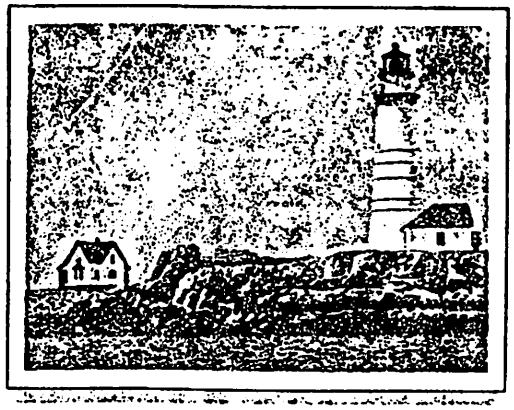
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On Boston Light

North America's oldest lighthouse, on Little Brewster Island, has withstood time, tides, and acts of war. It remains one of the few stations where lightkeepers have not been replaced by machines.

To the lighthouse

By Gail Caldwell

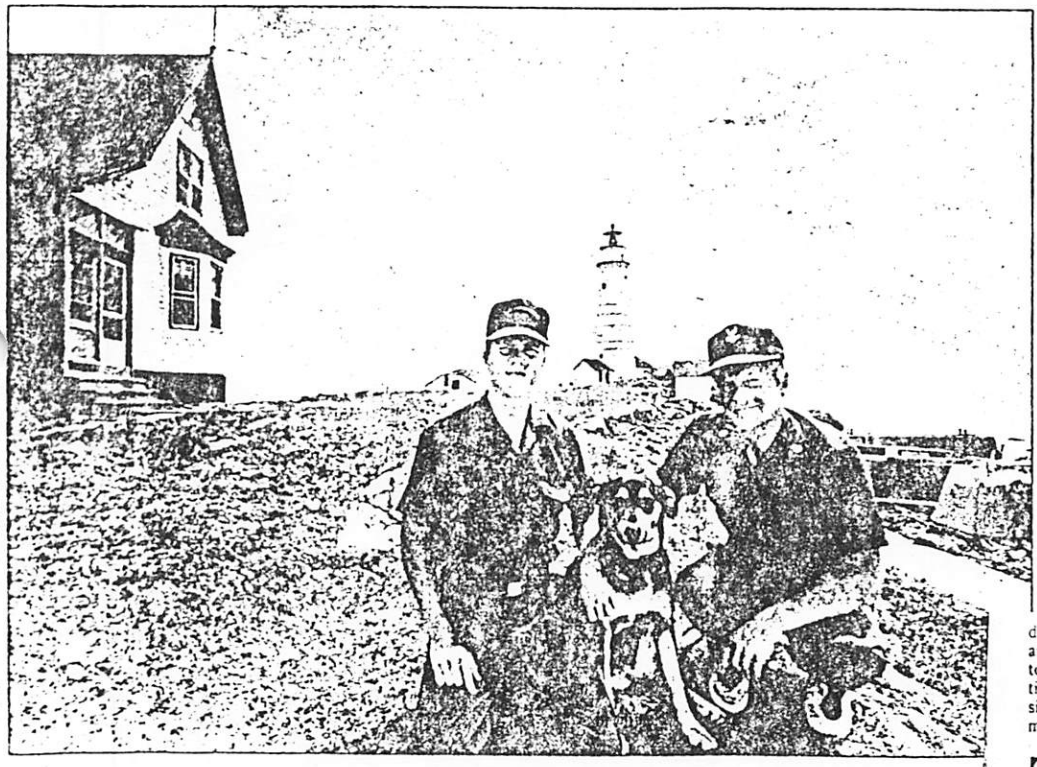
LITTLE BREWSTER IS JUST A SLIP OF AN ISland, a miniature of rockpiles and grassy knolls curved in at its craggy center. Situated at the outer edge of Boston Harbor, about nine miles from the city's waterfront, the land mass is the smallest of the Brewster cluster, a few hundred yards from Shag Rocks and a few minutes by boat from the Coast Guard's Point Allerton station in Hull. At twilight, you can hear the tide and the cries of cormorants, and you can see Boston's skyline blinking to life as the sun (and pollutants) cast a tangerine haze over the city. Graves Light signals twice every 12 seconds from the northeast, and a glow from the waters to the southeast hints of Provincetown. Lobster pots and pleasure boats abound. The croaky songs of herring gulls compete with Logan Airport's roar and with the eerie, mechanical music coming from the fog warnings at automated lights nearby. History and technology are colliding out here, and yet no one seems able — or willing — to pick the winner.

With its proud white buildings and clipped green grass, Little Brewster calls to mind an old Down East seaside village, updated with a few modern phenomena. There are six structures on the island, and at its highest point — 23 feet above sea level — stands 105 feet of granite, brick, and imported glass known as Boston Light. Established in 1716, it is the oldest light station in North America, and one of the few remaining in New England that have not gone the way of automation. There are only 23 manned lights left along the shoreline from Maine to Rhode Island; 239 others are engineered to operate independently (sans lightkeeper) and require only occasional maintenance.

ROMANTIC LORE AND ANCIENT-MARINER myth surround our early keepers of the flame, and Boston Light, originally illuminated by lamps and candles, is no exception. It was here that the now-platitudinous battle cry of "Don't give up the ship!" was first uttered during the War of 1812. Local merchants petitioned for the lighthouse in 1713, and Massachusetts complied a few years later. George Worthylake, the light's first keeper — along with his wife, daughter, and two helpers — suffered the occupational hazard of drowning while trying to return to the site, then called Beacon Island, in 1718. (Young Ben Franklin wrote a poem about the drownings called "Lighthouse Tragedy," which he later dismissed as "wretched stuff, in street ballad style.") The second keeper met a similar fate, and his entire vigil at the light lasted all of two days. Fire took the tower in 1751, but Boston citizenry denounced the idea of a lightning rod, considering such blasphemy "vanity and irreligion for the arm of flesh to presume to avert the stroke of Heaven."

GAIL CALDWELL IS A BOSTON-BASED WRITER AND CRITIC. HER ESSAY ON READING APPEARED IN THE JULY 22 *GLOBE MAGAZINE*.

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PAUL Dodds (right), the fifty-sixth lightkeeper of Boston Light, with his assistant, Patrick Doherty.

The British, angered by the colonists' attempts to disengage the beacon during the Revolution, blew up Boston Light in 1776. Massachusetts rebuilt the structure in 1783, and nearly a century later, in 1859, the tower was raised 14 feet to its present height. Certainly the light has seen its share of inclement weather and consequent tragedy: Despite the warning lamp and fog signal, the *Miranda* crashed on the rocks near the light in the winter of 1861, and only 12 men lived to tell the tale. The *Calvin F. Baker* followed suit in 1898; three crewmen froze to death in the rigging.

In World War II the light was extinguished for security purposes. The Blizzard of 1978 forced the men on the island to evacuate their living quarters and move to the light's base, on higher ground. The water on the island was waist-deep in that storm, and it wreaked havoc on the house's foundation. It also destroyed the pier and took a large part of the sea wall on Great Brewster with it. In rain storms this past spring, the waves battering the island were seven or eight feet high, with wind speeds surpassing 60 miles an hour. Boston Light has suffered its share of blows — delivered by various elements and war efforts — but the tower has served as a navigational aid as well as a warning signal for maritime traffic for more than 250 years.

The US Coast Guard absorbed the business and operation of lighthouses from the now-defunct federal Bureau of Lighthouses in 1939. The current in-resident officer-in-charge, Paul Dodds, is Boston Light's fifty-sixth lightkeeper. Raised in the Nantasket section of Hull, Dodds used to sit on the sea wall as a boy and stare out at Boston Light, fantasizing about working on the island when he grew up. After 12 years in the Coast Guard, he got his wish when he was assigned to the island this past February. His partner and assistant crew member is Patrick Doherty, a young and indefatigable Coast Guard fireman; together, they oversee the light and the island along with Fara, a 7-year-old mutt that hasn't left the Brewsters since she came to the island as a puppy. (Once, at low tide, she wandered over to Great Brewster; the consequence was 11 puppies a couple of months later.)

It takes about 20 minutes to reach the light from Hull in a 17-foot Avon inflatable craft, but when the sea is calm the guys at the Coast Guard station like to do it in 12 or 13 minutes, which means around 28 knots. Boston Light is run by what the Coast Guard calls a three-man billet: Two men are always on the island, with a third (and sometimes fourth) rotating off duty. Dodds and Doherty, for instance, work a two-week rotating stint on the island, with one week off. The men are officially on call 24 hours a day, but they split the day into 12-hour shifts. Each morning and evening the American flag is raised and lowered, and at precisely 15 minutes before sunset, the power switch is thrown to illuminate the light — 2 million candlepower worth of light intensity, visible for 27 miles under good conditions. Fifteen minutes after sunrise, the beam is extinguished for the day.

One acquires a certain sea vision after living with the ocean at the back door, and Dodds and Doherty keep an eye on a score of navigational buoys as well as neighboring automated lights at The Graves and

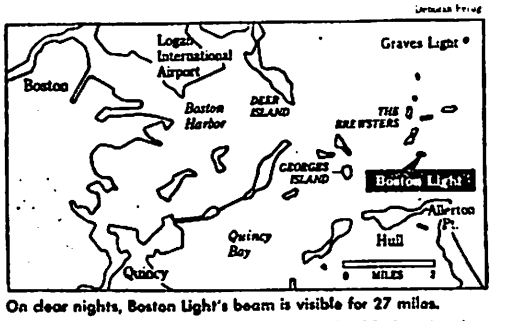
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Minots Ledge, to make sure they're operating efficiently. Graves can often be seen winking every 12 seconds during the day. "It shouldn't go on until 15 minutes before dusk," says Dodds, "but they just let it run." Each light has a specific code that distinguishes it from nearby beacons, allowing mariners to get their bearings just from the number and frequency of flashes. Boston Light's signal is timed to flash every 10 seconds, and its fog signal (when needed) blasts for three seconds out of every 30.

Automated lights, of course, require less maintenance than populated lighthouses, and they need minimal attention once conversion has taken place. To maintain Boston Light, Dodds is allotted $7500 annually; the majority of that goes to communications, upkeep, and fuel. (The fuel bill alone at Boston Light runs to almost $2000 annually.) Most of the cost of maintaining Boston Light would be eradicated if the light became automated, but that's highly unlikely — if for no other reason than the landmark's 1965 classification as a national historic monument. Sightseers, transported to the island by pleasure boats, flock to the site each summer; one Sunday afternoon in June the visitors book lists 17 names. The Coast Guard is building a new pier to accommodate the tourism. While Dodds seems relieved that his role as lightkeeper isn't in any jeopardy, he's under no illusion as to why. "The head honcho told me, 'If it weren't for the historical monument, you wouldn't be here.'" The light off Portland, Maine, is safe from automation for the same reason, says Dodds. "Portland Head is visited by so many visitors a year that it would be foolish for the Coast Guard to automate the light."

Sentiment aside, the argument for automation is not only valid but, from an economic standpoint, undisputable. Labor-efficient and cost-efficient automated lights free up valuable Coast Guard personnel who can be sent on to high-priority tasks such as patrol and rescue efforts. Lights like that at Deer Island, which runs on commercial power, and that at Minots Ledge are visited regularly by service teams, which perform preventive maintenance and make sure the lights are operating properly.

Although some lights are easily converted, the business of automating a light can be a challenge, and it varies enormously from one light to the next. Lieutenant Junior Grade Tracy Allen, of the Coast Guard's Office of Aids to Navigation, says the Coast Guard spent several years planning the engineering phase of automation, which becomes more



On clear nights, Boston Light's beam is visible for 27 miles.

complicated with more isolated lights. Many lights are equipped with daylight control, a cell device that senses when darkness is falling and activates the lamp. "Some lights have actual submerged cables which control them. Others are controlled by our radio link and are monitored by a remote monitoring system," says Allen. "It's a multiphase process, and there has to be a determination of what equipment is needed and whatever structural changes that might have to be made to accommodate that equipment." The most recent switch to automation took place last winter at Matinicus Rock, 25 miles southeast of Rockland, Maine. It involved the installation of two fiberglass pods, or modules, that contain the generators for the light. The project cost the Coast Guard $223,000.

Allen is the first to admit that automation is the more practical solution (as well as the probable wave of the future) for illuminating safe harbors, but he points out that in some instances, a human-operated light is preferable: "There are certain areas where a Coast Guard presence at a light may deter vandalism, and in that respect it's good to have somebody there. It would be hard to determine the cost of *not* having someone there, and what you might encounter in the outages or just general problems that would occur from vandals' getting into the structure and either destroying electronics gear or doing anything that might affect the signal."

In spite of automation's economic advantages, its primary function, in Coast Guard language, is to "eliminate undesirable hazardous duty." Keeper Worthylake and his family were early victims in a long line of casualties who met their maker while tending lighthouses. When the Coast Guard launched its Aids to Navigation and Modernization Program (LAMP) in 1968, its main criterion was to lessen the number of lives lost and injuries sustained. Lieutenant Commander Chet Motekaitis, assistant branch chief of the Aids to Navigation office, calls the efficiency aspect of automation "an adjunct" to the LAMP project. "When you take the price of the people, that was the big saving. We always saved. We saved in people dollars, we saved in people problems, personnel problems, by eliminating undesirable hazardous duty."

Motekaitis is less than swayed by the Romantic myth of the noble lightkeeper, pointing out that many of our oldest lights are little more than rockpiles. "Go way back to Minots Ledge, or to Graves. They've got quite a history," he says. "It's just pretty nasty out there. You're out on an offshore structure — Minots has been knocked down a couple of times. It's hazardous to get to them. You can't always get out there, and you can't always get back." He considers the high cost of automating Matinicus Rock (a site that was difficult to reach in severe storms) money well-spent, and he calls the project "major, full-blown, the whole nine yards."

The Coast Guard is not unaware of the other price paid for switching the stations to machine operation — namely, deterioration of the beacon and the structure. The service visits partially remedy that problem, but due to limited resources, many lights have fallen into disrepair. A new lighthouse maintenance program has been initiated, in which buoy tenders are sent out to upgrade lights. "There's been a renewed effort to bring these lighthouses back up into top condition," says Allen. "We've been accomplishing five major projects each year."

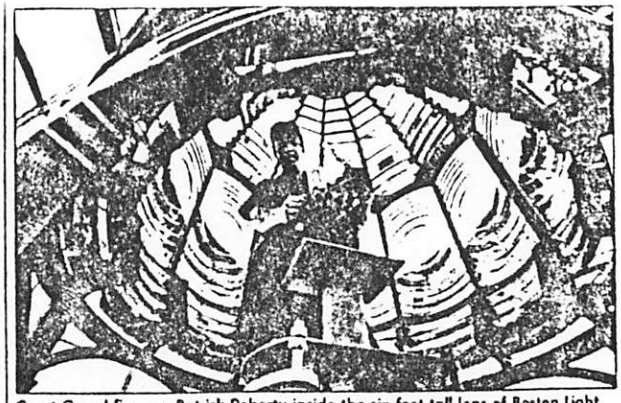
With fewer than 10 percent of New England's lighthouses still living the old life, it doesn't

stations at Boston Light and Portland Head are an anomalous footnote to history. But the Coast Guard can't or won't predict just when the others will be converted. "Right now there are lights undergoing automation," says Allen. "There are some lights being considered as candidates right now, but when and if they will actually be automated, I would hesitate to comment on."

The journey to the top of Boston Light is not for the faint-hearted or acrophobic. You enter the base of the light through two sets of massive iron doors that are stamped with an 1840 imprint from the South Boston Iron Company. A vertiginous iron staircase — 76 steep steps, with a thin hand rail — winds its way up to the first landing, where a nine-rung ladder proceeds to the lower parapet at 89 feet. It is there that the lamp's massive base and clock machinery are oiled and serviced each week; a small door to the outside leads to the first catwalk. Another inside ladder ascends to the light itself, a majestic, second-order Fresnel lens imported from France in 1859. During daylight, the light casts brilliant prisms on the walls of the room below. More than six feet tall, with a circumference exceeding 15 feet, the lens is large enough for a man to crawl inside — and men regularly do — to replace its lamps and clean the glass. (Properly polishing the entire lens takes about three hours, and on a summer day, the lens deck can be a scorcher.) A 1000-watt lamp supplies the illuminant, which is then intensified through the refraction of the lens. The glass at the base of the lens is chipping; it is 125 years old.

Two of the three tiers of windows surrounding the lamp on the lens deck are the original glass from 1783, and "they leak like crazy," says Dodds. From an aerial view at 102 feet (the height of the lens at its focal point), the other buildings on Little Brewster are the size of dollhouses, while across the way the town of Hull seems as close as a next-door neighbor. The sea and the skyline are gray and blurry; you can hear the wind whistling through the glass panes, but the tower feels as solid as it is old.

The switch for the beacon is



Coast Guard fireman Patrick Doherty inside the six-foot-tall lens of Boston Light.

thrown at the base of the lighthouse. If you're standing on the grounds below when the light goes on, just before twilight, the lamp's filaments look like a giant white Christmas tree, its beam blinking on every 10 seconds. The men on the island say that when its beam hits Great Brewster, you can't help seeing a ghost of fog running along the shore.

Boston Light is powered by a commercial power line from Hull, and an emergency backup generator can maintain the entire island, if necessary. There are two fog signals at the base of the light: an electronic signal with a fog visibility sensor and an older, more powerful one operated by air compressors. (The latter is manually controlled, and in use about 80 hours a year.) The first signal is commonly used at automated lights, and it emits a weird, toneless sound — a far cry from the gruff warning of the old fog horns of yesteryear. But the electronic frequency must have its appeal: One morning in June, a baby pilot whale, lost from its parents, adopted a fog buoy near Scituate, circling around and crooning to its new friend. The Coast Guard and divers from the New England Aquarium approached the youngster, trying to coax it back out to sea, but the whale stayed put.

Doherty, who has been with the Coast Guard for three years, has fueled and serviced the lights up and down the New England coast, and he talks with a passion about his favorites. He attributes the deterioration of automated lights to the fact that no one is on the sites permanently to maintain them. Given his energy and productivity, it's little wonder that he takes issue with the neglect inherent in automation. In the first five days of an early summer shift, he and Dodds had built a few tables, painted the boathouse (they converted the upstairs there to a gym last winter), hung two sets of doors, supervised the installation of a new fuel line, cleaned the entire house and grounds, serviced the equipment, and conducted their regular 12-hour watches. Dodds has spent $13,000 for renovations in the several months he has been lightkeeper, and the crew has painted all the buildings and built a white picket fence around the island. Little Brewster, in all its aged splendor, has been given a face-lift.

That's the good news. A more sobering fact is that the island is eroding at an alarming rate: nine inches in the last three months of 1983 alone. A woman who used to go there as a girl made a trip to Boston Light this past June and was shocked by the amount of land shrinkage. She remembered a dozen or so feet of grassy knoll behind the rain shed where she played as a child, a half-century ago. It isn't there anymore.

Boulders of slate lie like discarded rubble at the base of the island now, torn from this humble piece of land by time and exposure both. Harsh breakers during unusually bad storms are partly responsible — witness the damage done to the house's foundation, the pier, and the sea wall on Great Brewster during the Blizzard of '78. A bit of repair work has been attempted (in one spot a steep cliff has been partially reinforced and protected from further disintegration), but that seems small recompense for the mounds of rock that have started moving seaward. An 1859 surveyor's map tells the truth that no cosmetic surgery can disguise: Compared with a 1983 outline of the island, the original sketch is almost unrecognizable.

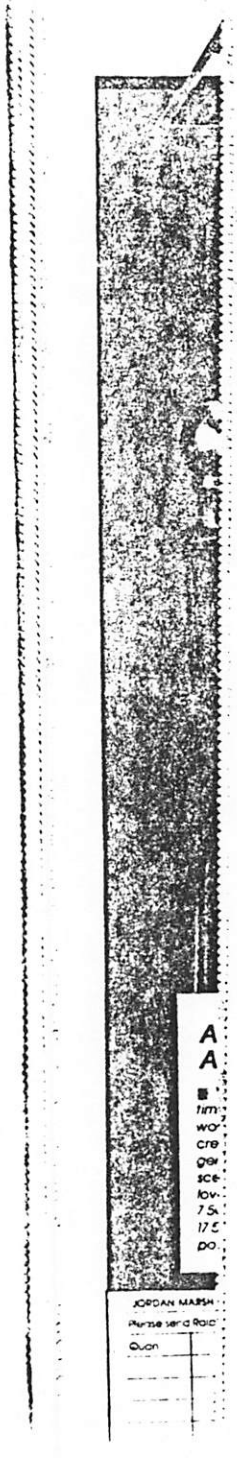
If this rate of erosion keeps up (and there's little reason to hope otherwise), Dodds thinks Boston Light won't be around in another 40 years. Doherty gives it 50. Neither estimate is generous or encouraging. "The oceans are getting larger," says Dodds. "You can't argue with Mother Nature."

Weather dictates life on Little Brewster, and one of the lightkeepers' jobs is to call in the weather report to Allerton station, where it is then transmitted to the National Weather Service in Boston. Marine coastal weather log sheets in the radio office record the conditions of the sky and the weather, visibility, wind speed and direction, state of the sea, temperatures of the water and air, and barometric pressure. The men are far enough out to be able to sight inclement

serves the change, and if a storm rolls in or an unexpected gale picks up force, the lightkeepers contact Allerton station forthwith.

Dodds estimates that the beacon at Boston Light aids 20 or 30 big ships every 24 hours. "And with the small boats — lobstermen and fishermen and pleasure boats — it could easily go to 100 or 200. I even get people who pull up on the island and ask if they can use the bathroom." It is standard procedure to keep an eye out for recreational boats in distress, which can mean anything from a motorboat with no gas or a sailboat with no wind to a more urgent situation. When you spend the better part of your days staring out at the sea and horizon, spotting a dinghy or a Sailfish becomes second nature. One spring afternoon Doherty saw a fellow aboard a small boat floating out to sea, past and around Boston Light. He noticed that the man was alone on deck and that he didn't wave or make any gesture of acknowledgement.

The next morning, the Coast Guard sent out a boat from Hull to search for the vessel, which had been reported missing overnight. The Coast Guard was cruising around (away from where the sailor was headed) when Doherty recognized the boat's description. He radioed the information to the Allerton station, and the Coast Guard found the man a few hours later — adrift, lost and disoriented, dangerously far from shore. An automated light may be able to sense the change between darkness and light, and sophisticated radar might have spotted the vessel in distress before too long. But neither comes equipped — or programmed — with the same observational powers of Patrick Doherty of the US Coast Guard. •



WITH its beacon and fog horns, Boston Light has been an aid to navigation and a warning signal for more than 250 years.

