

AVRO CANADA

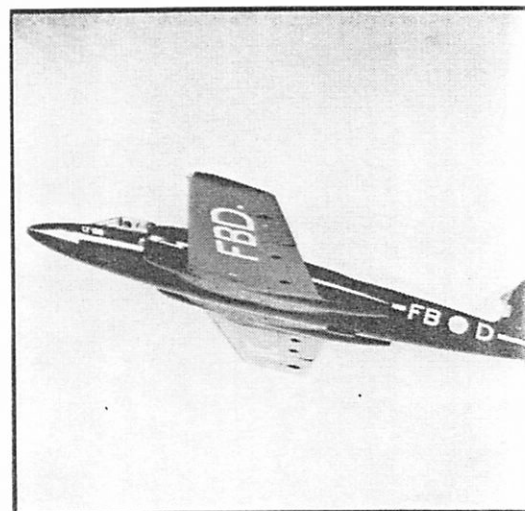
Prime Factor in Aircraft Production

Just about the hottest thing in Canada's aviation industry at present is A. V. Roe Canada Limited. From a standing start five years ago this firm has established itself with the world's leaders in the design field, for both engines and airframes. It is now preparing to make its mark as a production concern. This is a reef on which many aircraft companies with great talent for design have foundered, but there is every indication that Avro Canada will excel in this phase as well.

First Magnitude: Few people in Canada realize just what an enormous job is involved in converting from development to production on a large scale. In truth, it is a task of imposing magnitude that must follow a path fraught with pitfalls. Tools must be designed and made for production, many of the large number of shops that go to make up an aircraft plant

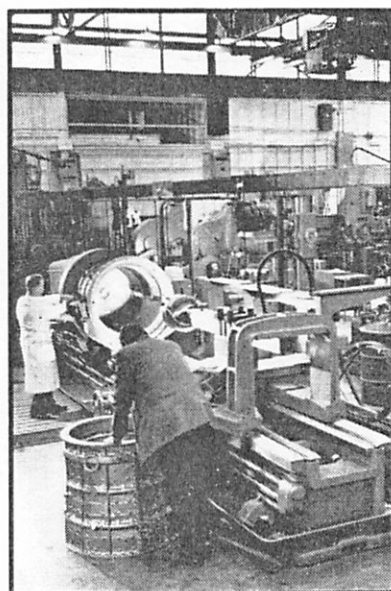
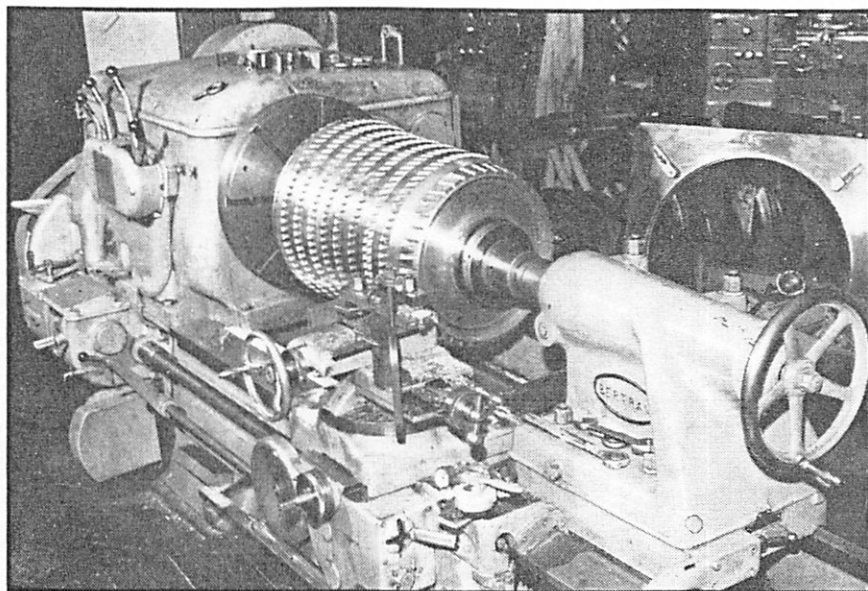
must be converted to new work, workers must be trained, a continuous supply of myriad materials must be arranged, and so on, ad infinitum.

To add to the difficulties, there has been scant experience in Canada with this problem hitherto. Aircraft have been produced in this country in large numbers before, but never on such a scale as that projected at Avro Canada. Previously any large-scale, high-rate production was to other concerns' designs. This is a somewhat simpler task in that the tools are at least designed, and perhaps available in finished form, and further, considerable advice is available from personnel already experienced in the production of the design in question. Remember, too, that in the Avro Canada the problem involves not just an aircraft design, but also an engine, which is an even more imposing job.



Workers, Unite! Avro Canada's success as a production firm will depend on the efforts of every employee, of course, but it is on the shoulders of the young and keen and aggressive planners and administrators that the responsibility finally rests. These planners and administrators are headed by three men, Vice-President & General Manager Walter N. Deisher, Executive Vice-President Fred T. Smye, and Director of Manufacturing J. H. Berry, all of whom have had much experience in the field of production. Of these three, as director of manufacturing, Mr. Berry is the man most directly responsible for organizing the actual production program.

He comes well prepared for his job of co-ordinating and directing all of Avro Canada's gas turbine and aircraft manufacturing activities. He was at one time with General Motors for a



ORENDA COMPRESSOR AND (RIGHT) COMPRESSOR CASING

period of sixteen years in three different countries, in connection with the manufacturing operations of that company's various plants.

Full Employment: In 1940 he became Canada's Director General of Automotive & Tank Production and Motor Vehicle Controller. Later he was appointed vice-chairman of the Production Board, and was a member of the joint U.S.-Canada Production Board. Since the war he has been president of War Assets Corporation, and also administered the industrial phase of Canada's U.S. dollar conservation program as Director General of the Department of Trade & Commerce's Import Control Branch. Examination of Mr. Berry's experience, as well as that of Mr. Deisher and Mr. Smye, gives good reason for confidence that Avro Canada will meet all production demands.

Plans for going into large scale production have been accelerated only since the war in Korea started and already the advanced state of preparations is clearly evident. In one the plant bay where just a few short months ago Lancasters were being converted or prepared for conversion, machine tools have been set up and some have already been put into use turning out parts for Orendas. Within a short period, this machine shop should be going flat out. This will be the pilot line and will also be used for tool proving for the main production plant. For the time being, the experimental & development shop is being utilized to turn out parts for the first production

engines, in addition to its normal work.

CF-100 Production: In another bay the CF-100 production line has been set up and is now being used to build the ten preproduction fighters originally ordered by the RCAF in addition to the two prototypes, both of which have been flying for some time. An additional substantial production order has also been received for an unspecified number of fighters and depending on future developments, this might be increased considerably.

A few CF-100s have already begun to take definite shape on this line, there being on hand finished components to assemble the first ten airplanes. Sufficient parts and materials are also on hand to construct an additional and substantially greater number of machines than in the preproduction order. Here again, it is expected that future developments will change this picture radically, insofar as numbers of aircraft are concerned. It may well be that future orders for this type will not stress total numbers of aircraft so much as rates of production. It is safe to say that this rate will be impressive by any standard.

Production Jetliner: The production model of the Jetliner is being constructed in a third bay. Here, as well, the work of fitting out Lancaster 10-MRs to equip the RCAF's Maritime Squadrons is being carried on. The RCAF took delivery of the first of these on December 29. The second Jetliner is well advanced, with the time for marrying up the various components drawing near. This machine is slightly longer than the original, the length having been added in order to provide more passenger space, and not for aerodynamic reasons. It is also planned to install a larger U.S. jet engine in the second airplane, thus giving it considerably more power than the first.

The space between the present detail and assembly buildings is being built in, so that in a short time the two buildings mentioned will be a single unit. In this way considerably more floor space will be provided. At the present time the two buildings are joined only by a closed in passageway. The flight test hangar has had an addition made also. This extra space will be used to house offices for flight test, flight engineering, and servicing personnel.

Other Buildings: The building in the foreground of the photo on page 7 contains the administration and aircraft engineering offices. Visible in the background are the runways of Malton Airport. This photograph does not show the location of the new plant being constructed by Avro Canada for the production of Orendas. This plant, which will be a big one, is located

ON PAGE SEVEN: The top picture on page seven is an aerial photograph of the Avro Canada plant. All the buildings visible above the road cutting diagonally across the picture are used by Avro Canada. Two storey building with central tower contains the administration and aircraft engineering offices. New Orenda plant will be located about half a mile from locale shown in this photo.

about half a mile away. To date work has been confined mostly to clearing the site, and laying the foundations and footings and it is not expected that the finished plant will go into use in less than a year.

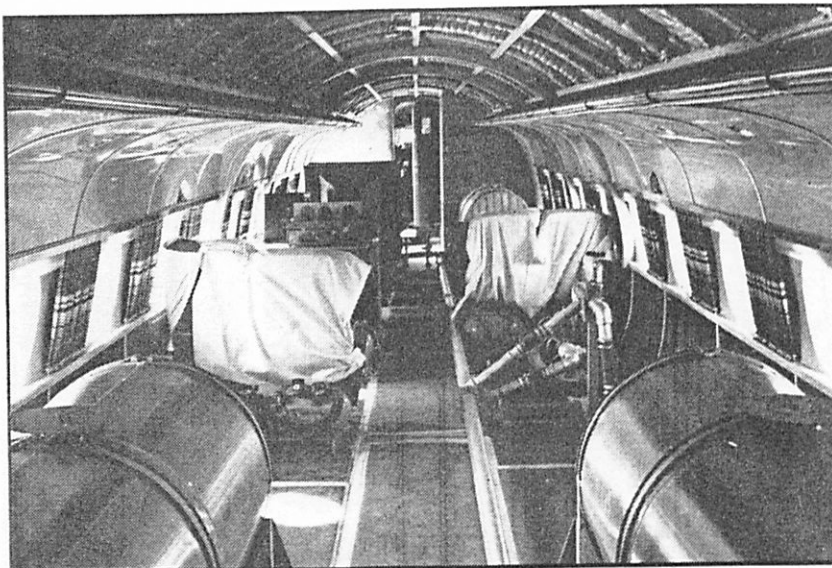
In all, Avro Canada is expanding its original 1,000,000 square feet of floor space by more than 50%, and some 175 acres of property are being added to the 225 already owned. The staff, of course, is growing constantly; at the turn of the year it was approximately 4,800, with hiring proceeding at the rate of about 100 per week (labor turnover does not allow the total to rise as fast as the hiring rate would indicate however). Skilled workers are getting harder to come by all the time and Avro is now working on a scheme to train hands on the job.

Help Wanted: Technical schools in Toronto area may be called on to help in training workers in the necessary trades. The company has also been advertising for skill tradesmen in the U.K. and a recently announced Government immigration scheme is expected to bring to Canada many workers in this category. Some women have already been hired in certain departments—in fact, when the labor force reaches its peak of approximately 10-12,000 in about two years, a large percentage of this figure will be made up of women.

The Orenda, the rate of production of which may well mean the success or failure of the production program for front line fighters for the RCAF, is apparently living up to its early promise, though scant information as to performance has actually been released. The flight tests of this engine in a North American F-86 are said to have gone well, with the speed and climb of the aircraft being improved substantially. According to Avro Canada since the results of these flight tests have been given to the USAF, it is said that this service has been taking much interest in the engine.

American Interest: The idea of manufacture in the U.S. under license has been mooted and though certain American firms have shown definite interest in taking up U.S. rights to manufacture, none will likely do so unless the possibility of a large contract from the USAF becomes a very real one.

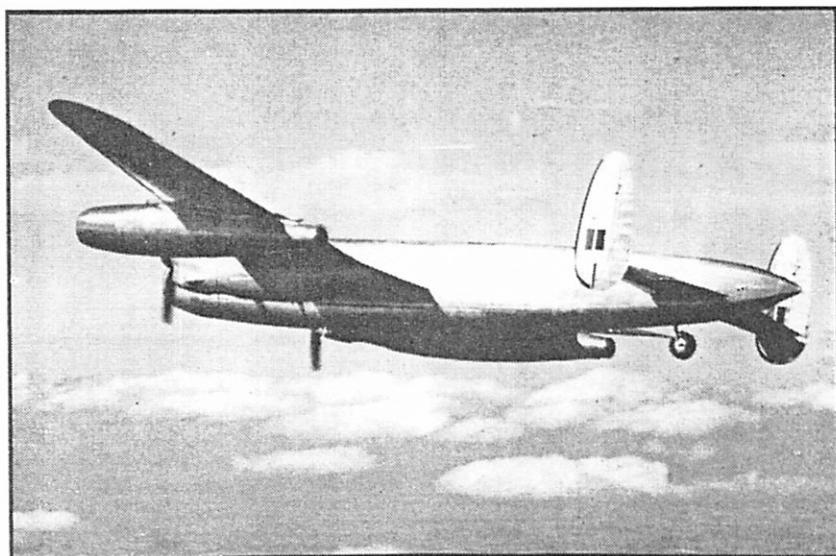
No official announcement has yet been forthcoming that the Orenda will be used in the Canadair F-86, but it is



JETLINER CABIN WITH TEST EQUIPMENT



FIRST JETLINER IN FLIGHT



ORENDA-LANCASTER



WALTER DEISHER



J. H. BERRY



FRED SMYE

widely accepted in Canadian circles that this will be so. Another possibility is that Britain will order some 400 F-86s from Canadair, though this, too, still lacks official confirmation. Yet a third possibility is that the CF-100 will become a standard fighter for the Atlantic Pact Nations, in which case the orders for engines and airframes would outrank anything in the previous experience of the aviation industry in Canada.

More Than Rumor: All three of these possibilities are based on something more substantial than rumor. If any or all of them are realized, the effects will be much more far reaching than it appears on the surface. That is, Avro Canada will not be the only company to gain. As it is, at the present time the Orenda is some 90% Canadian built, from Canadian materials supplied in the raw form or fabricated into necessary parts by firms in Canada. Plans are now close to realization that will result in the Orenda being a 100% Canadian product. Since Avro Canada suppliers number well over the 300 mark (for engines and airframes), it can be easily seen that a broad segment of Canadian industry will benefit, as will Canadian labor.

If enough aircraft were ordered to require, say, 100 Orendas to fly them away from the factories, then 150 Orendas would actually have to be built. This is because of every two engines built, the equivalent of a third has to be available in the form of spare and replacement parts.

Undiminished: The situation as far as the Jetliner is concerned is that flight trials and the development work are continuing undiminished; in the event of an all-out war, it is quite likely however that this project would have to give priority to Avro Canada's defence commitments (unless, naturally, a military application is found for the Jetliner, of which there seem to be many).

Recently R. Dixon Speas, U.S. representative for Avro Canada, summed up the progress that had been made on the Jetliner to the Aeronautical Association of Boston. Mr. Speas said that during its 150 hours of flight test operation since it first flew in the fall of 1949, the Jetliner had substantiated its design predictions. It had travelled at a true air speed of over 500 mph; it had made a flight up to 39,800 feet, and it had made one flight of about

1,100 miles on its present fuel capacity of about 2,800 U.S. gallons. The fuel capacity for the second aircraft was being increased to 4,000 U.S. gallons and operating ranges of 1,100 miles with adequate air line fuel reserves, the airplane would carry 50 passengers and their baggage, or about 12,000 pounds in cargo version.

Operating Experience: Based on the operating experience of the flying so far, the air line version of the Jetliner would cruise at 30,000 feet at a true air speed of 420 mph. This air speed might be increased upon demonstration of speeds in excess of the 500 mph thus far demonstrated. Under Civil Air Reg-

TRIANGLE WITH VELOCITY

The Avro Canada Jetliner last month made a triangle tour, the vertices of which were at Toronto, Chicago, and New York, and in so doing broke three speed records. It flew the Toronto-Chicago leg in 1:31; Chicago-New York, 1:42; New York-Toronto, 1:09. Normal air line times are, respectively, 2:30, 2:50, and 1:42; respective distances are 460 miles, 750 miles, and 360 miles. Also broken were American records for rate of climb and altitude for transport type aircraft. The Jetliner climbed to 30,000 feet in 22 minutes and reached a maximum altitude of 36,000 feet. It carried the equivalent in weight of a full load of passengers. Purpose of the flight was to check fuel consumption, and navigation procedures, as well as serviceability of the aircraft away from its home base.

ulations there was a margin required between demonstrated true air speed and allowable cruising speed—thus the present restrictions to 420 mph cruising speed.

The use of more powerful American built engines will not only make the Jetliner even more attractive to U.S. air lines (there are already more than 100 U.S. companies providing equipment for the second Jetliner, which should fly this summer), but will also raise the true air speed and the climb. This winter the existing Jetliner is to be put through a series of anti-icing and pressurization tests.

Veil of Secrecy: Secrecy permits little to be said about the fighter except that at the end of the year the two prototypes had carried out more than 150 test flights. These include flights with wingtip tanks, which, while serving the functional purpose of adding materially to the range, also serve aesthetically to make the aircraft look remarkably sleek.