

Airport and airway surveillance radars (150 nautical-mile) are in operation at 16 airports for air traffic control purposes. Precision approach radars are in operation at Montreal and Toronto International Airports and five additional installations are expected to be in operation by 1965. Instrument landing systems (ILS) provide radio signals which permit pilots to approach airports for landing during periods of very low visibility. An installation normally consists of a localizer transmitter providing lateral guidance to the runway, a glide path transmitter for slope guidance to the approach end of the runway, two marker transmitters giving distance indications from the runway and a low-power radiobeacon (compass locator) to assist in holding procedures and lining up on the localizer course. Forty instrument landing systems are in operation.

Aeronautical radio communications stations are located at strategic points across the country, including the Arctic. These stations, operating for the most part on high frequencies, provide communication with domestic and international air carriers. Thirteen international communication stations, giving coverage from coast to coast and over the oceans, form a major contribution on the part of Canada to international aviation.

Subsection 6.—Public and Private Commercial Microwave Facilities

Canada, because of its population distribution and the vast areas served by microwave communication links, ranks second highest among the world's users of microwave communications systems on a per capita/per mile basis. Because of an increasing demand for television outlets, it has been necessary to extend microwave routes to provide television interconnections for the CBC English, French or private networks. With the use of more automated equipment by industry and various services, associated data and control information must be transmitted at rapid speeds over microwave radio-relay to wide areas of Canada. This Subsection gives a summary of the facilities existing or under construction at the end of March 1964.

Railways.*—Early in 1964 the Telecommunications Departments of the Canadian National and Canadian Pacific Railway Companies placed in operation a microwave system extending from Montreal to the Pacific Coast. The system will be used for television, telephone and data relay purposes. The railways also operate microwave facilities which link the Province of Quebec with the Maritime Provinces and Newfoundland. In addition, the Canadian National Telecommunications have installed a microwave system between Alberta and the Yukon Territory which carries telephone and data traffic and serves both civil and military organizations in the area. In co-operation with Alberta Government Telephones a combination microwave and tropospheric scatter system connects Alberta and the Northwest Territories. This system is also intended to provide communication for civil and military use in Far North areas. The Quebec North Shore Labrador Railways have developed a microwave system extending into northern Quebec to provide communication for mining operations and to serve some civil communication purposes. Ontario Northland Railways has completed a microwave installation connecting northern Ontario and James Bay for purposes of military and civil communication. The Northern Telephone Company is expanding its microwave facilities in northwestern Ontario for carrying television program material and civil communication. The Pacific and Great Eastern Railway makes extensive use of 6,000 Mc/s microwave facilities linking Vancouver with Prince George and Dawson Creek, B.C.

Telephones.—The Trans-Canada Telephone System consists of eight provincial and private systems collectively providing a transcontinental microwave system for the purpose of carrying telephone, television, data and other types of communication services.

*See also p. 755.