direction-finding stations which are described under radiotelegraphy at pp. 927-928. Lists of aids to navigation, with the exception of very minor ones, are published by the Department of Transport.

16.—Marine Danger Signals maintained in Canada, Years Ended Mar. 31, 1948-54

NOTE.—In addition to the aids to navigation listed, approximately 9,000 unlighted buoys, balises, dolphins and beacons are maintained. A table showing marine danger signals maintained during the years ended Mar. 31, 1929-40, is given in the 1941 Year Book, p. 581. Figures for 1942 will be found in the 1948-49 edition, p. 716, and for 1943-47 in the 1950 edition, p. 766.

Type of Signal	1948	1949	1950	1951	1952	1953	1954
	No.	No.	No.	No.	No.	No.	No.
Lights	2,469	2,491	2,778	2,841	2,861	2,901	2,876
Lightships	8	8	8	8	8	7	6
Light-keepers	1,120	1,094	1,416	1,353	1,131	1,154	1,083
Fog whistles	9	11	18	22	23	24	18
Sirens	2	2	3	3	3	3	4
Diaphones	169	176	207	212	213	216	211
Fog bells	37	38	43	44	46	46	49
Hand fog horns	137	137	134	133	127	124	122
Hand fog bells	10	10	10	10	12	12	12
Lighted and combination lighted whistling and bell buoys	552	585	618	655	681	719	778
Whistling buoys	39	39	38	38	37	37	36
Bell buoys	112	113	109	110	113	112	115
Fog guns and bombs	12	11	11	10	9	8	9
Fog alarm stations only	10	11	15	15	15	15	15

Navigable waters have been improved greatly by dredging in channels and harbours, by the removal of obstructions, and by the building of remedial works to maintain or control water levels. Incidental to these developments of navigable waters are works to guard shorelines and prevent erosion, and for the control of roads and bridges that cross navigable channels. Ice-breaking operations are carried on at the beginning and at the end of winter to prolong the season of navigation in important waters that freeze over—particularly in connection with sea-going shipping from Montreal, Que.—and to prevent flood conditions during the spring ice break-up.

St. Lawrence River Ship Channel.—This channel extends from about 40 miles below Quebec City to the foot of Lachine Canal at Montreal, a distance of 200 miles of which about 113 miles is dredged channel.

The first minor development began in 1844, on Lake St. Peter, where the limiting depth was 10½ feet at low water. Since 1851, progress in deepening and widening the original natural channel has been more or less continuous through a series of improvement projects in keeping with the increasing demands of trade and the safety of larger and faster vessels.

The present channel above Quebec City has a limiting depth of 35 feet (opened in 1952) at extreme low water and a minimum width of 550 feet, with additional width up to 1,500 feet at all curves and difficult points. This section comprises about 100 miles of dredged channel. Below Quebec the limiting depth of dredged channel, about 13 miles in length, is 30 feet at low tide, with a width of 1,000 feet. An average tidal range of 15 feet in this area provides ample depth for any vessel using the St. Lawrence route. The latest improvement project (1952) comprised the further widening of critical sections and the provision of additional anchorage and turning areas. Annual maintenance requirements owing to silting in this dredged channel are relatively minor above Quebec but below the city silting is more pronounced because of tidal action.