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. Four chains of Decca stations are in operation, one in Quebec, one in Nova Scotia, and two in Newfoundland. 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.

Aeronautical Navigation.—Radio aids to air navigation are provided from coast to coast and from the Canada–United States border to the Arctic along and off the airways, and are used by many Canadian and foreign air carriers flying over Canadian territory. Trained engineers and technicians are assigned to six regional offices located at Vancouver, B.C., Edmonton, Alta., Winnipeg, Man., Toronto, Ont., Montreal, Que., and Moncton, N.B., to carry out the construction and efficient operation of facilities.

The principal radio aid to air navigation provided by the Department of Transport is the low-frequency *radio range station*, located approximately every hundred miles along airways. It provides specific track guidance to pilots by means of audible signals and the signals may also be used for the purpose of obtaining direction finding bearings. In addition, radiotelephone communications are provided between ground and aircraft, by which means pilots may obtain weather data, air traffic control instructions and other information concerning the safety of flights.

Twenty very high frequency *omni-directional ranges* (VOR) are now in operation. Unlike the low-frequency radio range stations, this type of facility does not limit the aircraft using the station to one of four distinct courses but enables the pilot to select any desired course. The twenty omni-directional ranges have permitted the establishment of VOR airways west of Montreal and of thirteen trans-border airways. Eighteen additional installations are under construction and should be in operation by the autumn of 1960. Preliminary work has begun on seven others.

Aeronautical radiobeacon stations provide radio signals with which pilots may use their direction finding equipment to obtain relative directional bearings. *Fan markers*, operating on very high frequencies, are usually placed on an airway so as to inform the pilot when he may safely lose altitude after passing high terrain or to indicate accurately the distance from an airport. *Station location markers* are similar to fan markers except that the signal radiated is such that aircraft may receive the same indication irrespective of the