

Bell Rock Lighthouse

Light Established

1811

Engineer

Robert Stevenson

Position

Latitude 56° 26.1'N

Longitude 02° 23.1'W

Situated 12 Miles from Arbroath

Character

Flashing White every 5 Secs

Elevation

28 metres

Nominal Range

18 miles

Structure

White tower 36 metres high. There are 96 steps to the top of tower

History

The oldest existing rock Lighthouse in the British Isles is the tower on the Bell, or Inchcape, Rock a long and treacherous reef lying in the North Sea, some 12 miles East of Dundee and in the fairway of vessels plying to and from the Firths of Tay and Forth. Even in the old days, this rock had provided to be a danger to navigation. In his account of the Bell Rock Lighthouse, Robert Stevenson, Engineer to the Board, stated "there is a tradition that an Abbot of Aberbrothock directed a bell to be erected on the Rock, so connected with a floating apparatus, that the winds and sea acted upon it, and tolled the bell, thus giving warning to the mariner of his approaching danger. Upon similar authority, the bell, it is said, was afterwards carried off by pirates, and the humane intentions of the Abbot thus frustrated" Robert Stevenson went on however to state "of the erection of the bell, and the machinery by which it was rung, if such ever existed, it would have been interesting to have some authentic evidence. But, though a search has been made in the cartularies of the Abbey of Aberbrothock, preserved in the Advocates' Library, and containing a variety of grants and other deeds, from the middle of the 13th to the end of the 15th century, no trace is to be found of the Bell Rock, or anything connected with it. The erection of the bell is not however an improbable conjecture; and we can more readily suppose that an attempt of that kind was made..."

The erection of a permanent seamark on the Bell Rock presented some difficult structural problems. The surface of the rock is uncovered only at low water while at high water it is submerged to a depth of some 16 feet.

Work on the excavation of the rock was begun in 1807 but it was not until February 1811 that the light was first exhibited. The tower which is of stone quarried from Mylnfield, near Dundee, and from Rubislaw, Aberdeen, is 115 feet in height, 42 feet is the diameter at the base, tapering to 15 feet in diameter at the top. It is of solid dovetailed masonry for the first 30 feet, half of which is below high water and above are 5 chambers and the lightroom.

The original optical system used at the Bell Rock consisted of twenty four parabolic reflectors 25 inches in diameter with their inner surfaces silvered to better reflect the light. Each reflector had, located at the focus, an argand lamp having a circular wick of three quarters of an inch diameter. The reflectors were arranged in a rectangle with seven located on each of the major sides. The ten reflectors on the minor sides had red glass discs fitted to the outer rims such that the light emitted from these would be red in colour. The whole apparatus was caused to revolve by the action of a clockwork arrangement powered by a weight descending through the tower. As the optical system revolved a distinctive character of alternating red and white light was seen. This was the first revolving light in Scotland

The parabolic reflectors were later replaced by a 1st Order Fresnel lens in which a paraffin vapour burner provided the illuminant. The PV burner was replaced by an electric lamp in the mid 1960s.

A Dalen optic in which a gas light is burned in a lens system was installed during 1988 with a range of 18 miles, the character is flashing white every 5 seconds, replacing the existing electric light installed in 1964.

The Lighthouse was demanned on the 26 October 1988 and is now remotely monitored from 84 George Street, Edinburgh.

There is a painting by J W M Turner depicting this lighthouse during a storm, and Sir Walter Scott, when he inspected the Bell Rock in 1814, in the course of his duties as one of the Commissioners of the Northern Lighthouses, wrote the following short poem in the visitors' album:-

"Far in the bosom of the deep
O'er these wild shelves my watch I keep
A ruddy gem changeful light
Bound in the dusky brow of night
The seaman bids my lustre hail
And scorns to strike his tim'rous sail"

During the first and second World Wars, the lighthouse exhibited a light when ships were expected to pass the Inchape reef which runs for 2,000 feet across shipping routes of the Firths of Tay and Forth. It was on 27 October 1915 when the Captain of the "ARGYLL" (10,850 tons) one of the Devonshire Class Armoured Cruisers, sent out a routine signal to the Admiral Commanding the Coast of Scotland at Rosyth, requesting the Bell Rock be lit on the night of 27/28 October. The message was never passed on as the lighthouse had no radio and all messages had to be delivered by boat. Heavy seas made this impossible. The "ARGYLL" sank but fortunately there were no casualties at all in the complement of 655 men. In the Second World War the Bell Rock was machine gunned by an enemy aircraft on 31 October 1940, 30 March 1941 and on 5 April 1941. Also on 1 April 1941, one bomb was dropped which exploded about 10 yards from the base of the tower, doing no damage. No one was injured during these raids and the damage consisted (in total) of 9 bullet holes through the dome, 14 lantern panes broken, 4 lens prisms damaged, 6 red shades smashed, 1 balcony tank and balcony rail damaged and 1 astragal damaged.

Tragedy struck the Bell Rock in 1955 when the crew of the RAF Helicopter were lost while involved in a goodwill gesture. An account of the incident by C E Cadger, the Superintendent at the time is as follows:-

Helicopter from Leuchars base on routine training flights frequently passed over the Bell Rock and occasionally as a friendly gesture would lower a bundle of newspapers, magazines and such like to the keepers, provided the weather and sea conditions made it possible for the Lightkeepers to receive the gifts while standing on the landing grating well clear of the tower. This exercise was much appreciated by the keepers and no doubt provided useful experience for the Airmen. On 14 December 1955 a helicopter circled the rock and the indications were that the crew intended to drop something, but as heavy seas were sweeping over the landing grating it was not possible for the keepers to venture there.

The airmen thereupon elected to embark on a hazardous and intricate operation, namely to lower what they had intended to deliver on the top of the dome, where the three keepers went to accept delivery.

While manoeuvring into position over the lighthouse something went wrong and the keepers were horrified to see that helicopter plunged out of control in their direction; by a miracle the keepers escaped uninjured, but the "copter in its descent hit the copper dome a glancing blow denting but not piercing the plating, ripped off a large section of the cast iron gutter surrounding the lantern, wrenched off the steel ladder between the balcony and the dome, demolished a number of plate glass lantern panes, distorting some of the bronze astragals, and carrying away handrails and other fittings before crashing on the rock base of the tower 130 feet below.

The three Lightkeepers scrambled down the lantern framework as best they could and made their way down to the lighthouse doorway, and from this vantage point about 30 feet above the rock, looked down on the battered wreck of the helicopter, partially submerged and being buffeted by the heavy seas braking over the reef.

It became apparent that the wreck could not remain for long under the existing weather conditions, it was also apparent that one of the RAF men was still in the wrecked machine, but to reach him under prevailing conditions was seemingly impossible; nevertheless an attempt was made.

Mr Wood was the smallest of the three lightkeepers, but what he lacked in stature he more than made up for in courage, fastened a life line round his middle while the other Assistant held the rest of the line. He then proceeded down the bronze ladder from the doorway into the maelstrom below, watched his chance between the oncoming seas, made a dive for it, and managed somehow to enter the swaying wreck. Unfortunately the airman had not survived the crash and there was nothing Wood could do except make his way back to the safety of the lighthouse doorway if he could; his luck held and he had barely joined his companions when a huge wave swept over the reef, lifted the wrecked machine bodily and carried it away into deep water. It was never seen again.

The tragic loss of the RAF crew cast a gloom over the Bell Rock, as it undoubtedly did over the Leuchars base. The friendly flashing light from the lightroom was extinguished as a result of the accident (as though it too was in mourning for the loss), and was probably the only time the light was not exhibited during the 158 years of its existence, except for periods during the war years.

The Bell Rock without its customary light created a very real danger to shipping and a warning to mariners was broadcast accordingly and immediate steps were taken to have a temporary light installed until repairs to the building could be carried out and the main light made serviceable. This however was greatly hampered by a succession of gales which prevented a landing being made.

It was not until 20 December that weather conditions eased sufficiently for a landing to be effected with a motor boat from MV MAY and another from MV PHAROS standing by in case of emergency.

All materials for the installation of the temporary light were successfully landed, together with tarpaulins for wrapping round the damaged lantern to exclude the high winds, also the materials required for reglazing the lantern, and two Artificers R L Naylor and J M Danskin who were to carry out the work.

The work commenced at once to install the temporary light which took the form of two large sized buoy lanterns, one erected on the west side of the lighthouse

balcony and the other on the east side, operated from gas cylinders and a master flashing device to regulate the two lights and promote simultaneous flashing.

The temporary lights were brought into use within a couple of days and proved satisfactory; the work of repairing the damage to the lantern was next tackled by the Artificers ably assisted by the Keepers. This was a more difficult assignment carried out under vile weather conditions, removing broken glass from the astrangals of a lighthouse lantern in freezing gale force winds with occasional sleet showers thrown in for good measure, and fitting the new triangular glass panes in place at time during the hours of darkness, could not be described as an occupational treat. Nevertheless within a week this part achievement brought about not by "working to rule" as is common-place in some spheres at the present day, but by breaking every rule in the book.

The structural damage was unrelated to the operation of the light and fog signal and in no way impaired the efficiency of the lighthouse, and therefore received attention at a later date when replacements could be obtained, and more favourable weather conditions could be expected.

One would have thought that the tragic loss of the helicopter crew would have placed the Bell Rock out of bounds for all other crews, but this was not the case.

On Christmas Day (Sunday) in the early afternoon, another helicopter visited the rock. On this occasion for once the sea was calm, the wind a gentle breeze the tide low and the landing grating high and dry - excellent conditions for landing anything.

The "copter hovered over the grating and something resembling a large milk churn was winched down to the three keepers who received it and had it hoisted up into the kitchen for closer examination.

The scene within the small circular kitchen was one of excited anticipation, the atmosphere somewhat over-heated by the coal burning range, and thick with tobacco smoke from the bunch of "overgrown youngsters" all wide-eyed and eager to see what Santa had dropped on their doorstep. The metal cylindrical container held a series of metal trays one on top of the other, and each tray was loaded with a choice assortment of delicacies usually associated with the Christmas season namely, Roast turkey with all the trimmings; potatoes both mashed and toasted, brussel sprouts, Christmas pudding etc and all steaming hot. There was also 100 cigarettes and a quart bottle of a well known brand of Scotch Whisky.

The toast was to the generous kind-hearted RAF personnel at the Leuchars base of their handsome and acceptable gifts.

Find out more about the Bell Rock at www.bellrock.org.uk

