

Thames Tow Boat Co. (Thames Shipyard) (F.H. Chappell & Co.)  
Foot of Farnsworth St.  
New London, CT  
New London County  
Connecticut

HAER No. CT-1

HAER  
CONN,  
6-NEWLO.  
13 -

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

REDUCED COPIES OF MEASURED DRAWINGS

Historic American Engineering Record  
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HISTORIC AMERICAN ENGINEERING RECORD

THAMES TOW BOAT COMPANY

HAER-CT-1

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CONN,  
6-NEWLDO,  
13-

(Thames Shipyard)(F.H.Chappell & Co.)

Date: 1900-1903.

Location: Foot of Farnsworth St., New London, Connecticut.

Designed by: Burhorn & Granger.

Owner: U.S. Coast Guard.

Significance: The Thames Shipyard has been in constant use from the time of its completion in 1903 to the present (as of 1978). Originally constructed to build and repair ocean-going tugs and barges, the yard served as a submarine maintenance base in World War I and World War II. Few major alterations have been undertaken at the yard. It remains a complete, surviving example of a wooden ship-building and repair facility, and contains the oldest known steam powered marine railway in the U.S.

Historian: Alex Gratiot

Transmitted by: Monica E. Hawley, Historian, 1983.

Additional information and drawings may be found in CT-1-A and CT-1-B.

Constructed between 1901 and 1903, the Thames Tow Boat Company's marine railway plant survived into the 1970's without any major alterations to its original form. Shipyards undergo almost constant renovation to keep abreast of new market conditions and new technologies. The Thames Tow Boat Company's New London shipyard exists as a rare survivor, an example of a turn of the century marine railway plant that did not go through frequent alterations. In addition to its historical configuration and general character, the yard retains two steam powered marine railways, the oldest surviving units of this type in the U.S.

The shipyard was originally built for the Thames Tow Boat Company, a New London firm involved in hauling coal via tugboats and barges. It also played an important role in the operation of F.H. Chappell & Company, a New England coal retailing firm. Both of these firms were controlled by the interests of Frank Huntington Chappell, a direct descendant of one of New London's founding families and an important figure within the community. [1] Though he came from an influential family, it appears Chappell worked as a fifty cent a day bookkeeper and a War Department clerk prior to serving in the Union Army during the Civil War. In 1865 he returned to New London and opened a coal and wood retailing and distributing firm. [2]

Increasing industrial and domestic fuel demands made the business of supplying coal a profitable enterprise in New England, and F.H. Chappell & Company prospered until the early years of the twentieth century. [3] The Chappell Company originally received coal by rail, but New London's proximity to the ocean prompted an exploration of nautical transportation alternatives. Coal for New England could not be carried directly from the Pennsylvania and West Virginia fields because of geographical barriers. Usually coal was sent by rail to the cities of Norfolk, Virginia and Baltimore, Maryland, where it was dispatched, again by rail, to northern cities. In the late 1860's the Chappell Company bought two ships: a 124-ton steam ship named the "Setucket," and a 149-ton schooner named the "Godspeed." [4] These purchases represented an attempt by the Chappell Company to reduce the transportation costs of its coal.

In the 1870's experiments in marine transportation occurred which utilized oceangoing tugs. These tugs towed or pushed square-ended scows which had been developed for use in relatively quiet inland waters. However the Chappell Company chose to ignore the basic unseaworthiness of these vessels and put them to work on the open sea. [5] While the Chappell Company experimented with its coal transportation operation, a Norwich, Connecticut firm, known as the Thames Tow Boat Company started towing in the New London vicinity. The company was organized in December, 1865 and, though Chappell's early involvement with it is uncertain, it is known that he purchased complete control of it in 1878.

Following this transaction the Thames Tow Boat Company expanded its operations to include the transportation of coal for the Chappell Company. The company used oceangoing tugs to tow old schooners and square-rigged vessels instead of square-ended scows. Towing from one to six vessels in line, the company was the first firm to send tows south of Sandy Hook, New Jersey to Norfolk, Virginia and north around Cape Cod to Boston. Because of their early start in the business and the fortuitous location of their distributing centers, both of Chappell's companies prospered. By 1890 the towing company operated an office at No. 1 Broadway in New York City along with coal distribution centers in Newport, Rhode Island, South Norwalk, Connecticut and New Haven. [6]

In an attempt to reduce overall operating expenses the company decided to begin outfitting and repairing its own barges and tugs. The facility for this work was designed by Burhorn and Granger of New York City in 1900. It was constructed on the banks of the Thames River in New London between 1901 and 1903. [7] Originally operated as the marine railway plant of the Thames Tow Boat Company, it did not become the Thames Shipyard Incorporated until after the dissolution of the towing company in 1931. [8]

The plant was designed to both build and repair wooden ships. As shown on the HAER drawing site plan (CT-4-1), the facility stretched along the western shore of the Thames River. The barges were constructed in the northern end of the works, where the shipways ran between the blacksmith shop and the sawmill. Wooden ship-building was labor intensive and the lack of heavy machinery in the northern part of the yard was indicative of this fact. However, the steam-powered sawmill did contain a shipwright's band saw and a double disk saw with two six-foot diameter blades. [9]

The southern end of the yard was devoted to repair work. At the center of this area were two steam powered marine railways used for hauling ships from the water. As shown in the HAER drawings, the apparatus consisted of three basic elements: 1) an inclined plane leading into the water, 2) a cradle for holding the ship, and 3) a steam powered winch for hauling the cradle up the incline. [10]

The four iron strap rails of the inclined planes were laid on heavy wooden stringers and spiked to the top of closely driven wooden piles. The two rails which supported most of the ship's weight during hauling were positioned closely together near the centerline where the ship's keel rests in the cradle. The second, smaller pair of rails, supported the weight borne by the bilge blocks (used to keep the ship balanced over the keel) and the extremities of the cradle.

The cradle sat on rollers, which in turn rested on the iron strap rails. One set of stringers followed the incline of the plane, while another set on the lower two-thirds of the cradle supported a level

working platform. This working platform was held above the stringers by heavy wood trusses. The space between the two sets of stringers was filled with scrap metal or field stone which served as ballast; it prevented the cradle from floating. Beams ran perpendicular to the longitudinal stringers and supported both the keel blocks, which bore almost all the weight of the ship on the cradle, and the sliding bilge blocks, which gave lateral stability to the craft. Winches for hauling the bilge blocks in and out from under the hull were placed on docking platforms on each side of the cradle supported by upright posts.

The winches, steam engines and their boiler were positioned inside a brick headhouse at the upper end of the inclined plane. They rested on a concrete foundation supported by clusters of wooden piles. The two winches, manufactured by Robert Poole and Son Company in Baltimore, were powered by two horizontal single-cylinder steam engines built by Houston, Stamwood and Gamble of Cincinnati, Ohio. [11]

Conceptually, the operation of the railway is a simple process. Prior to hauling, the keel and bilge blocks were adjusted to fit the hull of the craft under repair. The cradle was then backed down to the end of the rails by the backing chains, and the craft was aligned over the cradle. The cradle and craft were then pulled up the rails until the vessel's keel rested on the keel blocks. The bilge blocks were then winched firmly under the vessel from the high platforms on the sides of the cradle, and then the steam powered winch hauled both the craft and the cradle up the incline and out of the water. If all went smoothly, the entire process took less than half an hour.

Aside from being less expensive, the marine railway possessed other advantages over a masonry dry-dock. These included having a well lit and well ventilated, dry working surface which was level with the ground. In a highly developed form, as at the Thames Shipyard, the marine railway was simple and relatively troublefree. The rollers, which were subject to the greatest wear, were easily and cheaply replaced, while the cradle itself had a probable life span of approximately forty years and could easily be rebuilt. After more than seventy years of operation, the engines and winches showed no major signs of wear.

The two winches were installed at slightly different times, probably to reduce the initial outlay of capital. The No. 1 Marine Railway was installed in 1901 with a cradle capacity of 2,500 tons. Workers at the yards indicated its winch was capable of hauling more than that, although how much more is unknown. [12] The No. 2 Marine Railway was installed in 1903. Its capacity was 1,000 tons and it was powered by the same engines as No. 1.

In addition to a two-story joiner shop, there was another two-story frame building for storing fine woods, with a sail loft and splicing shop on the top floor. The company's intention to enter the boat

repair and maintenance business is indicated by the boat storage shed and its lockers for valuables.

All machining and boiler work was done in a two-story frame building at the south end of the yard. The boiler works, with plate bending rolls, shears, and punching and riveting machines, occupied the northern half of the building. While the section of this building devoted to the boiler shop is uninterrupted by intermediate posts and is open to the roof trusses two stories above, the other end of the building is divided into three floors. The machine shop occupied the first floor, with power to the lathes, shapers, planers, drill presses and other machines transmitted by lineshafts from the building's steam engine. The upper floors were occupied by a pattern storage area. Patterns were made at the yard, but parts were cast elsewhere.

Shipbuilding began at the yard as soon as possible, but did not last long. One of the first ships launched was the 185-foot long "Paul Jones," which, with 1500 hp engines was reputedly the largest tug built in the United States at the time. Two coal barges were built including the 243-foot "John Forsyth." Aside from these three vessels other new construction undertaken consisted of a second tug and two lighters. The demise of shipbuilding by the company is believed to have been tied to the rise of the railroads in the early twentieth century and the consequent decline in the demand for oceangoing tow boats. [13]

As the towing industry collapsed, the Chappells accepted new and different work at the Thames site, which necessitated some changes in the physical plant. During World War I, the proximity of the Electric Boat submarine shipyard, which was financially supported by the U.S. Government, assured a great deal of work for the Chappells throughout the war. Obtaining contracts for submarine repair necessitated the installation of electric welding equipment, which was paid for by the U.S. Government. At the same time, the blacksmith, machine and boiler shops were electrified. Steam power was retained for running the No. 1 and No. 2 marine railways and the air compressors. Steam was also used for such diverse tasks as heating buildings and cleaning fuel tanks prior to welding. Strategically, the work done during the war was considered very important, and a garrison of troops was stationed in a building north of the No. 1 railway to provide security for the yard.

Following the war, the shipbuilding section of the yard closed and the repair facility expanded. The building that housed the troops was converted into offices, paint shops, and a pipe shop; the saw mill was dismantled and the large disk saw sold. The shipwright's band saw was placed in a smaller building near the blacksmith shop. The boiler that provided steam for the mill replaced the original boiler powering the marine railways, which was apparently very worn. In 1919, the electrically powered marine railway No. 3, with a cradle

capacity of 1500 tons, was installed. Its construction necessitated the moving of the joiner shop up the hill to its present location.

As their shipbuilding activities terminated following World War I, the Chappells survived by repairing large pleasure yachts. To enter this competitive market, they were careful to develop their reputation for having a "clean" repair yard (a relative judgment) and good craftsmen. Undoubtedly, the Chappell's social position gave them access to the circles they intended to serve, and helped make their yacht repair business profitable. In 1931, the last remnant of the Thames Tow Boat Company was eliminated when the yard became a separate company under the name of Thames Shipyard, Inc.

World War II brought more work from the government. The shipyard repaired submarines and converted merchant ships to war purposes. The post-war period, however, saw the slow decline of the yard. First, the large pleasure craft could no longer be afforded even by the wealthy and were replaced by much smaller boats which did not need the marine railways for repairs. While they obtained some work from ferry businesses and occasional government contracts, Lawrence Chappell decided that to make the enterprise work in the long run would require a major investment for extensive renovations as the gradual deterioration of the plant had become a major problem. The 2,500 ton cradle was damaged beyond repair in the early 1950's and the cradles of the No. 1 and No. 2 railways both required extensive rebuilding. As Lawrence Chappell was already elderly, he chose to sell the land and the structures to the Coast Guard, who had been interested in the property for some time.

Negotiations for the sale began in 1966, and at that time the yard was leased to John Wronowski, owner of a ferry boat line serving Block Island. Following the sale, the Coast Guard continued to lease the property to him on a six-month renewable basis. Naturally, such conditions have not been conducive to the maintenance of the shipyard's historic fabric, and it is clear that the economic value of the site is rapidly decreasing.

The complex may seem of recent date when compared to other types of industrial structures, but it is quite old by standards of the shipbuilding trade. Few shipyards have the versatility possessed by the Thames Shipyard, and the ability of the more specialized yards to survive changes in taste or technique is obviously limited. Mechanization vastly increased the size of individual shipbuilding operations since the days when a fair-sized clipper ship could be built in a back yard, but the technology remains relatively unchanged, and the structures, though larger, continue to be no less ephemeral than a century ago. The Thames Shipyard has weathered a great deal of change in the industry without being radically changed itself. The steam powered marine railways may serve as a standard for comparison. Only two other such units are known to exist in this country, one at the

Munroe Drydock, Inc. in Chelsea, Massachusetts, and the other at the Anderson-Christofani Marine Ways in San Francisco, California. Both of these were installed in the 1920's, making those in New London the oldest in the United States. It may be concluded that the Thames Shipyard is a very unusual physical survivor of a turn of the century shipbuilding and repair facility, a species almost extinct.

<sup>1</sup>F.H. Chappell was a direct descendant of one of the founding families of New London and related through his mother to the well-known Connecticut families of Huntington and Saltonstall. Chappell and his family were probably among the more important in local society. "Death Closes the Career of Frank Huntington Chappell," Evening Day (New London), 24 November 1919, p. 7.

<sup>2</sup>Ibid.

<sup>3</sup>On the background of the coal hauling trade, the best source is John Greenwood Brown Hutchins, The American Maritime Industries and Public Policy, (Cambridge, MA, 1941), pp. 375, 542, 544, 546. F.H. Chappell & Company changed names a number of times, depending on which, if any, of his brothers participated. The name changes are as follows:

1865-1877: F.H. & W.S. Chappell (His brother, W.S. Chappell, later became a grocer.)

1877-1887: F.H. Chappell

1887-1898: F.H. Chappell & Company

1898-1919: F.H. & A.H. Chappell & Company

Through all of these changes, however, F.H. Chappell remained in control of the firm. See "Death Closes the Career."

<sup>4</sup>"Death Closes the Career." On the capabilities of the various carriers, see Hutchins, Maritime Industries, pp. 546, 371, 545, 555, 557.

<sup>5</sup>Hutchins, Maritime Industries, pp. 564-565; "Death Closes the Career"; Henry Hall, Report on the Ship-Building Industry of the United States, (n.p., n.d., c. 1884), p. 112.

<sup>6</sup>"Death Closes the Career."

<sup>7</sup>Interview with Lawrence A. Chappell (grandson of F.H. Chappell) in HAER files, Washington, D.C.

<sup>8</sup>Thames Tow Boat MSS, in possession of Lawrence A. Chappell. It has not been possible to uncover any information on the firm of Burhorn & Granger.

<sup>9</sup>Chappell interview.

<sup>10</sup>This method of raising ships above water level apparently has a long history. It is likely that it originated with the simple reversal of the launching ways, and in that form was used for small craft through the beginning of the nineteenth century. The motivation for developing alternatives to the costly masonry dry dock came with the

rapid increases in private shipping in the late eighteenth and early nineteenth centuries. Of the many different devices developed in that period for gaining access to the bottom of a ship for the purpose of making repairs, the marine railway was the most successful. The first improvements were made in England, and are recorded in a patent of 1819 granted to Thomas Morton, a shipbuilder of Leith. "Specifications of a Patent Granted to Thomas Morton," Repertory of Arts, Manufactures and Agriculture, vol. XXXV, (London, 1819) pp. 272-276. The first example in this country was allegedly built in Salem in 1822. William Avery Baker, A Maritime History of Bath, Maine, (Bath, 1973), p. 476. By 1838 an English traveler reported seeing a number of steam powered ship ways "on the well-known principle of Morton's patent-slip, but of a very rude description." David Stevenson, Sketch of the Civil Engineering of North America, (London 1838), p. 29. Sometime around 1868 the Viaduct Works at Crumlin, England, had produced a "patent slip" capable of hauling a 2000-ton craft from the water. Henry N. Maynard, The Viaduct Works' Handbook, (London, 1868), p. 72. Development in the United States continued apace, basically through the designs of the Crandall family of marine engineers in Boston. By 1900 they were the leading designers of marine railways (as they are called in this country). Communication from the Crandall Dry Dock Engineers, Dedham, MA, HAER files, Washington, D.C. The first Crandall marine railway (or railway dry dock, as they are called now) was built in 1854. On the status of H.I. Crandall & Son at the turn of the century, see Ralph C. Davison, "The Largest Marine Railway in the World," The Railroad Gazette 33 (9 August 1901): 558; another article on the same structure is "Marine Railway at Shooter's Island," Marine Engineer 6 (August, 1901): 328. Burhorn and Granger chose Crandall Dry Dock Engineers to design the winch and engines for the Thames facility. For reasons unknown, specifications for the rest of the railway were not made by Crandall. According to Mr. L.A. Chappell, H.I. Crandall was a friend of F.H. Chappell. After seeing the two marine railways following their completion, Crandall expressed the opinion that more piling and timber had gone into the inclined planes and the cradles than was necessary. F.H. Chappell replied to the effect that he wanted them to be more permanent than the average marine railway. Chappell interview.

<sup>11</sup>Robert Poole & Son Company to Burhorn & Granger, 9 October, 1900, Thames Tow Boat Company MSS. Only in the type of chain used for hauling does the Thames Shipyard marine railway differ from the standard designs of Crandall. Instead of using open link chain running over sprockets, stud link chain was wound with "wildcat" pockets. Henry B. Newhall to Burhorn & Granger, n.d., Thames Tow Boat Company MSS.

<sup>12</sup>Chappell interview

<sup>13</sup>Chappell interview. Almost all the information concerning the operation of the shipyard was derived from this interview. The Chappells

disposed of most of their barges and tow boats during the second decade of the twentieth century. They sold the "Paul Jones" in 1916 while most of the barges were left to rot upstream from the yard.

ADDENDUM TO:  
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FIELD RECORDS

HISTORIC AMERICAN ENGINEERING RECORD  
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1849 C Street NW  
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