THE KEEPER'S LOG

SUMMER 2000 VOL. XVI NO. 4

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Fire Island Lighthouse

by Wayne Wheeler

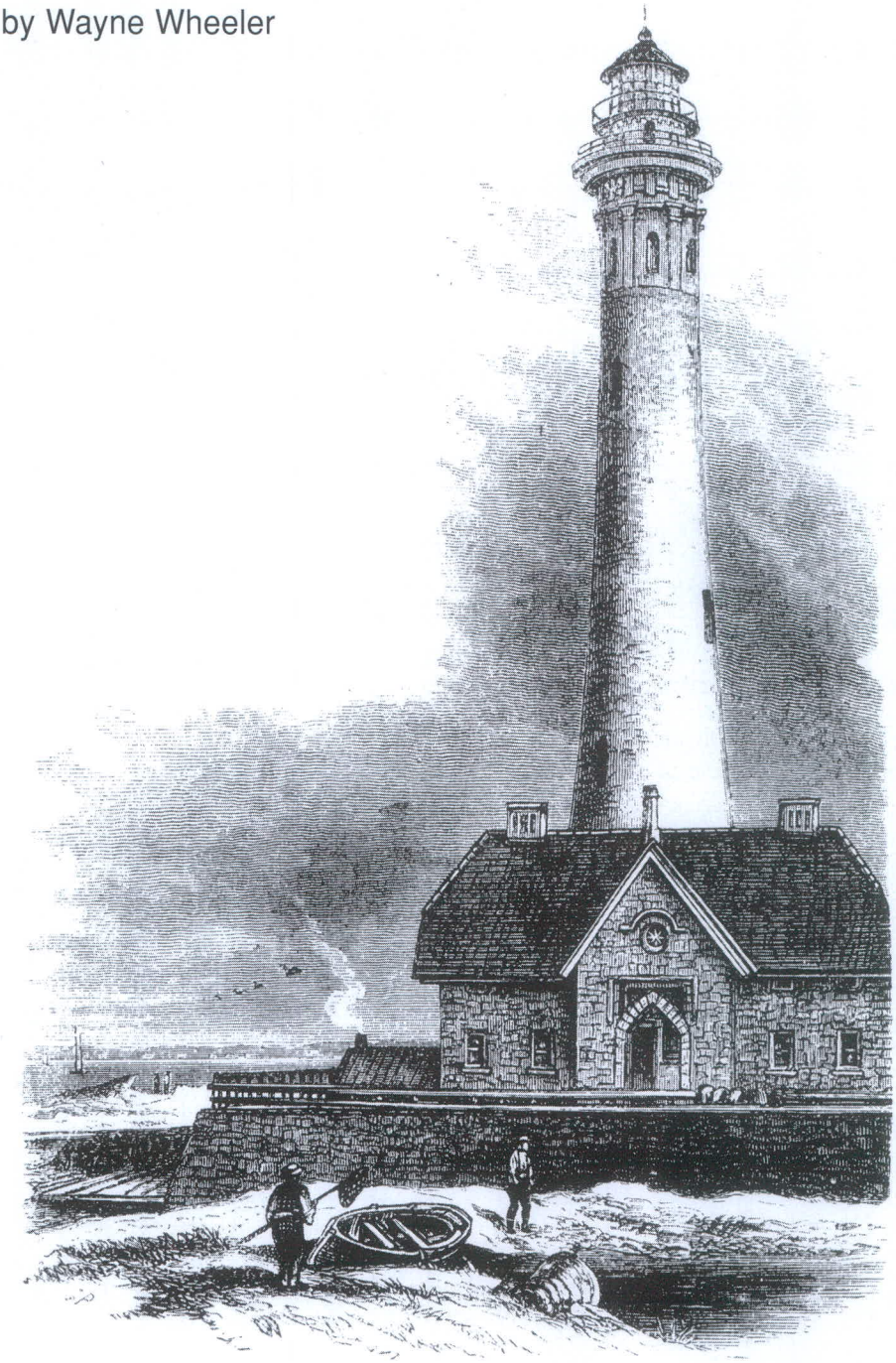
Fire Island is a unique barrier island with a varied ecosystem. The charms of the island are worth mentioning to set the stage for the story of the lighthouse.

Lying off the southern coast of Long Island, Fire Island stretches 32 miles from Democrat Point at the west end to the Moriches Inlet on the east end.

The Fire Island National Seashore manages the barrier beach plus a few small islands behind it and the boundary waters. This barrier island stands defiantly facing the Atlantic Ocean while protecting the waters of the Great South Bay, as well as the mainland of Long Island. The island is made up of seventeen separate communities, primarily for summer recreation, the rest of the island supports diverse natural habitats. The National Park Service protects the natural life, whether a hidden hardwood grove, or long-legged herons stalking the shoreline.

There are parts of the island that few visitors ever see. Wild geese and brant fly over the salt marsh and occasionally a startled deer dashes off through a thicket. Yet, the national seashore is almost within sight of New York City's skyscrapers.

In 1980 a seven-mile stretch of Fire Island, from Smith Point West to Watch Hill (1,400 acres) was designated by Congress as wilderness, the only area in New York State so honored. With the exception of the wheelchair-accessible boardwalk trail at Smith Point West, the wilderness is reachable only by foot. If you're willing to invest the time and energy necessary to hike the area, the wilderness will reward you with a view of the island as it must have looked when the first Europeans saw it for the first time 400 years ago.



Throughout the year the park presents different faces at different seasons. In winter the beach is deserted and the ocean booms as it assaults the land. The shades become muted to grays and browns, the deep greens of holly and pine form mosaics over the landscape. Spring is a petulant season that brings greening of the land and an ocean which varies daily between generosity and greed. Storm waves attack the beach one day, and nurture it the next. Rafts of migratory waterfowl bob on the protected waters of the Great South Bay.

Later, the red garnet sands of winter are replaced by lighter shades, and summer has returned. The beach is again populated by visitors who come to enjoy the golden sand and cool water. In fall, the visitors are replaced by numerous species of migrating birds and the island is fragrant with the delicate scent of bayberry and pine. The weather grows colder, and summertime residents reluctantly close up their homes.

Fire Island National Seashore is a jewel of many facets; there is always something new to discover or a new way to look at something familiar.

Fire Island Lighthouse

The toe of a spit of land at the western end of Fire Island was certainly a logical place for a lighthouse. It was situated midway between the Montauk Point Lighthouse, at the easternmost point of Long Island, and the Sandy Hook Lighthouse in New Jersey, which guards the entrance to New York Harbor. Vessels arriving from Europe sail across the Atlantic on what is known as the Great Circle Route. As vessels approach the North American continent, enroute New York City, they navigate through an area known as the New South Shoals, off Nantucket Island, then pick up Montauk Point light and, eventually, the Sandy Hook beacon. However, it wasn't too long after Montauk Point was established in 1797 that mariners voiced concern about a lack of navigational aids between Montauk Point and the entrance to New York, a distance of some 120 miles.

Until the Erie Canal opened up the Great Lakes in 1824, Boston and Philadelphia were the major ports of our new nation. The Erie Canal grew New York City from the inside out as all manner of goods departed the Lakes for foreign shores through New York City. As more and more vessel traffic plied the waters along the south side of Long Island, more and more vessels came to grief on the low lee shore, a barrier reef known as Fire Island. Clearly more aids were required and Congress acted.

An Act of March 3, 1825 authorized "For a light-house near Fire Island Inlet, in the State of New York a sum not exceeding $10,000."

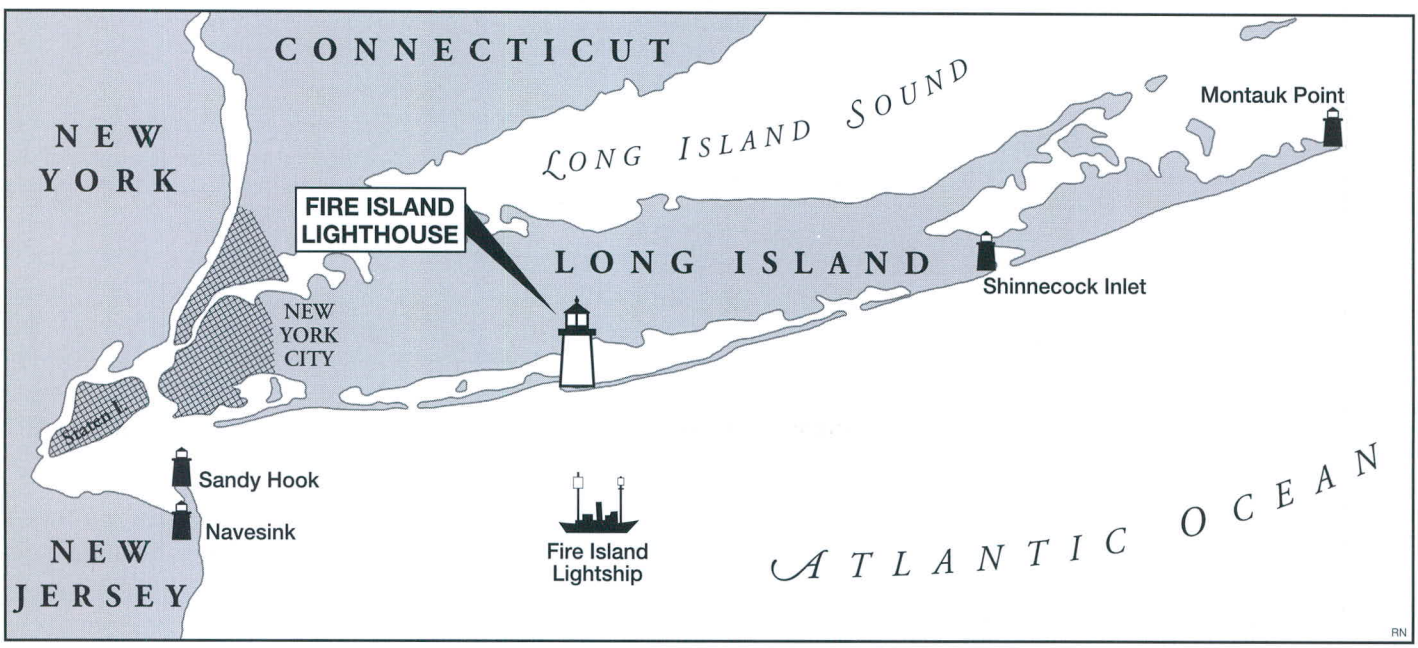
A lighthouse at Fire Island would serve two purposes. It would help prevent New York bound, transatlantic vessels from running aground on the low lying beaches of Long Island and the shifting off-shore barrier reefs, and it would assist smaller vessels as they navigate into the Great South Bay.

In a letter written on June 15, 1825, Jonathan Thompson, the Superintendent of Lighthouses for that area, described the purchase of property on the east side of Fire Island Inlet.

"Because I was unable to obtain a title to the land by purchase as there was doubt who were, if any person was the owner, therefore, I made application to the state legislature for a cession of the jurisdiction over it and for Commissioners to approve the value of the land at fifty dollars, which I have paid and received from the United States a certified copy of the Act and a duplicate of the appraisement, which has been recorded, all of which makes a good and sufficient title to the land."

A map of the property acquired from a 1925 survey shows it to be 2,112 feet from the ocean to the bay and about 1,320 feet east to west, or about 64 acres.

Superintendent Thompson notified contractors that, "... proposals to build a light-house and dwelling will be received



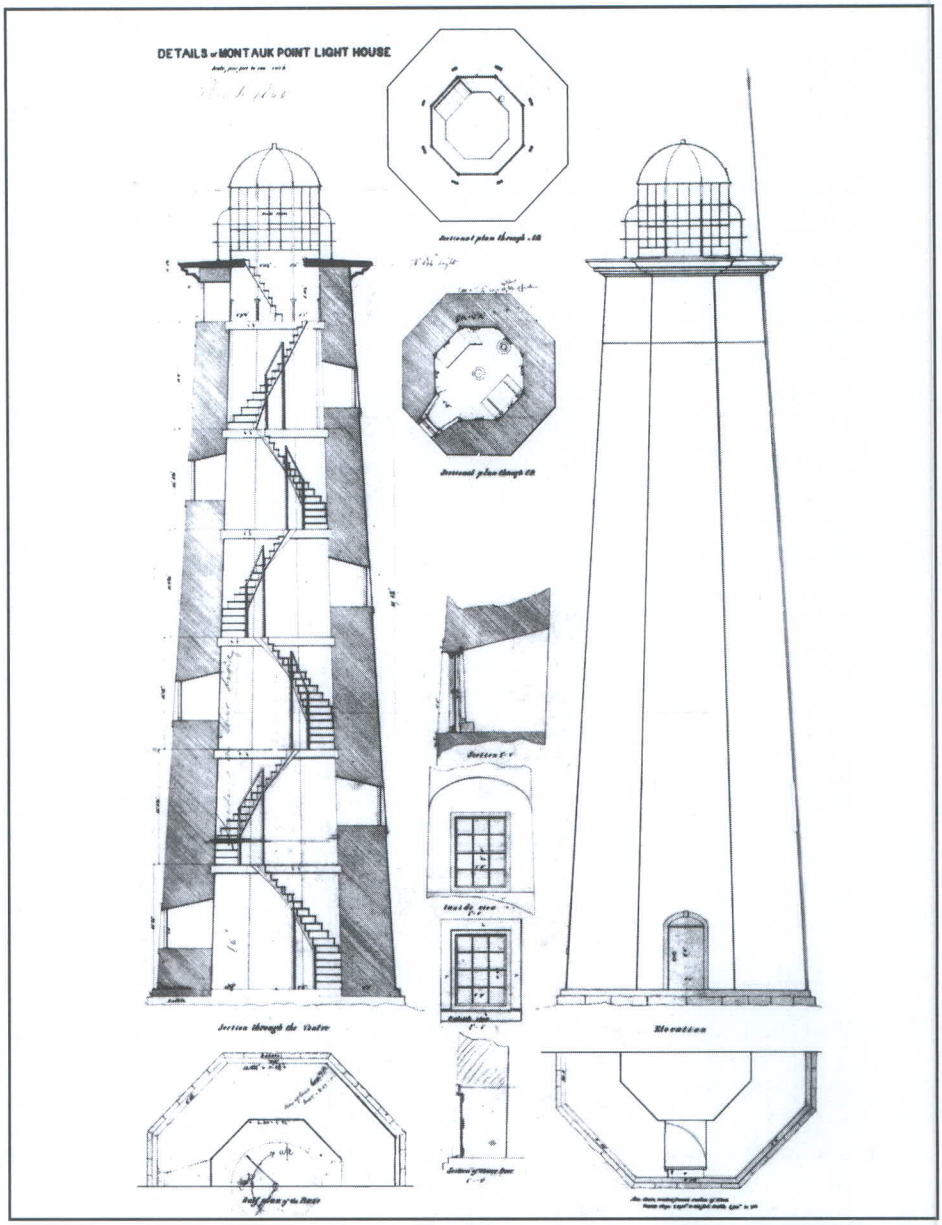
until July 15 next, of the following dimensions, materials and description. The Light-House is to be an Octagonal Pyramid to be built of Connecticut River blue split stone and the best quick lime and mortar, the foundation wall to be seven feet thick from the base to the water table, and tapered to two feet six inches at the top of the pyramid." This octagonal, tapered tower design was used for many of the colonial and early American lighthouses: Sandy Hook, Montauk Point, New London, etc..

The height of the tower was 74 feet above the water table to the base of the lantern, 32 feet in diameter at the base and 16 feet at the top of the tower. The foundation was comprised of layers of square timbers, 34 feet long, placed transversely from six feet below the water table to three feet above the surface. The specifications also called for, "... a strong and substantial paneled door, three feet wide and lock thereon, hung upon strong hinges, well secure in the wall... six windows in the tower, three of which on the west, and three on the east side, with durable window frames and sashes, the sashes to be glazed with glass 10 by 12 inches..." The top of the tower (before the lantern was added) was arched over, leaving a scuttle (2' 3" by 3' 3") on one side for access.

The lantern was a wrought iron octagon with 2 1/2" square posts run six feet down into the stonework. The lantern was twelve feet in diameter and, like most lanterns of the day, had small 10" by 12" panes of glass. The dome of the lantern was copper. The vent on the top of the dome was unusually large for the day. It is described as "...made of copper in the form of a ball, sufficient to contain 40 gallons, and large enough to secure the funnel against the rain; the ventilator to be turned by a large vane, so the hole for venting the smoke may always be to leeward."

In addition to the tower, the contract called for a four-foot diameter well, "... of sufficient depth to provide good water, at a convenient distance from the house and furnished with a... windlass, an iron chain, and a strong bucket and a suitable house over the well. The Light House and Dwelling to be completed by the first day of the December next."

Separate proposals for fitting up the lantern room were issued a month after it



The original Fire Island tower was almost identical to the original Montauk Point tower shown in this drawing.

was constructed and called for "...eighteen patent lamps and plated reflectors, highly burnished, and all the necessary apparatus to make the same complete; the lights to be fitted up on the most approved revolving plan; eight double tin butts, with sheet iron covers of eighty gallon capacity each for keeping the oil."

Although the exact date of completion is not known, the light went into operation in the fall of 1826. Of the $10,000 appropriated for construction, the final cost was $9,999.65. Records show that the 35 cents were carried over in "surplus funds."

Early Light Lists state that the Fire Island Lighthouse could be seen 27 miles. With the light at 80 feet above sea level, the mariner would have to be at a height of 225 feet to be able to see the light over the horizon. But the reflector system just didn't have that kind of power. Even the far superior 1st order Fresnel lens only has a range around 24 miles. The 1839 Light List states the optic consisted of 18 lamps backed by 15-inch reflectors. The 1849 Light List states only 14 lamps installed, but the reflectors were larger at 21 inches in diameter with a range of 22 miles, which is still a reach. Apparently the change in the optic system occurred in 1842.

In both cases the optic was a revolving type producing a flash every 1 1/2 minutes. The clockworks mechanism was powered by a descending weight that had to be

rewound every four hours.

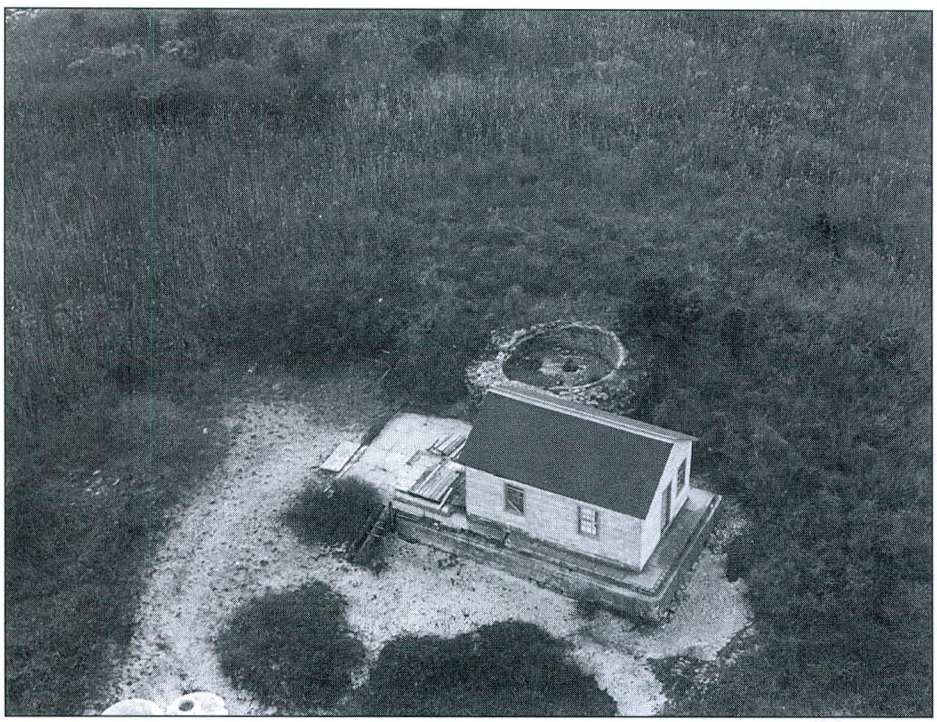
When the Lighthouse Board came into power in 1852, one of their first orders of business was to replace the antiquated reflector system with Fresnel lenses. With the exception of a few range lights, all lighthouses had Fresnel lenses by the outbreak of the Civil War.

When the Lighthouse Board was an ad hoc committee and investigated our aids to navigation system they reported on the Fire Island Light Station, "This is the most important light to navigators trading to New York. It may be said to mark the eastern entrance to the bay of New York.

"It is situated on the south side of Long Island... distant 37 miles from the Highlands of Navesink, which mark the western entrance to the bay of New York. This tower has an elevation of only 89 feet, 3 inches [this is the overall height of the tower, not the focal plane], and had only 14 lamps and 21-inch reflectors for a revolving light. The range of this light, with its present elevation and the best apparatus that could be procured, would not exceed 14 1/2 nautical miles in ordinary weather. It is therefore clearly necessary to increase its height, and place in the tower the most powerful lens apparatus that can be procured."

On March 3, 1857, Congress appropriated $40,000 for the construction of a new Fire Island Light Station. Construction began shortly thereafter starting with a stone pier foundation measuring 100 feet by 150 feet. Tower walls at the base are 11 feet thick, tapering to two and a half feet at the top. An 1857 letter from a Lt. Duane, one of the Topographical Engineers assigned to the Lighthouse Service, stated that he questioned using brick for the building materials. "... Even if brick were to be employed, this material does not appear to me to be adapted to a work of such importance in such an exposed situation. I would, therefore, recommend that stone be used in this case. The present appropriation would be sufficient to build the tower and probably the lantern, leaving the apparatus (lens) to be purchased from a new appropriation or some other source." No answer to Lt. Duane's letter has been found, but his recommendation was obviously ignored as the Fire Island tower is constructed of 800,000 bricks.

The construction was started in the early summer of 1857 and halted when bad weather set in in December. Most of the concrete filling of the foundation had been completed by the time work stopped for the season.



Remnants of the original Fire Island tower behind the garage. An 1882 constructon drawing courtesy of the National Park Service.

On April 9, 1858, when work started up again, Lt. Duane, found that the concrete of the foundation was unreliable and expressed concern that the weight of the tower, if it were constructed on the foundation, as it existed, might cause settling of the tower and cause it to crack. To insure against this eventuality without redoing the foundation, the engineer ordered a double number of iron bands embedded in the lower ten feet of the tower. He felt this measure would prevent spreading or cracking of the tower.

By mid-summer a Notice to Mariners was issued. Dated July 3, 1858, it announced, "On the evening of Monday, the 1st day of November next, a first order revolving light will be exhibited for the first time, and on every night thereafter from sunset to sunrise, from the lighthouse now in course of erection at Fire Island Beach, east side of Fire Island Inlet, south side of Long Island, N.Y. The illuminating apparatus is of the first order revolving catadioptric of the system of Fresnel, and will produce a brilliant flash once in every minute, which will not be materially different in appearance from the existing light in the old tower in that place, except in the greater brightness of the flash and the increased range of the new light.

"The light-house tower which is placed about 200 feet NE from the old light-house tower, is built of brick, will be 150 feet in height (to the base of the lantern), cream or yellow color, and the light will be about 166 feet above the mean level of the sea.

"The old tower and keepers' dwelling will be removed immediately after the exhibition of the light from the new tower. The new light should be seen in ordinary states of the atmosphere, from the deck of a vessel 15 feet above the water, from 21 to 23 nautical miles."

Progress proceeded during the summer of 1858 on schedule. However, as funds and material became depleted, Lt. Morton wrote the following letter to the Secretary of the Lighthouse Board.

August 16, 1858
Capt. Wm. B. Franklin
Washington, DC

Sir:

I believe it is your intention to have the old Tower and Dwelling at Fire Island

torn down on the 1st of November next.

I have therefore proposed to tear down the stone part of the dwelling at once, in order to use the stone in building the foundation of the new Dwelling.

The old tower will furnish the stone for the superstructure of the new Dwelling, but it will of course not come in play this season [this decision resulted in the charming stone dwelling which exists today].

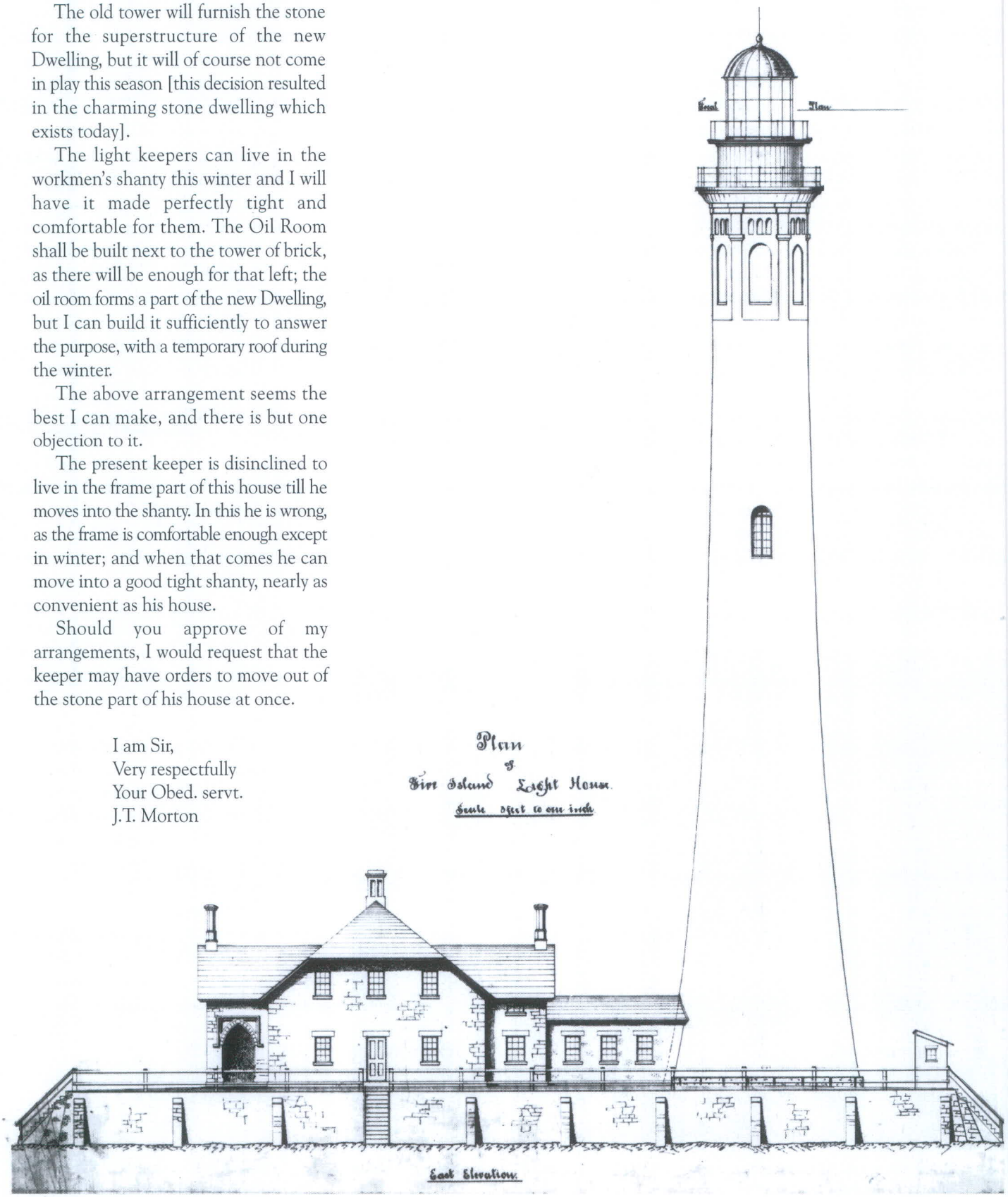
The light keepers can live in the workmen's shanty this winter and I will have it made perfectly tight and comfortable for them. The Oil Room shall be built next to the tower of brick, as there will be enough for that left; the oil room forms a part of the new Dwelling, but I can build it sufficiently to answer the purpose, with a temporary roof during the winter.

The above arrangement seems the best I can make, and there is but one objection to it.

The present keeper is disinclined to live in the frame part of this house till he moves into the shanty. In this he is wrong, as the frame is comfortable enough except in winter; and when that comes he can move into a good tight shanty, nearly as convenient as his house.

Should you approve of my arrangements, I would request that the keeper may have orders to move out of the stone part of his house at once.

I am Sir,
Very respectfully
Your Obed. servt.
J.T. Morton

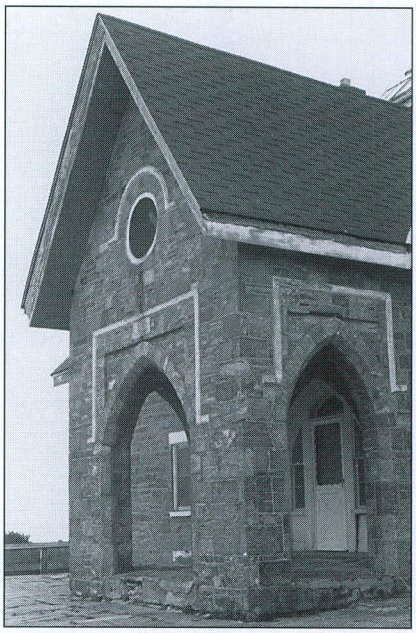


Opposite page – The (circa) 1857 Lighthouse Service drawing of the Fire Island Lighthouse.

Below – An 1886 photo of the Fire Island Lighthouse and dwelling.

Right– Detail of the entrance to the duplex dwelling. The apartments open off a central hall.

All material courtesy of the National Park Service.



The keeper was ordered to comply and he was moved into the workmen's shanty before it snowed.

To ensure that the brick tower would hold up to the occasional severe winters in the area, two coats of a cream-colored cement were applied to the exterior, each coat being 1/8 inch in thickness. It wasn't until August 4, 1891 that the color of the tower was changed to the present black and white stripes.

Upon completion, the superintendent of the 3rd Lighthouse District wrote to the Lighthouse Board, "There has been performed the most important work which I have been charged with, viz. the erection of a 1st order Light House tower, and keeper's dwelling.

"The tower is brick, with a granite cornice, and rests upon a foundation of concrete faced with granite... From the foot of the tower... to the top of the cornice is 140 feet, and the focal plane of the lens is 14 feet above the last mentioned level, so that the light is about 166 feet above the mean level of the sea.

"A substantial stone dwelling of one story and attic has also been built containing a large oil room, and separate quarters for three keepers and their families. This communicates with the tower, and with the exterior as well as with the main hall of the dwelling. There

is a terrace around the entire premises, which is embarked to the level of 13 feet above mean tide. The terrace is retained by a wall of dry stone masonry, the material of which was obtained from the demolition of the old tower and keeper's house.. The tower is fitted with an illuminating apparatus of the 1st order revolving catadioptric of the system of Fresnel, which produces a brilliant flash of white light once a minute. The weights belonging to the clock works descend inside the central iron column [of the stairs]."

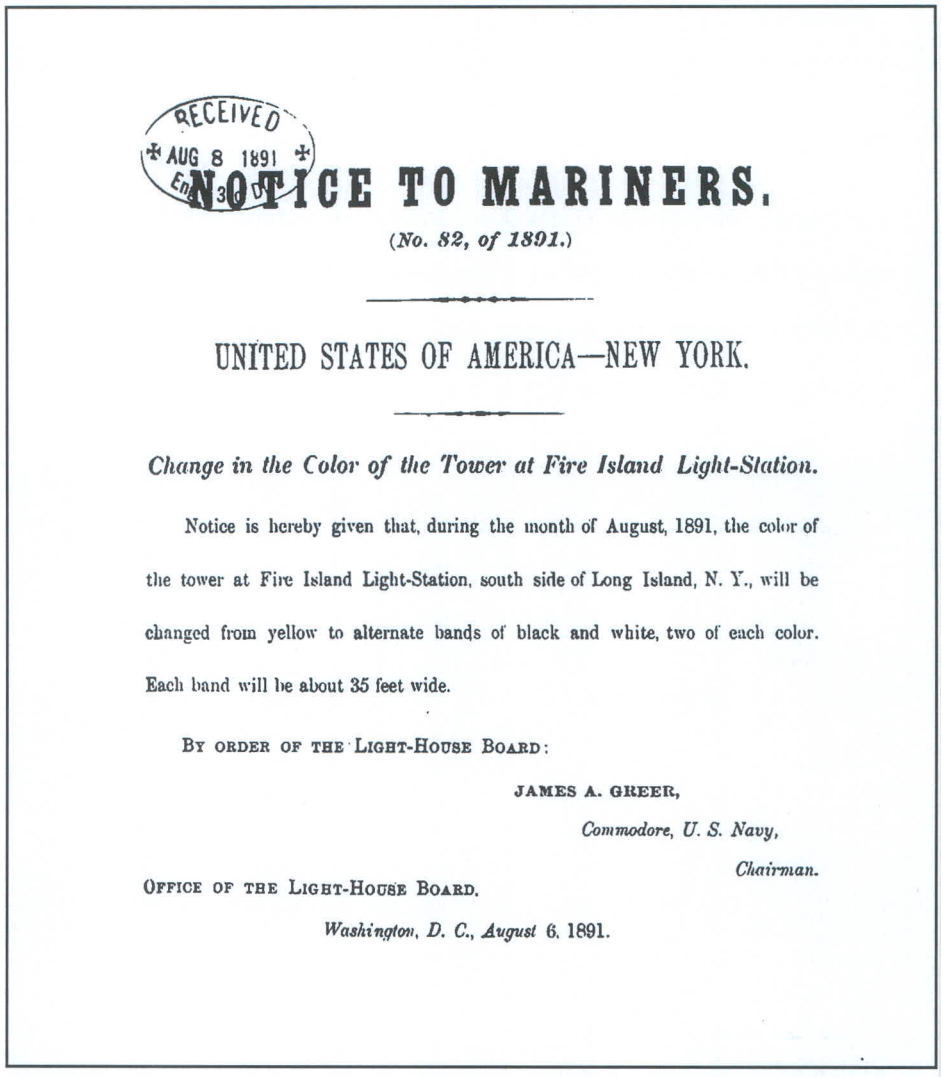
As planned, the new light was exhibited for the first time on November 1, 1858. On November 4, Engineer Morton wrote to Capt. Franklin, "The light was duly exhibited on the first instant and burned excellently. I hope to carry with me to Washington a photograph of the establishment in a week or so."

A review of the annual Reports to Congress from the Lighthouse Board doesn't show any startling changes to the station, mostly repairs. In 1876, "... the lantern was sheathed anew and the tower cement-washed and recolored..."

In 1889; "Repairs were made to the keeper's dwelling and tower, a [marine railway] 120 feet long was built, the boat house was fitted with winch, and a coal bin built." The oil house was added the next year.

A Notice to Mariners in 1891 advised that the color of the Fire Island tower would be changed from yellow to alternate bands of black and white.

In 1894 the Annual report states, "This is the most important light for transatlantic steamers bound for New York. It is generally the first one they make and from which they pay their course. It is a 1st order light, flashing white at intervals of one minute.. Mr. Henry Lapaute, of Paris, France, a manufacturer of lens apparatus for lighthouses, exhibited at the World's Columbian Exhibition, held at Chicago in 1893, what is known as a bi-valve lightning light, with electricity as an illuminate. It is called bi-valve because it consists of two powerful range lenses, 9 feet in diameter, back to back, and is named a lightning light on account of the brilliancy and short duration of the flash. The arc light used is of very high candlepower, and the makers claim that the intensity of the flash will be proportionately greater [a flash every five seconds]... The Lighthouse Board concluded to purchase this apparatus and install it in Fire Island light tower in place of



RECEIVED
AUG 8 1891

NOTICE TO MARINERS.

(*No. 82, of 1891.*)

UNITED STATES OF AMERICA—NEW YORK.

Change in the Color of the Tower at Fire Island Light-Station.

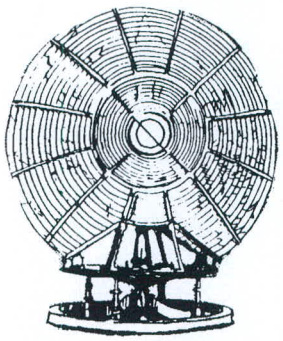
Notice is hereby given that, during the month of August, 1891, the color of the tower at Fire Island Light-Station, south side of Long Island, N. Y., will be changed from yellow to alternate bands of black and white, two of each color. Each band will be about 35 feet wide.

BY ORDER OF THE LIGHT-HOUSE BOARD:

JAMES A. GREER,
Commodore, U. S. Navy,
Chairman.

OFFICE OF THE LIGHT-HOUSE BOARD,
Washington, D. C., August 6, 1891.

An old post card from around the turn of the century showing the Fire Island station. From far left the roof of the boat house, generator building with the base of the old tower (covered with peaked roof) and lighthouse complex.



Left – The 2nd order bi-valve which was slated for Fire Island and ended up at the Navesink Lighthouse.

the present lens... This necessitated in addition a steam and electric-light plant and a boiler and engine house to contain them. The steam and electric-light has been delivered by the makers at the Staten Island General Depot... During the change the light will be shown from a fourth-order lens."

Retrofitting the tower continued into 1895 and a narrow gauge railroad was constructed between the beach and the coal shed, The 4th order lens was placed on a bracket on the south side of the tower to be used while the new lens was installed, probably a 375mm lens.

Although the building for the power generating equipment was completed, for some reason the new lens and electric system wasn't installed. As the Annual Report the following year states, "The steam and electric plant established at this station was returned to the General Light-House Depot on December 21, 1896. Light Lists after that date continue to show a 1st order lens with a flashing characteristic of once every 60 seconds. In 1933 the characteristic was changed to a flash every 7.5 seconds.

Although not authenticated, there is some opinion that the generator plant and the 2nd order bi-valve lens initially slated for Fire Island, went to Navesink. The 1898 Report mentions the installation of an electric power plant and the installation of a 1st order bi-valve lens in June.

The 1898 Report states: "Telephone connection with the Lighthouse engineer's office [on Staten Island] was established on May 5, 1898, under the appropriation for national defense [in case the Spanish attacked]. On May 18, the station was furnished with a signaling outfit. The station was connected by telephone with the Life Saving Service line, so that messages can be sent to Quogue Life Saving Station and connection made there with the central station at Quogue, so that messages can be repeated at the life saving station direct to the general light-house depot."

In 1908 a letter signed by several shipping companies was sent to the Lighthouse Board.

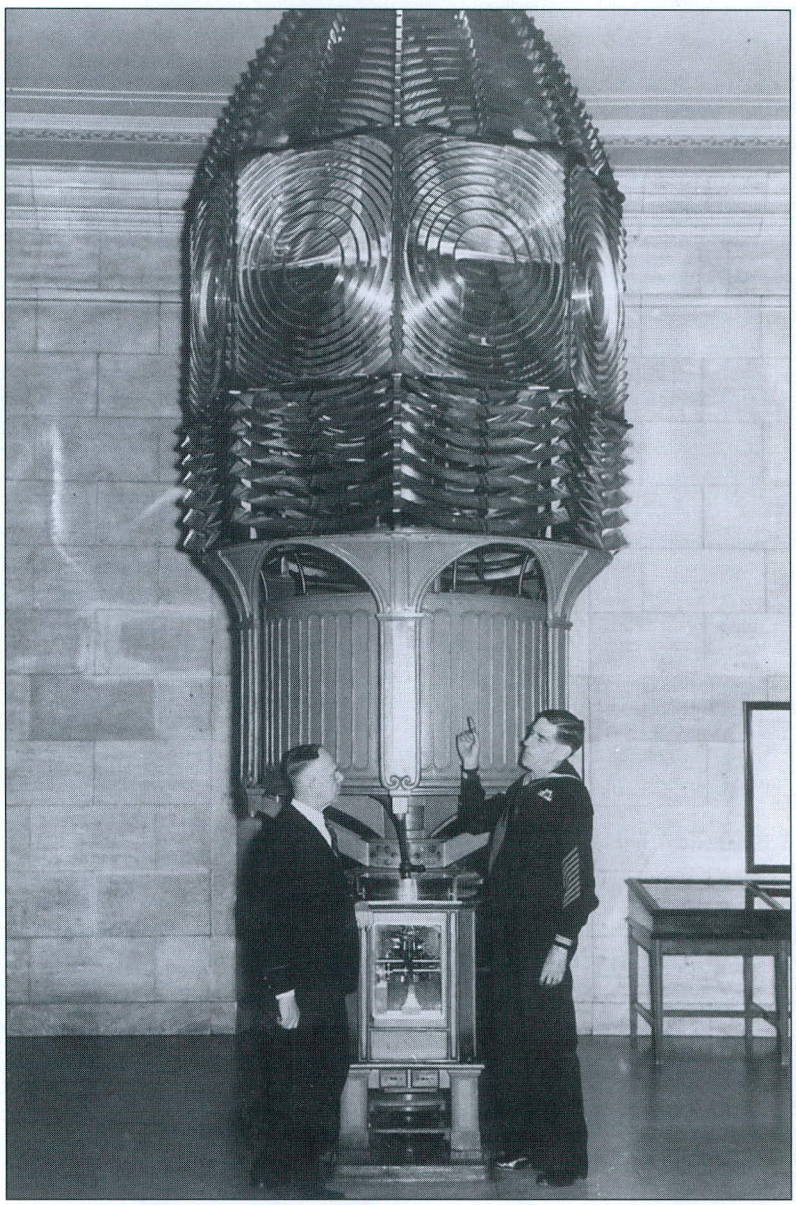
Sir:

The undersigned steamship companies and marine insurance companies, respectfully represent:

That it has been the enlightened policy of the United States Government to meet the requirements of the growing traffic of the Port of New York by providing for the safety and accessibility of the approaches and channels of this harbor.

That the light on Fire Island is the objective point which is made by all vessels approaching New York Harbor from the East after making Nantucket South Shoal Light-vessel.

Below – Fire Island's 1st order lens at the Franklin Institute in Philadelphia. Note the clockworks in front of the lens. This lens is a duplicate of the Farallon Island, California lens. Photo courtesy of the National Park Service.



That it is of the greatest importance to the safety, and the uninterrupted course of navigation, that the light on Fire Island should be of a character equal to that of the best lights in existence elsewhere.

That the present light on Fire Island has not been changed for many years, it is not a modern light, and is not of such power as should be provided for a light in this important position.

The undersigned, therefore, respectfully urge upon your Honorable Board that the light on Fire Island should be brought up to the highest standard of the lights on this coast, and that its visibility and power should equal the standard of the light on Navesink.

And your memorialists will ever pray.

Signed–White Star, Red Star,
American & Atlantic Transport lines.

However, the Board took no action, as the lens remained in place and the characteristic stayed a flash every minute. In 1933 the characteristic was changed to a flash every 7.5 seconds. The same lens was used. The old characteristic of the eight-sided Fresnel lens was created by having it turn one revolution every eight minutes. By increasing the speed to one revolution a minute the characteristic of 7.5 seconds was created (60 divided by eight).

On December 31, 1974, the Coast Guard abandoned the light station and installed a modern aero-beacon on a water tower in nearby Robert Moses State Park. The light station became part of the Fire Island National Seashore. In 1982 the Fire Island Lighthouse Preservation Society was formed, dedicated to assisting the National Park Service restore and preserve the light station. The society convinced the Coast Guard to re-establish an optic in the lantern room. The Coast Guard agreed and to celebrate the re-lighting a huge ceremony was held on May 25, 1986.

Over a period of years, the society raised $1.5 million for a three-phase restoration effort: to strip and recoat the tower (finished in 1987); to restore the keepers' dwelling and grounds (1985 & 1986) and to establish a fund to maintain the station in perpetuity.

Fire Island Lighthouse in 1921. Note the keeper at lower left. Photo courtesy of the National Park service.

Fire Island keeper Chester Byron Harper with daughters Ann and Mabel by the Fire Island boat house 1914. Photo courtesy of the Fire Island Lighthouse Preservation Society

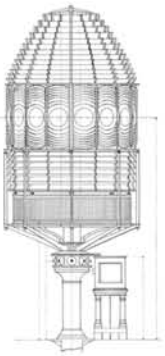
Right – Work being done on the upper portions of the tower during the restoration period in the late 1980's. The entire coating of the tower was stripped and a product call Shotcrete was power-hosed on the old brickwork providing a secure coating which will last for many years. Photo courtesy of the Fire Island Lighthouse Preservation Society.

Below – Fire Island tower in 1882. Note the deteriorated sections of the tower with the concrete coating breaking off. Photo courtesy of Bill Muller.

During this period and since 1996, the society has managed the Fire Island Light Station for the National Park Service. From January through March the lighthouses is generally closed. The lighthouse is open weekends through the remaining nine months with the exception of June and July, when it is open daily. Guided tours of the tower are available. Throughout the year, school groups are brought to the station to learn about lighthouse life and the flora and fauna of the area. Creative fundraisers occur periodically. One gala, titled the Barefoot Black Tie Dinner, is held every August. Golf outings, 5-km runs and other events continue to bring people together and raise funds for the lighthouse.

If you are interested in learning more about the inspired activities at the Fire Island Lighthouse, you may contact them at 4640 Captree Island, Captree Island, NY 11702 or call (631) 661-4876. They can be found on the web at: http://www.516web.com/museum/filps/

Join the U.S. Lighthouse Society Today or Give the Gift of Membership!



Restoration & Preservation

Thomas Point Shoal Lighthouse, MD

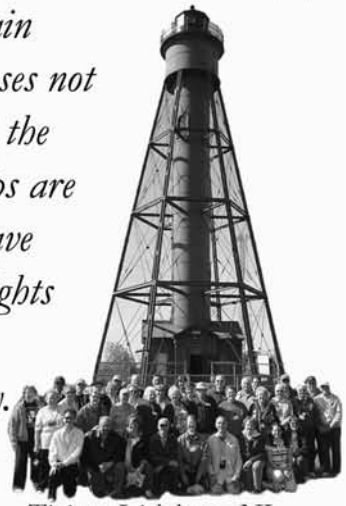
The U.S. Lighthouse Society has donated to many lighthouse preservation projects throughout the U.S. Most recently we were honored by being presented with the Preserve America Stewardship Award from The White House for our restoration work at Thomas Point Shoal Lighthouse.

Help Support Our Important Mission!

Education

The Keeper's Log *magazine is the only one of it's kind and has been published quarterly since 1984. Receive this award-winning publication as a benefit of membership.*

The Society organizes domestic and international lighthouse tours. Many of our excursions gain access to lighthouses not normally open to the public. These trips are a great way to have fun, see lots of lights and learn about lighthouse history.



Tinicum Lighthouse, NJ

To learn more visit

www.uslhs.org

or

call Headquarters at

415-362-7255