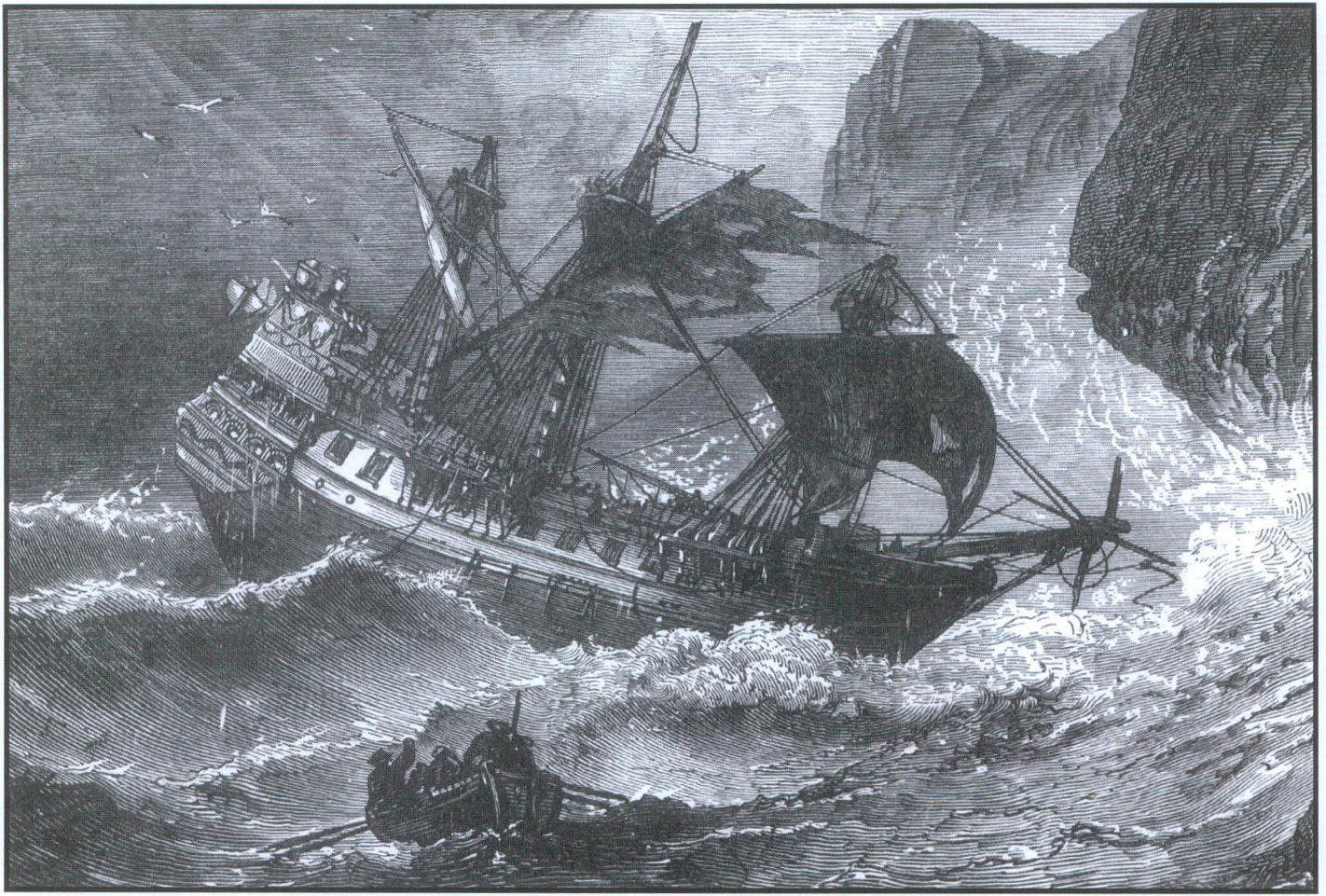




The Bishop

The Story Of The Bishop Rock Lighthouse
By Wayne Wheeler



he Scilly Isles, of England, is the first landfall a mariner encounters when approaching the English Channel from the west. It was among these low lying, wave-washed islets that the Royal Navy experienced its worst peacetime disaster.

In October of 1707 a naval squadron, commanded by Admiral Sir Cloudsley Shovel, was returning from the Mediterranean. The squadron encountered a gale shortly before making landfall and all but two of the frigates were swept onto the ledges and reefs which litter the western seaboard of the Scilly Isles. Admiral Shovel's flagship came to grief on the Glistone Rock. Although he was fortunate enough to be washed ashore on the Cornish coast, he was later slain by a woman envious of the rings on his fingers. In all, 2,000 men, one half of the squadron, perished that night.

After the schooner *Douro* struck the Scilly's Crebawethan Island in January 1843, with the loss of all aboard, Trinity House decided that it was time to survey the Westerly Rocks. They would erect a lighthouse as far west as possible, among the reefs and ledges, where it would do the most good. It was an ambitious project.

Almost every 19th century lighthouse project represented a new beginning for the art of lighthouse construction. No two sites confronted the builders with identical combinations of geology, oceanography and meteorology. Each project had a wholly new and often totally unanticipated lesson to teach. And practical experience, however laboriously and painfully gained on one project, was of little or no use in the next.

Probably nowhere in the world is land and water mixed more chaotically than in the area of ocean extending southwesterly from England's Land's End to a point

slightly beyond the Scilly Isles. These waters conceal far deadlier menaces to navigation than any ordinary wave-lashed and rock-littered coastline.

In and around the Scillies, the seabed is scored in every direction with deep channels and the area is dotted with hundreds of rocky ledges that abruptly shoot up out of the sea bottom from exceptional depths. These criss-crossing ridges are beyond sight of the mainland, providing no hint of their presence. The abruptly rising faces of the surfacing rocks and the deep gullies drive incoming waves, which have swept unimpeded over 3,500 miles of open Atlantic, to fantastic heights.

The fury to which these seas are aroused in times of storms, with towering combers flung in wind-driven sheets of water by screaming southwesterers and spray hurtling across the outer Scillies, is truly staggering to the imagination. Sir James Douglass, who

visited almost every known stretch of ocean in the course of his long professional career, once stated that in all his travels he had never experienced more violent seas than at the Bishop, which is the outermost extremity of this immense and treacherous area known as the Scillys. Although a chart of the area reveals over 150 islets, only five are large enough to be inhabited. Most of the remainder are low lying ledges, awash at various tide stages, or small granite rocks barely poking their heads above water. An early hydrographical book mentioned the area and the St. Agnes lighthouse among the Scillys at the time; 'With this mark [lighthouse] you run in amongst many rocks terrible to behold with the seas alternately flying over them in white sheets or fleeces of that element.' Other references stated "those perilous rocks" or "the dogs of Scilly". These graphic descriptions served to warn the mariner of the disastrous fate which awaited him should he make an error in navigation.

For centuries the stream of maritime traffic approaching these waters had been obliged to divide into "ocean" and "coastal" traffic. The former was able to avoid the teeth of the Scillys by standing far out to sea. But the latter, had to grope through the incredibly perilous channels separating the Scillys and the mainland. For many years, the only night-time guidance available was from the light of St. Agnes (in the Scilly Isles) which was established in 1680 as a coal fueled

lighthouse. In 1790 one of the first revolving reflector systems was installed in this lighthouse. After 1795 the Longships lighthouse, just off Land's End to the east of the Scilly Isles provided additional navigational information. The intervening miles of darkness were crowded with memories of disasters, such as the ghost of Sir Cloudsley Shovel and his doomed fleet.

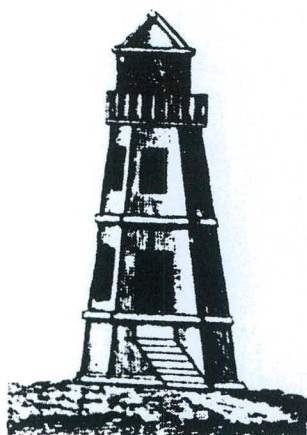
The rapid increase in sea traffic in the area around the southwest extremity of Cornwall during the first half of the 19th century made the need for additional lighthouses increasingly urgent. However, because of the logistic and construction problems associated with building on the Bishop, Wolf and other rocks that dotted the area, it wasn't until 1846 that Trinity House came up with a plan to construct a lighthouse on the Bishop Rock, the outer most

and most dangerous single spot in the area. Although a logical choice, it was also an exceptionally courageous one. Even with the accumulated experience from building the Eddystone, Bell Rock and Skerryvore wave-swept lighthouses, lighthouse engineering had little precedent or preparation for the conditions which would be encountered at The Bishop.

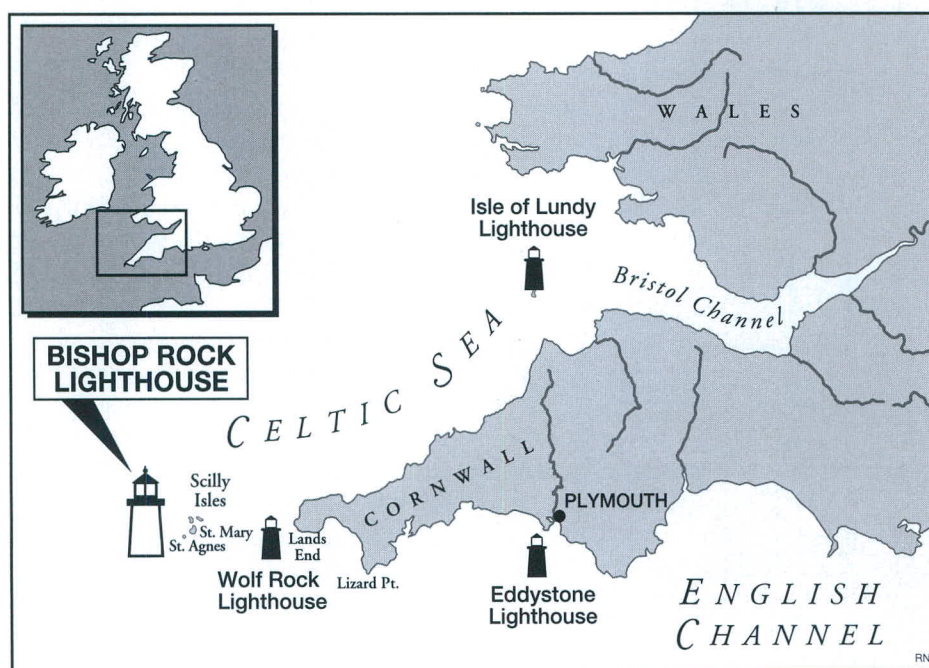
Bishop Rock derived its name from its resemblance to a Bishop's mitre hat. This craggy nubble, marking the western most extremity of the huge reef, extends out nearly 50 miles from Land's End before descending abruptly into the Atlantic. It has an exposed surface area of 153' by 52' at low spring tide. Like its neighbors, it plunges to a depth of 20 fathoms (120 feet) or more on all sides. It not only afforded no protection from the Atlantic waves rolling in, but actually amplified their ferocity by channeling waves up and over the top. Observations taken in the early 1840's, just prior to beginning the project, indicated that waves sweeping over this out-cropping often reached the incredible height of 100 feet from crest to trough - far higher than any observed on the open sea and was due to the configuration of the rock and seabed surrounding it.

Three critical factors — the narrowness of the exposed rock, the violence and height of the waves, and the resultant impossibility of construction of a landing platform — all led to a consensus that a stone tower would be very difficult and prohibitively expensive to construct. Therefore the engineers felt that an iron structure mounted on iron piles, presenting little resistance to the flow of the sea, was the most practical design.

In 1847 Trinity House assigned its engineer, James Walker, the task of designing the lighthouse. Overseeing the construction was the father and son team of Nicholas and James Douglas (who would later construct the present Eddystone Lighthouse). These were both excellent choices. James Walker had an extensive private practice, in addition to his work with Trinity House, and was widely considered the most eminent Civil Engineer in the Realm. The Douglas family was to become an English lighthouse engineering dynasty as respected as the Stevensons of Scotland (who constructed Bell Rock and Skerryvore).



St. Agnes Lighthouse circa 1740.



The project proceeded steadily, with occasional interruptions when seas made it impossible to land on the rock. At times the workmen had to beat a hasty retreat, or hang on for dear life. A lookout was posted to watch out for heavy seas or combers. In the event of sudden large waves, when there wasn't time to evacuate the rock, the men clung to iron stanchions and each other as they were inundated by the icy water. Occasionally a workman was swept off the rock, although always rescued by fellow workmen. It's amazing that no one was lost during this perilous construction project.

The construction crew labored over four seasons to erect the iron pile lighthouse. The tower legs, constructed of cast-iron with wrought iron cores, were sunk into holes which had been drilled in the rock and then cross braced. A hollow center tube, 3½ feet in diameter, contained the ladder for access from the rock to the lantern. Over all, the structure stood 120 feet high.

Except for the installation of the lens, the project was finished in 1849. Trinity House ordered the lens for installation in the spring or summer of 1850. However, a violent storm struck the area in February 1850. Massive waves lashed the new lighthouse, snapping off the legs. Engineer Walker had badly miscalculated and the \$60,000, four year project, was destroyed. A local paper reported: "The massive pillars and apparatus erected during the last three summers on the Bishop Rock, at a vast expense, were entirely washed down in the storm of Tuesday night last week...The pillars [ed. cast-iron legs] are broken off, some at the base, others at two, three, four and five feet from the foundation, evidently proving that the pillars were not sufficiently strong..."

And, engineer William Douglas stated; "This disaster was doubtless due to the heavy seas sweeping over the rock at an elevation considerably higher than had been estimated, and thus striking with their full force the larger surface of the upper portion of the structure, intended for the residence of the light keepers, and for the storage of their provisions, fuel, etc." It was certainly lucky for some would-be keepers that the installation of the lens had been delayed for the structure was unoccupied when the storm struck.

The following year the engineers were back in the Scilly Islands. They set up base on nearby uninhabited Rosevear Island which afforded a view of the Bishop. In this manner, they could determine when the state of the sea would allow a landing on the rock. Thus, they were able to maximize construction time at The Bishop. Living quarters and a workshop were constructed on Rosevear.

However, the island base was, itself, occasionally cut off from civilization when heavy seas prevented landings. When supplies ran low, the workmen resorted to living off the

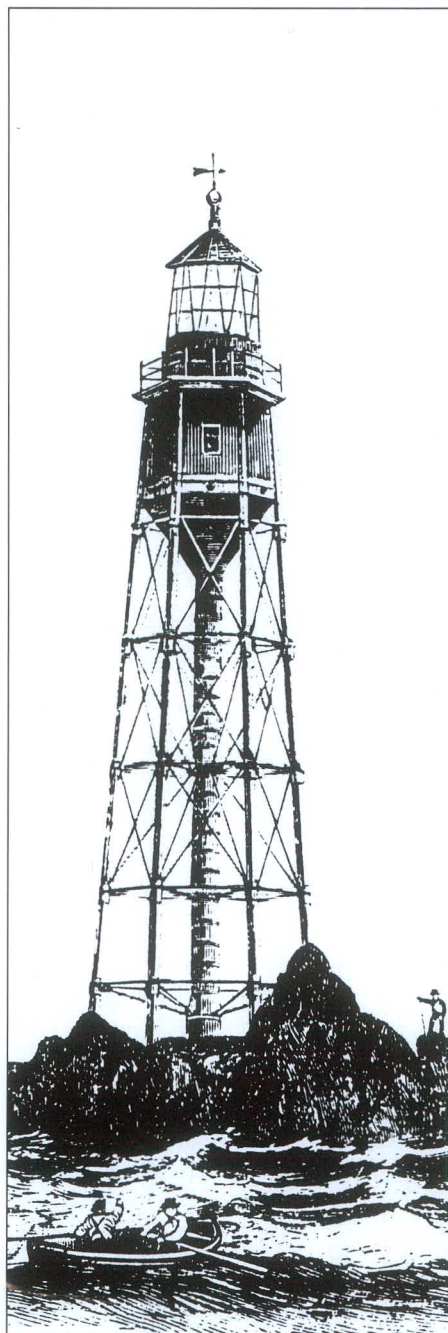
land as best they could; fish, sea birds' eggs, shell fish and a few vegetables.

By this time Nicholas Douglas was a man of 52 years and no longer able to leap from bobbing boats to slippery rocks. For the construction of the second lighthouse on the Bishop Rock he acted as superintendent, leaving the bulk of the on-site construction work to his son James. James worked along side the workmen and shared the same quarters and hardships that they did. This went a long way in gaining the respect and confidence of the workmen.

During 1852 stone for the new tower was quarried in Cornwall, sent to the Scilly base camp on Rosevear Island, aboard the *Billow*, where each block was cut to the correct size, numbered and then transported to the construction site by the steam tug *Bishop*.

The Bishop Rock slopes sharply much like the Eddystone [see *The Keeper's Log* volume II]. In fact the lowest stones had to be set one foot below the lowest spring tide. To facilitate this a cofferdam was constructed around the lowest area and the water pumped out. This obviously had to be accomplished during the lowest tide and under the calmest of conditions. Stones were set in steps up the slope until a sufficient base was created (along with the natural rock) to allow the towers full base of 34 feet to be constructed. The first stone was laid on July 14, 1852 and it wasn't until July 30 that the first stone of the circular base could be set. By the end of the working season 44 stones had been set in place, all dovetailed and interlocked both vertically and horizontally.

The construction of the second Bishop Rock Lighthouse took six long years. When finished, the tower stood 147 feet high, 37 feet of the structure was below water at high tide. The first 45 ft. of the tower was solid granite. From the solid base up the walls varied in thickness from almost 5 feet at the base to 2 feet at the service room level, just below the lantern. The lantern itself was 14 feet in diameter and 28 feet high. The 1st order lens was first lighted on September 1, 1858 and the fixed white light could be seen 14 miles. However, that must have been the calculation to the surface of the water on the horizon, as the tower height combined with a mariner at the mast head of a ship should have produced a range far greater than that, say 22 miles.



The First Bishop Rock Lighthouse.

In all the tower contained 2,500 tons of dressed granite and cost over \$175,000, a tidy sum for those days. Prince Albert, titular head of Trinity House, when addressing the Elder Brethren of that August organization noted, "...a triumph of engineering skill and perseverance ...magnificent and perhaps the most exposed in the world."

However, the finished tower turned out to be not all that magnificent as it was battered by subsequent storms in the ensuing years. As mentioned, the fetch of the sea before this lonely outpost was 3,600 miles. The amount of water hurled against the tower, during a gale, after traveling across the Atlantic, is staggering. Pressures in excess of 7,000 lbs. per sq. ft. have been recorded on the walls of the tower. Battered by huge waves, the tower shuddered and vibrated to the extent that books were thrown off shelves, thick glass storm panes of the lantern were shattered, the lens was damaged by the vibrations and a violent storm of 1860 ripped the exterior metal access ladder from its bolts. Granite blocks a few feet above the high water mark were actually cracked by the force of the waves. Most illustrative of all was the loss of the 500 pound fog bell which was ripped from the tower at the 119 foot level. It had hung just beneath the lantern room gallery. Waves washed right over the lantern and obviously terrified the keepers. When the storm subsided somewhat the keepers hung a distress flag from the gallery, the flag pole having been ripped off by the same wave that snatched the 500 pound bell. It was five days before a Trinity House engineer could land at the Bishop and assess the damage, which he reported at \$5,000.

Over the years the tower continued to be battered and the Bishop became a station which many keeper tried to avoid. In 1874 the tower was lashed to the extent the lantern storm panes (windows) were broken and the lens itself cracked in 30 places. The keepers feared for their lives as they watched waves climb past the galley windows, some 70 feet above the ocean. Most disturbing were the increasing cracks in the lower granite blocks.

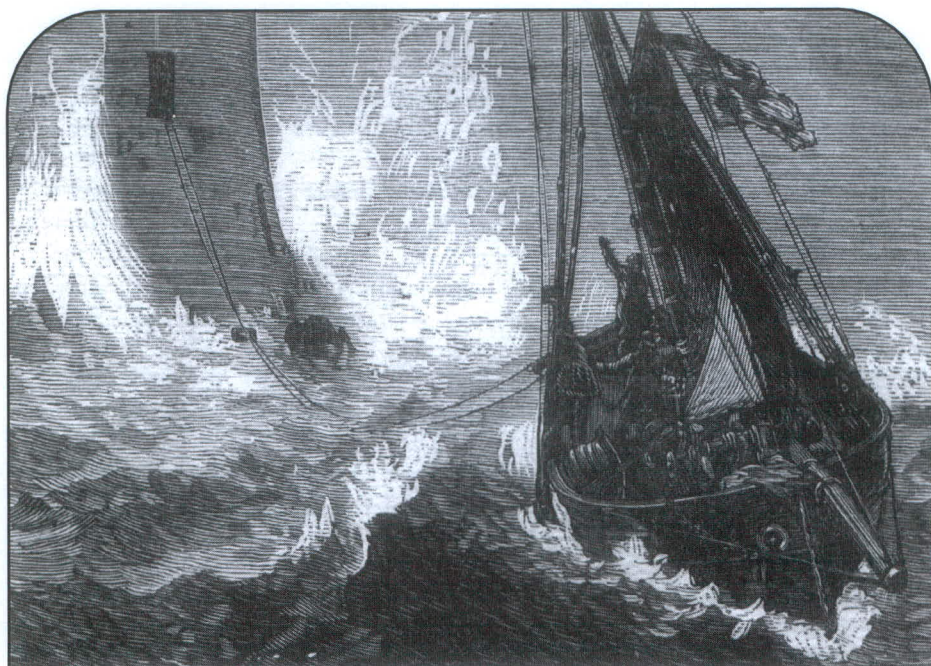


New Lighthouse on Bishop Rock,
Scilly Islands.

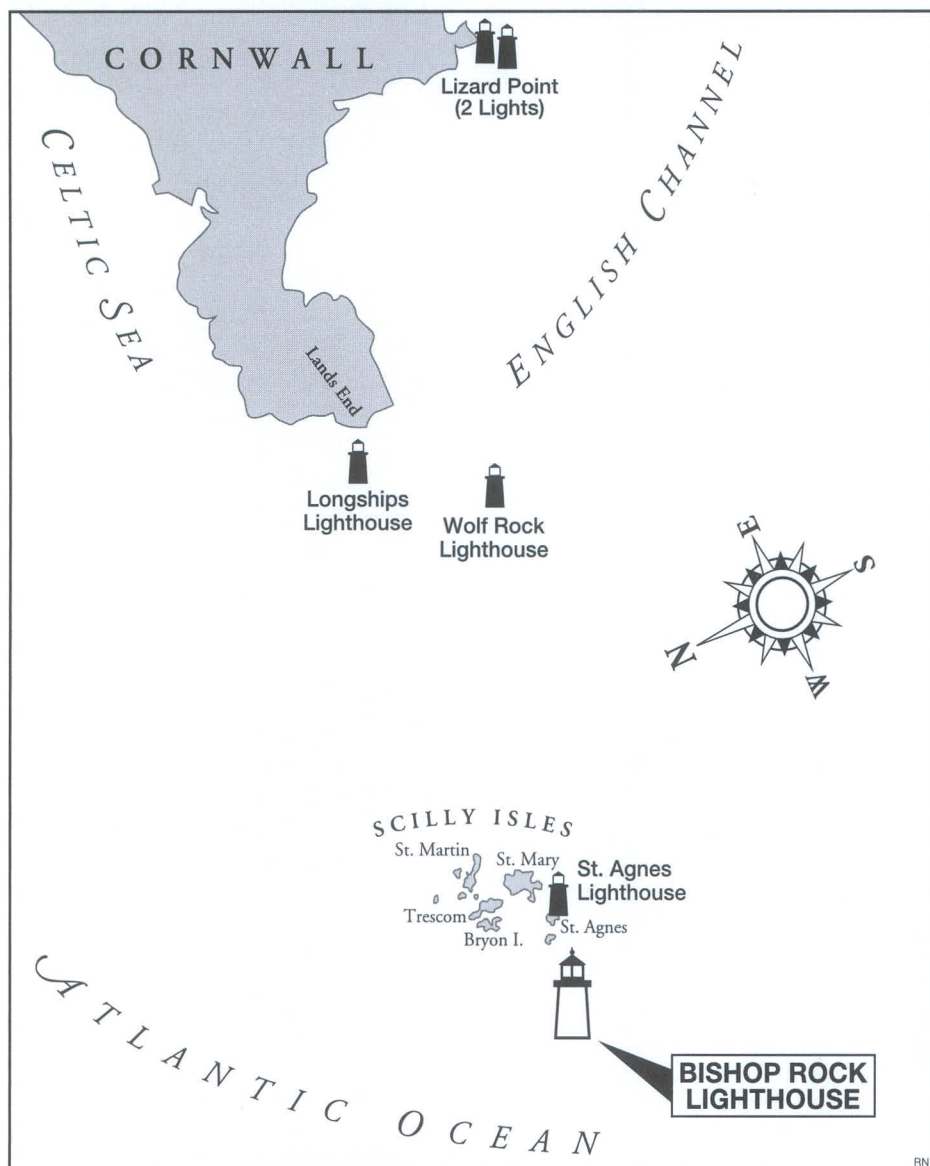
In 1881 a storm carved 50 pound chucks from granite blocks at the base of the tower. This event caused the engineers to reevaluate the tower. They finally decided on a three part solution to strengthen the tower. The first phase called for encasing the lower level of the tower with additional dovetailed granite blocks from the foundation to the service room. When finished the tower was 41 feet in diameter at the base. This second layer of stone surrounded the old base up to 40 feet and provided a landing platform at that height. The new base was constructed between May 25, 1883 and November 1884.

The second phase encased the tower walls in a layer of granite (thinner than applied to the base) from the landing platform to the lantern. This was accomplished by December 1885 and involved the addition of 54 courses. Up to this point a crane had been mounted on the gallery and moved around the deck to raise the granite blocks to each new course or layer. Once the work reached the gallery level, the lantern room was removed and a 40 foot mast was installed in the center of the service room floor (the room just below the lantern). A crane was mounted on the mast. Additionally, a lightship lantern was mounted on top of the mast as an aid to navigation and it was all accomplished without any break in service to the mariner.

The third phase involved raising the height of the tower. Between June 26, 1886 and August 30 of that year courses 63 to 91 were installed creating four new floors above the old tower. The workmen, now above the reach of the sea, were able to work more quickly and install one or two courses a day. After a period of 3½ years 3,220 tons of new granite blocks were in place giving the tower a larger diameter, a greater height and a total weight of 5,720 tons. A new lantern was installed on top of the extended tower. The height of the lantern was now 144 feet above the sea. A new more powerful lens producing a group flash white light every 15 seconds was installed. The taller tower, and more powerful lens, enabled the light to be seen for 29 miles. The cost of the improvement project was \$195,000.



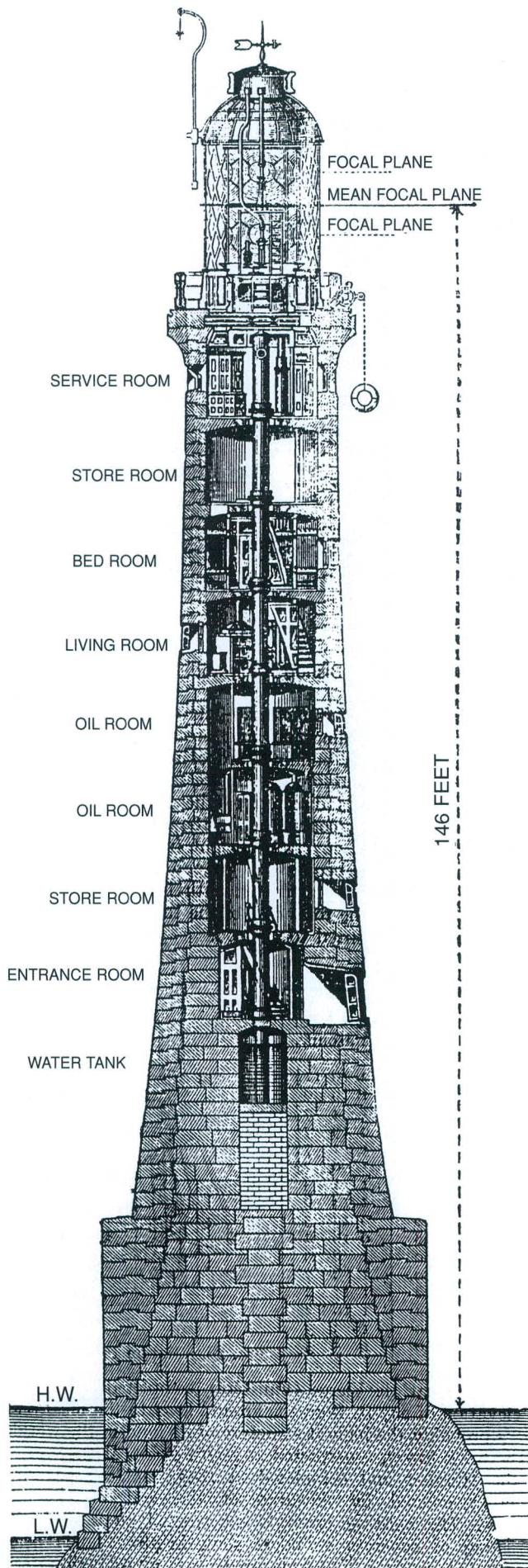
Left — making a landing at the Bishop Rock Lighthouse. Old *Harper's Magazine* engraving.



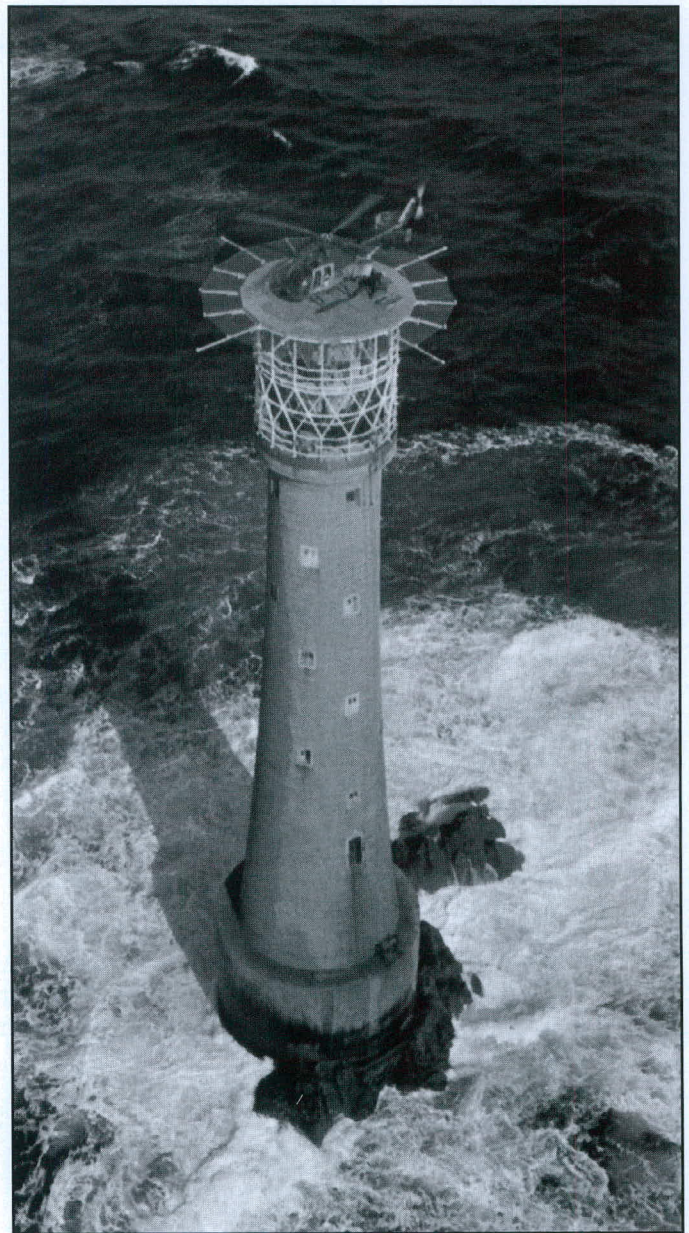
The Bishop was always a difficult lighthouse to land on, even in calm weather. To transfer supplies or take keepers on and off the lighthouse a line (rope) was stretched between the landing platform and the relief boat. The keepers scaling the line to the tower, or if being relieved, slid down the rope to the boat. However, with the swirling currents of the area the relief boat could be suddenly pulled away from the tower causing the rope to tighten, or worst case snap. Also the boat might be suddenly sucked in toward the tower causing the rope to sag, dropping the keeper into the water.

In 1975 and 1976, Trinity House removed the top of the lantern and installed a helicopter platform to aid in the transportation of men and supplies to the rock. Since that time this offshore lighthouse has been automated. The addition of the helicopter platform alters the graceful nature of the design, but it certainly makes life eminently safer for Trinity House members. Many of the other rock lighthouses of England also have had helicopter platforms installed on the top of the lanterns.

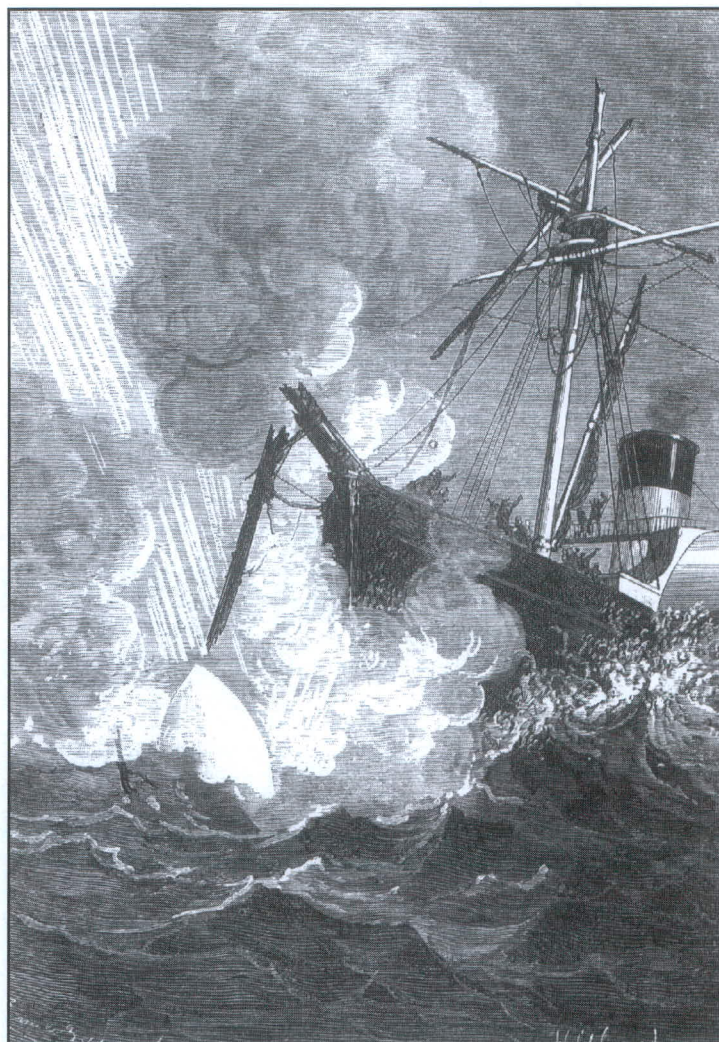
The existence of the lighthouse on the Bishop Rock, even with Douglas's improvements was no guarantee that vessels would be spared the sharp fangs of the Scillies. Some 17 years after the tower was modernized the vessel *Schiller* came to grief on a nearby reef, within sight of the Bishop.



Left — The reconstructed Bishop Rock Lighthouse. Note the lighter colored inside blocks which illustrate how the structure looked before being enlarged. Illustration from the 1911 *Encyclopedia Britannica*.



Above — The Bishop Rock Lighthouse as it appears today with a helicopter platform on the lantern room.



On May 6, 1875 the Germany Eagle Line vessel *Schiller* was nearing the Scillys enroute Hamburg, with a stop at Plymouth, England. The Atlantic crossing had been uneventful, the seas were calm and the skies clear. As the sun set the dinner service began and the passengers went below deck to the dining salon. Suddenly the ship was engulfed in a thick fog bank. However, the captain chose not to reduce speed. After all, the Eagle Line took pride in being able to advertise its vessels had some of the swiftest crossings of the Atlantic. Unfortunately, the strong and unpredictable currents in the area of the Scillys had placed the *Schiller* off course. The vessel raced on in the thick fog and at two minutes to ten p.m. struck and came to rest on the Retarrier Ledge. Only 53 out of a total of 364 passengers survived the tragedy. By morning the vessel had been beaten to a hulk; both funnels and the bridge had been torn off by the pounding seas. The survivors told of intermittently

seeing the Bishop Lighthouse when the fog lifted from time to time.

The keepers at the Bishop Lighthouse were well aware of the wreck which occurred just a few hundred yards from their tower, but without a boat they were powerless to help. Keeper James Daniel recounted the event in a letter:

"At 11:35 p.m. William Mortiner came running down and called to me, and said he could see a vessel on the rocks, I jumped up and went out on the parapet [ed. galley deck] without stopping to dress, and saw the masthead and starboard light of a large steamer. She was burning blue lights and firing off guns and rockets, she seemed to be sinking. The last gun was fired at 1:30 a.m. on the 8th inst... I relieved G. Gould at four a.m.

Fog again raised at six a.m., and I could then just see the topmast of the vessel out of the water. We could

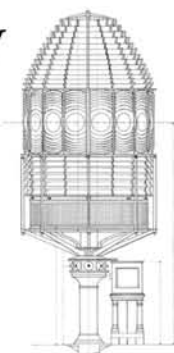
count about 26 people in the rigging. I could see one lady in the lee side of the rigging with two males by her. She was in a sitting position, I should think lashed. It was a dreadful sight. At about seven a.m. the mast fell, and I suppose everyone perished, but I still hope that a few or some might have been saved.

On Sunday three bodies floated past us, and this afternoon more have past close to us. No one knows what was felt in this house by all hands to see so many of our dear fellow creatures suffering and dying so near to us, their suffering must have been severe, for it was a cold drizzling rain all night, wind WSW. I think you had better take this letter, together with my compliments, to Mr. John Banfield, Lloyd's agent."

I remain your affectionate husband.
James Daniel



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.

*To learn more visit
www.uslhs.org
or
call Headquarters at
415-362-7255*

Help Support Our Important Mission!

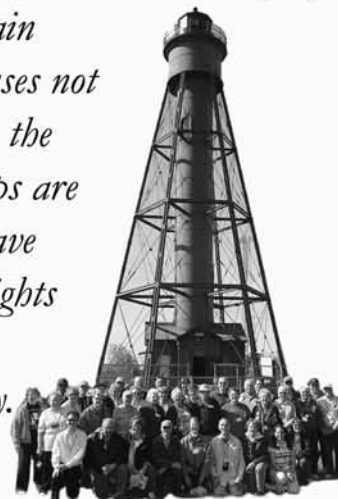
Education



The Keeper's Log magazine is the only one of its 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