

A History of Beavertail Lighthouse
by
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Beavertail Point at the southern end of Conanicut Island is strategically located near the entrance to Newport harbor and between the east and west passages of Narragansett Bay. As colonial Newport became a major port through its part in the Triangle trade and later through privateering, Beavertail was recognized as the most propitious site for a navigational beacon. The town of Jamestown maintained a watch house here, probably for security in this period of shifting alliances among the British, French, Spanish and Indians; and before long a beacon was added as well. Exactly what form the beacon took is unclear, but the town records suggest it may have been a form of elevated bonfire. The Proprietor's Records for March 2, 1705, order "that there shall be a chimney built upon the Watch-house at Beaver Tail by the Indians belonging to the town...;" and for June 9, 1712, "that John Hull grant a warrant to Gersham Remington to warn the Indians to build a beacon as soon as possible." Beacons at that time were often buckets of burning tar or pitch hung from a pole, and probably this fuel, which burned more slowly than wood, was used here as well.

Conanicut Island had been sacred to the Indians of the area as far back as 3,300 B.C., judging from evidence found at burial sites. When the Newport proprietors purchased the island from the Narragansetts in 1657, Beavertail Point was allocated to Benedict Arnold, ancestor of the famous traitor. Apparently the responsibilities which this important site entailed were not wholly to Arnold's liking, for on June 9, 1712, a warrant was issued to

him "to look after the watch and see that it is faithfully 'keep't'...."

The first lighthouse in the colonies was erected in 1716 by Massachusetts Colony on Little Brewster Island in Boston harbor. On August 23, 1738, the Colony of Rhode Island established a "bank" to raise money for a lighthouse at Newport - "which will be of singular service for vessels coming into the harbor in the night season, and prevent great damage which is occasioned for the want thereof." Typically such money would have been raised by taxing vessels using the harbor, but war between England and Spain interrupted the undertaking. Had it been carried out, Rhode Island would have had the second lighthouse in the country. Two years later the town of Jamestown ordered another beacon to be built by Abel Franklin. This particular signal may have been one of a chain extending from Watch Hill to Providence, believed to have been built at that time of unrest for use in warning the colonists of approaching enemies.

By 1749 funds for a lighthouse had been secured, and in February the General Assembly authorized a committee

to build a light house at Beaver Tail on the 'island of Jamestown,' alias Conanicut, as there appears a great necessity for a light house as several misfortunes have happened lately for want of a light.

Members of the committee included Abel Franklin, Josiah Arnold, Benedict's son, and Captain Joseph Harrison. The work must have been completed by August, for that is when the Assembly ruled

that there be a proper Person appointed by the Committee... to be Keeper of said Light house;...and that he be under the particular inspection of said Committee, who are hereby fully impowered upon such a person's failing in

his duty, to remove him, and put another in his Room from time to time. And said Keeper shall carefully and diligently attend his duty at all times, in kindling the Lights from Sun setting to Sun rising and placing them so as they may be most seen by vessels coming into or going out from this Colony.

Abel Franklin was appointed first keeper. When the lighthouse was finally built it was the third in the colonies, following the 1746 Brant Point light on Nantucket.

This lighthouse had the impressive distinction of having been designed by the leading colonial architect, Newport's Peter Harrison. Harrison had just completed the Redwood Library ^{in Newport} and was at work on plans for King's Chapel in Boston when he agreed to help out with the lighthouse. His brother, Joseph, was on the lighthouse committee and was a ship's captain, as he once had been himself. He no doubt enjoyed this chance to contribute to the safety of navigators as well as to Newport's importance. The lighthouse was built of wood, was 24' in diameter at the base and 13' at the top, and 58' high at the cornice "round which is a Gallery, and within that stands the Lanthorn, which is about 11 feet high, and 8 feet in Diameter." Unfortunately, on July 23, 1753, it burned to the ground-only three days after the General Assembly paid Joseph and Peter's bill of £329 - 7s - 4p for paint. In August the General Assembly authorized a new lighthouse of "stone or brick, at the Place where the lately burnt stood." Harrison also designed the new tower, and the building committee was ordered to "make use of all the bricks at Fort George (on nearby Goat Island) or such part of them as they shall think proper." Meanwhile Abel Franklin continued his duties with an ordinary lantern.

This second lighthouse appears in a depiction of the French fleet entering Newport harbor under fire from the British in 1779, sketched by a French naval officer who participated in the encounter. When the British departed Newport soon thereafter they partially destroyed the tower, and it remained unlit until the close of the War. In May, 1783, the General Assembly voted

that the duty on all ships and vessels (except Coasters, fishing vessels, wood sloops and vessels employed in bringing stone and sand) be raised 8d, per ton: that the said duty be continued until there shall be a sufficient sum raised to defray the expense of repairing the said lighthouse.

On August 7, 1789, the new Congress established its jurisdiction over the nation's twelve lighthouses. Aside from fortifications, these were the first structures to embody the federal authority, an indication of the importance of sea commerce at that time. The state governments did not all relinquish their authority easily, however. Not until May, 1793, did the Rhode Island General Assembly agree to the transfer of Beavertail,

provided, nevertheless,...that if the United States shall at any time hereafter neglect to keep it lighted and in repair...the grant of said lighthouse shall be void and of no effect.

Ships continued to be wrecked, of course, despite the presence of lighthouses. More than 30 wrecks off of Beavertail have been recorded since 1830; how many occurred before then can only be guessed. Until reforms at the Lighthouse Service of the 1850s, in fact, many mariners charged that the unreliability of the lighthouses contributed to the uncertainties of nighttime navigation. Keepers, however, often aided sailors in distress. The 1796 Certificate of the Providence Marine Society, an organization formed to help mariners and their families in times of need, vividly depicts the rescue of sailors from a ship which

has been dashed against the rocks at Beavertail. The lighthouse mutely watches on.

In October of 1817, an experiment of considerable significance in the history of illumination took place at Beavertail. Newport inventor David Melville - who in 1806 became the first American to use gas lighting publicly, in his house on Pelham Street - was awarded a contract from the Department of the Treasury to demonstrate that gas was a viable alternative to whale oil as a lighthouse illumina^{up}te. Whale oil had many drawbacks as a fuel, including smoking^{up} of the lantern glass and difficulty in igniting in cold weather. Melville showed in the 12 months of his demonstration that gas burned much more cleanly and brightly and could be seen from much greater distances than could whale oil lamps. Gas greatly simplified the keeper's tasks as well, as it was conducted through a copper pipe to the lantern room and eliminated such arduous tasks as carrying containers of whale oil up the tower, and trimming the charred wick ends of the whale oil lamps several times each night. Melville built a gas house northeast of the tower, and produced hydrogen gas by burning tar and rosin in a tightly closed retort. The gas was purified by passing through a tank of water and then stored in a gasometer tank until needed. The government acknowledged the success of Melville's experiment, which had been widely praised by mariners and others, but refused to renew his contract. Melville charged the whale oil industry of lobbying against him.

Photographs of Beavertail taken before the 1938 hurricane show a wooden building with columns on the gable end, northeast of the lighthouse in the same location that Melville built his

gas house. The elderly daughter of former keeper Ed Donahue describes this as "the water building," with a pool of water at one end and used for storage of firewood at the other. This probably was the former gas house, left empty when Melville dismantled his apparatus in 1818. The building was destroyed by the hurricane and today the area is a paved parking lot.

Problems with the condition of the lighthouse plagued it for much of its century-long life. One source of the difficulty was damage inflicted by the British, described here in 1804 by William Ellery, Superintendent of Lighthouse for Newport:

The British in the Revolutionary War set fire to it and the flames so shocked the walls; especially about the Windows, that notwithstanding they are four feet and a half thick at the bottom and three and a half feet thick at the top, our Masons have not since been able to make them tight and secure against the impression of storms of rain.

Also contributing were the primitive colonial building techniques employed in the construction of lighthouse towers. Rubble stone and other local materials were simply piled up to create walls with enough mass to support the weight of the tower. At some point, too, the height of the tower ^{at Beavertail} was increased. An 1817 sketch ~~by Melville of the tower~~ shows the diameter of the lighthouse and the thickness of the walls at each of seven stories, and notes that the elevation is 80' to the floor of the lantern. In 1827, however, Melville was awarded a contract to reduce the height of the lighthouse

by taking off the whole of the upper part thereof down to the old cornice of the building, where the diameter is about fifteen feet from outside to outside and eleven feet from inside to inside of the wall; i.e., the new parts of the lighthouse to be removed and the old part, up to the said cornice, to remain: whereon (he) shall erect an iron lantern...

At the same time Melville installed a circular wooden stairs with iron handrail, "no step to exceed eight inches in height," and to be "provided with double steps for resting places at the equal distances of ten stairs." The lantern itself was fitted with "a double cooper table, and fifteen patent lamps, with heaters, fifteen nine-inch plated reflectors, and two spare lamps fitted with heaters." For the work on the lantern he was paid \$285, and for the work on the tower, \$1,150 plus the old lantern with its table and lamps together with the lumber from the floors and stairs of the building, plus any stones from the top of the building that remained after using them to fill in the basement.

In 1838, in a Report to the U.S. Light House Establishment, Beavertail lighthouse is described as being 98 feet above the level of the sea and its limit of visibility as 15 3/4 miles.

The rubble stone tower was 68 feet high ascended by an interior spiral stairway of wood with landings at convenient places. The oil was stored under the lower landing. There were 15 lamps, with reflectors, arranged around two circular copper tables, each 3 feet in diameter, the lower table supporting 8 lamps, the vacant space being towards the land.

In 1851 the lighthouse is reported as in bad shape: "worst built tower yet seen, built of soft shale; not been repaired in seven years;" and, "the inside walls are as green with moss as the fields around with grass."

In 1852 the U.S. Light House Board was established, and the reforms which followed included replacement of decrepit lighthouse structures. In Rhode Island, Beavertail, Watch Hill, and Dutch Island lighthouses were all replaced (Beavertail and Watch Hill with nearly identical designs), and Point Judith was rebuilt. Congress appropriated \$14,500 for the new lighthouse at

Beavertail, plus a third-order Fresnel lens, and a Daboll horn fog signal. The 10' square granite tower, 54' high, was completed in 1856, 100' inland from the old structure. The fog horn building was constructed over the old foundation and an oil house and keeper's house were built adjoining the tower. In 1898 an assistant keeper's house was added. Today all but the fog horn building stand as four-square as when they were built. When the 1938 hurricane devastated the coast, it destroyed the fog horn building and uncovered the foundation of the second, 1754, lighthouse, long forgotten. (A plaque at the site identifies it incorrectly as the 1749 foundation.) The circular rubble foundation may be seen today, a rare example of this early building technique.

More than lighthouses were needed in thick fog. Cannon were tried as fog signals at Boston in the 18th century but apparently with little success. In 1829 at Beavertail a fog bell was installed, again by David Melville. It was described as weighing 600 lbs., hung in a six-foot belfry atop a 12-foot brick tower and operated by a clockwork mechanism that allowed it to ring for 16 hours with one winding. It remained only four years, however. In 1851 a fog horn made by Celadon Daboll of Connecticut was established at Beavertail, the first significant advance in fog signal technology. The sound was created by a vibrating metal reed set in the 17' trumpet throat and was operated by a simple air compressor. Daboll offered two models, one with a hand pump and the other with a horse-powered treadmill. The horse was chosen for Beavertail and the keeper, a widow named Demaris Weeden, requested additional compensation for new duties. But although the sound itself was acclaimed-it could be heard

six miles away in Newport - before long the signal was discontinued.

As the Light House Board continued to search for improved fog signal devices, Beavertail saw a succession of state-of-the-art mechanisms. Important in their design was that they be simple enough for keepers to operate in remote locations, and that the sound be adequate for identification on the water. (Only gradually did the fact of uneven sound distribution over bodies of water become understood, a condition that complicated the search for reliable signals.) In 1857 Daboll's steam-powered fog signal was installed, soon after the new lighthouse was completed. It probably used fresh water from the well Melville put in for his gas house 40 years before. In 1868 this was replaced by Daboll's newest device, a whistle operated by an adapted Ericsson-type hot air engine. In 1881 an up-to-date steam whistle with two boilers and two 10-inch trumpets was installed, a type that was being used increasingly throughout the lighthouse system. And in 1888 one of the first Crosby automatic fog signal controllers was added, which could accurately regulate the length and frequency of signal blasts. This was especially important in a foggy area such as Newport, where several fog signals operated simultaneously. In 1900, a new type of signal was tested here, a siren that consisted of two slotted plates, one fixed and one moving. As the moving plate rotated at a rate of several thousand cycles per minute it created vibration which produced a loud, piercing sound. It was operated by compressed air, and powered by an internal combustion engine.

With the exception of the year of Melville's experiment with gas lighting, Beavertail's beacon was fueled for over a century by

whale oil. As the supply of whale oil dwindled in the later 19th century other fuels were tested, including colza oil made from rape seed, and mineral oil. Eventually kerosene was adopted throughout the system, and by the early 20th century the more efficient kerosene oil vapor lamp had replaced the older Argand-type lamp. Electricity was of course the next advance, reaching Beavertail in 1931. (The last lighthouse in the country to be electrified was Conimicut in upper Narragansett Bay, in 1961.) Beavertail was automated in 1972. The third order Fresnel lens was returned in 1984 after an absence of several years.

In 1981, Beavertail State Park was opened following acquisition of acres which had been used for military purposes during World War II. The Coast Guard continues to operate the light as one of ten that are active on Rhode Island waters. The keeper's house is occupied by a caretaker. The Assistant keeper's house, empty since 1972, received exterior renovation soon after the park opening, but the interior remains unfit for public use. The Rhode Island Parks Association is planning to renovate the assistant keeper's house as a maritime museum, with exhibits on the history and natural history of Beavertail Point. A traveling exhibit on Rhode Island's lighthouses will be installed here once the building renovation is completed.