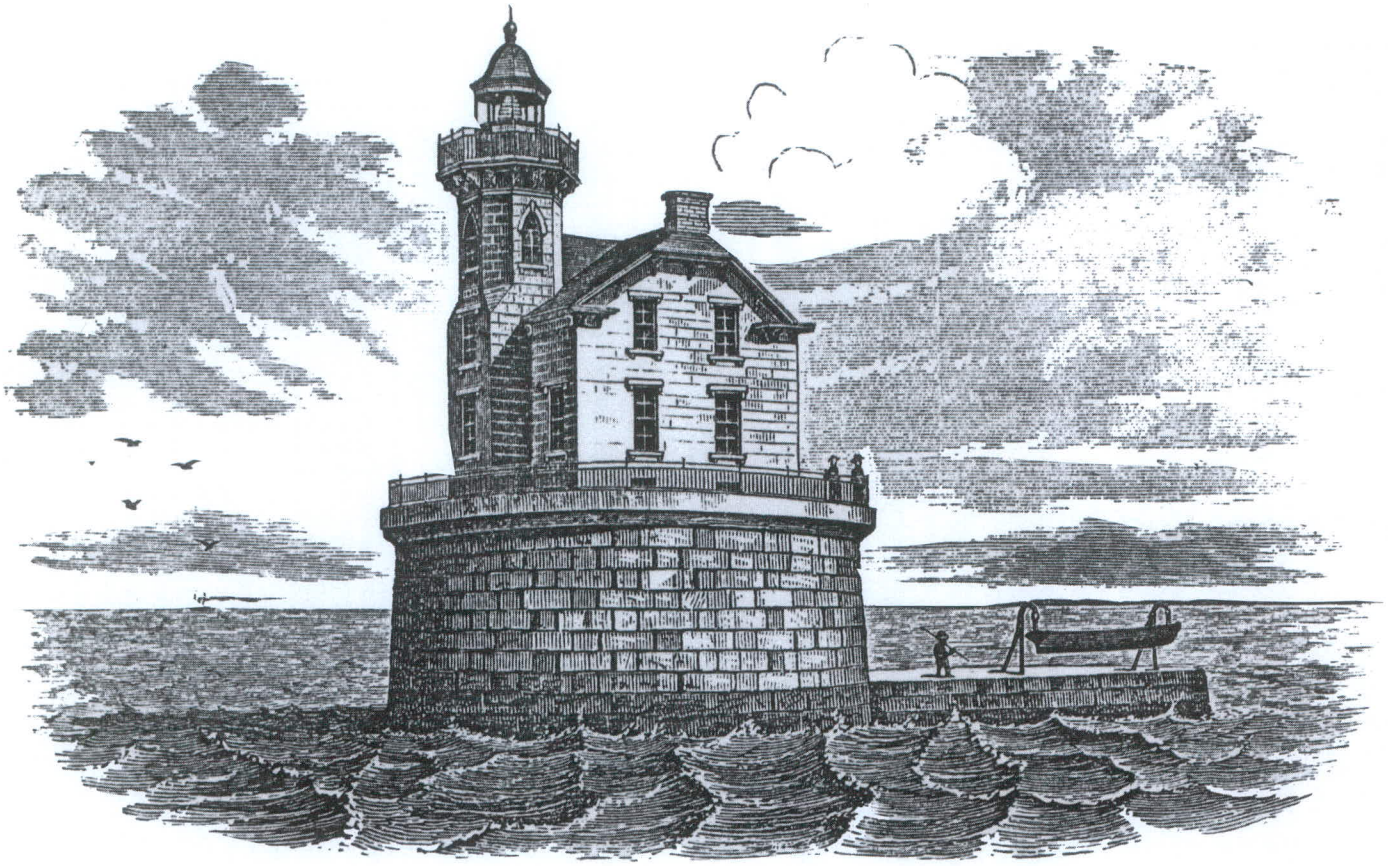


A Lighthouse For Race Rock

By Wayne C. Wheeler

Thousands of years ago Long Island Sound was a large oval lake, carved out by the last Ice Age. At some point in time, the easternmost wall of this large lake eroded or otherwise collapsed, allowing the ocean to ebb and flow throughout the sound. The wall from Long Island to Connecticut, running northeast, consists of Plum, Little Gull and Fisher Islands as well as Valient Rock and Race Rock reefs. The remainder of this "wall" is below water, mostly 40 to 83 feet below low water. However, there is a comparatively narrow opening in the undersea wall southwest of Race Rock which is around 200 feet deep. It is through this two mile gap that the water of Long Island Sound passes during each tide change. At the height of the ebb tide the water passes Race Rock at speeds up to 4 knots or 4 1/2 miles per hour. A navigator, especially in the days of sail, who made a wrong calculation when passing through the Race, found his vessel swept onto Race Rocks or Valient Rock to the southwest, usually with disastrous results.

The first record of a vessel coming to grief on Race Rocks was the English warship *John and Lucy* which went hard aground there in 1671, with the loss of several lives.

In June of 1712, Connecticut's governor Gurdon Saltonstall ordered the erection of a beacon on the west coast of Fisher Island; perhaps to warn ships of Race Rock or perhaps to keep watch for the French Privateers who were preying on unarmed merchantmen in that era and area.

The Lighthouse Service constructed a lighthouse on Little Gull Island in 1805 to mark the southern side of the gate (it was rebuilt in 1867) but the northern side, Race Rock, remained unmarked with a lighthouse for the next 73 years.

In 1847 Congress appropriated $400 for placing buoys near Race Rock and on the Watch Hill Reef. They didn't last long. In 1853 $1,000 was appropriated to construct an iron spindle on Race Rock; it was swept away within a year by an ice floe.

The 1855 report of the Lighthouse Board states, "Beacon or Spindle on Race Rock – An examination was made of this position during the last summer, with the view of ascertaining its character and the proper plan to be adopted in the erection of a beacon thereon.

"This rock appears to be a boulder, located upon a rocky ledge, about 200 feet average diameter, within the depth of two and a half fathoms [15 feet] at low water. The depth over the highest part of the rock is five feet at low tide, falling off rapidly on each side to six and seven feet, the accessible solid part of it being about 7 by 10 feet.

"It is located about three-quarters of a mile WSW from Race Point, and between it and the shore is a navigable channel a

quarter of a mile wide. It is understood to have had two spindles erected on it within the last fifty years, both of which have been carried away; but they were slender affairs, of only three inches diameter, inserted eighteen inches into the rock. There is not sufficient space on it for a structure of much lateral magnitude, and the examination indicates that a beacon similar in respects to the one now erecting at Plum Gut would be suitable here, formed of a central shaft of forged iron, seven inches diameter, stepped four feet in the rock, with iron stays around it, secured into the rock with the patent lewis. The shaft to carry a globular or cylindrical cage, of conspicuous size, elevated twenty feet above high water.

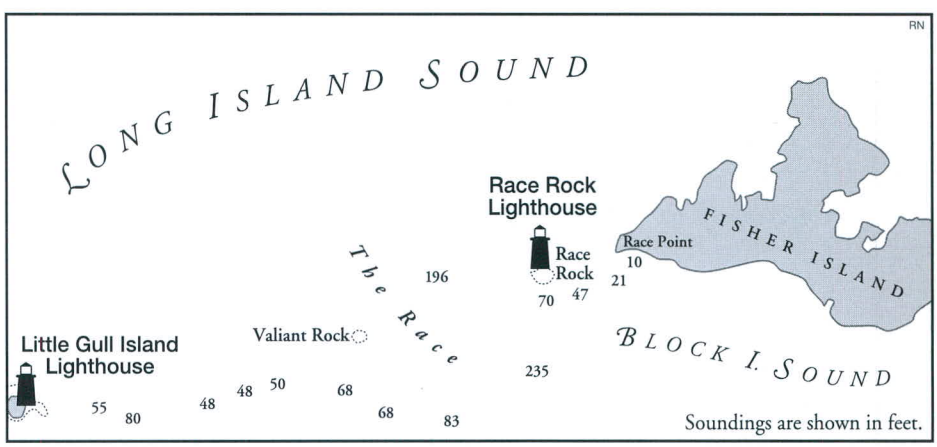
"There can be no doubt that, with the simplest form of structure which may be adopted for this locality, a whole season will be required to secure it on the rock. Nothing having been effected in this respect during the present season, it remains to make arrangements for an early commencement upon the work of the opening of the next [season]."

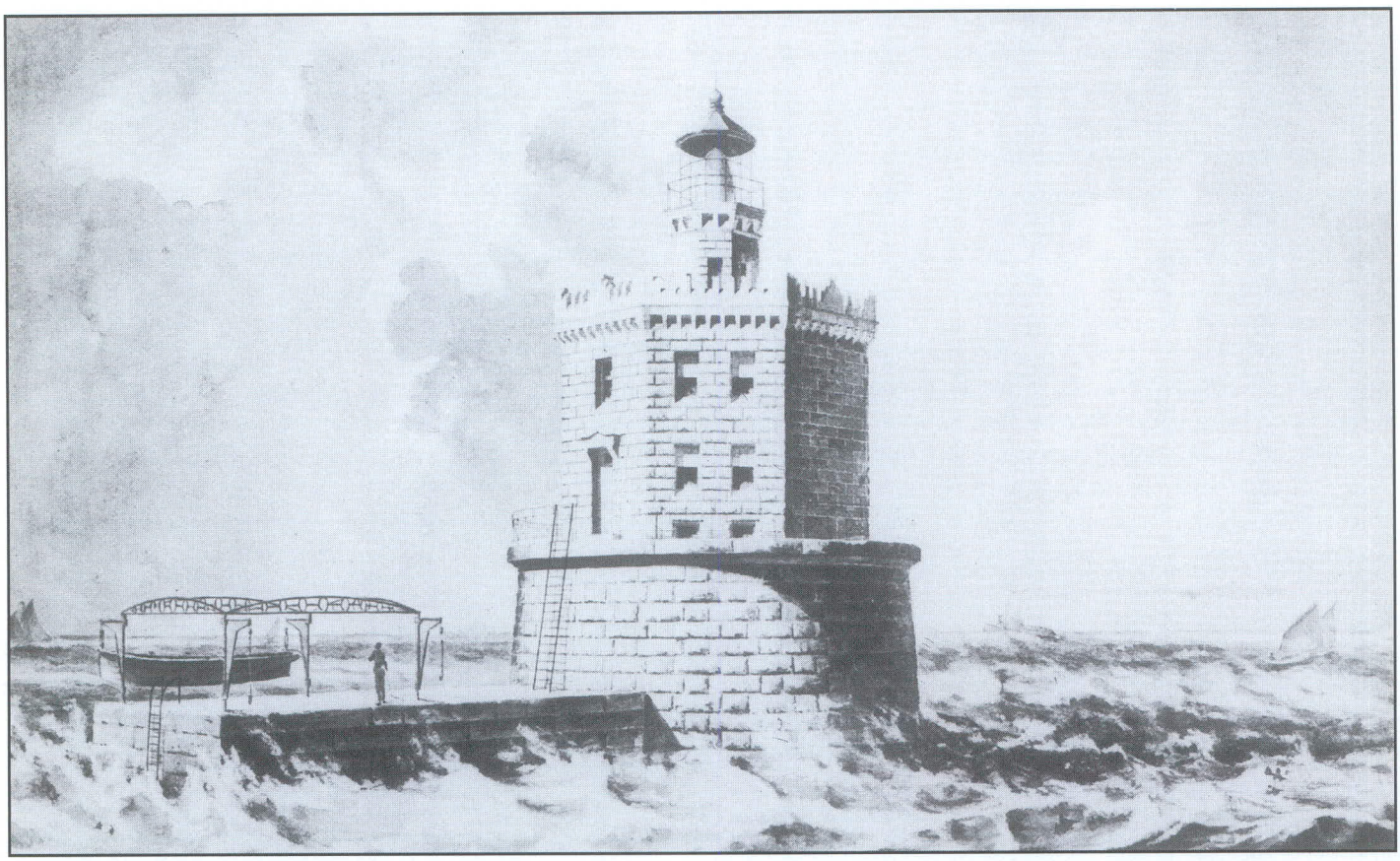
We have no knowledge that the spindle was ever erected, but around the time of the Civil War the Lighthouse Service tried buoys again, large wooden spars, and again they met with little success.

In 1868 Congress finally appropriated $90,000 to construct a beacon on Race Rock (but not quarters for the keepers), which at the time was thought to be one large boulder. The Report to Congress from the Lighthouse Board in that year stated, " The subject of the construction of a beacon to mark this danger has been under consideration by the Board for some years, and by the Act approved July 28, 1866, the sum of $90,000 was appropriated by Congress for the purpose. Detailed plans for the construction of a tower of granite have been adopted by the board. It was proposed to lay the foundation on bedrock, twelve feet below low water, by means of a coffer dam. This proposition was based upon soundings made at different times, which indicated that the area required for the proposed structure around the boulder known as Race Rock was very flat, there being a slight inclination outwards from the boulder, this deviation from a horizontal plane not being at any point more than twelve inches. With difficulty these soundings were obtained, by means of an iron rod, from a vessel's boat, the current running at a very rapid rate." However, the Lighthouse Board didn't trust the soundings and devised a more accurate method of determining the bottom contour. What they found was, " . . . This apparatus disclosed the fact that the former soundings were insufficient and unreliable for the purpose of a work requiring so much accuracy, and that the area required for the base of the proposed tower was made up of an aggregation of boulders of smaller size than Race Rock itself, and of such number and size as to make the use of a coffer dam impracticable. The project which contemplated the use of one [ed. coffer dam] has therefore been abandoned. New plans are now in course of preparation, and it is hoped ere long that something satisfactory may be designed, when the work will immediately commenced."

The annual report of 1869 stated, " . . . This very serious obstruction to navigation in Long Island and Fisher's Island Sounds was supposed at the time that this appropriation was made to be a large boulder, over which it was proposed to erect a tower for the light, and to erect a dwelling for the keepers on the south end of Fisher's [Island] distant about 3/4 of a mile from the rock. A careful and minute survey of this locality having developed the fact that Race Rock is not a single boulder of great size, a different plan becomes necessary. It is proposed, if Congress sees fit to make the requisite additional appropriation, to construct a projecting pier of granite and to erect thereon a keeper's dwelling two stories high and octagonal in plan, with a circular stairway in the center, to be carried a sufficient height above the roof of the dwelling to support the lantern and illuminating apparatus; the whole to be of granite, and fire proof. A powerful fog signal will be attached. The advantages of this plan over the original one, even if the foundation was not found to be different from what it was supposed to be, will be apparent. The projecting pier will be of an increased diameter and increased stability, and consequently more effectively resist the force of the storm waves and pressure of packed floating ice in winter. The attendants upon the light and fog signal will be always at hand to attend to their duties, which could not be insured if they were compelled to live on the island nearly a mile distant, particularly in the winter, when the ice is brought by the tides in immense packs and with great force through this comparatively narrow channel for passing vessels. The estimated cost of this important aid to navigation on the present plan, as detailed in general terms, would be $200,000, of which $90,000 are already available, leaving $110,000 to be provided by Congress. The amount now available is, it is believed, sufficient to carry the work above water, and it is proposed to commence the foundation next spring."

The amount estimated was an enormous amount of money in that era. Congress not only didn't appropriate the additional amount requested, but by Act in 1870 returned $80,000 of the original appropriation to the treasury. The Board wrote in their 1870 Report, "An appropriation of $150,000 is recommended for continuing this important work and included in the annual estimates." This amount was approved by Congress on March 3, 1871 and the contract was awarded to F. Hopkington Smith of New York.





The original design for the Race Rock Lighthouse. An illustration in the 1872 Report to Congress from the Lighthouse Board.

Mr. Smith (1838 - 1915) was a well known and highly regarded structural engineer, architect, artist and writer with an uncanny ability to improvise on the spot. He was born into a high society Baltimore family, which unfortunately suffered financial reversals when he was still a young man. He was forced to begin his career as a shipping clerk and eventually became assistant superintendent of his brother's iron foundry. After witnessing the brutal treatment of a fellow employee, he quit and established his own engineering firm with partner James Symington. Between them they managed a prosperous engineering firm for thirty years, specializing in work for the federal government, and in particular, marine engineering. Their work included a breakwater at Block Island, RI, a sea wall at Tompkinsville, Staten Island, NY (General Depot of the Lighthouse Service), and even the foundation for the Statue of Liberty. But Smith always regarded the construction of the Race Rock Lighthouse as his greatest achievement. In 1898 he wrote a fictional novel, "Caleb West, Master Diver," which was based on the construction of the Race Rock Lighthouse.

To assist him with the Race Rock project, Smith hired Thomas Scott as the foreman. Scott's long experience as a diver and familiarity with Race Rock uniquely qualified him for the job. Both men quickly reviewed the survey of the area and were convinced that they should construct a turtle shaped artificial island to support the proposed lighthouse. Apparently, their bid was initially only for the foundation work as the 1872 report to Congress from the Lighthouse Board states, "The proposals for the construction of the foundation and pier of this structure were so excessive in rates, and so much above the amount of the appropriation on hand, that no more than the landing and the enrockment [a mass of large stones thrown into the water to form the base of a pier] of the foundation, and two courses of the pier, could be contracted for. This embraces 8,000 tons of dimention-stone, weighing from eight to ten tons each, for the enrockment alone. The landing has been commenced and good progress made upon it.

The rip-rap foundation consisting of 10,000 tons of rip-rap stones, irregular in shape, and weighing from three to five tons on average, was completed on November last, and remained without displacement during the storms of winter and spring, and no appearance of settling is manifest. An appropriation for continuing the construction of the pier and erecting the dwelling is required, and the sum of $75,000 is estimated. Basing the estimate on the proposal of lowest bidder for the work now under contract." This estimate would later prove too optimistic.

Back in 1870 the contractor had begun work with a steady stream of sloops and barges, each bearing rocks weighing three to seven tons. Once on site, the rocks were heaved over the side and they slowly began to form a mass, which finally reached the required height above the surface in the early months of 1871. The workmen immediately began blasting off the jagged surface to provide a level foundation for the base.

It was a tricky and dangerous operation. Before each blast was made the men had to get in boats and row to a safe distance from the site. However, during strong ebb and flood tides the currents were so swift that they had trouble rowing back after the blast. Not long after this phase of the work began, Scott's working boat, the *Wallace* (containing

200 pounds of gun powder) blew up and was destroyed, killing some of the men and injuring others, including Scott.

The foundation work was completed in 1872, and the Lighthouse Board reported, "The work was discontinued for the remainder of the season early in the month of September [1872], when adverse weather was experienced." However, the contractor reported that he didn't think the foundation was stable enough to support the planned structure. He had spent almost three years pouring 10,000 tons of stone into the water and now thought it not sufficient. He had been ready to begin laying the first course of foundation stone when the crew noticed that some of the outer rocks had slipped down the slope. To the experienced Captain Smith this was an indication that the foundation was not stable. Smith donned diving gear and personally surveyed the bottom, which confirmed his worst fears. However, the government was insistent on gambling on the stability of the work already accomplished, in lieu of undoing most of the work already accomplished. After months of haggling, the Lighthouse Board engineers were finally convinced that they had no other choice but to acquiesce to Smith's plan. What Scott and Smith proposed was to remove 1,000 tons of previously placed rock from the center of the pile or island and use it to construct a retaining dike around the submerged edge of the island. Each submerged block had to be secured with a sling by divers working on slippery footing, in turbulent currents. Then the blocks had to be carefully lifted and accurately placed on the outside of the island. To accomplish this task, a system of four derricks were equidistantly placed around the extreme edge of the turtle-back shaped island. Their tops were connected by heavy wire rope and the outboard sides secured with heavy chains to withstand the weight of the extracted stones. This effort required months of dangerous and exacting toil, as hundreds of stones weighing from five to ten tons each were hand secured by divers. These stones were laboriously inched out of their watery beds and precisely placed in the new positions.

The effort caused several close scrapes, including collapses of two derricks and a harrowing encounter with a summer storm. The work continued until a space was created to allow for the installation of a steel band 69 feet in diameter.

In the 1873 Report the Board stated, "The plan was modified with the view of a concrete foundation in place of the riprap; and work under the new contract was commenced early in the month of May, since which the contractor has made considerable progress, having completed the laying of the facing or dimention stone. The preparations for the laying of the concrete foundation are progressing, derricks are being erected, breakwater of riprap laid, etc."

Working on Race Rock in 1873. The work barge is in the foreground. Surveyors can be seen on the edge of the foundation at left. The poles are various cranes mentioned in the article. National Archives photo.

In 1874 the Board reported, "The work at this station continued until . . . September 1873 when all active operation ceased. The contractor reported the foundation so far completed as to be ready for the placing of the iron band to be filled with concrete, and at the same time submitted a statement of the amount of riprap stone removed from the center of the island . . . The necessary removal of remaining stone that interfered with the placing of the iron band, 69 feet in diameter, has been completed, and the band placed. Material of the various kinds for the manufacture of the concrete in large quanties on the island has been assembled, and tests have been made of all to insure a compliance with the terms of contract. The contractor has erected a shanty on the work for the accommodation of his workmen, etc. and it is hoped that he may now push his work forward with more energy and means and equipments than he has heretofore employed."

Report of the Lighthouse Board, 1875 – "The operations during the year have consisted in completing the concrete foundation for the pier, and the laying of cut-stone courses of the pier and landing wharf has been commenced. The contractor has not pushed this work during the year with the energy which its importance demands."

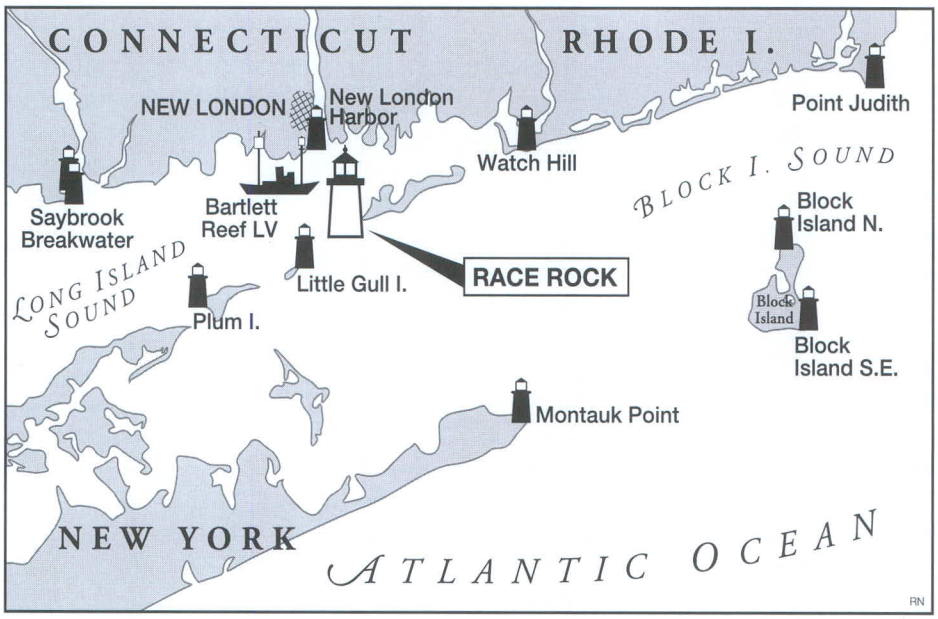
In 1876 the Board reported – "At the close of the working season of 1875, the end of November, the work at this station had advanced to the completion of the second course of the pier and landing-wharf, which was the amount of work limited by the contract of February 1872. Operations were resumed in the later part of May of the present year, and, at the close of the month of June, the stones of the third course of the pier and landing-wharf were laid and partly grouted, but not doweled . . . "

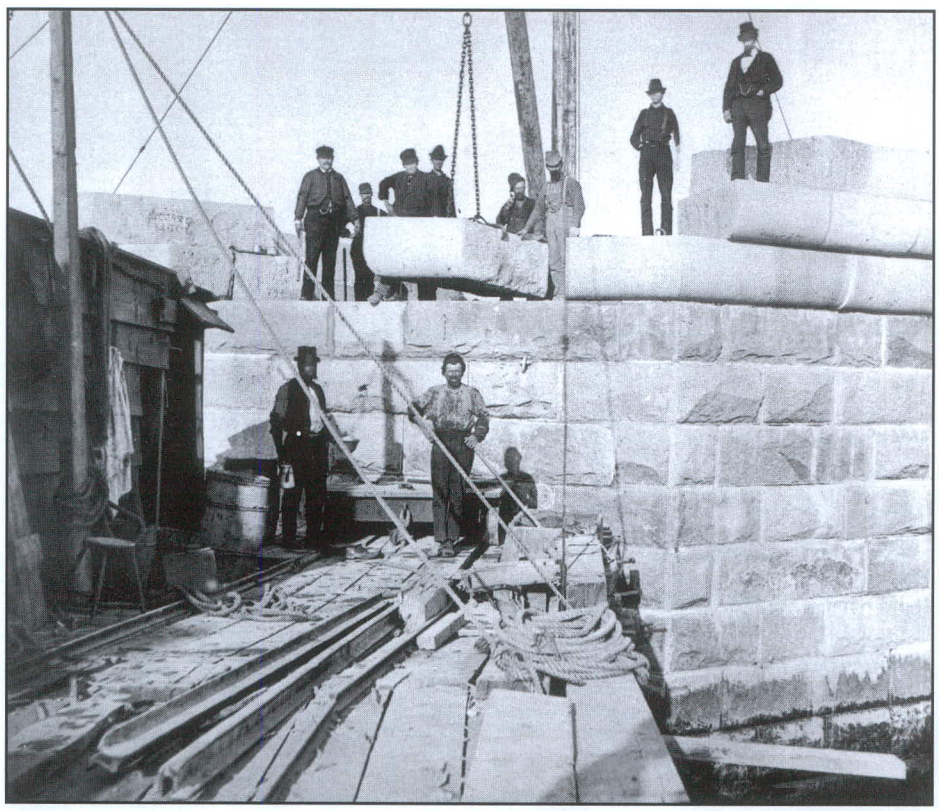
During that year, when the eighth course was completed, a violent storm struck and threatened to sweep away the men, tools and temporary shelter. The workmen lashed everything down the best they could and braved the storm, which finally subsided the next morning. However, it was closely followed by several more storms, two of which

badly damaged the workmen's quarters and another in November which carried away the crib at the end of the landing wharf.

In 1877, the work began in May which required repairing the damage done by the storms of the previous year. Work was further delayed by the failure of the supply contractor to furnish enough cement to keep up with the masonry work. Toward the end of the year, the pier had been completed and work began on the lighthouse.

The Lighthouse Board's report for 1878 stated, "The work at this station continued to progress slowly and unsatisfactorily until the completion of the pier in December, 1877. The pier was finished to the thirteenth course in July, and the work then stopped, as the contractor had not procured the stones of the fourteenth course. This neglect delayed the work throughout August and September. In October a few of the coping stones were laid when the work again ceased, and nothing further was done until December, when the pier was completed. Plans for the dwelling and tower having been approved in March, a preliminary examination was made of the station and measures were taken for erecting a temporary pier for landing material, and a building for quarters of the working party and storage of material. During April the timbers were procured, framed into cribs at the depot, which were taken to the station by the tender *Mistletoe*, when one of them was sunk in place and filled with stone. The materials for the workmen's quarters were also taken to the station and put together. In this month the cut-stone for the facing of the dwelling and tower was delivered to the lighthouse wharf at New London. The work was unavoidably delayed during May by the necessity of using the *Mistletoe* at Sandy Hook. The *Mistletoe*, with all the necessary materials and working party on board, left the depot on June 11 for Race Rock, when operations were at once resumed and were continued to the end of June. The materials used are conveyed to the pier by means of an inclined railway, about 75 feet long, extending from the temporary landing crib to the pier. The cellar walls were, at the end of June, completed up to the top of the pier, except on the tower side; the partition walls were finished, the window and door frames were underway at the depot, and the iron work was more than half finished. Good progress has been made since the





Lifting a foundation stone from the work barge to the foundation, 1873. National Archives photo.

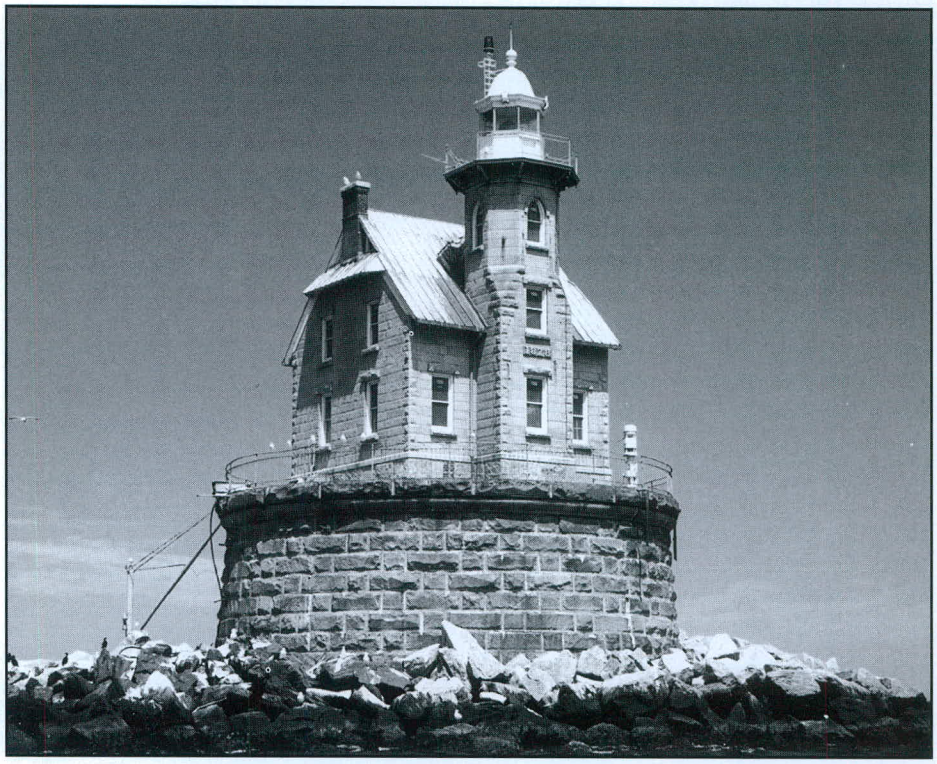
commencement of the superstructure, and unless some unforeseen accident or unfavorable weather occurs, there is reason to believe that the light-house will be completed by the commencement of winter."

1879 Report — "This station was finally completed, and the light shone from the tower for the first time on January 1, 1879. The work in all respects has been very thoroughly done."

The final cost of the station was $275,000, far over initial estimates. Originally the 4th order lens produced an alternating red and white light every 30 seconds, but the period was increased to every 10 seconds in 1883. The fog signal was a bell, struck by machinery. It proved inadequate and was probably discontinued shortly after the station went into operation because in 1895 the Board stated in their Annual Report, "This light-station, which was built at large expense, is of great use to vessels going in and out of Long Island Sound. It would be of much greater use if it had a fog signal. There is deep water close to this rock. The current running by it is so swift that the channel is called 'The Race.' Hence the light-station, when it is hidden by fog, day or night, is a source of great anxiety to navigators, if not a positive danger. A fog signal could be established here at a cost not to exceed $3,000, and it is recommended that an appropriation of this amount be made therefor."

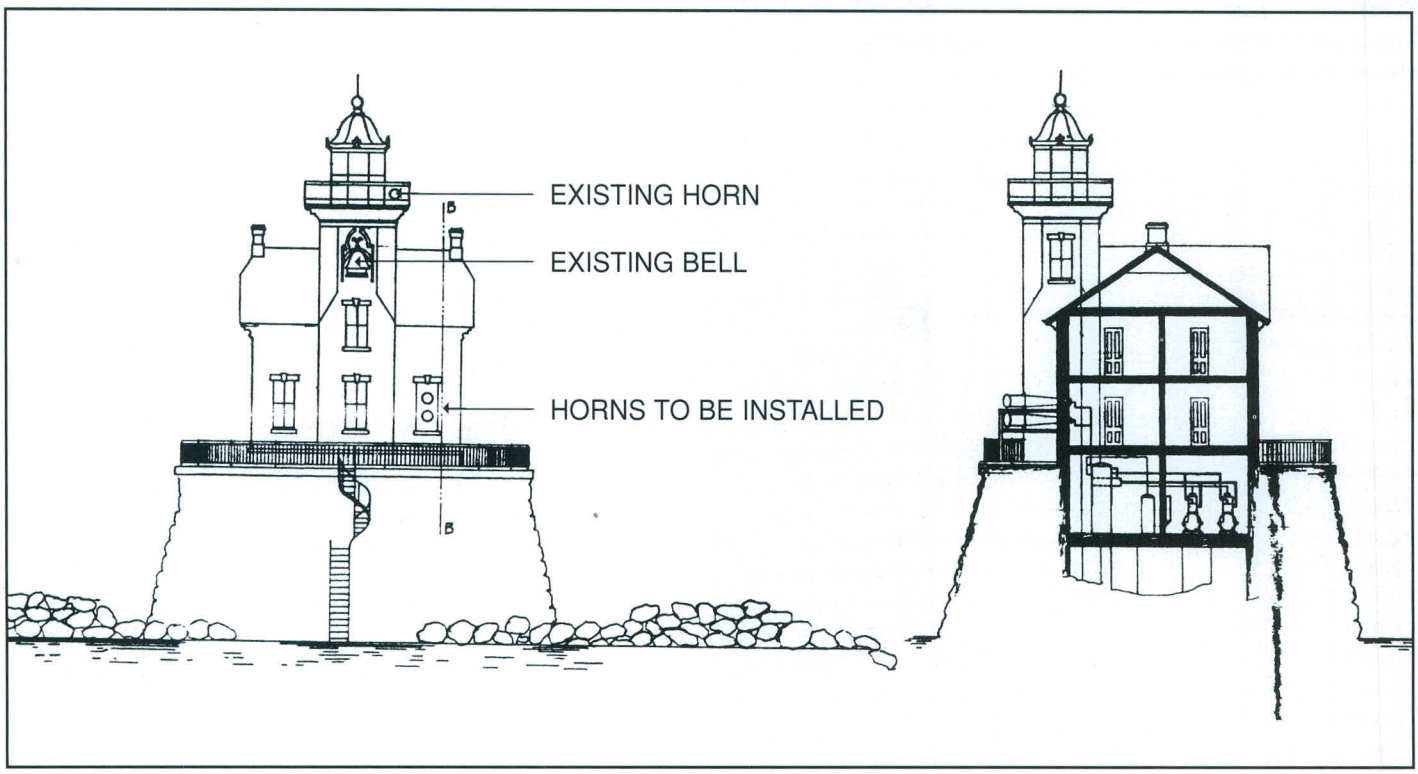
A second class siren was established at the station in 1896.

Race Rock was automated and the personnel removed in November 1978, but it continues to assist the mariner to navigate the swift currents of 'The Race,' off Fisher's Island, Long Island Sound.



Above — Race Rock Lighthouse in 1990. A standby optic can be seen on the dome of the lantern and an electronic fog signal at the right side of the foundation. Elliot Tayman photo.

Below — The 1896 drawing showing the location of the installation of the "new" siren fog signal, as well as bell fog signal and an earlier horn.



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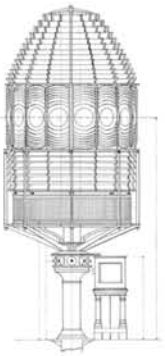

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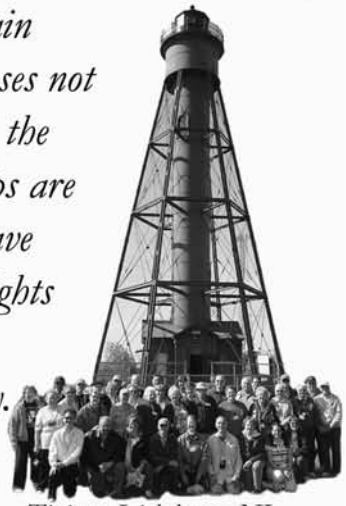

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