

Because of the advent of new types of heavy high-speed airline aircraft, airport development underwent tremendous changes during the four or five years preceding the War. Before this time, a more or less level field with a grass surface served as an airport; with the faster and heavier types of aircraft, hard-surfaced runways up to 4,000 feet in length had to be built. To maintain schedules it was necessary to have these airports lighted for night flying, and a great deal of experimental work had to be done. The old floodlight system was found unsatisfactory and was ultimately replaced by flush-type contact lights set close to the ground down each side of a runway. In winter these became choked with snow and it was necessary to substitute moveable units on extension cords. As a result of much experimentation modern airports are now lighted with boundary lights, obstruction lights, rotating beacon and lighted wind cone, range lights and contact lights, the latter changeable for winter and summer use.

Winter Maintenance.—The maintenance of first-class airports in Canada during the winter months has raised many problems. Since skis cannot be used on a high-speed aircraft, it was apparent from the start that the runways would have to be either compacted or cleared. It later developed that the problem varied with the locality. Some areas in northern Canada have so much snow that clearing is not feasible; others are so damp that compaction is unsatisfactory. Gradually the country has been divided into zones, and particular types of equipment have been developed for each zone. All difficulties have not been solved but the methods used give reasonably satisfactory results.

Aerial Navigation Charts.—Co-incident with the development of the trans-continental airway system, it was found necessary to prepare a standard system of air charts, covering the whole of the route, and including all the principal centres in the southern portion of the country where flying is taking place. This work was undertaken by the Hydrographic and Map Service, Surveys and Engineering Branch, Department of Mines and Resources, in co-operation with the Department of Transport. As a result, it is now possible to fly from coast to coast using uniform maps. Previous to this, recourse to a multitude of maps of different scales and legends was necessary.

Operation Experience.—The organization of the Trans-Canada Air Lines Company served the dual purpose of meeting the demand for rapid air transport in Canada, and of testing the use and efficiency of all the auxiliary services and facilities that had been developed. The Company's workshops in Winnipeg have, by far, the best equipment for testing, overhauling and calibrating aircraft instruments in Canada and, in this way, a very noteworthy contribution has been made.

Valuable assistance has also been given by a number of private commercial aviation companies that are equipped with plants for the overhaul of aircraft and aircraft engines. These plants have, in many instances, been enlarged to meet the growing requirements for repair facilities and are thus taking an essential place in the industrial foundation required to support the British Commonwealth Air Training Plan.

CONTRIBUTION TO THE AIR DEFENCE PROGRAM

Canada was selected as the base for the British Commonwealth Air Training Plan for a number of reasons, the most important being: its immunity from attack; its central geographical location in relation to the other units of the Empire; its proximity to the largest base of supplies in the world, i.e., the United States; its fine tradition in flying, both during the War of 1914-18 and subsequently in civil aviation;