Ford and the automobile. It was the age of Rudolph Diesel and his internal combustion engine that ultimately would largely supplant the steam engine for maritime propulsion. This was the period when coal – the fundamental fuel of nineteenth-century mechanized power – gave way to petroleum as the primary energy source of motive power for the twentieth century.



*The Inman liner* City of Paris *was the height of transatlantic luxury and speed when she was launched in 1889. Yet, as modern as she was, she still carried sails and a crew to handle them. Built of steel by J. & G. Thomson at Glasgow, Scotland, the* City of Paris, *10,508 tons (528x63), was 560 feet overall and could carry 540 passengers in first and second class and 725 in steerage. With her twin screws and triple-expansion engines she operated at 20 knots, winning the Blue Riband for transatlantic speed in 1889. In 1893 the* City of Paris *and* City of New York, *though British built, were transferred to American registry and, as the* Paris *and* New York, *became the first modern, large American-flag passenger ships. After duty as the U.S.S.* Yale *during the Spanish-American War, the* Paris *returned to passenger service but grounded on the British coast in 1899. Refitted, she returned to service as the* Philadelphia *until 1918. After serving as the transport U.S.S.* Harrisburg *during World War I she returned briefly to transatlantic service in 1920. Sold to Italian owners in 1923, she was broken up soon thereafter.*
Oil painting by Antonio Jacobsen, 1889. (M.S.M. 63.466, photo by Mary Anne Stets)

## NOTES

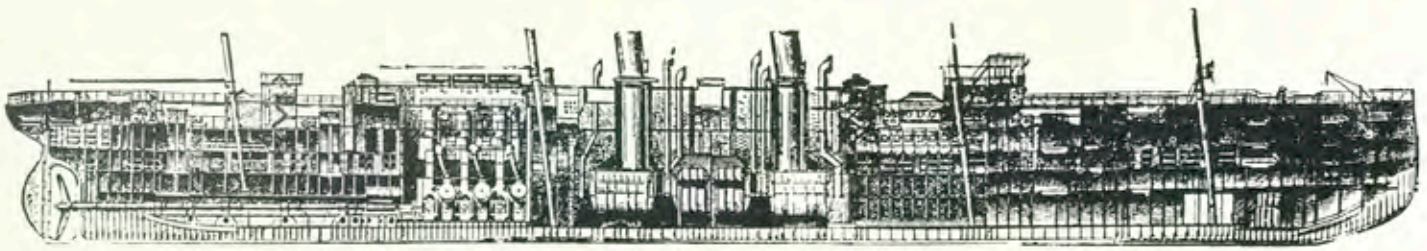
1. J. Bowline and R.R.C. Gregory, *Yarns from a Captain's Log* (Edinburgh: William Blackwood and Sons, 1912), pp. 233, 357.
2. For the best general background to developments in the maritime area, see Louis C. Hunter's magisterial *A History of Industrial Power in the United States, 1780–1930*, vol. 2, *Steam Power* (Charlottesville: University Press of Virginia, 1985).
3. Maurice Daumas, ed., *A History of Technology & Invention: Progress Through the Ages*, trans. Eileen B. Hennessy, vol. 3, *The Expansion of Mechanization, 1725–1860*, (1968; translation, New York: Crown, 1979), pp. 298–99; Edgar C. Smith, *A Short History of Naval and Marine Engineering* (Cambridge, England: Cambridge University Press, 1937), pp. 3-4.
4. Daumas, *History of Technology and Invention*, pp. 44–50; John Guthrie, *A History of Marine Engineering* (London: Hutchinson Educational Ltd., 1971), pp. 26–30; T. Main, *The Progress of Marine Engineering, From the Time of Watt Until the Present Day* (New York: The Trade Publishing Company, 1893), pp. 1-9.
5. Main, *Progresss of Marine Engineering*, pp. 27–28.
6. Edward W. Sloan, *Benjamin Franklin Isherwood, Naval Engineer* (Annapolis: U.S. Naval Institute, 1965), pp. 83–86.
7. *Ibid.*, Chapters 3 and 4.
8. In his *The Life and Adventures of Martin Chuzzlewit*, Charles Dickens vividly evokes the singular appearance of a New York steamboat bringing passengers ashore from one of the Atlantic sailing packets: "The steamer – which, with its machinery on deck, looked, as it worked its long slim legs, like some enormously magnified insect or antediluvian monster – dashed at great speed up a beautiful bay," (New York: Caxton Publishing Co., 1883), p. 260.
9. A classic contemporary assessment of early river and bay steamboats, with particularly detailed comments on engines, boilers, vessel dimensions, and performance, is Jean Baptiste Marestier, *Memoir on Steamboats of the United States of America*, trans. Sidney Withington (Paris, 1824; translation, Mystic: Marine Historical Association, 1957). The standard work on inland steamers is Louis C. Hunter, *Steamboats on the Western Rivers: An Economic and Technological History* (Cambridge: Harvard University Press, 1949).
10. Smith, *Short History of Naval and Marine Engineering*, Chapter 3, "Pioneer Transatlantic Steamships," and Chapter 10, "Types of Marine Engines"; Guthrie, *History of Marine Engineering*, Chapters 2, "The Earliest Steamships," 3, "Early Marine Engineering," and 4, "Paddle Engines"; Cedric Ridgely-Nevitt, *American Steamships on the Atlantic* (Newark: University of Delaware Press, 1981), Chapters 1 through 6.
11. Guthrie, *History of Marine Engineering*, pp. 43, 79–91; Smith, *Short History of Naval and Marine Engineering*, pp. 142–151.
12. Guthrie, *History of Marine Engineering*, pp. 79, 89.



*Above, In a triple-expansion engine, high-pressure steam expands successively in three separate cylinders before being condensed. The cylinder diameters are carefully calculated to produce equal force on the piston rods. This engine, built for the 438-foot, 5,000-gross-ton North German Lloyd Line steamer* Aller *in 1885, has cylinders of 44, 70, and 108 inches in diameter, with a six-foot piston stroke. Such an engine was 20 to 25 percent more efficient than a compound engine of equal horsepower.*
(*Ocean Steamships*, 1891)

*Below, longitudinal section of a French steel steamship, ca. 1885. Her boiler room, surrounded by coal bunkers, takes up the entire midship portion of the ship. Aft of it is the tall triple-expansion engine. Until twin engines became common around 1890, these steel ships still relied on a sailing rig in case of mechanical failure.*
(*Ocean Steamships*, 1891)

13. Gerald S. Graham, "The Transition from Paddle-Wheel to Screw Propeller," *The Mariner's Mirror* 44 (February 1958): 45–46.
14. Smith, *Short History of Naval and Marine Engineering*, Chapter 5, "The Introduction of Screw Propulsion"; Guthrie, *History of Marine Engineering*, Chapter 5, "Screw Engines."
15. Henry W. Bellows, *The Old World in Its New Face*, 2 vols., (New York: Harper & Brothers, 1868), 1: 18; Edward W. Sloan, "The Machine at Sea: Early Transatlantic Steam Travel," in Benjamin W. Labaree, ed., *The Atlantic World of Robert G. Albion* (Middletown, Connecticut: Wesleyan University Press, 1975), pp. 129–33.
16. William S. Lindsay, *History of Merchant Shipping and Ancient Commerce*, 4 vols., (London, 1874; reprint, New York: AMS Press, 1965), 4: 575–76.
17. Smith, *Short History of Naval and Marine Engineering*, pp. 133–34.
18. *Ibid.*, pp. 129–30.
19. For example, see U.S. Navy Department, General Order No. 131, 18 June 1869. See also Lance C. Buhl, "Mariners and Machines: Resistance to Technological Change in the American Navy, 1865–1869," *Journal of American History* 61 (December 1974): 702–27. The major work on steam engineering – including steam vessels, machinery, and the growth of naval engineering as a profession – in the nineteenth-century American Navy is Frank M. Bennett's monumental *The Steam Navy of the United States* (Pittsburgh: W.T. Nicholson, 1896). There is also much useful information in Donald L. Canney's *The Old Steam Navy*, vol. 1, *Frigates, Sloops, and Gunboats, 1815–1885* (Annapolis: U.S. Naval Institute Press, 1990).
20. Guthrie, *History of Marine Engineering*, pp. 100–03. See also Geoffrey Penn, *"Up Funnel, Down Screw!" The Story of the Naval Engineer* (London: Hollis & Carter, 1955), especially pp. 60–61.
21. Still the best account of early transatlantic steamship development is David B. Tyler's scholarly *Steam Conquers the Atlantic* (New York: D. Appleton-Century Company, 1939). An equally authoritative if more limited work, paying greater attention to technological factors, is Ridgely-Nevitt, *American Steamships on the Atlantic*. Two authoritative contemporary works on mid-century steamships and their machinery are Charles B. Stuart, Engineer-in-Chief of the U.S. Navy, *The Naval and Mail Steamers of the United States*, 2nd ed., (New York: Charles B. Norton, Irving House, 1853) and [Thomas Tredgold] *Tredgold on the Steam Engine: Marine Engines and Boilers*, vol. 1, (London: James S. Virtue, n.d. [ca. 1851]).
22. Benjamin Isherwood's notes concerning working conditions on the U.S. screw steamer *Princeton*, in B.F. Isherwood, trans., "The Experiments Made by Mr. Uthemann . . . ," *Journal of the American Society of Naval Engineers* 19 (August 1907): 616.
23. Smith, *Short History of Naval and Marine Engineering*, pp. 157–58.





*Following the success of its turbine-powered* Carmania *of 1905, the Cunard Line built the* Lusitania *and* Mauretania *of 1907 to pioneer the steam turbine engine in large transatlantic liners. Here is their sister, the 45,647-gross-ton* Aquitania *(868.7x97x49.7), probably arriving in New York on her maiden voyage in 1914. With a working steam pressure of 195 pounds per square inch, her turbines powered the four screws with 62,000 shaft horsepower, giving a maximum speed of 24 knots. Operated by a crew of 972, she could carry 3,230 passengers. Her boilers were converted from coal to oil firing in 1919. Retired in 1949, the* Aquitania *was broken up in 1950.*

Photo by Merritt & Chapman, ca. 1914. (M.S.M. 64.660.1282)

24. The fire-tube, or Scotch, boiler was greatly preferred for use in merchant steam vessels. On the other hand, both the Royal Navy and the United States Navy throughout the nineteenth century continued to use the water-tube boiler, where the water passes through hundreds of small tubes which are surrounded by the hot gasses from the furnace. Not surprisingly, the relative merits of fire-tube versus water-tube boilers provoked unending arguments among engineers. See B. F. Isherwood, Chief Engineer, U.S. Navy, "Water-Tube and Fire-Tube Boilers," *Journal of the Franklin Institute* 107 (January, February 1879): 14–24, 97–105; and Smith, *Short History of Naval and Marine Engineering*, Chapters 9, 13, and 16.

25. Smith, *Short History of Naval and Marine Engineering*, pp. 128–29, 132–33; Guthrie, *History of Marine Engineering*, pp. 118–19.

26. See Sloan, *Isherwood*; Bennett, *The Steam Navy of the United States*; and Monte A. Calvert, *The Mechanical Engineer in America, 1830–1910* (Baltimore: Johns Hopkins University Press, 1967) for extended discussions of the controversial professional status of the American marine engineer. For the British experience, See Penn, *"Up Funnel, Down Screw!"*.

27. William McFee, *Watch Below: A Reconstruction in Narrative Form of the Golden Age of Steam. . . .* (New York: Random House, 1940), p. 74.

28. As quoted by Alfred Thayer Mahan, *From Sail to Steam: Recollections of a Naval Life* (New York: Harper & Brothers, 1907), p. 39.

29. A major mid-century effort to measure marine steam engine efficiency was that of Chief Engineer Benjamin F. Isherwood, whose voluminous reports were published as *Engineering Precedents for Steam Machinery: . . .*, 2 vols., (New York: H. Bailliere, 1859) and *Experimental Researches in Steam-Engineering*, 2 vols., (Philadelphia: William Hamilton, Hall of the Franklin Institute, 1863, 1865). Isherwood's contributions are discussed in Robert H. Thurston, *The Development of the Philosophy of the Steam Engine: An Historical Sketch* (New York: John Wiley & Sons, 1889), and in R.H. Thurston, *A Manual of the Steam Engine: Part I, Structure and Theory*, 6th rev. ed., (New York: John Wiley & Sons, 1903).

30. Smith, *Short History of Naval and Marine Engineering*, pp. 174–75.

31. Gerald S. Graham, "The Ascendancy of the Sailing Ship, 1850–1885," *Economic History Review*, 2d ser., 9 (August 1956): 83, 87; Guthrie, *History of Marine Engineering*, Chapter 6, "Compound Expansion"; Smith, *Naval and Marine Engineering*, Chapter 12, "The Marine Compound Engine."

32. Smith, *Short History of Naval and Marine Engineering*, p. 174.

33. Graham, "Ascendancy of the Sailing Ship," pp. 74–88. Iron hulls had largely replaced those of wood by the end of the 1860s, although merchant steamers and warships alike carried an elaborate set of sails – and the crews to handle them – until the end of the 1880s. With iron and then steel hull construction came great increase in vessel tonnage, and thus cargo capacity, so that the merchant steamers of the later nineteenth century were not only several times larger than the biggest pre-Civil War liners but also much more economical because of their far greater revenue-producing carrying capacity. For the uneasy accommodation that men trained in sail had to make with steamships and marine engineers in the later nineteenth century, see Edward W. Sloan, "'Vulcan Now Rides in Neptune's Barge': Steam Propulsion and Seafaring Enterprise in Post-Civil War America," in J.R. Frese and J. Judd, eds., *American Industrialization, Economic Expansion, and the Law* (Tarrytown, New York: Sleepy Hollow Press and Rockefeller Archive Center, 1981), pp. 55–84. Some men of sail never did reconcile themselves to steam, as Edward W. Sloan relates in "Sail, Steam, and Lamentation: Joseph Conrad Confronts the Machine Age," *The Log of Mystic Seaport* 33 (Winter 1982), pp. 111–23.

34. Graham, "Ascendancy of the Sailing Ship," pp. 81–84.

35. Smith, *Short History of Naval and Marine Engineering*, pp. 144–45; Graham "Ascendancy of the Sailing Ship," p. 86; F.E. Chadwick, "The Development of the Steamship," pp. 44–45, and A.E. Seaton, "Speed in Ocean Steamships," pp. 74, 78, in *Ocean Steamships: A Popular Account of Their Construction, Development, Management, and Appliances* (New York: Charles Scribner's Sons, 1891). For a brief, informed discussion of this subject see John F. Nichols, "The Development of Marine Engineering," *The Society of Naval Architects and Marine Engineers Historical Transactions, 1893–1943* (New York: Society of Naval Architects and Marine Engineers, 1945), pp. 425–41 (including members' comments on the paper).

36. The workhorse Liberty Ship of World War II was powered by oil-fired, triple-expansion reciprocating steam engines. For its history see John Gorley Bunker, *Liberty Ships: The Ugly Ducklings of World War II* (Annapolis: U.S. Naval Institute, 1972).

37. Smith, *Short History of Naval and Marine Engineering*, pp. 271–72; Guthrie, *History of Marine Engineering*, pp. 156–57.

38. Smith, *Short History of Naval and Marine Engineering*, Chapter 18, "The Introduction of the Parsons Steam Turbine."

39. *Ibid.*, pp. 275–77.

# EVENTS

## *America's Cup Comes Home to Mystic Seaport*

A new Seaport exhibition celebrating the history of the America's Cup will open 14 March, in the P.R. Mallory Building. The exhibit – which will coincide with the racing underway on the West Coast – will offer a small window onto a unique Seaport-created museum that opened in San Diego last June. The America's Cup Museum was created at the behest of the America's Cup Organizing Committee, which had originally discussed such a project with an Australian individual not associated with the Seaport. When Seaport Vice President Tom Aageson got wind of the negotiations, he contacted the ACOC and ultimately convinced the group that a serious and thorough tribute to the history of the America's Cup would not be possible without the support of Mystic Seaport, the widely acknowledged archive of the Cup.

America's Cup represents the Seaport's first attempt at creating a complete museum at a remote location. The Seaport designed and staffed the museum, which opened during the World Championship races – the first competitive gathering of the new boats. It was installed – in an old passenger ship terminal on the San Diego waterfront – in two phases, the first of which entailed artifacts and photographs. An audiovisual and interactive-computer element would be added later. A touch-screen introductory program – created with the help of Apple Computer, Inc. – helps visitors learn about the America's Cup boats and their crews. Another program offers visitors access – with the push of a button – to film vignettes and archival views of any of the races, from the earliest to the most recent. Finally, a computer-assisted design program – created with the help of Hewlett-Packard Co. – enables the visitor to design his or her own America's Cup yacht, using modern techniques.

*(Continued on page D)*



*On deck of the yacht* Reliance *in 1903. This dramatic photo, part of the famous Rosenfeld Collection, is available for sale in poster form through the America's Cup Catalog, or by calling (800) 662-6323.*
Photo courtesy of the Rosenfeld Collection, Mystic Seaport Museum, Inc. James Burton photographer.

# CALENDAR OF EVENTS

## FEBRUARY

***Winter hours continue.*** All exhibits open from 10 A.M. to 4 P.M. until 6 April.

**TITANIC! exhibit continues** in the R.J. Schaefer building through 10 May.

**10 to 25** ***Presidents' Birthday Party and Seaport Search.*** Special festivities planned. For details, please call ext. 4315.

**12** ***Winter Sailing Workshop:*** "A Survey of Marine Electronic Navigational Equipment." Youth Training Building, 7 to 9 P.M. Fred Wilson, of Dockside Electronics Service in Noank and a Mystic Seaport Volunteer, will provide a survey of marine electronic navigational equipment, including Radar, Loran, and GPS Systems. Come learn about their differences, how they work, what they tell us, and when to use them. Cost is $6 ($6.50 for nonmembers). Please call ext. 5323 for more information.

**17 to 21** ***Star Tech,*** an astronomy workshop featuring experiments, models, arts and crafts, and telescope viewing, is offered during school vacation to kids ages 9 to 13, 9:00 A.M. to 1 P.M. Please call the Planetarium at 572-5355.

**17 to 21** ***Liberty Days.*** Two-and-a-half-hour vacation program for kids "on Liberty" from school. See page D for details.

**17** ***George Washington's Birthday*** observed. Limited opening—three staffed and twenty unstaffed exhibits open. Reduced admission.

**18** ***Basic Celestial Navigation.*** Use of the sextant, star identification, plotting, timekeeping, and use of the *Nautical Almanac*. Twelve Tuesday evenings at the Planetarium. Cost is $130 (nonmembers $144). Please call 572-5355.

**18** ***Winter Sailing Workshop:*** "Behind the Scenes; A Tour of the Watercraft Stored in the Rossie Mill at Mystic Seaport Museum." Meet at the Youth Training Building, 7 to 9 P.M. Peter Vermilya, Assistant Curator of Yachting and Small Craft Collection at the Seaport, will host a tour of the watercraft presently in storage in the Mill. Take the chance to view part of the Seaport collection that is not yet available to the general public. Topics for discussion will include the following: what comes into the collection; how it is treated once it is accepted; the specific histories of individual boats; structure and design; and future directions. Please dress warmly. Cost is $6 ($6.50 for nonmembers). Please call ext. 5323 for more information.

**24** ***"Mystic Built:" Maritime Mystic Insight Tours*** continue. These special winter tours take visitors behind the scenes and back to a time when Mystic was a major shipbuilding port. Free with cost of admission. Weekdays 11 A.M., 1 P.M., and 3 P.M. On weekends the tours begin at 10:30 A.M. and leave every fifteen minutes. Please call ext. 5315 for more information.

**27** ***Adventure Series.*** Third in series of four travelogues. Listen to voyager Norman Baker, world-renowned navigator for Thor Heyerdahl, as he tells how he and his family restored the *Anne Kristinen* in the beautiful Virgin Islands and prepared to sail around the world. Cost is $6 ($8 for nonmembers). For information, please call 572-5339.

## MARCH

**1** ***Variety Store*** opens for the season.

**2** ***Introduction to Loran-C, North Star 800.*** An introduction to basic theory and use, with hands-on instruction using student's own North Star 800. Classes will be held three consecutive Mondays from 7:30 to 9:30 P.M. at the Planetarium. Please call 572-5355 for information and registration.

**2** ***Advanced Smithing.*** Designed for participants with some blacksmithing skills, this class will focus on advanced forge work, decorative techniques, and creation of useful items. Walter Scadden, a professional blacksmith with 15 years of architectural and decorative experience, will teach. The eight sessions will be held Monday and Wednesday evenings 7 to 10 P.M., through March 25. Enrollment is limited to six students (minimum enrollment is four). All materials and tools are provided. Cost is $205 ($225 for nonmembers). For more information, and to make your reservation, please call 572-5356. Phone reservations are secured with receipt of payment.

**3** ***Morning Fun for Kids*** begins for two- and three-year-old members and their parents. Please see page D for details.

**3** ***Boatbuilding Classes*** begin. Tuesdays or Thursdays 7:30 to 9:30 P.M., through 7 May. Cost is $265 (nonmembers $295). Students may also attend a day-long lofting class on 6 or 7 March. Registration begins 15 January. For information call ext. 5028.

**5** ***Morning Fun for Kids*** begins for four- and five-year-olds and their parents. Please see page D for details.

**7** ***Introduction to Radar.*** Basic theory and use, including antenna operation and radar navigation. One Saturday afternoon seminar from 1 to 5 P.M. at the Planetarium. For more information please call 572-5355.

**12** ***Application Deadline*** for Williams College-Mystic Seaport fall 1992 semester. Please call ext. 5359 for more information.

**13 & 20** ***Fireplace Cooking Class.*** One class each evening 6:00 to 10:00 P.M. in the Buckingham House kitchen. Hands-on instruction in open-hearth cooking techniques. Participation is limited to eight people per class. Minimum age is 14. Reservations begin 15 January. Cost is $45 (nonmembers $50). For more information please call ext. 5272.

**14** ***Tenth Annual Victorian Yankee Symposium.*** This year's program—"Images of the Victorian Yankee"—highlights the jewelry of the period, and looks at the people from several perspectives. Seamen's Inne. Registrations can be made by calling ext. 5256.

**14** ***America's Cup Exhibition*** opens in the P.R. Mallory Building. See story on page A for details.

**14** ***Spring Sailing Classes*** begin. Instruction for adults and juniors, geared to beginner, intermediate, advanced, and racing levels. All classes meet once a week. For more information please call the Sail Education Department at ext. 5323.

**17** ***Beginning Carving.*** Designed for students with no prior training, this class will provide the individual attention needed to allow all participants to progress at their own pace. Carvers with some experience are welcome. Jonathan Shay, professional carver and Exhibits Specialist for the Seaport, will lead the class, which will be project-oriented. The eight sessions will meet Tuesday and Thursday evenings 7 to 10 P.M. Enrollment is limited to six students (minimum enrollment is four). All materials and tools are provided. Cost is $205 ($225 for nonmembers). For information and reservations, please call 572-5356. Phone reservations are secured upon receipt of payment.

**20 to 22** ***Yachting History Symposium.*** See page D for scheduling details.

**26** ***Adventure Series.*** Travel across France with Philip Walker – the first American to cross the Alps in a hydrogen balloon – as he visits colorful bistros and views the Bayeux tapestry. This presentation, which is the last in a series of four travelogues, will begin at 7:30 P.M. in the River Room at Seamen's Inne. Cost is $6 ($8 for nonmembers). Please call 572-5339 for information.

## APRIL

**4** ***Seaport Seniors Weekends*** begin. Reduced admission ($12 instead of $14) for visitors ages 50 and above, every weekend throughout the month. Please call ext. 5315 for more information.

**6** ***Spring schedule*** begins. Museum hours 9:00 A.M. to 5 P.M., with outdoor demonstrations.

**8** ***Navigation from the First Voyage of the*** *Charles W. Morgan.* Historical context and hands-on work with sextant, chronometer, *Nautical Almanac*, and *The American Practical Navigator*, by Nathaniel Bowditch. Five Wednesday-evening sessions at the Planetarium, 7:30 to 9:30 P.M., and one Saturday session, 25 April, for sights. Cost is $60 (nonmembers $66). Please call 572-5355.

**25** ***Mystic Maritime Gallery,*** opening reception and dinner for Gallery patrons and exhibiting artists from the Mystic One Hundred show. Please call (800) 344-0675 for more information.

**26** ***Third Annual Mystic One Hundred*** show begins at the Mystic Maritime Gallery, and will run through 23 June. Please call 572-8524 or (800) 344-0675 for information.

## MAY

**1** ***Basic Celestial Navigation Seminar*** at the Seaport Planetarium. Intensive three-day seminar – 9:30 A.M. to 10:00 P.M. Friday and Saturday and 9:30 A.M. to 4:00 P.M. Sunday – is excellent as a refresher, and can be helpful as well to those who get the text and do some serious preparation ahead of time. Classroom sessions are interspersed with visits to the Planetarium and to the shore for practical sextant work. Cost is $198 ($220 for nonmembers). For information and reservations, please call 572-5355.

**9** ***Greenhouse Gang's Second Annual Plant Sale.*** Which came first, the greens or the greenhouse? Sounds like a silly riddle, but when you consider that proceeds from the Greenhouse Gang's Second Annual Plant Sale will benefit the Greenhouse Replacement Fund, you may change your answer. During the spring Pilots Weekend – which coincides nicely with Mothers' Day – the Gang will be selling herbs, annuals, vegetable seedlings, and perennial divisions from the Seaport's gardens. Hours are 9:00 A.M. to 3:00 P.M. at the Greenhouse.

**9 & 10** ***Pilots Weekend.*** A working weekend for Pilot members.

**15** ***Steamboat*** **Sabino** begins her 1992 season of daytime and evening cruises. Season extends through 14 October, with the schedule changing in June to accommodate summer hours. Half-hour cruises daily on the hour 11 A.M. to 4 P.M. One 90-minute evening cruise begins at 5 P.M. For information and reservations, please call ext. 5351 between 17 May and 14 October, ext. 5331 prior to May 1992.

**22 to 25** **Brilliant** ***Teenage program*** begins. Open to students ages 15 to 19, this program is an educational and exciting experience that offers participants the opportunity to act as the crew of a truly remarkable craft. The cost of this three-day excursion is $405. For information or to register, please call ext. 5325.

**23** ***American Society of Marine Artists*** opens in the R.J. Schaefer Building, running through September.

**23 to 25** ***Lobsterfest Weekend.*** Enjoy lobster in the rough sold to visitors 11 A.M. to 3 P.M. daily during Memorial Day Weekend. Food purchases are additional to the cost of admission. Please call ext. 5315 for more information.

**27** ***Decoration Day.*** A special historic enactment on the grounds recalls the "Decoration Day" of the 1870s. This celebration comes complete with parade and wreath ceremony. Active Military are admitted for free. Reduced admission for everyone, as the Seaport is open on a holiday schedule, with three staffed and twenty unstaffed exhibits open. Please call ext. 5315 for more information.

**29 to 6/1** **Brilliant** ***Weekend Sail for Adults.*** Mystic to Mystic. Adults will experience this remarkable craft as part of her crew. Cost is $515. For information and reservations, please call ext. 5323.

## JUNE

**5 to 8** **Brilliant** ***Weekend Sail for Adults.*** Mystic to Mystic. Cost is $515. Please call ext. 5323 for information and reservations.

**6 & 7** ***Twenty-third Annual Small Craft Workshop.*** Small craft enthusiasts will meet to discuss and use traditional small craft. Programs will be presented by experts in the field. Please call ext. 5028 for information and reservations.

**11** ***Members' Preview Concert*** of Sea Music Festival. See front outside wrapper for details.

**12 to 14** ***Sea Music Festival.*** This thirteenth annual celebration of music of the sea brings folk and traditional musical groups together to perform on the ships and the Seaport grounds. See back outside wrapper for details.

**12 to 15** **Brilliant** ***Weekend Sail for Adults.*** Mystic to Mystic. Cost is $515. Please call ext. 5323 for information and reservations.

**14 to 19** ***Elderhostel Sailing Program.***

**21 to 26** **Brilliant** ***Sail for Teenagers.*** The price of this six-day experience is $605. For information or to register, please call ext. 5323.

**22** ***Boat Livery*** begins 7-day operation. Please call ext. 4233 for more information in season, ext. 5341 before June.

**22** ***Steamboat*** **Sabino** summer schedule begins, running through September. Daily half-hour excursions from 11 A.M. to 6 P.M. One 90-minute downriver trip at 7 P.M. For information and reservations, please call ext. 5351 after May 17, ext. 5331 before.

**22** ***Summer schedule/Summer evening programs*** begin. For information, please call ext. 5256.

**22** ***Just for Kids.*** Free drop-in activities for children on the green and in the Children's Museum in Edmonson House. For information, please call ext. 5322.

**22** ***Whales and Tales Tours*** begin. One-hour tours focusing on whales, whaling, and the *Charles W. Morgan*. Tours are for children ages 6 to 12. Tickets are $2, and are available at the Visitor Reception Center. Please call ext. 5322 for information.

**24** ***Skywatcher's Guide.*** A Planetarium program and outdoor observations with telescope. Weekly sessions Wednesday at 8:30 P.M. Please call 572-5355 for information.

**28 to 7/3** **Joseph Conrad** ***Sail Education*** Program for Beginners. This program offers a basic introduction to small boat sailing, terminology, safety, and seamanship. Participants learn traditional sailors' skills – knots, sea chanteys, rigging, climbing, and rowing a 40-foot fishing boat. Enrollment is limited to 50, and the program is open to students ages 12 to 16. Cost is $415. Please call ext. 5323 for information and reservations.

**28 to 7/3** **Brilliant** ***Sail for Teenagers.*** Cost is $605. For information and reservations, please call ext. 5323.



*Just in Time for Spring Planting – 9 May – Plant Sale.*

(Continued from page A)

Above and beyond the earnings from ticket and shop sales, and access to tourists outside the Seaport's normal visitation, the America's Cup Museum affords the Seaport a rare opportunity to gain international recognition.

The museum's future beyond May is uncertain, and may hinge on the outcome of the racing. Although the artifacts and images will likely return home initially, the Seaport might agree to recreate the museum for the next competition, wherever it may be.

## Land Ho!

Imagine you're a sailor living in the nineteenth century. You've been at sea for a very long time. At last, your ship has put in to port, and you've been paid. What will you do with your freedom? How will you spend your money? What choices will you make?

First, choose to come to the Seaport during Liberty Days, 17 through 21 February. Special activities are planned for kids on liberty from school this week. Each morning, two groups of children (ages 7 to 9 and 10 to 11) will meet at the Seaport and share the experience of those nineteenth-century sailors. They will go to the bank to receive their wages. They may go from there to the tavern, where they might choose to spend a portion of their wages on a snack. They might relax and enjoy some entertainment at the tavern, or they may choose to get a tattoo. Other stops along the way could include Stone's Store, where a sailor might choose to purchase some tobacco, or the Mystic Press, where a handbill could be printed or a journal bought.

Sailors almost always spent at least a little of their liberty time visiting an old friend in town. Could the shipsmith be that old friend? What might he be doing this morning? Of course, the sailor may also have to make a trip to the Chandlery to pay off an old debt. Could he possibly have any money left after all these stops and all these decisions? If he hasn't spent wisely, his pockets may well be empty. He will probably have to return to sea.

What would you do if you were that sailor? Why not come and see? Parents are invited to drop their children off at the Visitor Reception Center at 9:30 A.M., and to pick them up again at noon. Liberty Day activities cost $10 ($11 for nonmembers), and enrollment is limited to 10 children per tour. For information, and to make the required reservation, please call ext. 5022. Reservations are secured with full payment.

## Make Your Summer Plans Now!

It may be cold outside, but already it's time to be thinking about your Seaport summer! Kids ages 7 to 11 will want to make sure they get their spot in Summer Day Camp 1992. This program fills up fast, so call now, at ext. 5022, or write us for an application. Address your letter to:

Education Department, Mystic Seaport Museum,
50 Greenmanville Avenue, P.O. Box 6000,
Mystic, CT 06355-0990.

## More Fun in The Morning

Mornings are better than ever since Morning Fun for Kids has grown. This jump-in, feet-first series for young Seaport members and their parents has really caught on. So much so, in fact, that one fun morning a week is no longer enough.

So we now host two fun mornings. Beginning 3 March, and running for six weeks straight, Tuesday mornings will be reserved for two- and three-year-olds, and Thursday mornings will belong to four- and five-year-old members.

The new set-up will better enable us to tailor activities to the particular interests and needs of minds and bodies at various developmental stages. Just because the program has gotten bigger, though, doesn't mean it won't sell out. Make your reservations today.

Morning Fun meets in the Children's Museum, which comfortably holds just eight kids (with eight parents) at a time. Enrollment is limited accordingly. Cost is $30 per child/adult pair, and an additional child can join the fun for just $12 more. For information and reservations, please call 572-5339.

## Boatbuilding at Its Best

This year's Yachting History Symposium highlights boatbuilding, and the weekend has something for every boating enthusiast.

Sessions begin Friday afternoon, with Dave Baker on Rushton and other Adirondack builders of canoes, guideboats, and rowing skiffs; Peter Vermilya on the catboat builders of Southern New England and Long Island; and Boyd Mefferd on the Michigan speedboat builders Gar Wood, Chris-Craft, Century, and Robinson. An evening session will explore the Chesapeake Bay Log Canoe fleet.

Saturday highlights include Robert E. MacKay on Consolidated; Barry Ward on Stephens Yachts of Stockton, California; John Gardner on the yacht builders of Boston's North Shore; Maynard Bray on the Herreshoff Manufacturing Company; and Bonnie Wilkinson on the Hutchinson Boat Works of the Thousand Islands.

After lunch, participants can choose from three focus groups: Barry Thomas on building *Breck Marshall*; Kevin Dwyer on restoring *Resolute*'s tender; and individual participants on their personal experiences in boat building and restoration. An evening cocktail reception enables participants to swap stories with kindred spirits.

Sunday morning tours will be longer than those held in the past, and will afford closer scrutiny of the Watercraft Collection, Ships Plans, the Rosenfeld Collection, and other Seaport collections. The Yachting History Symposium will take place 20 to 22 March, 1992. Cost is $80 ($100 for nonmembers). For registration information, please call ext. 5378.



# TITANIC!

MICHAEL McCAUGHAN



*The White Star liner* Olympic *arrives in New York on her maiden voyage, 21 June 1911. The* Titanic *was expected to make a similar arrival in April 1912. The* Olympic *and* Titanic *each had three engines. Two high-pressure triple-expansion engines produced 15,000 indicated horsepower each to drive their port and starboard screws, and a low-pressure turbine engine produced 16,000 shaft horsepower to drive the stern screw. They were rated for 21 knots. The* Olympic *made 500 crossings of the Atlantic before being retired in 1935 and broken up in 1936.*
Photo by Merritt & Chapman. (M.S.M. 64.660.686)

To commemorate the seventy-fifth anniversary of the loss of *Titanic*, a major exhibition was created at the Ulster Folk and Transport Museum near Belfast in Northern Ireland. Here the disaster has a special poignancy, for *Titanic* was built in Belfast and there is a thwarted pride in her memory. Essentially, the exhibition explains and illustrates *Titanic*'s construction, loss, and legend, including the discovery of her rusted empty hull on the Atlantic seabed in 1985. It dispels myths about the ship and demonstrates how *Titanic* has been absorbed into the popular culture of Europe and North America. By combining original *Titanic* material with vintage photographs, recordings, newsreels, and music, the exhibition creates a sense of the era as well as the catastrophe in which almost 1,500 people perished in the most appalling circumstances imaginable. The purpose of the exhibition is not only to inform, but also to trigger the visitor's imagination and emotion.

The White Star sisterships *Olympic* and *Titanic* were designed for the Line's North Atlantic service between Southampton and New York. They were intended to compete with the express Cunard liners *Mauretania* and *Lusitania*, not in high speed, but by offering great spaciousness, steadiness, and superlative standards of accommodation.

The contract for building the new leviathans was placed with Harland & Wolff Ltd. Since the formation of the Liverpool-based White Star Line in 1869, all their ships had been built at Queen's Island, and a close business relationship existed between the two firms.

As shipyard numbers 400 and 401, *Olympic* and *Titanic* were designed and built at Queen's Island between 1908 and 1912. Their construction was a considerable technological achievement for Harland & Wolff. On completion *Olympic* measured 45,324 gross tons and *Titanic* 46,328 gross tons. Additional closed space resulted in *Titanic*'s larger tonnage, although the hull dimensions of the two ships were almost identical (length 882 feet). In 1912 *Olympic* and *Titanic* were arguably the most complex structures ever built by man.

As the pioneer ship, *Olympic* was the center of interest at the time. There was much less publicity for the construction and entry into service of *Titanic*, as she was a virtual replica of *Olympic*. However *Titanic* did incorporate a number of improvements, especially in the arrangement and decoration of the first-class accommodation.

Harland and Wolff did not claim that *Olympic* and *Titanic* were unsinkable. No shipbuilder would be so foolish. However, great stress was laid on the safety arrangements of the ships. Both *Olympic* and *Titanic* were built with a double bottom, and their hulls were divided into 16 watertight compartments. They were designed to remain afloat with any two of these compartments flooded.

The idea of *Titanic* being an unsinkable ship probably derived from White Star's own publicity. The Line claimed that the captain on the bridge could "by simply moving an electric switch, instantly close the watertight doors throughout, *Practically making the vessel unsinkable.*"



*Thomas Andrews, Jr. (1873–1912), managing director of Harland & Wolff, was the principal designer of the* Olympic *and* Titanic. *He embarked on the* Titanic*'s maiden voyage to perfect the ship and was working on details when the ship struck the iceberg. After investigating the damage, Andrews predicted the ship's doom. When he went down with his masterpiece, he was just 39 years old. Displayed in the* Titanic! *exhibit are a photograph of Andrews, some of his drafting instruments, and some of his revisions to the plans.*
(Courtesy Ulster Folk & Transport Museum)

*Titanic* carried 20 lifeboats with accommodation for 1,178 persons, although there were 2,201 passengers and crew on board. The number of boats was in excess of Board of Trade rules, which required *Titanic* to carry only 16 lifeboats. The regulations were badly out of date, being the same for a ship of 10,000 tons and for *Titanic* at 46,000 tons.

Although *Titanic*'s type of Welin davits permitted the fitting of up to 48 lifeboats, enough for all on board, a sufficient number of boats was not carried. It is likely that this was a White Star marketing decision. The additional boats would have interfered with the promenading space on the boat deck and reduced the sense of passenger security that White Star was so anxious to promote. At the time, consideration of safety at sea principally related to improvements in ship design, rather than to the complementary need for adequate lifeboat provision.

On the evening of 14 April 1912, *Titanic* had completed three-quarters of her maiden voyage across the Atlantic. Ice warnings had been received, but the last one describing an ice field right across her track never reached the bridge. *Titanic* continued to steam at her service speed of 22 knots.

At 11:40 P.M. the lookout reported an iceberg straight ahead. To avoid a collision First Officer Murdoch ordered the ship hard-a-port. *Titanic*'s bows missed the iceberg, but an underwater spur of ice pierced her hull on the starboard side for a length of 300 feet. Within 10 minutes the ship's five forward compartments were flooded to a height of 14 feet above the keel. All the watertight doors in the bulkheads were closed.

Because of the limited height of *Titanic*'s watertight bulkheads, and because the decks above them were not watertight, it was inevitable that she would sink by the head as water flowed from compartment to compartment over the top of each bulkhead. The enormous inrush of water to the five forward compartments, with which the pumps could not cope, doomed the ship.

Two hours forty minutes after striking the iceberg, *Titanic* foundered in latitude 41° 46' north, longitude 50° 14' west.

The tragedy of *Titanic*'s sinking was that there were not enough lifeboats to save the 2,201 people on board. Furthermore, of the 20 available lifeboats, not all were filled to capacity. Boats were lowered only partly filled with passengers who refused at first to believe that *Titanic* would or could sink.

Many passengers were reluctant to leave the ship, thinking that the risk was less than in the boats. Some women were frightened of the long descent to the sea, and some refused to leave their husbands. The hope of imminent rescue made passengers still more unwilling to leave *Titanic*.

The boats left behind over 1,500 people to face death in the icy water. The wireless operators stayed at their posts to the end, as did the engineers and ship's band. Of the passengers, the highest proportion lost were in the third or emigrant class. This was accounted for by their greater reluctance to leave the ship, by their unwillingness to part with their baggage, by the problem for many of them in understanding English, and by the difficulty of reaching the boat deck from the third-class accommodation. There was no official policy of favoring first- and second-class passengers at the expense of the third class.

Only 712 survivors were picked up by the Cunard liner *Carpathia* when she arrived at the scene of the disaster, four hours after receiving *Titanic*'s wireless distress signals.

The catastrophe had a traumatic effect on the British and American public. The impossible had happened: *Titanic* was lying two miles down on the bottom of the Atlantic. Millionaires and poor emigrants alike had gone down with her. Scapegoats were found and heroism acclaimed. Commands "Be British" and "Women and children first" struck patriotic chords. Captain Smith was widely believed to have rescued a child before he perished with his ship. The sheet music of "Nearer My God to Thee" (reportedly played by the ship's band) became a best-seller. Entrepreneurs, catching the mood of the nations, flooded a ready market with disaster mementos.

For many, the loss of *Titanic* was rich in symbolic significance. The disaster was widely regarded as divine retribution for human conceit and arrogance. It demonstrated that nature was not a conquest of science. *Titanic* was the supreme expression of technological achievement and a microcosm of the civilized world. Her sinking called into question the established order of things. Faith in the supremacy of science, progress, and privilege was shattered. The age of self-confidence was over. The nineteenth century had ended.

Within a short time of the disaster, *Titanic* became absorbed into the popular culture of Europe and North America. During the past 80 years the ship and her destruction have been the subject of religion, music, opera, poetry, verse, vaudeville, folksongs, drama, paintings, films, cartoons, humor, advertising, graffiti, satire, and political allusion. *Titanic* exercises a powerful hold on people's imagination, and the phenomenon shows no sign of abating. Despite the magnitude of other horrors, *Titanic* remains the ultimate symbol of disaster. Its potency has not been diminished by the discovery of the rusted, empty hull in 1985.

*Titanic* continues to fascinate because her story is a revelation of the human condition and the mystery of nature. *Titanic* is a parable of the fallibility and nobility of man in a capricious world. ■

# *Titanic Revisited*

## LESLIE GIFFORD

Seldom does a single event carry such personal and international weight as did the tragic sinking of the luxury liner *Titanic*, in April of 1912. The catastrophe sent shock waves through the British and American public, and continues to captivate today

*Titanic!*, an important exhibit created by the Ulster Folk and Transport Museum, arrived at Mystic Seaport Museum in November, just as the Danielle Steele novel *No Greater Love* – about survivors of the disaster who lost family members to it – was making its way to the top of *The New York Times* best-seller list. The Seaport, which will host the exhibit through 10 May, is the last of four American venues.

The exhibit, which is relatively small, taps directly into the ongoing fascination of many who remember the disaster as if it happened yesterday.

A film of the 1985 discovery of the rusted, empty hull is included in the exhibit, as are photographs of the submerged wreck; a striking display comparing the three classes of passengers – as well as the crew – in terms of men, women, and children lost and surviving; and a series of dioramas portraying the passengers in their first-, second-, and third-class quarters.

*"When has such a mighty lesson against our confidence and trust in power, machinery and money been shot through the nation? The* Titanic, *mame and thing, will stand for a monument and warning to human presumption."*

– Bishop of Winchester, 1912

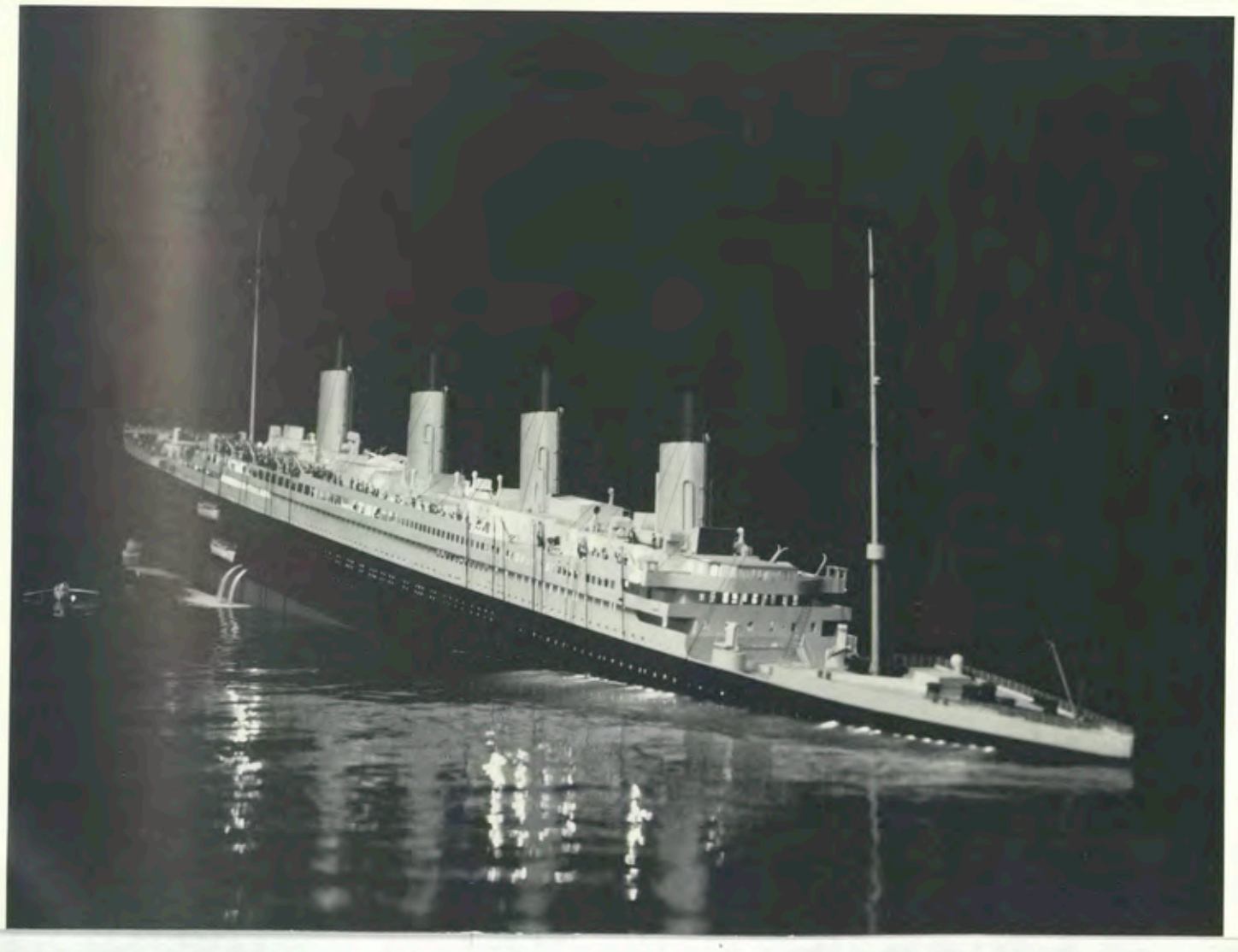
*This scale model of the sinking vessel is cloaked in darkness; voices cut through the night, recounting the disaster.*

(Photo by Claire White-Peterson)

A dramatic portrayal of the sinking vessel features a scale model of the ship engulfed in darkness, her stern headed aloft. The voices of survivors cut through the darkness, recollecting the ship's final hours, and ultimately acknowledging, "She's gone."

Because of the story's international appeal, *Titanic!* was designed for travelling. Leaving Belfast, the exhibit traveled first to Liverpool, but the British Council's eagerness to send it abroad has to date precluded additional European stops. The Council, whose interest in the exhibit rested in its potential as a "positive export" from Northern Ireland, would help fund as well as instigate the project. In addition, it would pilot the exhibit through some of the considerable red tape involved in any international transaction.

The Seaport became involved in the project when Ulster Folk and Transport Museum Curator Michael McCaughan traveled here about three years ago to gauge



U.S. interest in the exhibit. After some discussion, the Seaport agreed not only to host the exhibit, but to act as its U.S. sponsor as well.

Logistical questions were aired and answered. Details—such as the need for electrical transformers—were addressed. Stuart Parnes, Curator of Exhibits for the Seaport, agreed to coordinate the tour. He helped determine the locations to which the exhibit would travel, confirming as he did that each site was equipped with adequate fire protection, security, space, access, and electrical service. He enlisted the assistance of the Seaport Film and Video Division's Ken Mahler, who converted all taped audiovisual material to videodisc, which is substantially sturdier and more suited to travel. Parnes also coordinated the scheduling of the U.S. tour, on which the Seaport would be the final venue. This decision was based primarily on seasonal factors. Ulster Folk and Transport required that the exhibit open in May 1990. The Seaport—which enjoys its greatest visitation during the summer months—wanted to host this exhibition during its off season, in the hopes of offering something special for the winter visitor.

*Titanic!* spent the summer of 1990 at South Street Seaport Museum in New York City, moving from there to the Fullerton Museum Center in Los Angeles. The Museum of History and Technology, based in Seattle, Washington, was the exhibit's last stop before heading for Mystic Seaport in November 1991. Each time it has opened in a new location, the exhibit has taken on a slightly different look. Parnes had travelled to the various sites and made sketches of the areas that would house the exhibit. Doorways and windows, physical access and electrical services were noted and sent to Ireland, where individual layouts were designed. Parnes says he believes the Seaport design—which he says is "tighter and more intimate" than the others—is most effective. The job of tour coordinator did not stop in the planning stages. A Seaport staff member has been on hand at both ends of the shipping process each time the exhibit has moved, to ensure proper handling and to make any minor repairs needed.




*It was reported that the band had played "Nearer My God to Thee" as* Titanic *went down. The sheet music became a best seller, and entrepreneurs catching the mood of emotion, flooded a ready market with disaster mementoes.*
(Courtesy Mystic Seaport Museum)

*"The White Star Line has done much to increase the attractions of second class accommodation during recent years. In the* Olympic *and* Titanic *it will be found that this class of passenger has been very generously provided for. Nothing has been omitted in the determination to place the two new White Star leviathans beyond criticism as to the excellence of the accommodation both in the second and third class."*

– White Star Publicity, 1911

*This diorama depicts a second class stateroom.*
(Photo by Claire White-Peterson)



For many visitors to this exhibit, a good bit of its intrigue lies not in the information and materials it presents, but rather in the artifacts it has overlooked: no piece of the vessel is included in the exhibit. The omission is an ethical decision made by Ulster Folk and Transport, and it is one the Seaport supports. The International Congress of Maritime Museums (ICMM) and the Council of American Maritime Museums (CAMM), both prohibit the inclusion in a museum exhibit of pieces from commercially exploited wrecks. Though this directive is open to interpretation, neither museum had any interest in showcasing fragments of what Parnes calls a "grave site." If museums do not condone this type of exploitation, it is believed, they may help to lessen the market for such objects. At the same time, the museums saw no historical reason to include pieces of the vessel in the exhibit. And while some visitors may be disappointed in the exclusion, the sponsoring museums believe the variety of graphic material gives a strong introduction to the ship and the implications of her loss.

The reaction of visitors, says Parnes, has been "interesting." Some have been *Titanic* aficionados, who have come to the Seaport specifically to see the exhibit. Others have been visitors to the Museum who have simply happened on the exhibit.

*Titanic!* is very different from most Seaport exhibits, in that it contains few artifacts, many graphic reproductions, and a considerable amount of audiovisual material. In addition, the exhibit features relatively little labelling in comparison to other Seaport exhibits.

From the start, though, *Titanic!* has received favorable reviews. The light touch on labelling and artifacts did not appear to bother visitors, most of whom said they were satisfied with the amount of information provided. As might be expected, the exhibit has generated numerous stories and recollections. One interpreter relayed a conversation with a visitor whose mother had been aboard the vessel, saved two children, and later cared for them. The visitor, who came to the Seaport specifically to see the exhibit, recalled getting together on family occasions with the two children her mother had rescued. As Parnes says, "the personal experience lives on." ■

# Marjorie Robb: *Memories of a Terrible Night*

Marjorie Robb remembers the cold. She remembers the black night and the screams. It was a very long time ago. She was just 22. She is now 102.

Until a few years ago, Marjorie Newell Robb had never spoken about her memories of the night the *Titanic* went down in the North Atlantic. But when she decided to speak, she held nothing in secret. She spoke of her father, who went down with the *Titanic*, and she spoke of being privileged, and she said openly that this had a lot to do with her survival.

"We were very privileged," she says. "My father was chairman of the Fourth National Bank of Boston. He could indulge us, and he did. He decided he would take us, my sister and I, on a trip to Europe. We went as far as Egypt, then to what in those days was always called the Holy Land. On the return trip we boarded the *Titanic* in Cherbourg, France. I was 22 at the time."

In 1986 Marjorie Robb decided to speak. She decided she would finally say what she had kept deep within for so many years.

"To shed this grief," she says. "To finally speak about the awful night, I decided I would tell my story to anyone who would listen. There was nothing like the *Titanic*. It was the first voyage, you know, and it was a splendid ship. There was a grand staircase. The suites were luxurious, elegant. And what food, what menus."

When she speaks about this, she is talking about first class. "If you were first class you had the best of everything," she says. "Our first-class cabins were located on what was called the Private Promenade. Those accommodations cost $2,500 in *those* days."

Marjorie mentions names that have become synonymous with the *Titanic*. "People like the Guggenheims, Mr. and Mrs. Straus were on the Private Promenade. They were rich and famous people. Mrs. Straus went down. She wouldn't leave her husband. Mr. and Mrs. John Jacob Astor were there. I was their dinner guest. I knew these people. Mr. Astor went down with the *Titanic*.

"There was always something really odd about first-class passengers. They had different ways. They never looked over to third class, not even in the worst moments. They were apart. The amazing thing is that we who were in first class barely felt the collision. First class was the best place to be, and you had to be in just the right place to feel the bump. My sister Madeline and I never felt the bump. So many didn't even know we had hit an iceberg."



*Marjorie Newell Robb.*
(Photo by John J. Koulbanis)

## Joe Fuoco

Did she realize how serious the situation was? "Not at first," she says. "Not until I heard the screams. I was being placed in a lifeboat by my father. It was the second lifeboat to go into the water. And then I heard the screams.

"How ironic. My father felt he was safer than we were in the boat. He thought the lifeboats were dangerous, that we were in more danger than he. The lifeboats. . . ." She looks almost angry. "There weren't enough lifeboats. Some people had to die, and we realized that finally. We saw my father go off – somewhere – and we never saw him again. I wondered for a long time, did he wander about the ship? What was he contemplating in his last moments? We'll never know." She recalls the lights going off, the ship going down, and the calm and quiet of the cold sea in the morning.

"I rowed," she says. "I had never rowed a boat in my life, but that morning I rowed. When dawn came I saw the icebergs, cold, cheerless, frightful looking. We were hungry and cold. All around us were pieces of wood, debris. I had seen death. In the night so many men who were not in the boats, who had given up the boats to the women and children, clung to the boards and all the debris, but they couldn't hold on. Most of the men died that night."

Marjorie is frank when she dispels the fallacy that all the women and children were saved. "Those in the third-class area had the lights turned off on them," she says. "In third class you had *no light*. But in first class you had all the light you wanted. Money talked. In the darkness, the passengers in third class could not find their way out. They couldn't see anything at all. The women and children were trapped in the dark. They were screaming. It was the single most callous, inhumane act."

"I don't remember any such hymn as 'Nearer My God to Thee' being played," Marjorie says. "I don't remember that at all. But there was a lot of Irving Berlin. The band played Irving Berlin, one song after another, to distract people from the horror. I remember hearing 'Alexander's Ragtime Band.' Now that was definitely one of the hits of the day. We were in the boat and we could hear the all-string band playing it, and the music came across the water."

Then the long period of mourning began. "From the day my father went down with the ship, a period of constant family mourning began," she says. "We were diseased with grief from that day. Our lives became something completely foreign, strange, detached. It was truly almost a disease. We couldn't face the fact that my father was dead. My mother mourned all the rest of her life, and she died at 103. Under her pillow she kept my father's watch all the rest of her life. When his body was discovered his watch and his signet ring were intact. Now I have both since my sisters are also gone.

"Somehow this awful thing affected our family in such a way. For example, my sisters never married. They too suffered in silence. I was the only one who did marry." Marjorie's son Newell Robb is now Director of the Fall River Marine Museum in Massachusetts.

"I kept silent for decades," she says. "And then I visited the cemetery in Litchfield [England]. I visited the grave of the *Titanic*'s captain, Edward J. Smith. I heard some music that day, coming from somewhere. It was then I decided to end my silence."

She is reflective on the force of uncontrollable elements. "There are things stronger than all of mankind's attempts to conquer the elements," she says. "To this day, when I hear of a great earthquake, such as the ones in Mexico and Iran, I think of a sentence my daughter once said to me: man's efforts are useless compared to the powers of nature." ■



*Few educators have to retire to the bowsprit when they need a breather from student questions, but Lisa Norling doesn't seem to mind.*
(Photo by Kesley Gallagher)

# *A Seaport Profile:*
## *Giving History Identity*

LESLIE GIFFORD

Traditional methods of teaching American history have left unbridged the gap between past and present. What happened happened – to other people. The standard dates and facts were memorized, tested, and – typically – forgotten.

Times are changing. There has been a shift in recent years in the way academics "do" history. This trend has been away from the rote memorization toward an attempt to understand relationships between people of various economic, educational, and political backgrounds. To acknowledge the commonalities between people and trends, and not always to study them in their uniqueness. Thus was born the New Social History of Seafaring, which attempts to place maritime history within the broader context of the American story. This new social history came to the Williams College-Mystic Seaport Program in American Maritime Studies last fall, when Lisa Norling joined the staff. A Rutgers University graduate student in the process of completing her doctorate in history, Norling is the first recipient of the Robert G. Albion Fellowship in American Maritime History. The late Robert Albion, a pioneer in the field of maritime history, was director of the Frank C. Munson Institute of American Maritime Studies here for 20 years.

Norling's arrival marks the first time since Williams-Mystic founder Benjamin Labaree retired in 1989, that a historian has been part of the program's full-time faculty. It is an important addition for the Seaport, for which responsible work in the field of maritime history is a priority.

Norling is no stranger to the Seaport. She attended the Munson Institute in 1989, and in the same year won the *Log* Prize Article Award for her article, "Contrary Dependencies: Whaling Agents and Whalemen's Families, 1830–1870." She will be here for the 1991–92 academic year, after which she will pursue a tenure-track professorship on the history staff of the University of Minnesota.

Norling's particular area of interest has been the role of women in American maritime history – her dissertation, which she was hoping to defend in January of this year, was entitled "Captain Ahab Had a Wife: Ideology and Experience in the Lives of New England Maritime Women, 1790 to 1860."

Her interest in the role of women naturally would lend it greater emphasis in her program than in another professor's, she agreed. But, she said, she had no intentions of focusing on women at the expense of other facets of the social history of seafaring.

She planned instead to give the whole program a fresh emphasis, to look at things from new angles. Labor history, for example, would be studied "in terms of seafaring from the fo'c'sle rather than the countinghouse or the after cabin." From the outset, she was excited about the prospects of her new position: "The set-up is perfect in pedagogical terms," she said in August. "It is an attempt at a fully integrated curriculum centered around a common theme."

Enrollment in the Williams-Mystic Program has been likened to being thrown overboard. Each term, 21 students from regional liberal arts colleges plunge into an intensive study of maritime history and literature, oceanography or marine ecology, and marine policy. There is, as Norling puts it, "a real immersion into the past . . . There's such a difference in the learning when you don't just read, you actually get into touching and experiencing the ways of life of these people." By the end of the term, Norling's enthusiasm for the program had only increased.

"The kids were really engaged with the material," Norling said in December, noting that the intimacy of the group had offered many explorational opportunities that might not have existed in a larger, more conventional college setting. She had been able to take advantage of unexpected moments and developments, she said, and the course had evolved over the duration of the term. While in the first weeks of the semester she had felt more comfortable lecturing in the more traditional classroom setting of the G.W. Blunt White Library, by December she was holding

sessions all over the Seaport grounds. "It took the students awhile to get used to" the unconventional class structure, said Norling, who admitted that it took her some time to warm up to it as well. But eventually, she said, the whole group was caught up in the experience of "active, collaborative learning."

The history course requirements include two projects: a material culture component, which entails exploring a particular area or artifact and interpreting it to the rest of the group; and a major research paper.

The range of research topics selected during the fall semester reflects the diversity of the group, as well as its enthusiasm and initiative: "The Impact of Technological Change on the Lives of Fishermen"; "The Ethnographic Study of the Village of Noank at the Turn of the Century"; "A Cultural History of Pirates, From their Early Eighteenth-Century Portrayal to their Contemporary Image"; and "The Clipper Ship *Andrew Jackson*," Mystic-built and noted for her tremendous speed.

In preparing their presentations and papers, the students were encouraged to take advantage of the Seaport setting, which no college or university can replicate. Students sought out the support of staff members, who Norling says were extremely helpful; they combed through the manuscripts collections here and at the Mystic River Historical Society for glimpses of local history; and they sought out the firsthand recollections of such locals as a Noank shipbuilder, who plied his trade some 40 years ago.

Almost invariably, the students' material culture presentations took the group to various sites along the Seaport grounds. One student, for example, chose to demonstrate cod-splitting aboard the *L.A. Dunton*. "There's something particularly graphic about this demonstration," says Norling, noting that there really is no comparison between seeing the ritual performed and reading about it. The class visited several exhibits during the course of the term.

A session on symbolism, and its significance in maritime history, was held in the figurehead gallery. The Stillman Building was the setting for a study of ship models. A walking tour of the village ended with a discussion, in the Charles Mallory Sail Loft, of the rhythms of seaport life and the organization of the maritime community. This use of the village, Norling says, enabled her to "approach abstractions in concrete ways."

And the coursework was by no means restricted to the Seaport grounds. One of the highlights of the Williams-Mystic Program is a regular two-week stint on an offshore sailing vessel. The fall voyage took the group off Georges Bank aboard a 130-foot topsail schooner. Though much of the voyage is consumed with scientific experiments and the handling of the vessel, the students also gain an appreciation of the ways of life at sea. As Norling notes, "You get a very real sense of the difficulties of the fisherman trying to lower a fishing dory, when you're rolling up and down, and rolling . . . and rolling . . ."

The unceasing motion gave the group valuable insight into the sea's physical impact on its patrons as well: several members of the group experienced the nausea that no dosage of Dramamine will cure, and sore muscles were developed in the making of sea legs. Everyone, Norling says, was "quite good-humored" about the discomfort, and the sickness and soreness was unable to tarnish the breathtaking beauty of the sunsets and sunrises, the wonder at the multitude of stars shining in the pitch of night, and the chance sighting of birds living 100 miles from land.

Additional class "field trips" included an excursion to a fishermen's cooperative in Point Judith, Rhode Island, where a lesson on marine policy was conducted, as well as a long weekend to Nantucket, hosted by the University of Massachusetts Nantucket Field Station. Nantucket Harbor provided the perfect classroom setting for a lecture on harbor management. Another lecture, which Norling calls "Life, Love, and Labor in Early Nantucket," focused on the family organization and religious life that supported development of the whaling business.

The Nantucket excursion was an important addition to the program, Norling says, for its educational opportunities as well as for its value in bringing the group together again in an off-"campus," intimate setting.

The give-and-take between the history and science aspects of the program has been extremely healthy, says Norling, noting that Dr. James Carlton, Director of the Williams-Mystic program, and Dr. Janie Wulff—both renowned marine scientists—are sensitive to historical developments and their integration into science. For her part, Norling says, she frequently addresses the various technological changes that have shaped history.

In some ways, Norling says, she is sorry she will be here for just one year. "You learn in a different way when you're teaching, figuring out how to use resources in this setting."

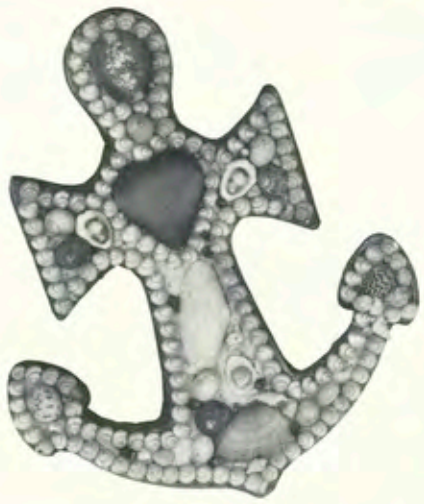
She planned for the spring semester to make the curriculum even more collaborative: "I want to have the students be even more responsible next semester for taking the lead in class discussions, to take even more initiative," she says.

She also plans to get them out on the grounds earlier in the term. Teaching on the grounds is at the same time more difficult and more solid than in the classroom setting, she says. Lectures in exhibits are "more public, more distracting, more open, and more concrete." The benefits far outweigh the drawbacks, she says.

"Just think of taking a class up to the Rossie Mill. You're surrounded by boats. It's overwhelming, and it's definitely more powerful than any planned presentation." ■



*The class digs into a trawl tub on the* L.A. Dunton. *Coiled in the tub is 1,800 feet of trawl line, equipped with 300 hooks spaced a fathom apart. The fishing apparatus was used for long-lining from dories between the 1850s and the 1940s.*
(Photo by Kesley Gallagher)



# "Sailors' Valentines"

JENNIFER SHEPHERD JOHNSON

Like countless others before him, Lafcadio Hearn was struck by the sight of Barbados when he visited the island for the first time in the 1890s. Barbados, the most windward of the Caribbean islands, was visited by merchant seamen, whalemen, and yachtsmen alike, who arrived for a variety of reasons, including trading, reprovisioning, and touring the island. Visitors who wanted to remember the island by bringing a tangible reminder of Barbados home with them could easily find objects made on the island.

Barbados was densely populated, and though many found work in the dominant sugarcane industry, other islanders turned to peddling as a way to support themselves. Local merchants were eager to sell souvenirs to visitors. Susan de Forest Day, who traveled on the yacht *Scythian* in the 1890s, noted: "the whole population [of Bridgetown, Barbados] seems to be gathered together to prey upon us. Crowds cluster around us with strange things to sell tied around their necks."[2] Day may have been approached by a peddler eager to sell a popular keepsake called a shell mosaic, or "sailors' valentine."

A typical sailors' valentine is a shallow, octagonal, wooden box displaying seashells arranged in elaborate geometric patterns. Wooden or cardboard slats separate the shells by type and color, dividing the box into compartments that together form intricate designs, often star or heart shapes. The shells were glued to cotton batting and the work was protected from dust and handling by a pane of glass.

In the popular imagination, sailors' valentines (like scrimshaw) were made aboard ship by homesick seamen who occupied their dog watch leisure time fabricating intricate patterns with shells they had collected on exotic beaches. Although mariners did collect shells during their travels, most sailors' valentines were made from fewer than twenty varieties of shells, usually all of which are found in the West Indies. Research on the styles and composition of sailors' valentines indicates that most of the pieces popularly called sailors' valentines were, in fact, made in the West Indies—particularly Barbados—and purchased there by visitors, whether they were sailors or travelers for pleasure. Thus, most were neither sailor-made nor strictly St. Valentine's Day gifts.

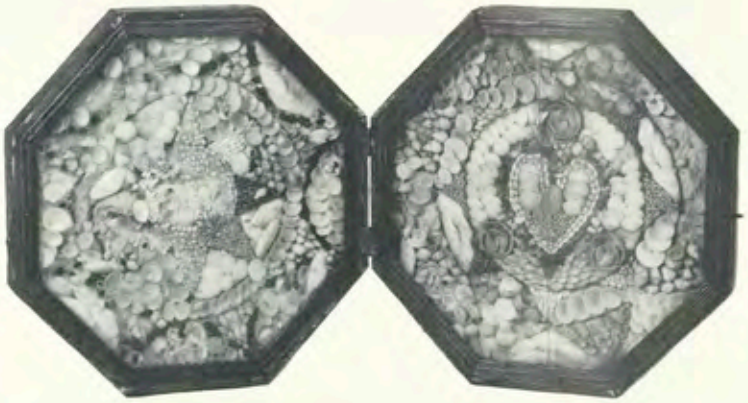
Two valentines at Mystic Seaport are hinged octagons with star and heart patterns



Top left, *although this anchor motif may appear unusual in format, we know of at least two nearly identical examples, both of which are now missing the velvet heart-shaped pin cushion.*
(M.S.M. 76.15, photo by Claire White-Peterson)

Center, *this Barbados trinket-seller poses with a basket of shells, helping to confirm that so-called "sailors' valentines" were most likely made by black West Indian natives rather than by sailors on shipboard.*
(Robert T. Hill, *Cuba and Porto Rico*, 1898)

Right, *this shell mosaic was bought at auction in the 1930s. At that time it was assumed to have been made by a Nantucket seaman, but instead was probably purchased by one.*
(M.S.M. 53.3023, photo by Louis S. Martel)



*It is a sight worth the whole journey,*
*– the splendor of this noon sky at Barbadoes; –*
*the horizon glow is almost blinding, the sea-line*
*sharp as a razor-edge; and motionless upon*
*the sapphire water nearly a hundred ships lie,*
*– masts, spars, booms, cordage, cutting*
*against the amazing magnificance of blue.*[1]

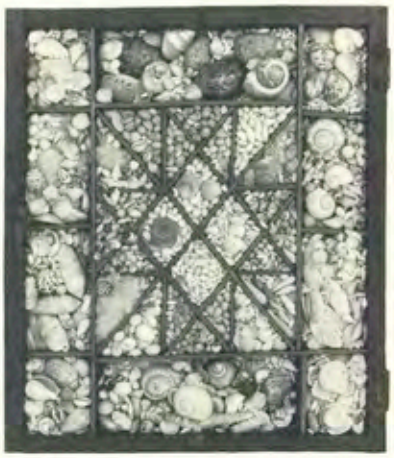
on each side. One was made with twelve varieties of shells, shaped to form a heart on the left and a five-pointed star on the right. Bright yellow paper dividers separate the shells. The second is both smaller and more intricate, with similar star and heart designs, but with wooden dividers separating pale pink, lavender, green, and white Caribbean shells.

One unusual valentine at the Seaport is anchor-shaped with a heart-shaped pin cushion at the cross bar. Over 200 shells of 10 different types were glued in place onto a wood and green-velvet backing. Several Seaport visitors have reported that they have quite similar examples, which may have been made from the same pattern. This suggests that the anchor pattern was especially popular and, far from being a unique, sailor-made item, may have been manufactured in quantity by island artisans.

Sailors' valentines from the end of the nineteenth century often had sentimental messages in English, like "Forget me Not," "Home sweet home," and even "A Present From Barbados." These shell mosaics look more like tourist souvenirs and commercialized trinkets than earlier examples.

Shell mosaics are similar in composition to nineteenth-century shell collections, which were also divided into geometric patterns. The shell collections differ from valentines though, and are typically housed in retangular boxes or standing cabinets with loose, unglued shells. Collecting shells was a popular nineteenth-century hobby, and people spent many hours sorting, identifying, and cataloging varieties and species. Unlike sailors' valentines, shell collections often contained shells from all over the world, not just the West Indies. Shell collections might even include sharks' teeth. Some captains collected shells on voyages around the world, and their collections were showcases of their voyages and adventures.

The Seaport's sailors' valentines fall somewhere between strictly scientific collections and tourist souvenirs. Though they may have been purchased from shoreside Barbados peddlers rather than being made on shipboard, they could be cherished in New England parlors. Although they were probably not made by sailors, a sailors' valentine could serve as a reminder of loved ones at sea, or of the exotic ports once visited. For us, they may not provide insight on sailor life, but they do speak to the ingenuity of native craftspeople and to the enduring desire to surround ourselves with mementos of other places and other people. ■



## NOTES and SOURCES

1. Lafcadio Hearn, *Two Years in the French West Indies* (New York: Harper & Brothers, 1890), pp. 67–68.
2. Susan de Forest Day, *The Cruise of the Scythian in the West Indies* (New York: F. Tennyson Neely, 1899), p. 191.

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Susan de Forest Day, *The Cruise of the Scythian in the West Indies* (New York: F. Tennyson Neely, 1899).

E. Norman Flayderman, *Scrimshaw and Scrimshanders: Whales and Whalemen* (New Milford, Connecticut: N. Flayderman & Company, 1972), pp. 279–81.

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Susan Williams, *Sailors' Valentines* (Rochester, New York: Strong Museum, 1988)




Top right, *the loose shells in this shell collection were separated by species and arranged by color into triangular and diamond-shaped compartments that together form a star pattern. These shells belonged to Miss Nellie Lambert of Mystic and were assembled by one of her Clift family ancestors.*
(M.S.M. 53.3095, photo by Claire White-Peterson)

Left, *double-sided closing sailors' valentines, like this example, were easily folded and stored by seamen and tourists who brought gifts home after a long journey. The fragile shell work was protected for the ocean passage in a wooden case.*
(M.S.M. 52.2107, photo by Louis S. Martel)



# What Lucius Waterman Had for Dinner

SANDRA L. OLIVER

*Lucius A. Waterman (1832–1895) was the youngest son of a Duxbury, Massachusetts, shipmaster. He went to sea with his father, then served as a U.S. Navy acting ensign, 1866–69, aboard the gunboat* Aroostook *in the Asiatic Squadron. After this long passage home he engaged in business and maritime affairs.*

Albumen carte de visite photograph, ca 1869. (Misc. Vol. 467, G.W. Blunt White Library)

Ensign Lucius A. Waterman left Hong Kong on 19 January 1869 aboard the Pacific Mail Steamship Company steamer *China*, bound for his home in Duxbury, Massachusetts. Transpacific steamship service had been established only two years earlier, but already this was a routine passage. Nevertheless, during his journey Waterman kept a journal, which is now Miscellaneous Volume 467 in the Seaport's G.W. Blunt White Library, and it offers fascinating glimpses of ocean steamship travel in the mid-nineteenth century.

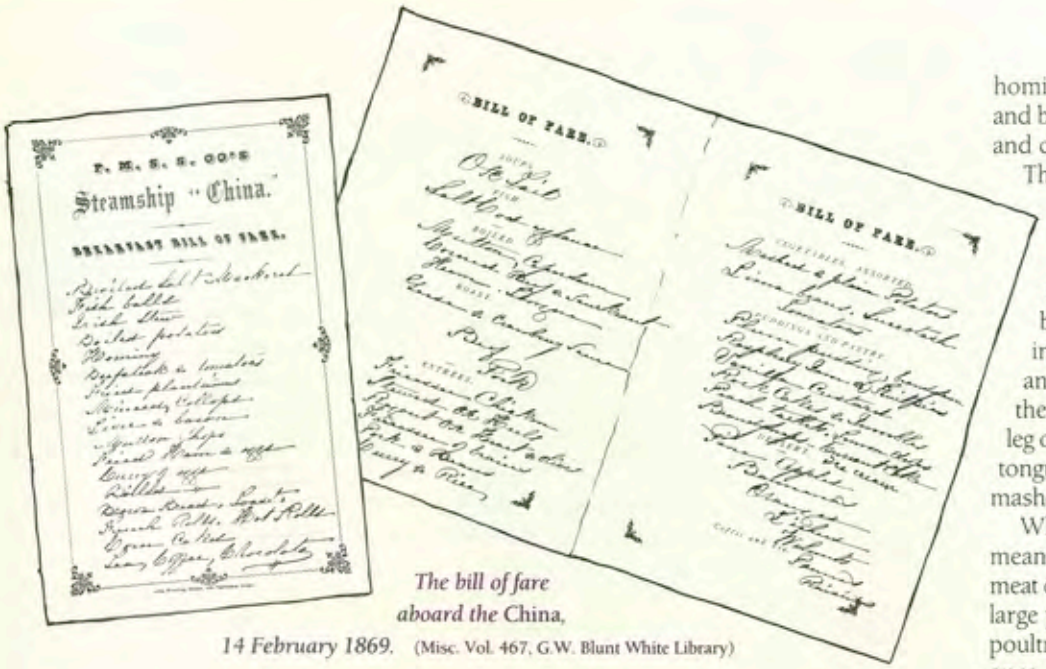
From Hong Kong, the *China* sailed to San Francisco, arriving 23 February. Waterman waited there at the Cosmopolitan Hotel until 1 March, when he boarded the Pacific Mail steamship *Constitution* for the second leg of his trip, which took him to Panama by way of Manzanillo and Acapulco. Landing in Panama on 15 March, Waterman took the Panama Railroad across the isthmus to the Gulf side and boarded the *Ocean Queen* for the third phase of the trip. Waterman reached New York on 24 March, having traveled nearly halfway around the world in 64 days.

During the trip, Waterman kept three days' worth of menus, one from each of the three vessels on which he traveled. Three of the menus are for dinners, and one is for a breakfast. Waterman saved the menus in an apparently random fashion; his journal does not record anything particularly remarkable about the days for which menus exist. All the menus were handwritten on printed forms in different colors, yellow, pink, and green, with delicate printed borders. The dates were written in by hand, as were the individual dishes, listed under the printed headings of soups, fish, "boiled" and "roasted," entrees, "vegetables, assorted," puddings and pastry, and desserts.

The Pacific Mail Steamship Company had had a virtual monopoly on American Pacific steamship travel since the happy accident of its establishment coinciding with the California gold rush. Although it did not have to compete for passengers, its ships were known for their comfort and regularity of service.[1] Waterman affirmed this about the *China*, writing on 22 January, "find everything pleasant and comfortable with plenty to Eat." On the San Francisco-Panama shuttle, with its rapid turnarounds, the *Constitution* was a different matter: she "does not compare with the China she is a very good ship, fast &c not having the time to keep her in good order she is consequently out of repairs, and dirty and nasty." The *Ocean Queen* apprently met Waterman's expectations, and in a gale he noted, "ship balances well."

As a naval officer, Waterman was familiar with the view of the coast and islands between Hong Kong and Yokohama, where they stopped briefly, and he found among the *China*'s officers an old acquaintance with whom he could talk. Otherwise, for this, the longest phase of his trip, he commented there was "nothing to do but walk decks, play cards and drum on the Piano &c, c."

"Nothing to do" was a familiar complaint among seafarers, even on relatively fast-moving steamships. In this situation, food took on special significance. Waterman traveled first class for his trip. He saved his meal tickets with table assignments and recorded the times that meals were served – which varied slightly from vessel to vessel. For example, aboard the *China* breakfast was served at 9:00 A.M. and dinner at 6:00 P.M., with a "tiffin" (small meal) at midday and a late evening tea at 9:00 P.M. On the *Constitution*, however, dinner for the first-class passengers was at 5:00 P.M., with different times for children (who ate separately from everyone on board) and for second-class passengers, creating in all three mealtimes for each meal. Consequently, Waterman recorded "the dinner gong a going from morning till night."




*The bill of fare aboard the* China, *14 February 1869.* (Misc. Vol. 467, G.W. Blunt White Library)

In spite of the fact that he saved menus and meal tickets and reported on mealtimes, Waterman never remarked about the food itself or his reaction to it, except once in Yokohama after he spent a day ashore. He arrived back at the ship "in time for a good square dinner which I heartily relished." Chances are he relished it because he seems to have been short of money and could not afford to buy anything extra, not even a bit of food in town, and probably had not had a thing to eat all day.

Most of the time, if Waterman mentioned food, it was to report that, among his activities of the day, he had eaten his "regular whack." One day he complained that he was "suffering somewhat from dyspepsia," a term for indigestion and flatulence, which he attributed to "good living and nothing to do."

Waterman may not have taken his "regular whack" at one of the meals for which he saved a menu. Aboard the *Constitution* on 10 March, five days before arriving in Panama, he wrote that the temperature was 89° to 90° and "Everybody grunting and sweating and trying to find a cool place, it is so hot I have no appetite and can scarcely obtain sleep at night before 2 or 3 in the morning."

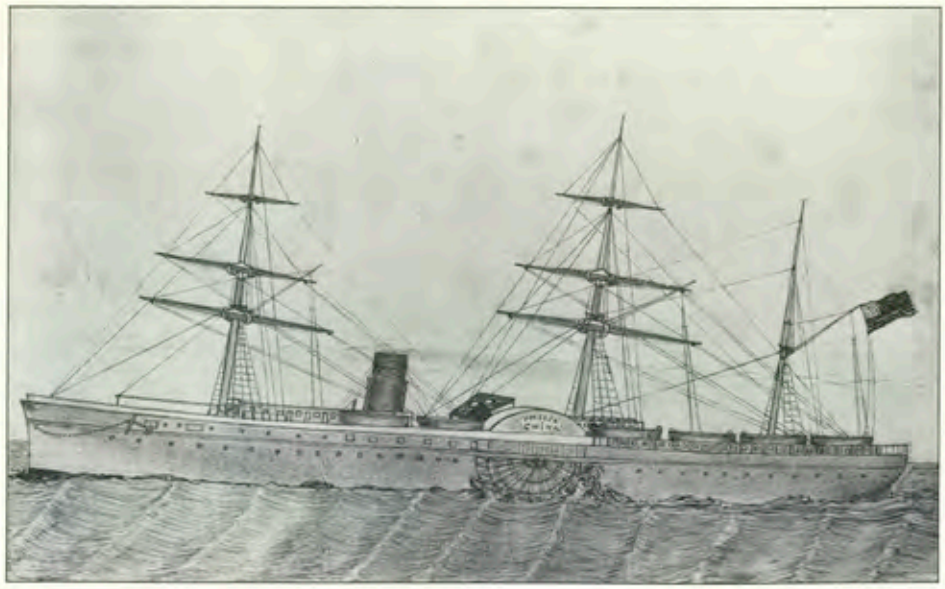
Aboard all three ships, the meals were notable for the variety of dishes served. The *China*'s breakfast menu for 14 February 1869 is suggestive of a twentieth-century restaurant brunch menu, offering nine meat-based dishes such as liver and bacon, fried ham and eggs, beef steak and tomatoes, and broiled salt mackerel. In addition, there were hominy, boiled potatoes, rolls, corn cakes, and both curried and boiled eggs. Tea, coffee, and chocolate were the beverages.

The dinner menus were solidly Victorian and squarely met a meat-and-potato-eating public's expectations. The menu collection consists of one each from a Saturday, a Sunday, and a Wednesday, but there are no discernable differences in quantity or quality from one day to another. There are some inevitables: all the menus have roast beef, all offer boiled leg of mutton with caper sauce, boiled ham, tongue, and invariably have potatoes mashed or plain boiled.

When the menu said "roast" it always meant meat, and was balanced by "boiled" meat dishes. Roasts seem to have been whole large pieces of meat: beef, pork, mutton, or poultry, including goose once and turkey once. Boiled dishes, besides ham, tongue, and mutton, included corn beef twice, once with sauerkraut, once with carrots.

The entrees were smaller cuts done up in ragouts, fricassees, or hashes, or put in pies. A homely pork and beans was served once, as were "giblet currie and rice," and macaroni and cheese.

Aboard the *China*, an ox was apparently taken aboard live and butchered when needed. It appeared on the table in several forms during 14 February. Soup that day was ox-tail soup. Under "roast" was the inevitable beef, and among the entrees were stewed ox heels, ragout of heart and olives, and fricassee of brains. Twentieth-century Americans are unfamiliar with variety meats, but this selection of dishes would not have seemed unusual to the travelers on the *China*.



*Lucius Waterman drew this portrait of the Pacific Mail Steamship Company steamer* China *in his journal. The* China, *3,836 tons (360x47x23), represented the height of American oceangoing wooden side-wheel steamship design. Built by William H. Webb at New York in 1866, she had a 1,500-horsepower, single-cylinder, walking-beam engine to power her side wheels. She could accommodate 500 passengers in first and second class and 800 in steerage. Sent to San Francisco in 1867, the* China *was immediately put on the new San Francisco-to-Hong Kong run, with coaling stops at Honolulu and Yokohama. She served reliably on the transpacific run for 12 years, making 30 voyages; then, superceded by iron ships, she was sold and broken up about 1886.*
Pencil sketch by Lucius Waterman, 1869.
(Misc. Vol. 467, G.W. Blunt White Library)



*Aboard the China, the dining saloon was probably similar to that of her sister ship America, with its elaborately painted woodwork, carpeting, and other appointments, shown here ca. 1870. The two tables with chairs rather than caned-seat benches presumably were for guests of the captain. Note the Chinese waiter. The last, and one of the two largest, American oceangoing wooden side-wheel steamships, the America was launched at New York in 1868, entered transpacific service in 1869, and burned at Yokohama in 1872.*
(Courtesy Mariners' Museum, Newport News, Virginia)

Between San Francisco and Panama, Waterman could have tried Chili Colorado, which has a western ring. Between Panama and New York there was a bit of Frenchification, with "Salmis of Goose au petite pois" and "Haricot Mutton a l'Anglaise."

Most of the vegetables were long-lasting roots: beets, carrots, parsnips, onions, and turnips. The tomatoes served on board were probably canned, as vegetable canning had become widespread, especially since the Civil War. On the Panama-to-New York leg, passengers were served fresh green corn (sweet corn) and green beans.

The availability of fresh fruit varied. When the *Constitution* stopped for coal and water at Acapulco on 8 March, Waterman noted that there was "plenty of fruit along side all night – Oranges, Limes, Pineapples and Plantains." However, it does not appear that the *Constitution* took advantage of the supply, for dessert two days later was figs, prunes, raisins, and nuts. This was another contrast to the *China*, which still had "Bananas, Pine Apples, Oranges, and Lichees" for dessert two weeks after the last port stop.

The pastry and pudding offerings were replete with all the familiar cakes, pies, puddings, cookies, and tarts that Waterman and fellow passengers would have had at home. Plum puddings, pound cake, brandysnaps, citron cake, peach tartlets, cup cake, and mince, apple, and cranberry pies all appeared on the menus, along with "vanilli [*sic*] ice cream."

Passengers desiring a drink with their meal, besides the tea and coffee regularly served, had to pay extra for it, something Waterman had to limit strictly. The *Ocean Queen* menu had a wine list on the reverse, which included brandies, sherries, Madeira, port, champagne, and clarets, as well as bourbon, scotch, rye, and gin. Cider, ale, porter, and ginger beer were available, and so was lemonade. Ice could be purchased for ten cents a pound.

Waterman recorded that, besides eating, he read a lot and played cards a great deal (games had to end at 11:00 P.M., and gambling was forbidden). He also joined fellow passengers singing around the piano, and once he played Hunt the Slipper with the ladies and other gentlemen passengers. He once remarked that he looked forward to seeing his wife. The trip afforded some drama: a Chinese passenger, one of hundreds in steerage, jumped overboard, and a crew member "subject to fits" had one.

Did Lucius Waterman look forward to having a home-cooked meal? He never said. But once he got home, the choices would not have been very different from the menus on the Pacific Mail ships. For example, the daily dinner menus and recipes provided by Marion Harland in *The Dinner Year-Book* (1878) include many of the menu offerings we see in Waterman's little menu collection: mutton, beef every way imaginable, and a long list of soups, including four for ox-tail. Mrs. Harland might have preferred to tell cooks simply to mash or boil their potatoes, as the steamship cooks did, but, because she was planning 365 dinners, she developed 102 different ways to serve potatoes.

Many of Mrs. Harland's recipes, like the one following, are very similar to what Lucius Waterman may have eaten aboard ship. On Saturday, 20 March 1869, Pork Chops and Tomato Sauce were among the four entrees on the *Ocean Queen*'s menu. Mrs. Harland's pork chop recipe includes "gravy" rather than "sauce."

*Pork Chops with Tomato Gravy*

Trim off skin and fat; rub all over with a mixture of powdered sage and onion. Put a small piece of butter into a frying-pan; put in the chops, and cook rather slowly, as they should be well done. Lay the chops upon a hot dish; add a little hot water to the gravy in the pan; a great spoonful of butter rolled in flour, pepper, salt, and sugar, and half a cup of juice drained from a can of tomatoes – keeping the tomatoes for a tomato omelette for breakfast. Stew five minutes, and pour over the chops.[2]

Mrs. Harland instructs us to save the tomatoes for another day, but put them in if you want, to make it more a "sauce" than a "gravy."

## NOTES

1. Frederick E. Eammons, *American Passenger Ships: The Ocean Lines and Liners, 1873–1983* (Newark: University of Delaware Press; London and Toronto: Association of University Presses, 1985), p. 49; also see John H. Kemble, *The Panama Route, 1848-1869* (1943; reprint, Columbia: University of South Carolina Press, 1990).
2. Marion Harland [Mary Terhune], *The Dinner Year-Book* (New York: Charles Scribner's Sons, 1878), p. 625.

# NEWS & NOTES

## *A Focus on Education*

When was the last time you stopped and looked at your television? Not the picture on the screen. The television. How frequently we take "things" for granted, forgetting to appreciate them for what they are, for what they do for us. The everyday objects with which we surround ourselves say so much about us, about the times in which we live, and about our values and beliefs. Yet we hardly notice them – until they break. Such was the topic of discussion at a recent teachers' workshop – dubbed "Why Things Matter" – at Mystic Seaport Museum. The session, part of this year's Teachers' Institute, was designed to help educators focus on objects, to interpret them, and to explore the many ways in which they speak for the culture to which they belong.

Teachers Institutes – sponsored jointly by the Connecticut Humanities Council and the Connecticut State Department of Education's Institute for Teaching and Learning – are based on the premise that the best teachers are those open to new approaches to learning. Mystic Seaport's five-year relationship with the program has been a valuable one for the Museum, the participating teachers, and their students.

The 19 teachers of grades four through twelve attending this year's Institute – entitled "Mystic Voyages in Learning" – signed on for a five-day exploration of American maritime history, literature, art, and music. The voyage began with a weekend-long Seaport experience that included lectures, tours of the grounds and its exhibits, an overnight aboard the *Joseph Conrad*, and an at-sea experience on *Argia*.

The "Why Things Matter" workshop was conducted at the first follow-up session, which began with Glenn Gordinier, Research Associate in the Seaport's Education Department, leading the teachers through the "*Charles W. Morgan*: A Reflection of America" exhibit here.

The tour was unlike many, in that participants were forced to take their time, to focus on individual artifacts, to understand the significance of the objects, and to acknowledge them as spokesmen for a generation. These artifacts – everyday "things" from an earlier era – are fundamental links to our forebears, and they cannot be overlooked; any workshop participant who swept through the exhibit quickly was sent back to view it again. The complete tour – including discussion halfway through and at the end – took nearly two and one-half hours, and was "an amazing exercise in looking," says Jan Larson, Supervisor of School Services.

*(Continued on next page)*




*Teachers take to the sea aboard* Argia. *The at-sea experience was a fundamental part of this year's Teacher's Institute curriculum, designed on the premise that experiential learning far surpasses the passive type.*
(Photo by Mary Anne Stets)

(Continued from page 111)

The experience inspired the teachers, who later formed small groups and developed projects that would help their students to understand the importance of objects. A group of middle- and high-school teachers, for example, agreed that their students would begin by creating a classroom museum. The students would be directed to cast themselves into the future, to zoom ahead to the year 2141, where they would design an exhibit of those objects that would best reflect life in America in 1991.

A class field trip to the Seaport would include a focused tour of the *Morgan* exhibit and a comparison of that exhibit to the one created in the classroom. Students might ask themselves some of the following questions: How did Mystic Seaport put together its exhibit? How did we compile our own collection? How do objects represent cultures? The final portion of the project would take place back in the classroom. The teacher would have prepared five modern-day objects and directed each student to select one and write a paper considering the ways in which that particular object represents contemporary culture.

Teachers of younger kids put their heads together as well, and designed museum-based activities appropriate to their own students. The classroom- and museum-based activities for the younger set focused similarly on objects as storytellers.

When the teachers met again in January, they were prepared for a similar focus tour through *Titanic*!, followed by more activity planning for follow-up with their students. The culmination of this year's Institute entailed presentations – and distribution – by participants of classroom materials they had created as a result of the Institute. Says Larson, the teachers were given free rein on their projects, which could include comprehensive teaching units, individual lesson plans, or annotated bibliographies. "Whatever works for them in their own classroom."

## ABOUT THE AUTHORS

***Edward W. Sloan III*** is Charles H. Northam Professor of History at Trinity College in Hartford, Connecticut, and Assistant Director of the Seaport's Munson Institute of American Maritime Studies.

***Michael McCaughan*** is Curator of Maritime History and Traditions at the Ulster Folk and Transport Museum in Northern Ireland. During his 22 years at the museum, he has written and lectured widely on Irish maritime history, technology, and traditions.

***Joe Fuoco*** is a free-lance writer and editor of *The Echo* in Providence, Rhode Island.

***Jennifer Shepherd Johnson,*** the Seaport's Cataloger, is a graduate of the Williams College-Mystic Seaport Program and the Hagley Program at the University of Delaware.

***Sandra L. Oliver,*** formerly of the Seaport's Education Department, is a foodways historian and consultant living in Maine.

***Leslie Gifford*** is Associate Editor of *The Log*.

# *Two New Mystic Seaport Publications Available Now*

*A Dictionary of Scrimshaw Artists*, a handsome new book by Stuart M. Frank, is certain to have a major and lasting impact on both the study and the collecting of scrimshaw, the folk art of whalemen. In his ground-breaking work, the director of the Kendall Whaling Museum has cataloged every known and recorded scrimshaw artist active through the early twentieth century. His persistent search has unearthed significant, often fascinating, information on these little-know artisans. This book is a valuable tool for the collector, curator, and scholar of maritime and folk art. The cloth-bound *Dictionary of Scrimshaw Artists* is now available for $55.00.

Having grown up in his father's shipyard in Essex, Massachusetts, Dana A. Story tried to carry on the trade after World War II, but by then wooden shipbuilding had become an anachronism, and his yard failed in 1948. For nearly 300 years, this Massachusetts town was renowned for its wooden ships, and Story's father – Arthur D. Story – was the most prolific builder of them all, launching 424 vessels, including the Seaport's *L.A. Dunton*, between 1872 and 1932.

In his candid reminiscences, Dana Story captures the spicy character of a coastal New England town. With fondness he brings to life the shipyard "gangs," men of long experience, proud and eccentric. In this now vanished time, the ring of the caulker's mallet sounded throughout the town and a man could shape a mast by eye using hand tools. Shipwrights continued to employ their skills well into their eighties, and a young man like Dana Story could hope to carry on an honorable New England trade.

*Growing Up in a Shipyard: Reminiscences of a Shipbuilding Life in Essex, Massachusetts*, is now available in paperback for $15.00. Both books may be purchased at the Mystic Seaport Museum Stores Bookstore. Museum members will receive a 10 percent discount on this and other titles at the Bookstore.

Books may also be ordered by calling (203) 572-5347.

# Morgan *"What is it?" Identified*

Thirteen Seaport members have correctly identified the mystery object on page 73 of the Fall 1991 *Log*. The wooden scrollwork panel is one of 18 similar panels in the *Morgan*'s after cabin and steerage. Placed at the top of the bulkheads (walls), between the deck beams, they provide some ventilation for the cabins and bunkrooms. The scrollwork pattern was copied from an early-twentieth-century photograph showing such panels on the *Morgan*.

Correct answers came from sharp-eyed members Keith T. Bender, Raymond Coleman, Phoebe S. deReynier, Cyrus Hamlin, Ted Kaye, George B. Kelley, John R. Lloyd, Jr., William H. O'Brien III, John Pencak, Peter Schmid, Ed Stillman, Mr. and Mrs. Edward J. Tabor, and Kathleen P. Troyanowski.

# *Planned Giving Program at*
# MYSTIC SEAPORT MUSEUM

The development of the Museum – the buildings, ships, and wharves, the exhibits, books, and manuscripts – gives eloquent testimony to the generosity of countless contributors. This personal and generous commitment on the part of our donors fulfills and sustains the legacy and vision handed down by the Museum's founders.

Many of the Seaport's members and friends have chosen to perpetuate the Museum's purpose by taking advantage of the Planned Giving Program.

Several types of Planned Gifts are available. They are designed to benefit the donor as well as the Seaport.

Members and friends of Mystic Seaport are urged to consider the opportunities of Planned Giving as a way of assisting the Museum in a meaningful and tax-wise manner.

For further information about how Planned Giving can help you assure the future of Mystic Seaport Museum, please call

Christopher Cox, *Director of Development,* (203) 572-0711

(Photo by Mary Anne Stets)



Your membership supports the work of Mystic Seaport, including the restoration of wooden watercraft, the perpetuation of maritime skills, the preservation of historic artifacts, and research on all aspects of American maritime history.

These activities deepen our understanding and appreciation of our collective heritage. With a keen sense of our past and where we came from, we can set a course for the future.

Members of Mystic Seaport not only have the satisfaction of supporting a great institution's important work, but can also join in educational activities for the whole family. The gates of the Seaport are open to members year round, so you can watch the progress of work in the Shipyard and Boat Shop, examine new exhibits, and board America's oldest existing wooden whaleship time and again.

We encourage you to share your Mystic Seaport experience with others. Tell your friends and family what you like about the Museum, invite them along the next time you plan to visit, or give them the gift of a year's membership, so they can enjoy learning about our seafaring past themselves.

Memberships begin at $30 for individuals and $50 for families. Please call the Membership Office at (203) 572-5339, or write Membership.

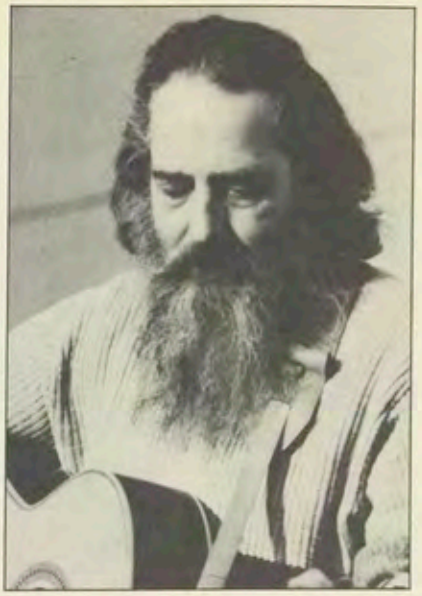
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# *Songs of the Sea, from Around the Country and Around the World*



*Perennial Sea Music Festival favorites Wickford Express return to share the songs of the sea.*



Right, *Johnny Collins – renowned bass/baritone on the English folk scene – will headline the Featured Performers Concert Saturday Evening.*

The Seaport grounds will hum with the sounds of the sea when the thirteenth annual Sea Music Festival comes to town, 12 through 14 June. This year's lineup includes such popular duos as Dick Holdstock and Allan MacLeod from San Francisco, and Daisy Nell and David Coffin from Gloucester. The festival's 85-year-young doyen of chanteydom, Stan Hugill, will return once again from Aberdovy, Wales.

Among the new faces seen at this year's gala will be Mixashawn, a Native American from Connecticut, and David Parry from the Museum of Civilization in Quebec, Canada.

Johnny Collins – a renowned bass/baritone on the English folk scene – will headline the Featured Performers Concert Saturday evening at 7:00. Sharing the spotlight with Collins will be the Menhaden Chanteymen, who will share the work songs of the North Carolina fishery. Perennial favorites Wickford Express will make the evening complete.

Concerts begin at 7 P.M. both Friday and Saturday nights. A country dance will follow the Friday evening show, and will get under way at 9 P.M. under the festival tent.

The annual Sea Music Symposium will be held as usual on Saturday morning in the Aloha Meeting House, and will feature a variety of speakers, including Mike Luster, folklorist and manager of the Menhaden Chanteymen.

Remember, the Sea Music Festival is a huge draw. Make your plans now.

*A Festival Weekend Ticket includes:*

★ Friday night "All Hands In" Concert/Dance: a musical sampler of all festival performers, coupled with a country dance with Swallowtail (no experience necessary – dances will be taught). Concert starts at 7 P.M., Dance at 9 P.M.

★ Saturday night Featured Performers Concert, 7 P.M..

★ Saturday Symposium, 9:30 A.M. in the Aloha Meeting House.

★ Admission to Mystic Seaport Museum and all Saturday and Sunday daytime festival programs.

*Please send to:*

Name _____

Address _____

City _____ State _____ Zip _____

_____ Festival Weekend Ticket for all events:
$23 per set per member ($36 for nonmember adults, $31 for nonmember children) $ _____

_____ Friday night "All Hands In" Concert/Dance:
$10 ($12 for nonmembers) $ _____

_____ Friday night Dance only (9 P.M. start):
$4 ($5 for nonmembers) $ _____

_____ Saturday night Concert only:
$8 ($10 nonmembers) $ _____

_____ Symposium only: $5 $ _____

TOTAL $ _____

*I would like to pay with:* ☐ Check to *Mystic Seaport.*
☐ MasterCard ☐ VISA *(check one)* Expiration Date: _____

Card number: _____

Please return coupon with payment to *Sea Music Festival* at the Seaport address. For more information, please call ext. 5037.

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***Members, you have only until 10 May to see* TITANIC!**