

waves, the water in the cylinder being stationary, it compresses the air at the top of the cylinder and drives it through the whistle above the buoy, thereby making the blast. This description of buoy cannot be used in shallow water, but is intended to be moored some distance away from the shoal or danger to be avoided. The cost of this buoy is \$1,575 in New York, without the ground tackle. We are now having two made, one to be anchored off the end of the eastern bar at Sable Island, and the other off Point Lepreau, in the Bay of Fundy.

A new description of buoy, with a gas light arranged in a frame on the top of it, enclosed in a small dioptric apparatus or Fresnel lens, has recently been used by the Trinity House of London and by the Commissioners for managing and lighting the Clyde, in Scotland, with good results. The gas is made specially for the buoys from petroleum oil, and is compressed into an iron cylinder, when about to be transferred to the buoys, and when a buoy of the largest size is properly charged with this compressed gas, it should burn day and night for ninety days, without requiring any attendance. Two of these buoys, with the necessary gas works to be erected at Quebec, have been ordered through the Trinity House, London, and will be placed immediately in the Lower St. Lawrence. If found to work successfully, they may possibly take the place of small lighthouses or lightships. They can be seen a distance of seven miles. The cost of the buoys, with a bell attachment, to warn vessels of their locality, will be \$3,750 each, and the cost of the gas works, with store holder, will be \$3,500. The arrangement of the lantern is such, that while the necessary air is admitted to feed the flame, no water can enter, no matter how high or violent the sea.

The Department is always ready to adopt any new improvement or invention which may be discovered in connection with the light-house service, after it has been thoroughly tested and pronounced to be efficient and successful.

The bell-buoys used are now made in Canada, by contract, similar to the bell-buoys of the Trinity House, London, and are made of boiler plate iron, with compartments and water ballast, the cost of which is about \$1,000.

The lighting apparatus in use in the lighthouses of Canada is very much the same as in other countries, viz., catoptric and dioptric. For our large important stations, having revolving lights, the catoptric apparatus is used. It consists of powerful lamps connected with flat oil receivers at the back of the reflectors. At the back of the lamps are parabolic silvered reflectors, varying in size from 18 to 24 inches in diameter, for the purpose of reflecting the rays, and throwing them out in a certain direction. A number of these lamps, with reflectors fitted to them, say three, four or five, are fixed to the sides of an iron frame, having two, three or four sides, and the whole made to revolve with clock work machinery and heavy weights. If the light is required to show, say, every three minutes, two faces will be found sufficient if oftener, three or four faces may be used, as the case may be. The