

As early as 1904, the Department commenced the establishment of coast radio stations as aids to navigation and for communication with ships at sea. At the present time Canada's extensive coastline is covered by a network of some 50 odd stations, of which 24 are located on the east coast, 9 on the Great Lakes, 15 on the west coast and 5 on Hudson bay and strait. Twice daily at advertised hours, a number of these stations broadcast messages to shipping, containing such important information as weather forecasts, storm warnings, reports in connection with floating derelicts, ice and other dangers to navigation.

The discrimination by underwriters in insurance rates charged on ships plying to Canadian ports has led the Department to feel that any reasonable expenditure which would tend to reduce these charges would be a sound investment. To this end 7 radio direction finding stations have been established at specially selected sites with respect to navigational routes on the east coast, and one on the west coast of Vancouver island. These stations are fitted with a special apparatus that enables the direction of an incoming radio signal transmitted by a ship to be accurately determined. That these stations have proved exceptionally successful is demonstrated by the volume of letters received by the Department of Marine commending the work of its stations, and it is the expressed opinion of many master mariners that Canadian direction finding stations set a standard for accuracy and efficiency. A more recent extension of this feature is the development of the direction finding instrument for use on board ship. To assist this development, the Department has installed radio transmitters at a number of its lighthouses and lightships. These radio "beacons", as they are termed, function automatically whenever the fog alarm plant is in operation, sending out a characteristic radio signal with an approximate range of 50 miles. Ships fitted with their own direction finding instruments are thus enabled to take their own bearings from the points at which the beacon stations are located. The latest plans of the Department provide for an entirely new type of radio beacon which will be completely automatic in its operation. Such beacons will be controlled by a clock which will start, in proper sequence, the gasolene engine, the generators and other associated apparatus, keeping them operating for a predetermined period and stopping all machinery at the end of the period.

Since the sinking of the *Titanic*, which on her maiden voyage struck an iceberg which had drifted into the transatlantic steamship lanes, an international ice patrol, supported and maintained by the maritime nations of the world, watches the traffic routes of the North Atlantic for the purpose of reporting the presence of icebergs to passing ships by radio. Canada has her own problem in this connection—that of combating ice which accumulates in the lower gulf of St. Lawrence prior to the opening of navigation to Quebec and Montreal each spring. For this purpose a patrol service is maintained during the ice period each year in the Gulf by the ice-breakers *Mikula* and *Montcalm*. These vessels cruise in the vicinity of Cabot straits, observing ice conditions and broadcasting to ships a synopsis of location and drift of the ice, and recommending routes to follow. When it is impossible for ships to circumvent the ice fields by devious routes, the ice-breakers are prepared to open up lanes through the ice.

On the west coast of Vancouver island co-ordination of the different services of the Department of Marine was undertaken a few years ago, and as a result line telephone, land patrol, sea patrol and the lifeboat service were all linked together