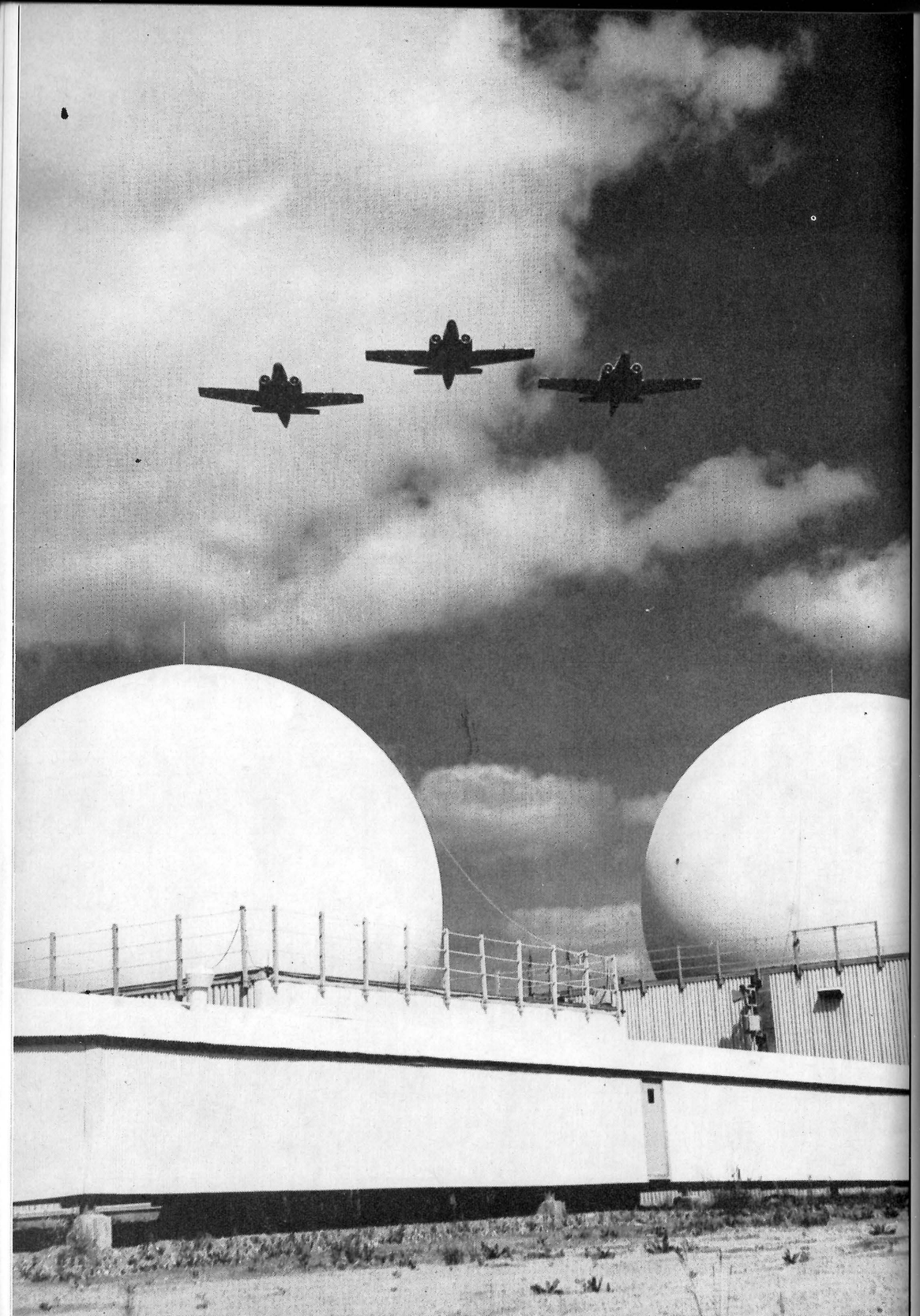


CANADA'S AIR FORCE

The RCAF Builds a Barrier

"WE ALL TAKE the fire department for granted until we have a fire at our house and then of course we expect it to be there immediately, and I suppose it is natural for the RCAF to be taken for granted by Canadians until there is an international fire. We hope there won't be one, but at the same time, we must keep prepared to handle it." This was Air Vice Marshal M. M. Hendrick, addressing the Canadian Aeronautical Institute earlier this year.

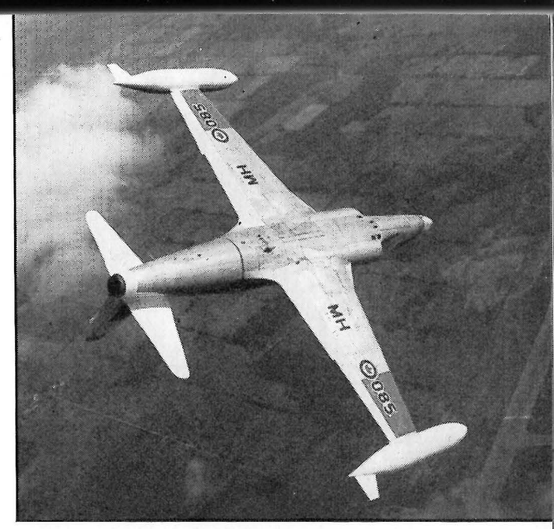
A/V/M Hendrick extended his analogy by noting that . . . "the only difference is that the fire department does get some practice every once in a while with a real fire and this keeps up their skills and spirits because they are doing something visibly useful. We hope we will never have a real fire to deal with, and therefore we have to exercise all our ingenuity to practice realistically and at the same time not to lose our keenness, not to get careless, to be always ready, perhaps for years and years on end. This is one of the toughest jobs in the whole Cold War."

Without End: A never-ending rehearsal for a play that may never be staged! And what an expensive rehearsal . . . according to A/V/M Hendrick, the RCAF:

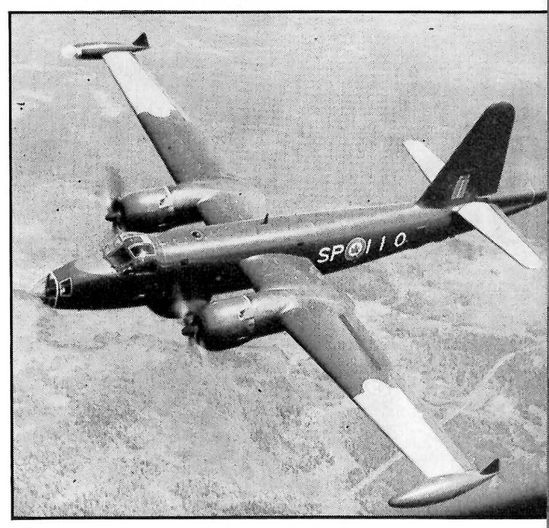
- Consumes $32,000,000 worth of fuel every year in its fighting and training aircraft.
- Has a technical inventory of aircraft, vehicles, and electronic equipment valued at $976,000,000.
- Has buildings and plants valued at $775,000,000.
- Spends $126,000,000 a year to maintain its technical equipment, aircraft, and electronics.

To assure the continuing maintenance of its technical equipment, the RCAF has an inventory of spares and equipment in the pipeline of over $200,000,000, which has to be stored, accounted for, protected, overhauled and kept ready. Noted A/V/M Hendrick: "In dollar value, this pipeline inventory is roughly half aircraft parts and engines and half electronic components, which underlines the interesting fact that with this build-up the important position of electronics as an equal partner with the airplane and its weapons has become more obvious.

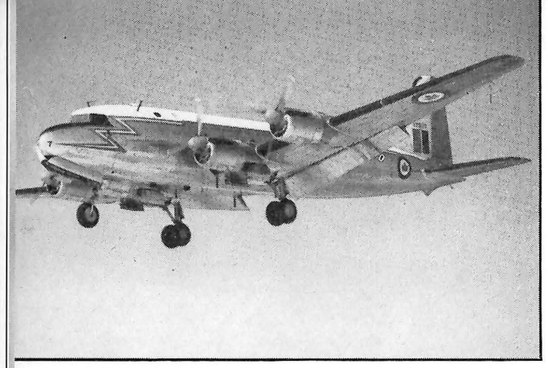
"Electronic devices are no longer considered by the RCAF as minor accessories or aids — they have become essential major components without which combat flying is no longer possible. This may be illustrated by two interesting trends: towards automatic flight and towards ground control of flight. We are halfway along the road to full automatic flight. . . . At the same time that flight becomes more automatic the aircraft becomes more depen-



The ubiquitous T-33 Silver Star is a well-known sight at practically all operational and training stations operated by the RCAF.

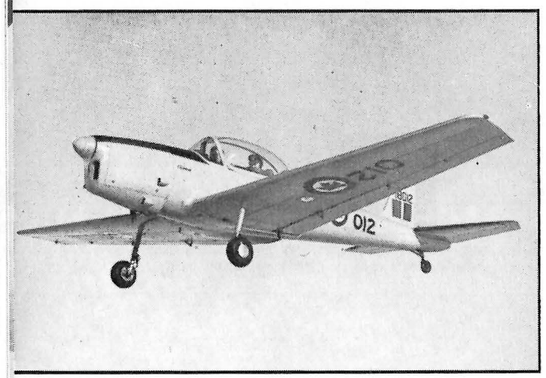


Above, Neptunes are Maritime Air Command's most modern aircraft. Below, Sabres are in service with operational and reserve squadrons.



Millions of domestic and international miles are flown each year by Air Transport Command's faithful and dependable North Star aircraft.

Above, evergreen Harvards are used by the RCAF for basic flying training, while the Chipmunk (below) is used for the new primary stage.



Below, de Havilland's DHC-3 Otter is in widespread use in the RCAF in a search and rescue capacity, and also doubles as a bush transport.

dent upon devices and controls on the earth beneath."

Man the Monitor: These trends towards all-jet flight, automatic flight, and ground controlled flight are rapidly becoming obvious in the day-to-day operations of the RCAF, as well as of other modern air forces elsewhere in the world.

The transition to jet flight may best be illustrated by A/V/M Hendrick's comment that of the total flying done by the RCAF three years ago, less than one-fourteenth was on jet-propelled aircraft. Today, one-third of all RCAF flying is on jets and the proportion is increasing steadily. "Furthermore, these jets are now all Canadian-built."

Insofar as ground control of flight and automatic flight are concerned, one has only to look at the Pine Tree aircraft control and warning system and the RCAF's CF-100's, with their black boxes that automatically guide them through collision course attacks.

The ground control capability is soon to be extended by the Dew Line, and to a lesser degree by the Mid-Canada Line, both scheduled to come into operation next year. And it may be assumed that the automatic features of the forthcoming CF-105 will probably extend into many other phases of flight besides the actual attack.

THE RCAF as it is known today represents the fulfilment of a build-up plan that was started some five years ago. It might be compared to an aircraft which is in full operational service, but which is being continually developed and modified to enable it to perform its job better, or to enable it to perform jobs efficiently without affecting its ability to carry out its primary function.

This is what is happening in the RCAF. Some years ago, it was planned that the air defence of Canada would be entrusted to a force comprising nine regular squadrons flying all-weather CF-100's, together with ten auxiliary squadrons, also flying all-weather CF-100's. The goal of nine regular all-weather squadrons was achieved, but while this part of the program was going on, it became obvious that it was not feasible to expect part-time airmen to operate such a complex type of airplane. While the reserve aircrews could probably have coped with the CF-100 reasonably well, the maintenance side posed a somewhat more formidable problem. The airplanes, their engines, and their electronic systems, simply could not be maintained properly by part-time ground-crew. Air Force planners were forced to a painful decision: no CF-100's for the auxiliary squadrons. This had the effect of placing the Canadian air defence force in the position of an airplane that doesn't live up to its spec. Obviously, modifications were in order, both to bring the air defence force to the state of effectiveness envisaged in the original plans, and also to give the auxiliary squadrons a new *raison d'être*.

The Solution: It was decided to form three additional CF-100 all-weather squadrons within the regular force, bringing the total of this type based in Canada to 12; insofar as the auxiliary squadrons were concerned, though the number of jet fighter squadrons was reduced to six, these are being equipped with Sabre 5's, thus acquiring a fighting potential that they have not known for years.

Insufficient: While it can be argued, and is generally conceded, that 12 regular all-weather squadrons and six auxiliary dayfighter squadrons can in no way be considered adequate defence of a country as big as Canada, it must be remembered that these are only Canada's contribution to the North American air defence system. It is not possible to visualize any situation where an air attack on Canada would not be regarded as an air attack on the U.S. This premise is the starting point for all Canadian defence planning.

This practice of constant change and modification with the aim of improving permeates every phase of Air Force operation. Not just equipment, but organization, procedure, and methods are being constantly reviewed and altered to make them more efficient.

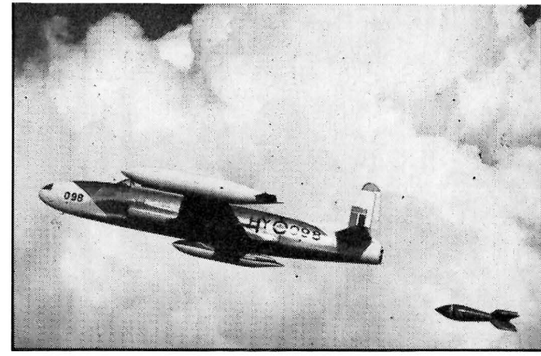
The building of the new early warning lines, farther to the north, by Canada and the U.S., might also come under the heading of "modification". Originally, it was thought that the Pine Tree Line, just slightly north of the populated belt of Canada, would supply sufficient warning. However, even before Pine Tree became fully operational, it became apparent that developments in the aeronautical art were such that Pine Tree could not give sufficient warning to get defending forces into the air in time. For this reason, it was decided to modify the North American early warning system by the addition of more lines, farther to the north: the Dew Line, to give first warning of invaders from the north, and the Mid-Canada Line to help keep track of the invaders once they had passed beyond the range of Dew Line radar, but were not yet within range of Pine Tree's groping electronic feelers.

Not everybody believes that the immense cost of construction these two lines (probably close to half a billion dollars, all told) is justified. Outspoken critics have included at least two retired high ranking Canadian Army officers, both of whom have held high positions in recent times.

In Favor: The case for the lines is presented by Defence Minister Ralph Campney who says: "They will buy us time — time to let the big U.S. deterrent force of bombers with their nuclear weapons winging away on their missions should the need arise; time to get our defences activated; time to prepare our people for impending attack.

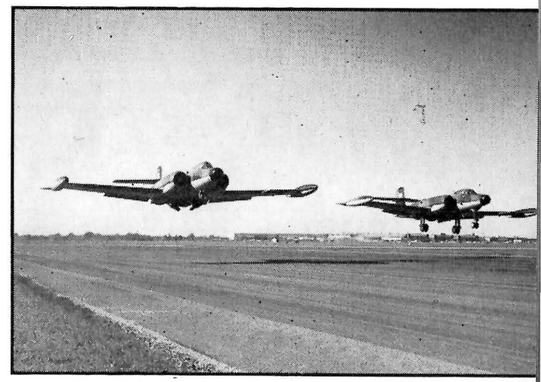
"Another purpose of this system is to alert our sister NATO nations if the Canadian north should be chosen as the first point of any attack. It is hoped that in the near future the early warning system of North America will be linked with an early warning system in Europe, to which NATO is giving high priority, thus forming an integrated comprehensive early warning system covering the whole of the NATO area. These warning lines cannot . . . buy us absolute protection. Their searching beams are not steel barriers. In a determined attack some enemy airplanes would run the gamut of the defending fighters and many lives would undoubtedly be lost. But these lines will nevertheless contribute very materially to NATO air defence plans generally and to Canada/U.S. effectiveness in particular.

"In defence terms any enemy invasion of our northland is of immediate concern to every Canadian, but — and this we should not forget — I think it is of equal concern to the citizens of the U.S. Realistic policy for continental air defence requires the closest co-operation between our two countries."



T-33 from Weapons Practice Unit at Cold Lake is used to tow radar reflecting target on which CF-100's practice collision attack procedures.

Above, Sikorsky H-34's are used extensively for transporting freight, cargo, and personnel for the Mid-Canada early warning system project.



Above, CF-100's are now serving in Europe as well as Canada. Below, RCAF airwomen are capably handling a wide variety of tasks.