

was also of considerable value. Great value lay, too, in providing a market for aircraft-engineering firms in Canada that were struggling to keep their plants in operation during the depression years. The encouragement of aircraft manufacturing plants in Canada was a well-defined government policy, but without the demand from these various civil sources, it is difficult to see how many of the companies could have survived.

Trans-Canada Airway.—The position of Canada in aviation was greatly strengthened by the construction of a line of first-class airports, placed at intervals of 100 miles or less, linking all the principal centres of population, and extending from coast to coast. By means of these airports, it became possible for any type of aircraft with wheels to cross the country at any time of year, by day or by night. To grasp the full significance of this line of airports to Canadian aviation in general, and to the defence problem in particular, it is necessary to bear in mind that between North Bay and Winnipeg there is an area, approximately 1,000 miles in width, of wild, rough, unsettled country, of such a nature that the construction of airports could be undertaken only in the face of great difficulty. The country is largely bush, lake and muskeg, and is well adapted to the use of aircraft using floats or skis but impossible for aircraft with wheels. Even with suitable equipment, a flight across this area was something of an undertaking, since arrangements had to be made beforehand for caches of fuel, oil and other supplies. The greatest difficulty, however, lay in the fact that there were no reliable weather-reporting facilities or aids to navigation and it was a common thing for an aeroplane to be stranded on a northern lake for days, waiting for the weather to clear before it could proceed. To cross this section of the country by aeroplane then, it was necessary either to put the craft on floats or skis, according to the time of year, and strike out over the bush and muskeg north of Lake Superior, or to go south of the Border if the type of craft was such that floats or skis could not be used—modern high-speed aircraft cannot easily be placed on floats or skis. A third alternative, which was frequently resorted to, was to dismantle the aircraft, box it, and ship it by rail to the desired point. The lack of mobility caused by the wild unsettled area between East and West, constituted a serious menace, which the building of airports has removed.

Radio and Meteorological Services.—A system of radio ranges was installed in connection with these airports, thereby enabling flights to be made in complete safety during unfavourable weather. Equally important, a meteorological staff was trained to provide weather reports and forecasts, designed to meet the needs of pilots. Weather charts are prepared in the offices of the Meteorological Division, Department of Transport, in Halifax, Montreal, Toronto, Winnipeg, Lethbridge and Vancouver, every six hours, from observations taken simultaneously over the whole North American Continent and transmitted to these central points by teletype. In addition to this, observations are made hourly at every one of the 42 stations on the trans-continental airway system. Weather reports prepared from these observations are transmitted over the radio range stations every hour for the benefit of pilots. Points off the Airway are served by Government broadcasting stations, which give weather reports and forecasts as required. This service has added greatly to the safety of all types of flying in Canada.

Airway and Lighting Engineering.—Incidental to the pre-war construction of airports, an organization was developed to carry out the engineering work involved in both building and maintenance. This organization, with years of experience in the selection of sites and development of airports, was made available to the Department of National Defence when war broke out in September, 1939.