

each compressing 150 cubic feet of air to 30 pounds pressure during that period. The timing device is operated by a strap running on a small pulley fitted to the shaft of the fly wheels and regulates the admission of compressed air to the diaphone by means of a small wheel with cams, raising a lever that opens a valve, and this exactly in accordance with the characteristic of this plant, which calls for a blast of five seconds every minute. The horn or resonator is placed outside of the building at the gable end. It is made of cast iron  $\frac{1}{2}$ " thick, measures four feet long, 15" at its opening and 4" at the end connected to the air pipe from one diaphone.

It must not be forgotten that generally only one boiler and one compressor are operated at a time, the others being standbys, in case something goes wrong with the parts in use.

The engineer in charge of this plant is well equipped with tools to enable him to keep the machinery in good order and execute minor repairs. He always has spare pieces on hand, such as pistons, diaphones, valves, wrought iron pipes, etc. The fuel used in the boilers is stored in a large coal shed near the landing as soon as landed, and thence carted, as wanted, to a smaller coal shed adjoining the boiler room.

At this station, the lighthouse and keeper's dwelling form but one building, with a tower rising from one of the corners. It is built of wood sheathed with shingles painted white, and stands on the highest level of this end of the island. The tower is octagonal in shape and carries a second-order dioptric illuminating apparatus, flashing every two seconds.

Greenly is not so isolated in the summer as the stations described previously, Newfoundland coasting steamers calling here about twice a month at fixed dates, and the presence of a large number of fishermen with their families and fishing outfits being a source of comfort and benefit to the keeper.

Cape Anguille station, which is 15 miles north of Cape Ray, is located about 20 feet above the sea on a large plateau bounded in the rear by a high range of mountains advancing towards the sea in the north. It was established only a few years ago to command that part of the gulf between Cape Ray and Cape George. The keeper's dwelling and fog alarm building are built of wood and resemble constructions already visited, more particularly the fog alarm which is almost a duplicate of that of Greenly Island. The remarkable feature here is the lighthouse tower, built of reinforced concrete and measuring ten feet in diameter, 90 feet in height, with walls 8" thick. It is built on a solid mass of concrete resting on shale three feet below the level of the ground. This immense column is steadied by six large flying buttresses, 1' x 4' at the base, diminishing in size as they rise up, until they measure one foot square under the flooring of the balcony. Please note that the buttresses do not form a solid body with the tower, but are only connected to it in three places. In the construction of these works, expanded metal was replaced by horizontal and vertical iron rods from  $\frac{1}{2}$ " to 1" in diameter, well connected and tied together with wire. The winding stairs inside are also made of concrete moulded as the work progressed. The lantern floor was strengthened by two 12" I beam so placed as to carry the weight of the illuminating apparatus, which is of the third order, and weighs about four tons.

The concrete was made with the following ingredients: International cement, one measure; clean and crisp sand, two measures; four measures of broken stone with a small proportion of gravel, and sufficient fresh water to obtain a thick mortar. When the moulds were removed, the concrete surface was brushed with two coats of thin cement mortar to give it a smooth appearance.

As I have said before, these towers look very well and are absolutely steady, showing no signs of vibration during wind storms, otherwise the mantles would be quickly destroyed and the mercury in the basin scattered in the lantern.

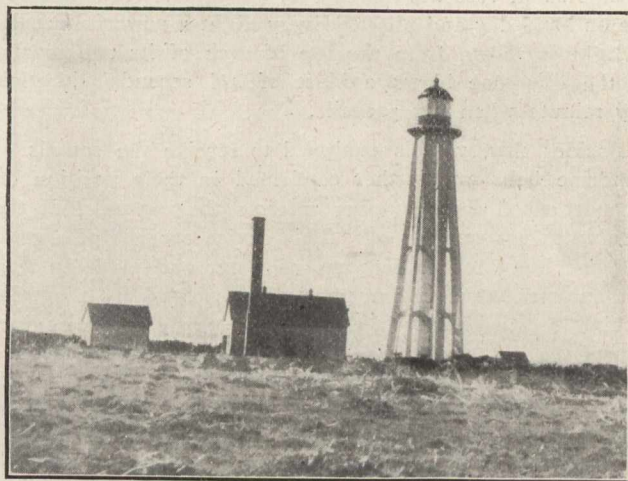
I am sure you are anxious to learn why the Government of Canada is expending money in establishing costly stations on strange land. It would seem that this should be

done by our friends, the Newfoundlanders, who already possess and maintain a large number of harbour and coasting lights.

In my opinion, the present arrangement is the most equitable, Newfoundland being more interested in its coasting trade than in ocean navigation. If you glance at a chart of the gulf, you will see that the Canadian lighthouses are built mainly for the benefit of Transatlantic trade, to serve as guides to vessels sailing for or from Canadian ports.

Those who see the Bird Rocks for the first time are quite astonished to find such a small island practically lost in the middle of the gulf. Owing to its peculiar aspect I believe it will be interesting to give here a condensed extract of a report made in 1903 by Mr. J. Obalski, Mining Engineer of the Department of Lands, Mines and Fisheries, Quebec, on the geological formation of this group:

"Bird Rocks, together with the two very small peaks a quarter of a mile to the north-west, forms part of the group of the Magdalen Islands. This group consists of 13 islands of different sizes, and must have formed part of the continent at some period of their geological history, and must have been connected with Prince Edward Island, situated 50 miles to the southward. The geological formation of these islands thus presents great uniformity, and what may be said of one applies to the others. It consists of beds of



Cape Anguille Light and Fog Alarm.

grey or reddish sandstone, generally broken up and resting on the eruptive rock, which has been called diabase and dolerite, but which presents a variety of basic rocks probably of rather recent origin. The aspect of these rocks is, moreover, variable according to their more or less advanced state of decomposition. It is quite possible also that there have been several periods of eruption, or rather that an ancient eruption has been brought to light by a more recent one, which would explain the fact that compact diorite is found in the vicinity of the diabase or even the trap which, on contact with the atmospheric elements, disintegrates and decomposes, forming banks of clay of various colors. The sedimentary formation of these islands, as well as that of Prince Edward Island, had been classified by the Geological Survey in the lower carboniferous, characterized by limestones containing fossils and surmounted by the sandstone above mentioned."

This rock is about 8800 feet long and about 400 feet wide, with its shore cliff 120 feet high and almost perpendicular. All around you see natural cornices and small grottoes, inhabited by myriads of white sea birds.

When construction work began on this rock it was no small undertaking to send men to the top to haul up the materials for the erection of a derrick, which was used for many years in hoisting men and materials in connection with the building and maintenance of the station. Later, some blasting was done for the installation of an inclined railway, over which a small car is made to travel by a steam winch. At the foot of this railway a small cribwork wharf has been built to receive the materials and supplies