

THE BELL ROCK

CHAPTER I

Situation and character of the Bell Rock. Proposal for a lighthouse to be erected. The floating-light prepared and moored.

(The Bell Rock was formerly known as the Inchcape Rock.)

The Bell Rock may be described as a most dangerous sunken reef, situate on the northern side of the entrance of the great estuary or arm of the sea called the Frith of Forth; and as such directly affecting the safety of all vessels entering the Frith of Tay. The surface of the rock is rugged and full of cavities, so that walking upon it becomes rather difficult.

At the time of high-water of spring-tides¹ the south-western reef is about 16 feet, or nearly the whole rise of the tide, under the surface of the water; while the part of the rock on which the lighthouse is built is about 12 feet below high-water mark of spring-tides; at low-water of neap-tides, hardly any part of the rock is visible: but at low-water of spring-tides, the general level of the north-eastern end where the lighthouse is built is about four feet perpendicular above the level of the sea.

Whatever may have been the early state of the Inch Cape or Bell Rock as an island, its present character is strictly that of a sunken rock; and, as such, its relative situation on the eastern shores of Great Britain has long rendered it one of the chief impediments to the free navigation of that coast.

¹ 'Spring' and 'neap' tides occur in alternate weeks. In spring tides the range between high and low water is at its maximum; in neap tides at its minimum.

The disastrous shipwrecks which occasionally happened at the entrance of the Friths of Forth and Tay deeply impressed every one conversant in nautical affairs with the most convincing proofs of the necessity for some distinguishing mark being erected upon the Bell Rock. As yet, the writer had not landed upon the rock; though he had begun to prepare a model of a pillar-formed lighthouse, to be supported upon six columns of cast-iron, under the impression that this description of building was alone suitable to its situation. In the summer of the year 1800, this model was presented to the Lighthouse Board, when an official application was made to the Commissioners of his Majesty's Customs for the use of the Osnaburgh cutter, then lying in the harbour of Elie, on the coast of Fife, to carry the writer to the Bell Rock, that, by landing there, he might be enabled to judge of the applicability of his pillar-formed design to the situation of the rock. Upon reaching Elie, the Osnaburgh was found to be under repair, and could not possibly go to sea for several days, by which time the spring-tides would be over. The journey was continued along the coast to West Haven, on the northern side of the Frith of Tay, where a large boat was procured, and manned with fishermen who were in the habit of visiting the rock to search for articles of shipwreck.

On this first visit to the Bell Rock, the writer was accompanied by his friend Mr James Haldane, architect. The crew being unwilling to risk their boat into any of the creeks in the rock, very properly observing that the lives of all depended upon her safety, and as we could only remain upon the rock for two or three hours at most, we landed upon a shelving part on the south side of the rock. Having been extremely fortunate both as to the state of the weather and tides, an opportunity was afforded of making a sketch of the rock at low-water: meantime, the boatmen were busily employed in searching all the

Cambridge University Press
 978-1-107-61093-4 - The Bell Rock Lighthouse
 Robert Stevenson
 Excerpt
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Map showing the position of the Bell Rock
 on the coast of Scotland

holes and crevices in quest of articles of shipwreck, and by the time that the tide overflowed the rock, they had collected upwards of two cwt. of old metal, consisting of such things as are used on shipboard. A few of these were kept by the writer, such

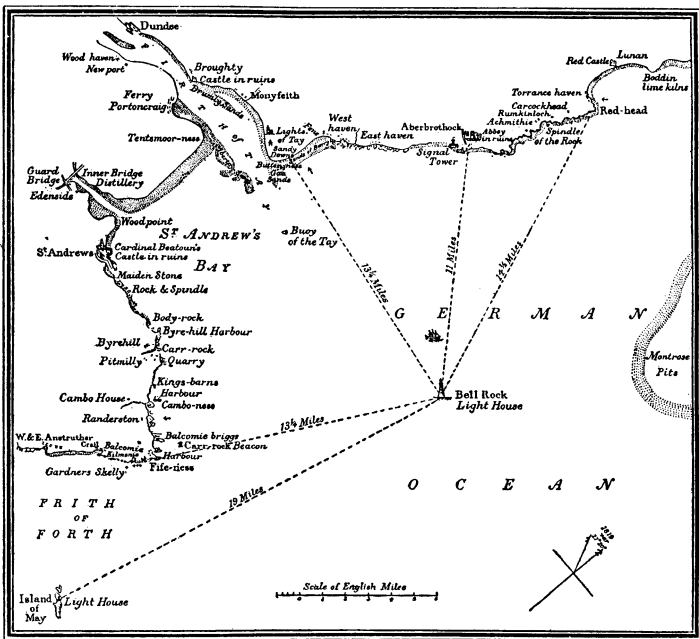


Chart showing the distance of the Bell Rock from the coast of the Firths of Forth and Tay

as a hinge and lock of a door, a ship's marking-iron, a piece of a ship's caboose (or *kambuis*, cover of the cooking-place), a soldier's bayonet, a cannon ball, several pieces of money, a shoe-buckle, &c.; while the heavier and more bulky articles, as a piece of a kedge-anchor, cabin-stove, crowbars, &c. were left with the crew.

The immediate result of this visit on the mind of the writer and of Mr Haldane was a firm conviction of the practicability of erecting a building of stone upon the Bell Rock; and from that moment the idea of a pillar-formed lighthouse was rejected, as unsuitable to the situation. Under these impressions, the writer, after his first visit to the Bell Rock, in the year 1800, made a variety of drawings, and constructed new models for a building of stone, shewing various methods of connecting the stones by dove-tailing them laterally, like those of the Eddy-stone Lighthouse, and also course to course into one another perpendicularly. These plans and models were duly submitted to the Lighthouse Board, accompanied with estimates of the expence, amounting to the maximum sum of £42,685, 8s.

(One notices the care with which Stevenson must have worked out his costs. To estimate to the nearest shilling for so great an undertaking was indeed a remarkable performance.)

The Commissioners of Northern Lighthouses promoted a Bill in Parliament to empower them to levy a duty upon shipping in the neighbourhood of the Bell Rock, for the purpose of raising funds to build a lighthouse upon the rock.)

The Act of Parliament, by which the Commissioners of the Northern Lighthouses were empowered to undertake the works at the Bell Rock, having only received the Royal Assent late in the month of July 1806, there was not sufficient time for making the necessary preparations for their commencement that season. But the writer, on his return from London, received instructions from the Board to have such preliminary steps in view as would enable him to begin the operations early in the summer of 1807.

The bill for the Bell Rock Lighthouse was drawn up under a strong impression of the uncertainty which must attend the whole of the works at the rock, and doubts were accordingly entertained as to the estimated expense being adequate to the

accomplishment of the undertaking. A clause had, therefore, been introduced, authorising the collection of lighthouse duties of one penny halfpenny *per* register ton from British vessels and threepence *per* ton from foreigners, 'immediately upon mooring or anchoring a ship or vessel, and exhibiting a floating or other light, at or near the Bell Rock', and 'half the amount of the said duties respectively', on the erection of 'a proper beacon or distinguishing mark or object on the said Bell Rock'. The measures first in order were, consequently, to fit out and moor a floating-light and to erect a beacon on the Bell Rock, that shipping might derive immediate advantage from them while the lighthouse was in progress; and also that the funds of the Board might, as early as possible, have the benefit of the additional duties.

In the year 1806, a great number of vessels were taken by our cruisers upon the coasts of Holland, Denmark and Norway, many of which were carried into Leith to be sold. One of these, a Prussian, which happened to be captured while fishing on the Dogger Bank, was purchased for the Bell Rock service. She was called the *Tonge Gerrit*, but was afterwards named the *Pharos*, in allusion to the celebrated *Pharos* of Alexandria.¹

(This vessel was specially fitted up to serve as a lightship, and after some difficulty, was anchored about one-and-a-half miles northwest of the Bell Rock on 14th July, 1807. After lying at anchor for some weeks to test the moorings, a light was exhibited from the *Pharos* on 15th September, 1807.)

¹ *The Pharos of Alexandria was a famous beacon-tower built in Egypt about 250 B.C., and then regarded as one of the wonders of the world.*

OPERATIONS OF 1807

CHAPTER II

The Smeaton built and launched. A preliminary trip to the rock. Selection of artificers. The working party sails to the rock.

We shall first proceed to a detail of the operations *afloat*, as they may be termed, or of the works upon the rock itself, during the season of 1807,—particularly of the erection of the principal beams of the beacon-house, or temporary residence for the artificers on the rock, and of the progress made in the preparation of the foundation or site of the main building. We therefore observe, that a vessel had been built at Leith, in the course of the spring, expressly for the Bell Rock service, to be employed as a tender for the floating-light, and as a stone-lighter for the use of the work. This vessel was launched in the month of June; she measured 40 tons register, was rigged as a sloop, and fitted in all respects in the strongest manner, to adapt her as much as possible for the perilous service in which she was to be employed. She was called *The Smeaton*,—a name which the writer had great pleasure in suggesting, as a mark of respect for the memory of the celebrated engineer of the Eddystone Lighthouse, whose narrative was to become a kind of text-book for the Bell Rock operations. *The Smeaton* was ready for sea in the beginning of August, and reached Arbroath upon the 5th day of that month.

The floating-light rode in safety at her moorings, and had hitherto been supplied with necessaries by the yacht belonging to the general service of the Lighthouse Board. In this vessel, occasional trips had also been made to the rock. In these

preliminary trips the writer had fixed in his own mind upon the parts of the rock most favourable for the position of the lighthouse, and on the south-west of it he chose the site of the beacon-house, that it might be sheltered in some measure from the breach of the north-east sea.

The Smeaton having got on board necessaries for the floating-light, and three sets of chain-moorings with mushroom-anchors and large floating buoys, the writer sailed on another preliminary visit to the Bell Rock on the 7th day of August, carrying with him Mr Peter Logan, foreman builder, and five artificers, selected, on this occasion, from their having been somewhat accustomed to the sea; the writer being aware of the distressing trial which the floating-light would necessarily inflict upon landsmen, from her rolling motion. Here he remained till the 10th, and as the weather was favourable, a landing was effected daily, when the workmen were employed in cutting the large seaweed from the sites of the lighthouse and beacon, which were respectively traced with pick-axes upon the rock. In the meantime, the crew of the Smeaton was employed in laying down the several sets of moorings within half a mile of the rock, for the convenience of vessels riding at the buoys by a hawser, instead of letting go an anchor.

The artificers, having fortunately experienced moderate weather, returned to the work-yard at Arbroath with a good report of their treatment afloat; when their comrades ashore began to feel some anxiety to see a place of which they had heard so much, and to change the constant operation with the iron and mallet in the process of hewing, for an occasional tide's work on the rock, which they figured to themselves as a state of comparative ease and comfort. In answer to some advances which had been made on this subject by the artificers, the foreman was instructed to select fourteen of the stone-cutters who had been accustomed to the use of the pick-axe, and to boring

or drilling holes with a jumper after the manner of quarriers, to go off to the rock in the course of a few days. In any agreement to be entered into, it was held as an express condition, 'That every man who embarked for the work at the Bell Rock should remain for the space of four weeks, without returning ashore'. Those chiefly wanted at this time were masons from Aberdeen, who were accustomed to the use of the boring-iron and pick in working granite. Being engaged only from week to week in the work-yard, they were desirous of knowing the reason for remaining a month at the rock; when they were informed that it was not unlikely some of them might suffer from sea sickness, and wearying of confinement on board of ship might wish to return ashore, which would be attended with much inconvenience to the work, by too frequent a change of hands. They were further told that by continuing for one month afloat, they would in the course of that time become so seahardy as probably to feel no desire to return till the end of the working-season, which at this advanced period could not last for many weeks. This condition was considered of importance in the commencement of the work, and it was the more readily agreed to, as the writer assured them that he should himself remain with them during that period.

16TH AUGUST. Everything being arranged for sailing to the rock on Saturday the 15th, the vessel might have proceeded on the Sunday; but understanding that this would not be so agreeable to the artificers it was deferred until Monday. Here we cannot help observing, that the men allotted for the operations at the rock seemed to enter upon the undertaking with a degree of consideration which fully marked their opinion as to the hazardous nature of the undertaking on which they were about to enter. They went in a body to church on Sunday, and whether it was in the ordinary course, or designed for the occasion, the