



CD Howe had big plans for Canada's aviation industry in the post-war years. City of Vancouver archives.

# Growing Demand

AME History, Part 2: By Roger Beebe

*Aircraft Maintenance Engineer Roger Beebe has compiled a history of the trade in Canada, from which we have taken excerpts and are presenting as a multi-part series. Last issue, Beebe traced aircraft development leading into the First World War—long before the term “AME” was used. Here in part two, we move ahead to the Second World War when political will shaped demand for Canadian AMEs.*

**T**HE WAR WAS A GREAT AWAKENING period for Canada's aviation industry. The expansion of airports, manufacturing and operations made Canada a world power in aviation. The geographic location also helped Canadians become world leaders in air transport...

On March 17, 1944, C.D. Howe, Minister of Munitions and Supply, in introducing the Bill amending the Aeronautics Act, made some interesting announcements as to future policy, including the separation of air services from other ground services so that there should be no monopoly of our air services by the railways. This foreshadows a complete change in the set-up of both Trans-Canada Air Lines and Canadian Pacific Air Lines. He also envisioned the creation of a greatly expanded system of feeder air lines under which young men who had served overseas in the Air Force would play an important part in the orderly and rapid expansion of domestic aviation by the allocation of the valuable franchise for airlines to our returned airmen in the best interests of Canada.

“...On a five year replacement basis we may look forward to an annual production for domestic uses alone of at least 10,000 aircraft a year within a decade. Most of these will be ‘puddle jumpers’ but there will be a proportion, as yet impossible to predict, of medium sized, single engine, four to five seats; a smaller number of medium twin-engine types of from 12,000 to 20,000 pounds; and a still smaller number of giant multi-engine types.”

...So the scene is set for the work of AMEs during and after the Second World War.

The AME profession expanded greatly during the Second World War along with the expansion of the aircraft manufacturing industry, which built the hundreds of thousands of aircraft used during the war. The ingenuity and experience of the maintenance technicians kept the air forces flying in the Arctic cold, tropical heat and the dry, sandy deserts. They learned to cope with the humidity of the South Pacific, the sand of the deserts and the brutal arctic cold. They also learned to main-

**On September 1st, 1937 Air Canada's forerunner, Trans Canada Air Lines (TCA), launched its first commercial passenger flight. Air Canada archives.**



**Right: By 1937-38 aviation companies were advocating a chain of landing strips from Fort McMurray to the Arctic Coast.**

tain naval aircraft based on the decks of aircraft carriers and spotter and self-protection aircraft launched from cruisers and battleships.

The experience of the early Licensed Canadian Air Engineers in opening up the airways of Canada and exploring the Arctic and our extensive coasts gave them the practical knowledge to teach the many new recruits. The air forces and naval air of all nations expanded greatly. This of course led to a demand for trained maintenance technicians of all types. The demands of the military lead to a very specialized division of the work.

The work was divided up into many technical specialties, unlike the general civilian method of having one multi-tasked Air Engineer or later known as an Aircraft Maintenance Engineer; maintain the aircraft while in service. There was always some specialization in civilian aviation at the shop level and at the component maintenance level but nothing like the military evolved to cope with the war demands.

The construction of aerodromes in the Arctic and Sub-Arctic opened up the great northern reaches of Canada and provided many opportunities for AMEs to work and prosper. This opening lead to the growth of population in the northern mining camps, the demand for more efficient air services became insistent. On the main traffic routes to the far north the length of the "freeze-up" and "break-up" periods was serious. On the shorter runs where there was little difference in latitude, these periods were short; but as the length of the air routes increased, the stoppage of all flights from this cause became intolerable. Ice melted and disappeared at Edmonton,



Alberta, early in April, but Bear Lake was still icebound in July. The increase in traffic called for more regular, efficient and uninterrupted service.

In 1937-38 Canadian Airways advocated a chain of landing strips from Fort McMurray to the Arctic Coast along the MacKenzie River and Yukon Southern Airways had made surveys on their air mail route from Grande Prairie to Whitehorse, with strips at Fort St. John, Fort Nelson, Watson Lake and Whitehorse where Pan American Airways, who had been granted landing rights on their route between Juneau and Fairbanks, Alaska, had already graded a strip, with the assistance of the Territorial Government of the Yukon and the Department of Transport, to accommodate the twin-engine transports.





**Saint-Hubert, Quebec, August 1930. Canadian Transport Agency archives.**

Similar work had also been done at Burwash Landing, at Dawson, at Mayo Landing, and at several other points on the chain between Whitehorse and Dawson by the Territorial Government. Yukon Southern Airways had cleared and graded strips at Fort St. John and Fort Nelson, while Canadian Airways had made some progress on the clearing and grading of a strip at McMurray on the MacKenzie River Route. Progress was slow, however, owing to the lack of funds and difficulty of moving heavy grading equipment into these remote districts.

In 1939 the Department of Transport, now Transport Canada, was recognizing the future importance of the air route to Alaska from the commercial and strategic points of view. It obtained authority and funds for a complete airway survey of the route from Edmonton to Whitehorse via the valleys of the Peace, Liard and Yukon Rivers. It was the logical route to Alaska and the Orient, and careful surveys had been made of all the alternative routes during the preceding four years. It lay east of the Rocky Mountains, passed over relatively easy terrain and was climatically preferable to any other route, having a moderate snowfall and freedom from fog at all seasons.

Preoccupation with the construction of aerodromes for the Empire Flying Training Plan during the first two years of the war diverted attention from Northern development, but with the entry of the United States into the conflict in December, 1941, the need for action again became most urgent. Fortunately, the Permanent Joint Board on De-

fence of Canada-United States, appointed in 1940, had given early attention to the need for better communication with Alaska. It had urged the immediate construction of the North West Staging Route from Edmonton to Fairbanks based on the plans of the Department of Transport. By strenuous efforts the main fields on this route at Grande Prairie, Fort St. John, Fort Nelson, Watson Lake and Whitehorse were completed under contracts let by that Department by September 1st 1941. After that a steady flow of reinforcements to the United States Air Forces in Alaska was comparatively simple.

During the next three years the route was greatly enlarged, new intermediate fields and radio ranges were added, and the difficulties of transport solved by the completion of the Alaska Highway which gave access to all aerodromes. The construction and early completion of the highway was made possible by the existence of the airway. The decision to exploit to the full the Norman Wells oil field caused a similar revolution of the Mackenzie River air route. The demands of the traffic were far beyond the capacity of the seaplanes previously used with such great advantage. The construction of a chain of full scale air bases was rapidly undertaken by the United States Forces with the approval and assistance of the Canadian Government. Then freight and passenger traffic moved into Norman



**McKenzie King conceived a plan whereby Royal Canadian Air Force personnel would remain in Canada, training Commonwealth recruits. Canada had the space for a limitless number of airfields and training schools. DND archives.**



**A TCA crew aboard a Canadair DC-4M North Star, 1950. Canadian Transport Agency archives.**

Wells and Yellowknife in D.C. 3's, C-46s and from there is distributed by seaplane to outlying points.

On the Atlantic Coast, similar action was being taken to improve the communications by air across the Atlantic. The Department of Transport was authorized to construct new bases at Montreal, Mont Joli, the Saguenay and Seven Islands, Quebec, Moncton, N.B., and Sydney, Nova Scotia; Torbay Newfoundland; and Goose Bay, Labrador. Gander airport was greatly enlarged. The United States Government was also authorized to build airports for their own services at Mingan, Que., Stephenville and Argentia, Newfoundland. These new bases added greatly to the efficiency and safety of the trans-Atlantic ferry system and the anti-submarine patrols off the Atlantic and Gulf of St. Lawrence Coasts. In addition they served the important purpose of providing staging aerodromes for the service of the aerodromes built in Greenland and Iceland by the United States Forces.

Later in the war the United States Government was given authority to construct with its own forces a further chain of bases in Northern Canada known as the "Crimson" route, a staging route to provide the shortest route from Los Angeles, California, to Northern European points by short hops. At the time the proposal was put forward the Canadian Government could not see its way to divert men and supplies for this purpose from other projects. It considered that the prospect of opening, before the close of the war, an efficient trans-Atlantic staging route through the Arctic Islands as remote.

However it willingly gave authority to the United States Forces to construct bases at Churchill, Southampton Island, Frobisher Bay, Baffin Island and Chimo, Quebec. In the final settlement of the war accounts between the two

Governments, Canada paid the United States \$76,000,000 for the work done on the "Crimson" route and resumed control of all bases in Canadian territory.

Though never used as a staging route, these bases have been invaluable in the post-war period as stepping stones for further development in the far North. As meteorological stations, bases for the air survey of the Arctic Islands, and as staging bases to aerodromes at still more remote meteorological and scientific stations now being established. This gave more efficient coverage all through the Arctic Archipelago and to similar joint United States and Danish bases in Northern Greenland. Landing strips were built at Baker Lake, Eureka Sound, and Cornwallis Island. It was then proposed to build a strip near all meteorological stations established there thus bringing to completion the ideas originally put forward in 1922 by the Air Board who had sent R.A. Logan to make a reconnaissance for this purpose.

... Each month of the First World War saw a constantly increasing demand for more aircraft, first for observation, then to fight the observation planes, and, finally, for bombing military objectives. Young Canadians flocked eagerly into the new service and acquitted themselves so well



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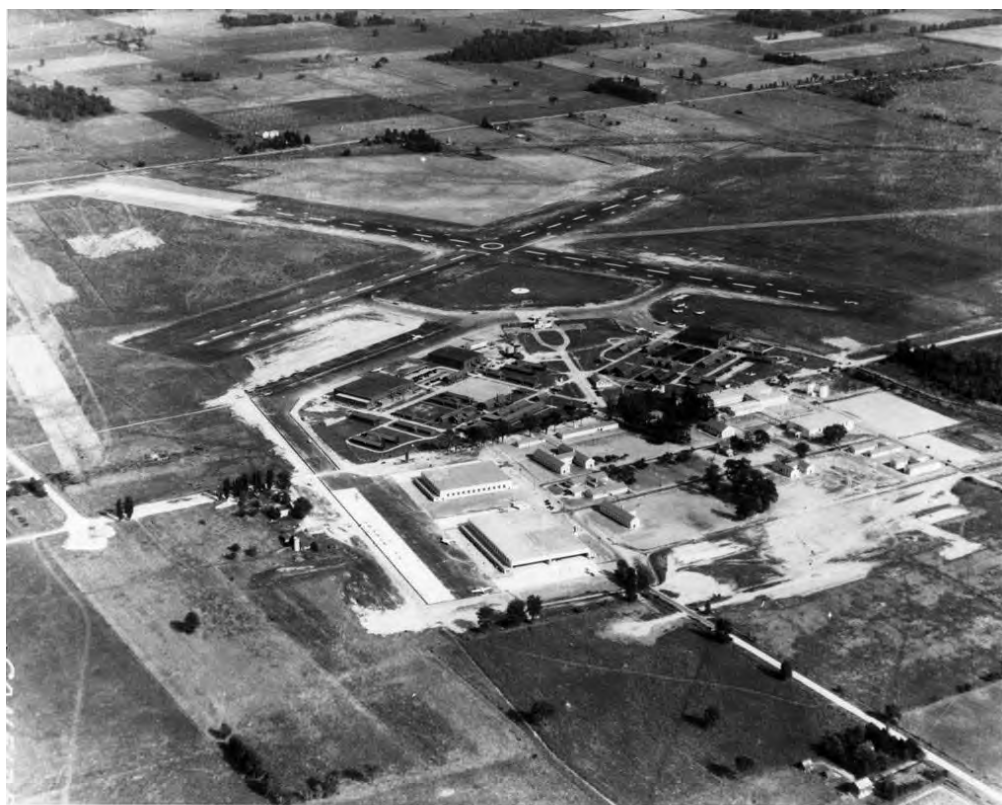
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**Preoccupation with the construction of aerodromes such as this one in London, Ontario for the Empire Flying Training Plan during the first two years of the war diverted attention from Northern development.**

that the Royal Flying Corps established training bases in Canada to enlarge their field of recruitment and supplement their overcrowded home training establishments. Camp Borden, Leaside, Armour Heights, Desoronto, Mohawk and Beamsville were all active flying training schools and Toronto University became the centre of their ground training activities.

History repeats itself when the crisis came in the end of August, 1939; it was natural that Canada should again play an important part in the War in the Air. This time the need was much more urgent. With the expansion of the Royal Air Force, the air space of the United Kingdom was rapidly approaching saturation. Every month saw the creation of



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Opening the Canadian north was to be a key strategy in the post-war era, and Dakota aircraft played a major role. DND archives.



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new squadrons as the output of aircraft rose. Each new unit required another aerodrome for operations and this, coupled with the expectation of intensive air fighting and the continuous bombing of all aerodromes, made it essential to find other bases where training could proceed without these distractions. Canada was the only practical outlet.

Canada's accessibility, the satisfactory experience of training in the World War and the known enthusiasm of her youth for the air, made it inevitable that she should become a great flying training centre for the British Empire. Missions from the United Kingdom, Australia and New Zealand reached Ottawa in September and, though a final agreement was not concluded till December, the scale and scope of the plan were

foundation for the plan, was the obvious solution of the problem. The Civil Aviation Division was called into consultation by the middle of October and the decision reached soon after that the responsibility for finding and building the aerodromes required for the program should rest on it.

A quote: "A cataclysm of the magnitude of the present war affects all civil activities. Aviation has no exception. Every phase of flying has been gravely affected by the change-over from peace to war. While meeting the Air Force requirement in all respects, the aim of the Department of Transport, Civil Aviation, has been to ensure that when the time comes to return to normal peace conditions, as much as possible of the war effort and expenditure may be adapted to increasing the



**An early model Royal Canadian Air Force Anson as used in the British Commonwealth Air Training Plan. The yellow overall finish, which denoted training aircraft, was typical of many BCATP aircraft. RCAF archives.**

determined early in October so that preparatory work could be put in hand.

The Royal Canadian Air Force, hampered for many years by lack of funds for aerodrome construction, had at the outbreak of war only five aerodromes ready for use and six under construction. Their auxiliary squadrons were all based on civil airports. The service aerodromes were, of course, required for operations immediately as the war began and were not available for the training plan.

Due to the energetic support of C. D. Howe there had been great activity in the building and improvement of civil airports in all parts of the country since 1936. This was principally along the line of the Trans-Canada airway but included many airports to serve feeder lines as well, the use of this chain of airports, built to a common, up-to-date standard, as a

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**The North American Harvard aircraft was heavily used by the Royal Air Force and Royal Canadian Air Force during the British Commonwealth Air Training Plan in the Second World War. DND archives.**

facilities for civil air transport in the Dominion. The aerodrome situation at any rate will be vastly improved..."

The above quote found in some old papers really gives one the scale of the blossoming of aviation in Canada and its requirements for AMEs. Civilian AMEs were employed in the airlines and bush operations that continued during the War. They also found jobs as aircraft and component inspectors in the military production systems. Airworthiness Inspection delegates were mostly AMEs, a tradition which carries on in many of today's delegates from Transport Canada.

The foundation of the cross Canada aviation technical trade system was built during these years as well. Toronto Central Tech had been around for most of the century, followed by places like the Southern Alberta Institute of Technology in Calgary. Gradually the system expanded across Canada and tech colleges can now be found in all parts of the country.

The technology in both aircraft manufacturing was changing as was the complexity of the aircraft systems. This all set the stage for the introduction of jets and turbine power into the post war civilian world. That fact, together with the electronic revolution caused by the war, brought major changes to all later AMEs, including the licensing and oversight system itself.

The effect of the war on aircraft maintenance was felt into the 1970s. When I joined the Ministry of Transport in 1975, we still had maintenance inspectors working there that had been Airworthiness Inspection Division Inspectors during the war at aircraft and component manufacturing facilities. The regulatory system in civil aviation manufacturing and maintenance was very much continued on from the 1940-1945 period. Resident inspectors at facilities were still commonly employed. Much regulatory compliance was simply accomplished by the fact everyone seemed to know everyone else in the industry and workmanship pride was the watch word. The advancing of the use of electronics in aircraft systems was bringing forward a new trade, avionics.

A general move was being made away from personal skill and responsibility to a systems approach. These factors and changing society led to many fundamental changes in the way AMEs were trained and licensed and how the then newly named Transport Canada was to regulate them in the latter part of the twentieth and the twenty-first centuries. ■

*(The entire text of this series can be found at Roger Beebe's website, [www.planetalkconsulting.com](http://www.planetalkconsulting.com))*