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THE DEVELOPMENT OF ICELANDIC LIGHTHOUSES DURING 50 YEARS, (1878-1928)

(From a Report published by the *Icelandic Lighthouse Service* on the occasion of its Jubilee).

For more than a thousand years communication had been carried out between Iceland and the continent, without any lights being shown from the coast to guide the navigator.

For centuries, traffic was carried out by small sailing-vessels which never ventured to cross the Atlantic in winter, when it was dark and stormy, but in summer it is never dark in the north, thus there was no urgent necessity for lighthouses.

But commerce developed rapidly during the latter half of last century, so that the absence of lighthouses was felt as an obstacle that should be removed.

The necessity was felt, but there were many difficulties to overcome before a lighthouse could be erected. The Members for Reykjavik and Akureyri laid the matter before Parliament in 1875. Strange to say, the first thing done about the lighthouse question was the introduction of a Bill to levy light-dues. It was proposed that every vessel coming to Iceland should pay 0.50 Kr. per ton, but then it was supposed that a lighthouse would be erected at Reykjanes as soon as possible.

However it was thought that a lighthouse at Reykjanes would be of very small importance, the nights being light from 15th March to 1st September, and it was stated that about 70 vessels at most were likely to pass during winter. Soon after the construction of the lighthouse, the number of ships passing from 1st August to 15th May proved to be 813; during the same period in 1911 there were 1517, and in later years the trawlers and other vessels have become so numerous that it has proved impossible to keep count of them.

The Reykjanes lighthouse was finished and was lit on 1st December, 1878. This lighthouse, for the first 20 years of its existence, was practically the only one. The building was octagonal 6.17 m. (20 ft) high. The lantern was of steel and with flat panes and had 15 parabolic mirrors of brass, each with a 14" oil lamp.

Reykjanes suffers considerably from earthquakes, which have frequently damaged the lighthouse, and gradually seamen began to complain that the light was not powerful enough, which was quite natural after the apparatus had fallen on the floor several times.

In 1896 a Danish lighthouse-expert was sent to Iceland to consider the sites and construction of 2 new lighthouses, at Garoskagi and Grotta, and at the same time he was asked to consider what could be done about the Reykjanes lighthouse. He came to the conclusion that the light apparatus was worn out, oldfashioned and used too much oil, and suggested that another one of a later and much improved construction should be ordered from Paris. If this were done, the 3 lighthouses could be run at the same annual cost as that of Reykjanes alone till then.

The change was brought about on 1st August, 1897 and proved satisfactory.

The lighthouse was built on a steep promontory which the sea had gradually scooped out and, as the cliff consisted of very loose material, large blocks were constantly falling into the sea, as a result of earthquakes and surf in heavy storms. The sea was approaching the site of the lighthouse, which was in obvious danger of being swept away. It was therefore decided to have it moved to another hill near by, where it was not endangered by the sea, and the change was carried out in 1908. The new lighthouse was cylindrical inside and pyramidal outside, the walls measuring 3.25 m. (10 ft 8 ins) at the bottom and 1.25 m. (4 ft 2 ins) at the top. The height was 22 m. (72 ft). The work was done as solidly as possible, of reinforced concrete, and it was supposed to be able to resist the earthquakes, which has, however, not quite proved to

be the case. On three occasions the wall has burst all round, about 9 m. (30 ft) above the base. The light apparatus, a 3-wick oil burner with a lens of 4th order, floats on mercury. It has been damaged several times, when earthquakes have caused the mercury to flow out of the basin, and the lamp even has been thrown on the floor.

The new lighthouse was a great improvement on the old one, but it had the disadvantage that the light was raised 73 m. (240 ft) above sea level and might therefore be hidden by clouds even when it was perfectly clear below. Another small lighthouse was therefore erected close to the sea in 1909, which had the first light with dissolved acetylene in Iceland.

For a long time the Reykjanes lighthouse was the only one in Iceland. More lighthouses were wanted, but no experts were there to give advice.

But seamen were beginning to realise the importance of lighthouses to navigation, and a petition for 13 new lighthouses was laid before Parliament in 1900. Two of these were granted, namely Elliosey and Arnarnes, both on the west coast. They were constructed in 1902, and both were fitted with oil burners.

By this time the necessity for buoys and day marks was beginning to be realised. Several captains handed in a petition for 18 buoys, etc., at various dangerous places off the coast.

The question of lighthouses was revived in 1905 and a Commission of Danish Naval Officers was appointed. They gave their opinion the same year, suggesting the construction of 7 lighthouses.

In 1905, Parliament granted 15,000 kr. for the construction of a lighthouse in the Vestmanna Islands (a group of rocky islands off the south coast), and this was constructed the following year by an engineer of the Danish Lighthouse Department. Later, complaints were made that the light was not sufficiently powerful, but as there was no inspector, and the lighthouse-keeper was totally ignorant of the question, nothing was done till 1910, when an Inspector of all Lighthouses was appointed.

The first lighthouse worth mention on the east coast was constructed at Dalatangi in 1908. The light apparatus is of the same make as that of Garoskagi (it has not been changed to this day) but a fog-siren was added in 1918, the first and only one in Iceland, fogs being more frequent on the east coast than in any other part of the country. The siren has been sounded about 1425 hours a years on an average.

Up to 1908, light-dues had been imposed on ships which arrived between Reykjanes and Cape Horn (west coast) only, but 3 lighthouses having been erected on the north, east, and south coasts, a Bill imposing general light-dues for all parts of the coast was carried in Parliament in 1907.

By this time, dissolved acetylene-gas was coming into use for lights, and it had proved satisfactory in Denmark, Sweden and other countries, being easier to handle, more reliable and less expensive than the old-fashioned open oil burners, and its introduction into Iceland marked a great step forward in the development of the lighthouse system. Various improved forms of acetylene burners have been used ever since in most of the later lighthouses.

The first important lighthouse of this kind was constructed at Dyrholaey (Portland), on the south coast, in 1910. The lantern was raised on an iron frame 7 m. (23 ft) high on a very steep promontory. It was fitted with a dissolved acetylene flasher (Gasaccumulator system) with an open burner and 3rd order lens drum, and had an optical range of 16 miles. The power of the light was increased in 1921, and in 1927 the lighthouse was replaced by a concrete tower with revolving 3rd order lens and incandescent burner (Dalen system). The optical range is 35 miles (geographical 27). In connection with this lighthouse the first radio beacon in Iceland was installed in the summer 1928, by Telefunken, Ltd. This lighthouse, like the one in the Vestmanna Islands, is exposed to damage by sand and pebbles. Once, for instance, 8 window-panes of the first lantern were smashed simultaneously, in a sand storm, and consequently the light went out, and could not be relit for two days.

One or two lighthouses were erected every year during the following period, some of them being constructed of concrete, others of iron, according to the particular conditions at each place.

The Director of the Lighthouse Department was therefore charged with the preparation of an estimate including the complete number of lighthouses that he considered necessary, and it was understood that they would be erected gradually during the following decades. The estimate included 63 new lighthouses and fog-sirens. Later, construction has been carried out in

accordance with the plan suggested in the estimate. During the last 10 years the system has developed more rapidly, 4 to 8 new lighthouses being erected per annum.

The Lighthouse Administration possesses a small steamer for transport of supplies for the lighthouses, as well as for the inspection service. The same steamer is also at the disposal of the State Telegraph Administration, for laying and repairing cables.

About 80 special day marks have been erected along the coast and on many skerries, during the last decade.

Several harbour lights have been established at the most important stopping-places for mail boats and fishing vessels.

Very few floating marks have been laid out. The mooring of buoys has presented various difficulties, the bottom being very hard and unfit for holding the anchor, besides, the sea is extremely rough.

In 1910, Th. KRABBE, State Engineer, was appointed Inspector of Lighthouses. An Assistant Engineer was appointed in 1914, and at the same time a Lighthouse Office was established as a separate Department, of which Mr. KRABBE was appointed Director. The Department now possesses a storehouse, a workshop, and a laboratory.

During the 50 years that have elapsed since the construction of the first lighthouse in Iceland, the works completed are the following: 51 lighthouses, 1 radio beacon, 1 fog-signal station, 1 light-and-whistle buoy, a number of day marks on the coast, and 35 harbour and range lights. Very little was done during the first 20 years, more during the next 10, but the last 2 decades have witnessed a rapid development.

