

### Subsection 2.—Aids to Navigation and Miscellaneous Works.

Included under this heading are the lighthouses and the whole system of marine danger signals on the east and west coasts of Canada, on Hudson bay and strait, the St. Lawrence river and gulf, the inland rivers and lakes and at the entrances to harbours—a very extensive system designed to provide safe navigation in all Canadian waters. In addition, a pilotage service is maintained in waters where navigation is difficult; this service is described under administrative services on p. 680. As a further aid to safe navigation, there are chains of radio signal and direction-finding stations which are described under that section of this chapter dealing with radiotelegraphy, on pp. 721-723.

### 3.—Marine Danger Signals Maintained in Canada, fiscal years 1927-33.

NOTE.—In addition to the aids to navigation listed, approximately 9,268 unlighted buoys, balises, dolphins, and beacons are maintained. The figures are supplied by the Department of Transport.

Description.	1927.	1928.	1929.	1930.	1931.	1932.	1933.	1934.	1935.	1936.	1937.	1938.
	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
Lights.....	1,725	1,771	1,815	1,855	1,912	1,923	1,923	1,924	1,920	1,938	1,959	1,983
Lightships.....	11	11	11	11	11	11	11	11	12	12	11	10
Light-keepers.....	1,156	1,179	1,192	1,207	1,227	1,230	1,230	1,226	1,223	1,223	1,227	1,233
Fog whistles.....	8	6	8	8	8	8	8	8	8	8	8	8
Sirens.....	2	2	2	2	2	2	2	2	2	2	2	2
Diaphones.....	147	153	158	162	165	170	171	171	170	169	168	168
Fog bells.....	35	36	38	38	38	38	38	38	38	38	37	38
Hand fog horns.....	148	151	147	151	152	153	154	154	155	158	158	158
Hand fog bells.....	5	4	4	4	4	4	4	4	4	4	4	4
Gas, whistling, and bell buoys.....	380	401	411	425	429	436	444	440	438	441	445	460
Whistling buoys.....	36	38	40	40	40	42	42	41	41	41	41	39
Bell buoys.....	101	104	111	119	119	119	122	122	122	124	126	127
Submarine bells.....	6	6	4	4	4	3	2	2	2	2	2	2
Fog guns and bombs.....	6	6	5	5	5	5	5	5	4	6	9	12
Fog alarm stations only..	13	13	13	13	13	13	13	13	13	13	13	13

A great deal has been done to improve navigable waters by dredging in channels and harbours, by the removal of obstructions, and by the building of remedial works to maintain or control water levels. Probably the largest task of this nature has been the St. Lawrence River Ship channel. An extensive floating plant is in service to maintain and improve the deep-water channel from Montreal to the sea for ocean-going shipping. Incidental to these developments of navigable waters are works to guard shore lines and prevent erosion, and also the control of roads and bridges which cross navigable channels. In order to prolong the season of navigation in important waters which freeze over in winter, ice-breaking operations are carried on at both the beginning and end of winter. This is particularly the case in connection with sea-going shipping from Montreal.