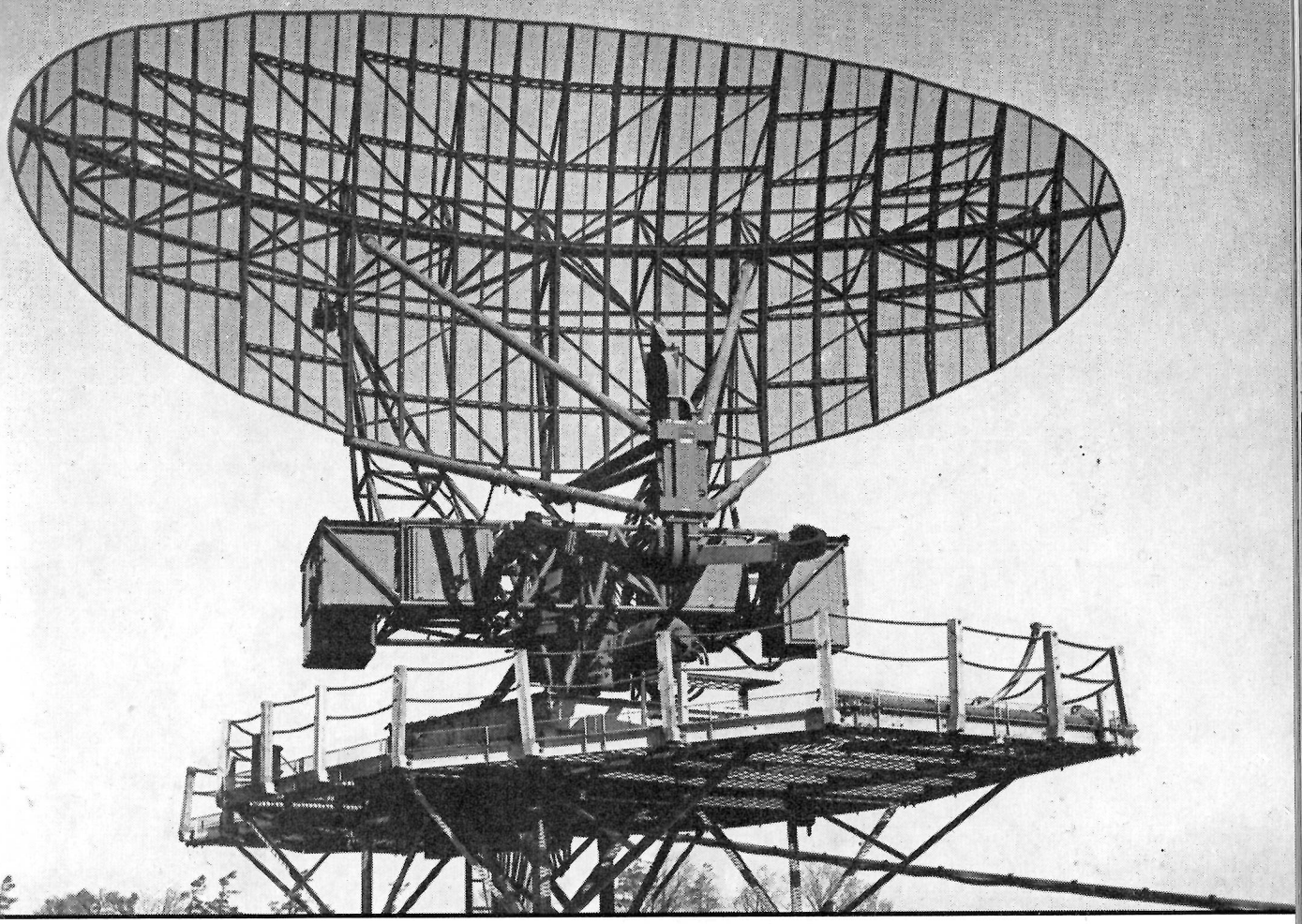
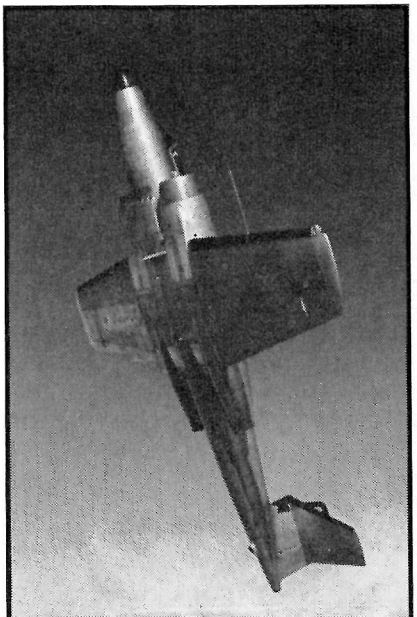


The Home Team

RADAR, GROUND OBSERVERS AND FIGHTERS FORM THE AIR DEFENCE TEAM

THE FINAL phase in the RCAF's expansion started with the recent entry into squadron service of Avro Canada's CF-100. And the completion of the first production model of the Mark 4 version of this powerful all-weather fighter indicates that the formation and equipping of more home defence squadrons is not far in the future.

These milestones are harbingers of a powerful air defence force to come, yet for the immediate future Canada's Air Force is too poorly armed to offer more than token defence against an air attack on North America. This is not to be taken as an implication that the air defence system as a whole is laggard. To the contrary, the air defence system is shaping up very well with most of the components working steadily towards a high degree of operational efficiency. Nevertheless, because the air defence machine must have all its parts in order to run at all, too much emphasis cannot be put on the production of CF-100's.



Force of Twelve: A quick summation shows that right now the RCAF can mount a fighter force in Canada of just 12 squadrons and even this is not really as impressive as it first sounds. There are, first, two Regular CF-100 squadrons—423 and 445—the first of several new squadrons which will form the nucleus of the home defence force. (A third CF-100 unit is now forming). The remaining ten units are all auxiliary squadrons, all of which are capable of operation in a highly efficient manner, but none of which is equipped with modern aircraft.

Only five of the auxiliary squadrons have jet aircraft, these being the Vampire-armed units at Montreal (2), Toronto (2), and Vancouver (1). The other five, at Winnipeg, Calgary, London, Hamilton, and Vancouver, fly Mustangs. It must also be taken into

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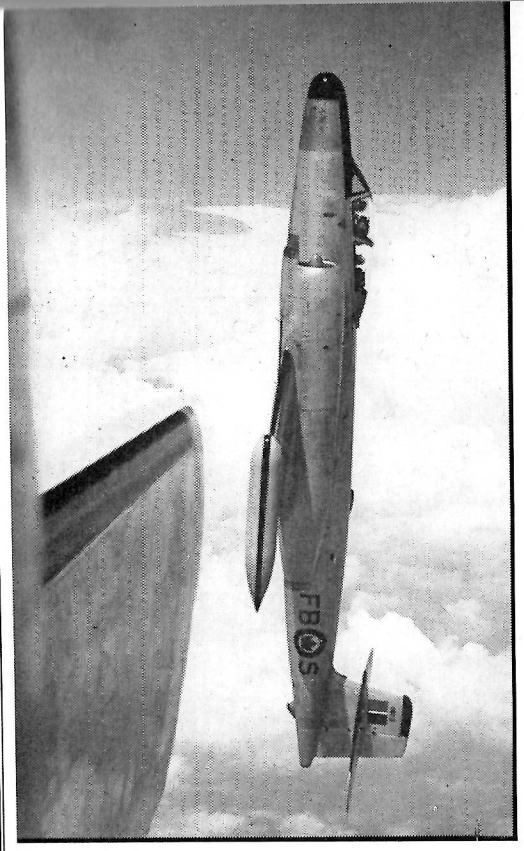
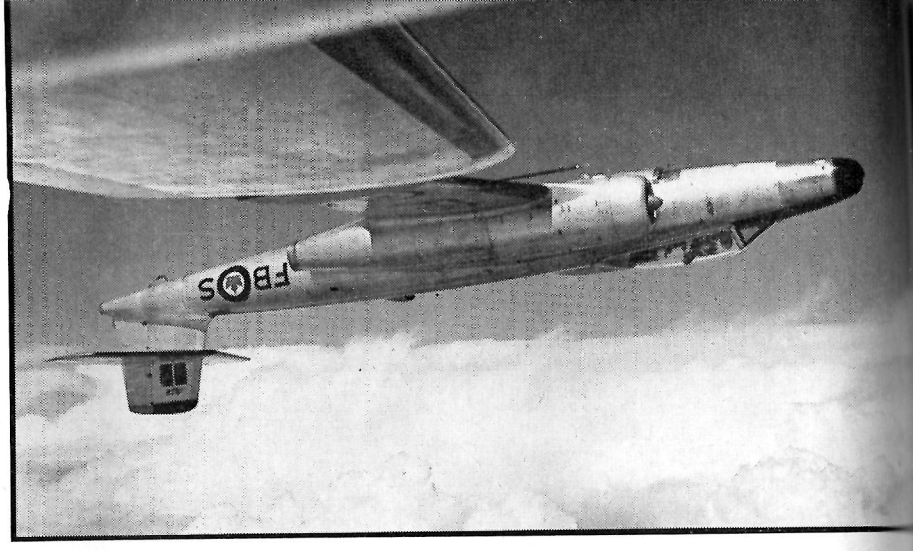
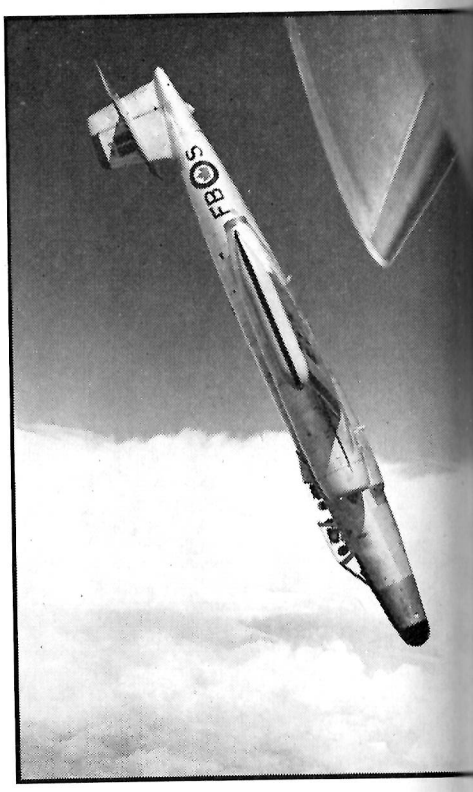






The prototype Avro Canada Mk. 4 CF-100 struts its stuff for the camera in these superb pictures. Avro Canada personnel have developed air-to-air photography to a fine art and are now turning out photos that are the equal of anything produced elsewhere in the world. Note accurate position holding of photoplane, flown by Peter Cope. Photographer was Hugh Mackechnie. Jan Zurakowski was pilot of the Mk. 4.

consideration that an auxiliary does not have the same complement of aircraft as a regular formation, so that in numbers of aircraft there is the equivalent of approximately two Vampire squadrons and two Mustang squadrons. The home defence force obviously lacks depth. The widely scattered fighter squadrons are like an elastic band stretched taut; if pressure is applied, it has no give left, so it must break. Only with the early formation of more CF-100 squadrons will the fighter forces attain the resiliency necessary to absorb blows and come back swinging.

The outlook should be much brighter by this time next year, but it would be unduly optimistic to expect that the majority of the home defence squadrons will have formed and/or been equipped with CF-100's much before late 1954.

Seven to Go: Here is what still has to be done to complete the RCAF's home defence force.

Seven more regular squadrons must still be formed in order to round out the planned establishment of 41 regular and auxiliary squadrons. It is understood that all the seven remaining will be fighter units flying CF-100's.

In addition, the auxiliary fighter squadrons are slated to be equipped with CF-100's but only after the regular squadrons are formed. It is likely also, that the two auxiliary tactical bomber squadrons, now flying B-25J Mitchells out of Saskatoon and Edmonton, will eventually fly CF-100's, perhaps in a fighter-bomber version.

Thus, when the home defence fighter force is in being, it will comprise at least nine regular CF-100 squadrons and ten auxiliary CF-100 squadrons.

radar

CONSIDERABLE comfort can be taken from the fact that even though the home defence fighter forces are still flimsy, the early warning system—radar in particular— has reached the point where it is actually capable of giving early warning to the country's most vital industrial areas. The communications aspect of the control and warning set-up has also progressed far.

Properly enough, very little factual information has ever been released concerning "Operation Pinetree", the code name given to the joint Canada/U.S. program for the construction of a chain of radar stations in Canada, but it has been officially stated that the radar system would be largely completed in 1953.

The stations are financed in a two-to-one ratio by the two countries, with the U.S. picking up the larger portion of the tab. Some stations are manned entirely by Canadians, others entirely by Americans, depending on whether the station in question watches over the approaches to an area most vital to Canada, or to the U.S. It is understood that most of the American-manned stations are on the eastern side of Canada.

Control & Warning: There are two general types of station in operation: one is strictly for early warning purposes, while the other is capable of also providing fighter control for squadrons seeking out an enemy. What the stations look like has understandably never been revealed. Needless to say, they are big, complex, and expensive to build and operate.

One thing they have in common is a big antenna similar to the one used to illustrate this article (the particular antenna shown in the photo was produced by Northern Electric Company Limited for one of the radar stations). But even these antennae are not ex-

posed to the common view. They are covered with a monstrous radome, which has thin walls fabricated from a specially compounded rubber and fiberglas, and held in shape by being inflated with about one lb. per square inch pressure. The radome, roughly 20 feet deep and with a diameter at the widest point of approximately 30 feet protects the antenna from the elements without distorting signals. It can stand winds up to 120 mph.

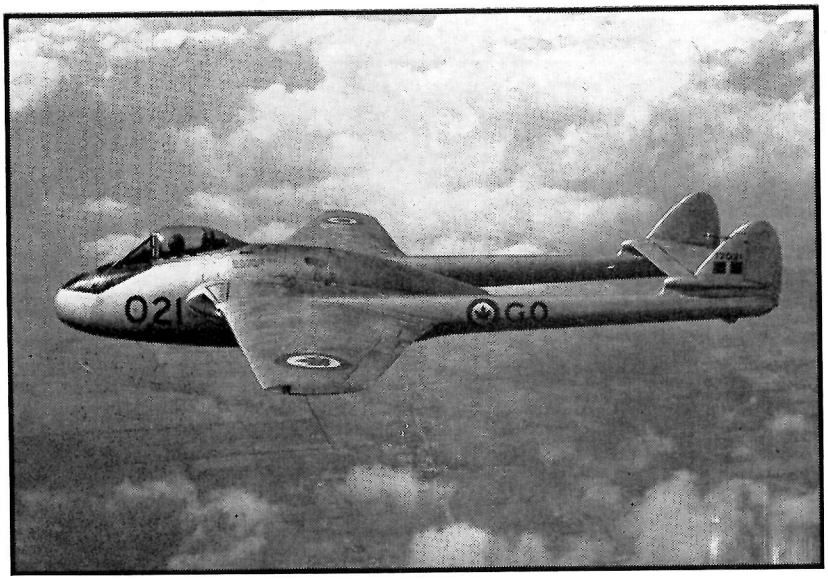
The man in charge of the RCAF section for the establishment of radar units in Canada is Group Captain G. M. Fawcett, an electronics expert who took over his present post in September of 1952. G/C Fawcett was the RCAF's Director of Electronic Development from 1945 till 1948; one of the other positions he held between 1948 and September, 1952, was that of Senior Telecommunications Staff Officer at Air Materiel Command HQ in Ottawa.

Airborne Stations: Apart from the protection afforded by the ground stations, additional early warning will probably be available soon through the use of radar picket airplanes. These radar picket aircraft, numbers of which are on order from Lockheed for use by both the USAF and the USN, are intended to prowl the skies at 40,000 feet. They are, in effect, airborne early warning stations. It is interesting to note that when the RCAF was first drawing up the specification for the CF-100, it visualized an aircraft which would operate as a team-mate with the radar picket airplane.

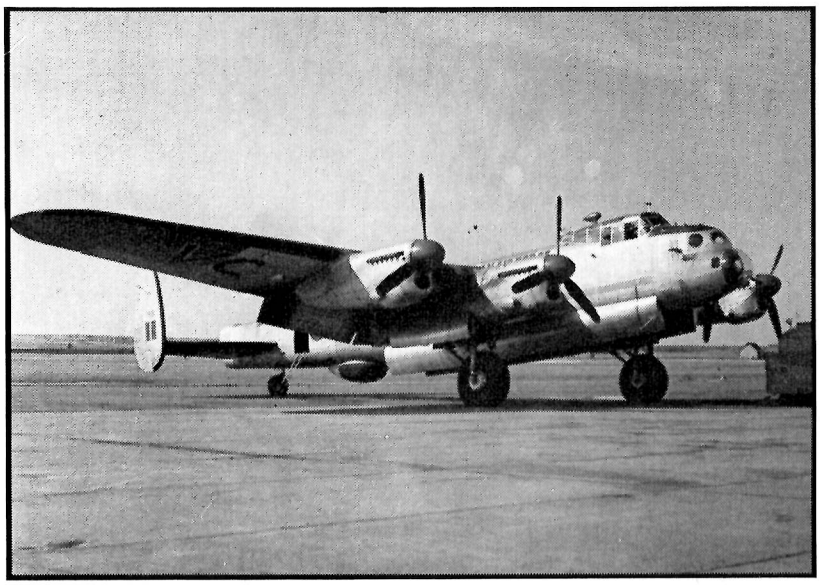
The pickets are modified versions of the Lockheed Super Constellation. Designated the RC-121C by the USAF and the WV-2 by the USN, the airplanes are made grotesque by an eight-foot high dorsal fin protruding from the top of the fuselage, midway back; this houses the height-finder radar antenna. A huge, bowl-shaped radome mushrooms from the bottom of the fuselage.

Besides their mobility, the picket planes' radar has greatly superior range to comparable ground sets. This is credited to the great height at which the aircraft operate . . . since radar range is restricted by its line-of-sight characteristics, the higher the radar set is, the farther it can reach.

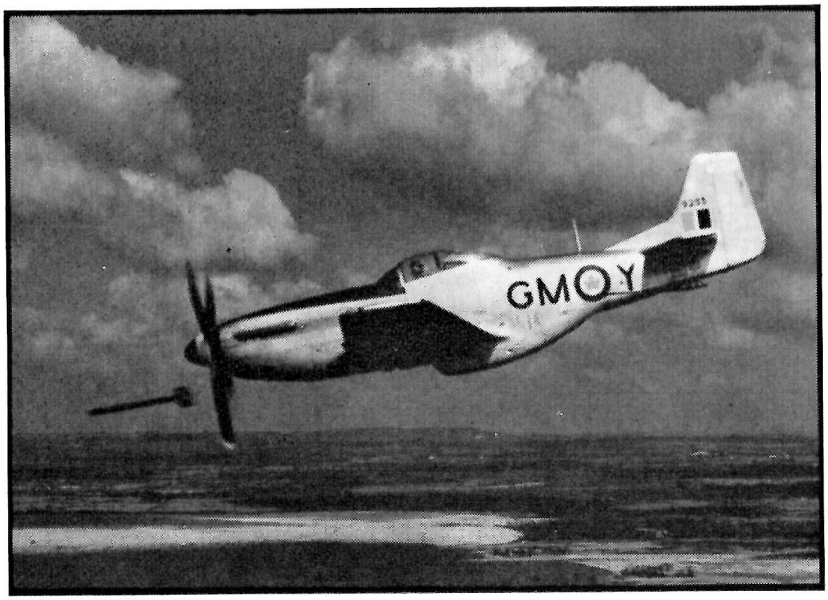
Facilities for a crew of up to 31 are provided. Each airplane carries a complete electronics maintenance shop and a team of technicians to make in-flight adjustments and repairs.



FIVE AUXILIARY SQUADRONS OF VAMPIRES COULD STILL DO A JOB



MARITIME LANCASTERS GUARD EAST AND WEST COASTS OF CANADA



A NUMBER OF AUXILIARY SQUADRONS STILL FLY MUSTANGS