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a frame on resnel lens, and by the in Scotland, buoys from when about largest size ld burn day lance. Two erected at use, London, awrence. If the place of a distance of attachment, and the cost The arranger is admitted igh or violent

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Canada is very dioptric. For the catoptric ected with flat k of the lamps 18 to 24 inches , and throwing see lamps, with , are fixed to or four sides, rk machinery to show, say, d sufficient if se may be. The reflectors on each face or side of the revolving frame are thus successively directed to every point of the horizon, and the combined result of their rays form a flash of greater or less duration, according to the rapidity of their revolution, the light gradually increasing till it attains its full power, and then gradually diminishing, till it becomes invisible. As regards the distance one of our powerful revolving catopric lights can be seen, it is only limited by the horizon, and with an ordinary high tower, the light being about 100 feet above the level of the sea, it should be visible on a clear, dark night, nearly twenty miles distant.

If lights are placed at too high an elevation, there is some risk of their being obscured by clouds or mist, while the land, lower down, may be quite visible. This was the case at Belleisle, near the entrance of the Straits, where there is a first order dioptric light placed at an elevation of 470 feet above the level of the sea at high water mark, but it was frequently obscured by clouds, while the land and breakers below could be easily seen. To remedy this difficulty, another light was erected on the rocks nearer the edge of the water, and this minor catoptric light can be sometimes seen when the large dioptric light above is invisible.

At some of our large catoptric lights we have as many as eighteen or twenty lamps, which not only consume a considerable quantity of oil but oreate much heat, causing danger of explosion if the oil was not specially prepared for the service. One great objection to catoptric lights, as compared with dioptric, is the large consumption of oil required for so many lamps, whereas in the dioptric apparatus only one lamp is necessary. We have 483 lights in the Dominion, the apparatus of which is on the catoptric principle, and as all the lamps and reflectors for these lights are manufactured in this country at a much less cost than dioptric apparatus can be imported from England, it has been found advisable to use this kind for all our revolving lights and fixed lights of a minor character.

The dioptric apparatus is used at some of our great sea lights, such as Sable Island, Belleisle, Point Amour, Cape Rosier, Bird Rock, Sambro Island and Seal Island, where the lights are fixed white, and they were manufactured either by Sautier, of Paris, or Chance, of Birmingham. A dioptric is made of cut crystals or prisms, highly polished, and the large sizes, such as first or second order, are very expensive. Only one lamp is used, with concentric wicks, numbering from one to four or five, according to the size of the apparatus, and from this is emitted luminous beams in every direction. The lamp is placed in the centre of the crystal apparatus, with an oil receiver so arranged as to keep a constant supply of oil up to the flame without obscuring any portion of the light. In the case of the dioptric or lens system, the controlling apparatus which gives brilliancy to the light is placed betore it instead of behind it, as in the case of the catoptric apparatus. This arrangement of crystals surrounding the lamp is so formed as to refract the beams of light from the lamp into parallel rays in the required directions. The lamp requires careful, constant, attentive watching by trained keepers, in order to regulate the size of the