Radio Aids to Marine and Aeronautical Navigation.—Services of the Telecommunications and Electronics Branch of the Department of Transport in aid of marine and aeronautical navigation are described in the following paragraphs. Details may be obtained on request from the Department of Transport, Ottawa.

Marine Navigation.—Radio aids to marine navigation are provided for about 4,000 radio-equipped Canadian vessels and almost as many foreign ships using Canadian waters. A safety and communications service for shipping is provided covering the East and West Coasts, the Great Lakes, the St. Lawrence River and Gulf, Hudson Bay and Hudson Strait.

Coast radio stations provide a safety watch and communications service for ships at sea and provide, as well, regularly broadcast weather reports, storm warnings and notices of dangers to navigation. Ships at sea may obtain medical advice from any coast station. The messages are delivered to the port medical officer of the Department of National Health and Welfare and replies are transmitted to the ship free of charge. The stations carry out communications by radiotelegraph and/or radiotelephone, and many of them provide connections to land telephone lines so that ships may communicate directly with any telephone subscriber. At Halifax (CFH) and Vancouver (CKN), shortwave facilities are furnished for world-wide communications. These stations participate in the Commonwealth long-range ship communication scheme. The coast stations on Hudson Bay and Hudson Strait, in addition to the regular services, provide commercial communications for posts of the Hudson's Bay Company and various prospecting and development organizations, make weather observations, handle administrative traffic and assist aircraft with information, landing conditions and direction finding bearings.

Coast radio direction finding stations, operated on Hudson Strait, enable ships to obtain a line of bearing from the station. No charge is made for this service. A chain of automatic *radiobeacon stations* is also maintained to provide a navigational aid to mariners by transmitting signals on which bearings may be taken by ships. These stations are arranged, where possible, in groups of three, transmitting on a common frequency but in proper time sequence so as to avoid interfering with one another. A navigator may thus obtain three bearings within three consecutive minutes and fix his location. For distance finding in foggy weather, a number of radiobeacons are synchronized with fog alarms at the same point. Ships may also request the transmission of signals from the coast stations for direction finding purposes.

Loran is a long-range radio aid to marine and air navigation which provides accurate fixes at distances up to 600 miles by day and 1,500 miles by night. Two Loran stations operate in Nova Scotia, three in Newfoundland and one on the West Coast. These stations, in conjunction with Loran stations of the United States Coast Guard, give service to ships and aircraft plying the North Atlantic and Pacific Oceans.

Decca is a short-range radio aid to navigation which provides accurate fixes at distances up to 250 miles. Three chains of Decca stations are in operation—one in Nova Scotia and two in Newfoundland—and the relocated Quebec chain, to be known as the Anticosti Chain, is scheduled to go in operation in October 1961. These stations give service to ships off Newfoundland and Nova Scotia, and in the St. Lawrence River and Gulf.

Radar is a valuable aid to marine navigation and it has become general practice to equip merchant ships with this device. Important buoys are fitted with radar reflectors to increase their radar visibility. Two shore-based radar installations are in operation—one at Camperdown near the mouth of Halifax Harbour and the other on the Lion's Gate Bridge across the entrance to Vancouver Harbour.

Lighthouses, particularly at locations where they would otherwise be completely cut off from summoning help in case of illness, are provided with low-powered transceivers for use in emergencies.