



AIR INDUSTRY PROGRAM SHIFTS TO WAR STRIDE BACKS RCAF EXPANSION

THE Canadian aircraft industry during the next three years will be geared to wartime tempo, with engines, trainers, and jet fighters in assembly-line production to supply the air training stations and the operational squadrons which are to be Canada's chief contribution to the continental and global defense efforts.

Here are highlights of a program which may boost our air industry to its wartime position as biggest employer in the country.

★ Main effort will be concentrated at the Avro Canada and Canadair plants. Avro now employs about 5,000 but will double this when the Orenda jet engine and CF-100 programs get rolling. Canadair is starting delivery of F-86E Sabres on a substantial order from the RCAF. It is probable that an even greater number of Sabre airframes will be ordered for use in Europe.

★ Harvard trainers will be built for the RCAF by Canadian Car & Foun-

dry Co. Ltd. at the Fort William plant. A \$65 millions order has been placed.

★ If current negotiations are successful, Canadian Pratt & Whitney at Longueuil, Que., will manufacture radial engines for the Harvard. This will be the first time piston engines have been manufactured in Canada. ★ It is probable that the de Havilland Aircraft Co. of Canada Ltd. will build quantities of Beaver aircraft for the USAF.

In his forecast of military expenditures during a recent speech in Parliament, Defense Minister Claxton outlined a three-year program to involve spending of \$5 billions.

Objectives of the RCAF and related manufacturing programs were summarized by Mr. Claxton as follows:

"1. Forty regular and reserve squadrons with more than 3,000 aircraft additional to those we now have.

"2. Radar equipment manned and located to provide radar defense integrated with a corresponding U. S.

LEFT—Production, as symbolized by the centre illustration of an Orenda machining operation at Avro Canada, will support our accelerating air effort. Target: 3,000 new aircraft, and 40 RCAF squadrons.

chain of stations, connected by the necessary communication system and backed by fighters.

"3. In Europe an air division of 11 fighter squadrons (included in the 40).

"4. Airfields, men and equipment to train large numbers of aircrew for ourselves and other countries.

"5. Industry in a position to produce large numbers of the latest types of aircraft needed by the forces of ourselves and others.

"6. Production of quantities of equipment for NATO and training of large numbers of officers to strengthen our common defense by assisting our allies.

"This whole program involves an increase in the number of service and civilian personnel employed full-time on defense from the present figure of about 90,000 to about 148,000.

"What About Cost? — Defense expenditures four years ago were \$194 millions. This year we appropriated and expect to spend on the defense forces \$567 millions plus some part of the \$300 millions voted for mutual aid. Next year, defense, including mutual aid, will require about \$1,600 millions. The three-year program will involve the expenditure of over \$5 billions."

The defense minister prefaced his detailed defense survey with an outline of our national defense objectives in the following terms.

"The objectives of our national defense are simple and clear. They are:

"1. Immediate defense of Canada and North America from direct attack;

"2. Implementation of any undertakings made by Canada under the Charter of the United Nations, or under the North Atlantic Treaty or other agreement for collective security;

"3. Organization to build up our strength in a total war."

Defense of North America—"Russian medium bombers of the B-29 type could reach pretty well any part of North America on a one way trip and, under certain conditions, reach some parts of North America and return. This being the case, it is quite likely that in a general war Russia would launch bombing attacks against North America either with atomic or conventional weapons.

"There is no way of making a continent of seven million square miles impregnable or impenetrable with

by the centre
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accelerating
aircraft, and

a kind of aerial Maginot line. Radar and fighters won the Battle of Britain, but despite the heavy concentration of air defenses in that small area, many enemy aircraft got through.

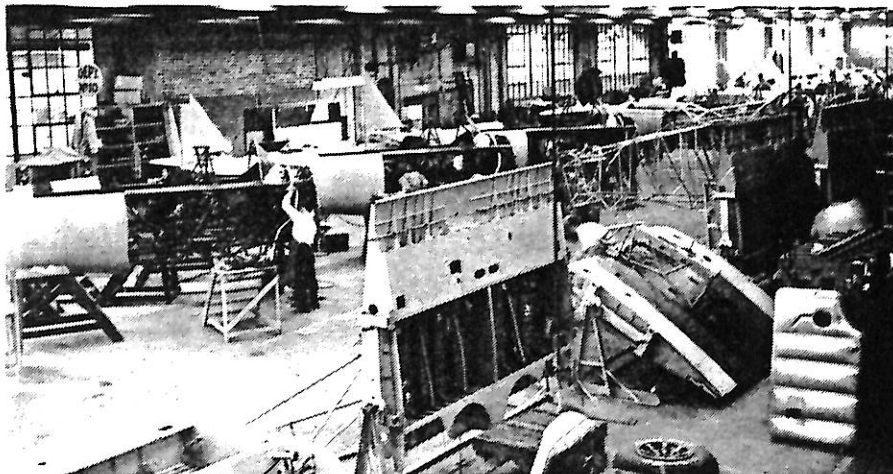
"To meet the possibility of air attack, our services are working in close co-operation with the United States. A screen of stations with the latest and most powerful radar apparatus is being built, connected with a network of communications and backed up by squadrons of fighters. The American and Canadian chains will be linked together to form a single system, of which about one quarter will be in Canada.

"If the question is asked why this radar and fighter defense is not already fully operational, it is because the radar, the type of communications selected and the aircraft—the F-86 Sabre and the CF-100 Canuck—have only recently been developed and have not yet been produced in the numbers required. As fast as aircraft can be produced, regular and auxiliary fighter squadrons will be manned and equipped to war strength. In the interim the RCAF has mobile radar sets and Vampire and Mustang fighters.

"To supplement these air defenses the army has a large stock of heavy anti-aircraft guns to be manned by active and reserve force personnel.

"In addition to attack by air, it might be possible for an enemy to land air-borne troops by a surprise attack on an airfield or by parachute. To meet this possibility the Canadian Army has a specially trained air-borne brigade group. For much the same purpose the United States has similar but larger formations. It is noteworthy that none of these formations was moved to Korea because they were specially trained and earmarked for this particular type of continental defense.

"**Civil Defense**—The object of civil defense is to reduce the consequences of enemy action upon civilian population and property. Because of the immense area of Canada and its constitutional structure, civil defense is a matter calling for the close co-operation of federal, provincial and municipal authorities. A large part of civil defense is the result of organizing the manpower and material resources already existing in each community. In the very nature of things the agency for action in civil defense, here as in other countries, must be the local municipal authority. That position was agreed to by the representatives of all the provinces at a conference held here last September.



A \$65-millions Harvard production program, to provide the planes for a major effort in pilot training, will be launched by Canadian Car & Foundry Co. at the Fort William plant. Above: Major overhaul and modification of Harvards by Canadian Car near Montreal.

"Following that conference a pamphlet on civil defense organization was issued. Civil defense organizations have been set up by most of the provincial governments and many municipalities are taking action."

Global Defense—Stressing the view that, despite the importance of Korea, "the vital centre of our global defense is in Western Europe, the Minister traced the background of the North Atlantic Treaty Organization under which 12 nations have agreed on a common defense.

"Following the meeting of the Defense Committee at Paris in November, 1949, a Canadian offer to train army officers and aircrew for their forces was well received and arrangements were worked out under which army officers and aircrew for Belgium, France, Italy, The Netherlands and Norway are now being trained in Canada. Later the United Kingdom expressed a need for such assistance and vacancies having been made available the first British trainees arrived in Canada last month.

"A further offering is being made

through NATO, to increase training facilities considerably.

"These facilities, together with those for training our own aircrew, will provide training for over 3,000 aircrew per year.

"This operation will require the opening of additional air stations and recommencing the manufacture of large numbers of Harvard trainer aircraft and the production of airplane engines in this country.

"The expense of training aircrew for North Atlantic Treaty nations during the fiscal year 1951-52 is estimated at \$64,500,000.

"In addition to training aircrew officers in the numbers mentioned, we have attending the various staff colleges and other courses in this country officers from Australia, Belgium, France, India, Italy, The Netherlands, Pakistan, Portugal, the United Kingdom and the United States . . .

"Canada's most substantial contribution to the planned force in being will be our Air Force participation. Air power is especially needed. One

(Continued on page 37)



Photographed together for the first time are the two jet fighters on which the RCAF will rely for its operational squadrons. The Sabre with USAF markings is the actual plane which established the existing world speed record, 670 mph. In the foreground is the Avro CF-100.

Air Industry Hits Wartime Stride

(Continued from page 17)

squadron is already undergoing operational training in England. This squadron is to be joined by two others to form a wing and these squadrons will be made available to the supreme commander.

"We plan to have in the Integrated Force an air division of 11 squadrons at full fighting strength, equipped with F-86E and Canuck aircraft. To support them there will have to be a supply line of reserve aircraft, depots, training establishments, and so on. You can see that the Air Force participation in the Integral Force will require a very large portion of our total defense budget.

Equipment

"This report indicates something of the size of the equipment program now under way and gaining momentum from day to day.

"To meet these requirements a new department of the government, the Department of Defense Production, is being proposed. In the first nine months of the present fiscal year which ended on Dec. 31, 1950, 80,000 orders were actually placed with industry. During this period orders have been placed with Trade and Commerce for the sum of \$701 millions."

Classifying the above purchases, Mr. Claxton noted that aircraft orders placed during the first nine months of the present fiscal year amounted to \$331 millions. He suggested that the present position of defense industry in Canada was comparable to what it was two years after the last war started "but with much greater potential capacity."

Additional orders are being placed, he said, for aircraft, "including Harvard trainers and engines." (Note—It has since been revealed that Canadian Car & Foundry Co. Ltd. will undertake a \$65-million contract to build Harvards at the Fort William plant. It is understood that Canadian Pratt & Whitney may undertake to build P & W Wasp Junior radial engines for the Harvards.—Editor)

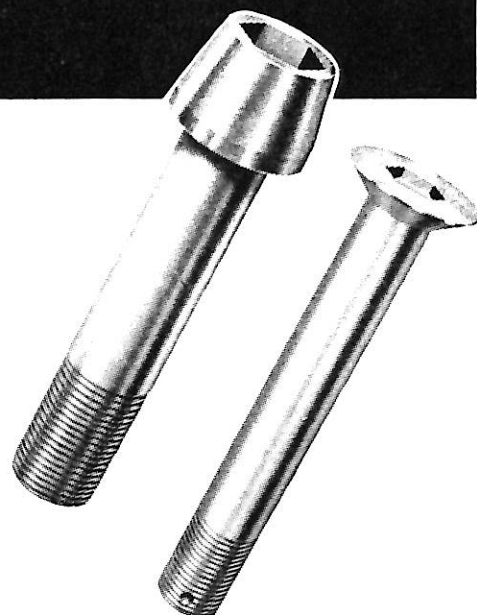
Referring to the "staggering cost" of modern armament, the Minister itemized \$750,000 for a two-engined fighter (i.e. Canuck) and \$400,000 for a single-engine jet interceptor (Sabre). A new airfield, with runways, buildings and equipment had a price tag of \$20 millions, he said.

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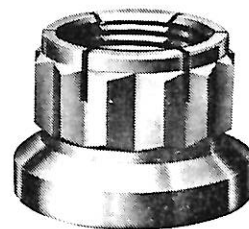
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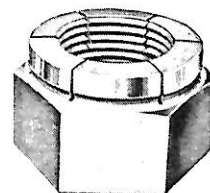
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Manpower—Three years ago, service and civilian defense personnel totaled 54,000. Today the figure is almost 90,000. During the next three years, service personnel will increase to 115,000, plus 33,000 civilians, a 65% increase over present strength.

"Because of the large requirements of the RCAF, not only in building up to its total of 40 regular and auxiliary squadrons, but also in the training services, the RCAF will... have more men than the Army has today and will be spending nearly as much as the other two services put together."

Avro Inventions Big Business

(Continued from page 19)

At present, a tremendous amount of work is being done on the ways and means of manufacturing blades for gas turbine engines and many patents are likely to come out of it. Consequently every development and production organization is protecting its rights to every invention it makes along this difficult and costly path.

Eventually one or two "answers" will materialize; the patents on these answers will be extremely valuable, for the competition, both commercial and international, is so intense that no one can afford to adopt second-rate or incomplete solutions to the problem.

From the foregoing it will be clear that patents exert a powerful but often-overlooked influence throughout the aircraft business and any company which ignores them altogether is asking for trouble. It is true that the extent to which various companies become involved varies considerably, but since the war there has been some renewed interest, especially in the relatively new arts such as helicopters and gas turbine engines which came into prominence during the war years.

The Patent Offices issue weekly publications giving details of the patents granted and hardly a week goes by without its share of helicopter and gas turbine patents, thrown in among the strange assortment of calculating machines, riding-boot driers, electrical appliances, brassieres, plastics, poultry pluckers and the rest.

Ownership of Patents—It is well-settled in common law that an employee must assign to his employer the rights to any invention which is made within the scope of his employment, and this is often confirmed by some form of Employee's Inventions Agreement which attempts to define this employer-employee relationship,

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