

More Power for Air Power

FROM THREE SOURCES COME ENGINES TO POWER CANADIAN AIRPLANES

IT IS only within the last few years that the production capabilities of Canada's Aircraft Industry have been rounded out by the establishment of aero engine manufacturing facilities. In truth, prior to the Fall of 1950, construction work had not even been started on any of the three major plants which are now busily engaged in aero engine production.

In view of these facts, a most commendable production record has been achieved—over 1,000 Orendas, more than 300 P & W R-1340 Wasps, plus a huge bank of Nene spares, with the first of a few almost completely Canadian-built Nenes scheduled to be completed by mid-1954.

Three organizations constitute the aero engine manufacturing industry in Canada. Largest of these is the Gas Turbine Division of Avro Canada at Malton, Ontario. Next in size is Canadian Pratt & Whitney Aircraft Limited of Jacques Cartier, P.Q., near Montreal. Also in the Montreal area is Rolls-Royce of Canada Limited.

These three firms are working on orders which, together, were initially valued at nearly \$130,000,000. They employ directly more than 7,000 persons, just about as many as the whole aircraft industry employed a few short years ago, and occupy over 1,640,000 sq. ft. of plant space. Like other phases of Canada's Aircraft Industry, engine production is widely sub-contracted, so that many other firms are participating besides the prime contractors. This is good, for a broad base provides a sound footing.

Brief summaries covering the activities of the Gas Turbine Division of Avro Canada, Canadian Pratt & Whitney, and Rolls-Royce of Canada follow.

Canadian P & W

NOW TURNING out R-1340 Wasp reciprocating engines at an average rate of 50 per month, Canadian Pratt & Whitney Aircraft recently passed the 300 mark in units completed. The first engines were ready for qualification tests in December of 1952 and actual deliveries started in January of 1953. It is therefore just

about 14 months since the first engine was completed and less than three years since the first sod was turned marking the beginning of the construction of Canadian P & W's plant.

Orders on hand for complete engines and spares are said to have a total value of \$30,000,000, the contracts covering the equivalent of approximately 1,000 complete engines.

Actually, the 340,000 sq. ft. manufacturing plant is working far below maximum capacity of 300 engines per month. This available capacity will eventually be absorbed, it is expected, as the Jacques Cartier facility is capable of producing a wide range of aircraft engines and parts, other than the R-1340.

As far as the current production unit is concerned, it is reasonable to expect that Canadian P & W can count on there long continuing an enormous demand for spares. One reason for this is that the Canadian firm is the only one in the world manufacturing the R-1340 and therefore a major source of factory-new parts. The other reason is, of course, that the R-1340 is in use in a wide variety of aircraft, several of which have been built in formidable quantities. Among the more common types of airplanes which use the R-1340 as a power source are the Harvard/Texan series of North American-designed trainers (in Canada alone, more than 3,300 of these airplanes have been built), the Norseman, the Otter, Piasecki HRP-1 & 2 series helicopters, Sikorsky S-55 helicopter, and Grumman Mallard.

Apart from its manufacturing operations, Canadian P & W still operates one of the largest engine overhaul bases in Canada. Situated at Longueuil, P.Q., about a mile from the Jacques Cartier plant, the Overhaul & Supply Division is a major factor in the RCAF maintenance program. It also serves a large number of civil organizations, supplying overhaul and spares service covering all of the wide range of Pratt & Whitney reciprocating engines in use in Canada. Similar services are provided for Hamilton Standard propellers, Sikorsky helicop-

ters, and Pesco aircraft accessories.

Total employment at Canadian Pratt & Whitney now exceeds 1,800.

Avro Canada

A MOST important event was noted on February 18 when the 1,000th Orenda was officially delivered just 17 months after the opening of the Gas Turbine plant. Approximately 75% of this total has been completed in the last twelve months.

In the 17 months that the plant has been in existence, many changes have taken place, one of the most important of these being the re-organization of Avro Canada so that the Aircraft Division and the Gas Turbine Division are now, in effect, separate entities. Each has its own basic organization and each is managed by its own vice-president & general manager. The association of the two Divisions is retained only at the highest management levels.

The Gas Turbine Division has been growing steadily and now occupies 1,250,000 sq. ft. of plant space, the increase in the past year of 250,000 sq. ft. being the result of the acquisition of a former Army warehouse at Malton for housing Gas Turbine development and experimental departments. Employment now stands at approximately 5,000, up slightly from last year.

Production of the Orenda is covered by a \$66,000,000 government contract and while actual numbers of engines involved have never been disclosed, considering the number of aircraft Orendas must power, it is safe to assume that the output of complete units and spares will be equivalent to approximately 2,500 whole engines.

Development of the Orenda continues and production units are now rated at 7,500 lbs. st. th. Pres. Crawford Gordon, Jr., once said that this engine was capable of development to 12,000 lbs.

For the future, a big new turbojet is in the design stages and an initial power rating of some 18-20,000 lbs. th. is the target. This engine, which has been tabbed the "Waconda" ac-

cording to unconfirmed reports, will probably be running in prototype form by early next year. It has been mooted as the powerplant for the CF-105 delta all-weather fighter.

Rolls-Royce of Canada

WHILE production work at Rolls-Royce of Canada is connected with an order for 900 Nene 10 engines for powering RCAF T-33AN Silver Star jet trainers, it is actually manufacturing only a very limited percentage of the total. The majority of the engines are being supplied complete by the parent Rolls-Royce firm at Derby, England.

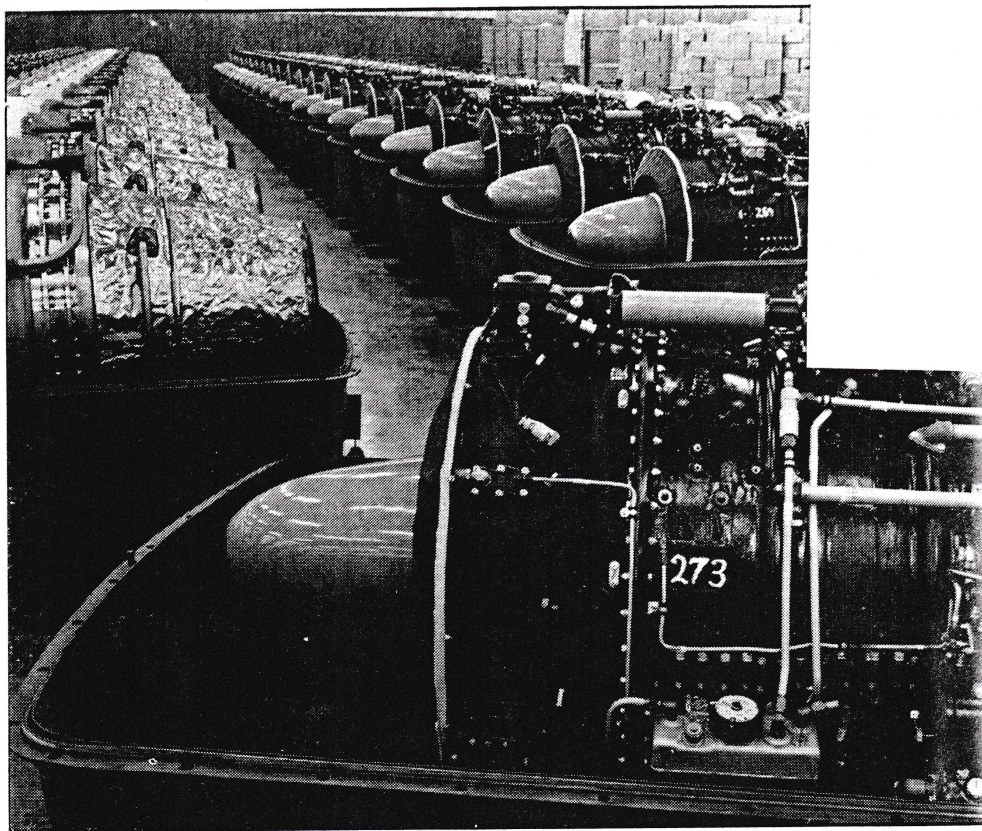
Rolls-Royce of Canada is in production on almost all the major components of the engine, but rather than assemble these into complete engines, they are being stockpiled to assist in building up the substantial spares bank that will be required by the time the RCAF has placed in service all 576 of the T-33AN trainers it has on order from Canadair. There will, however, be a moderate number of Nenes assembled by Rolls-Royce of Canada, and these will be made up of parts almost entirely of Canadian manufacture. It is expected that such Canadian-built engines will number approximately 50, and the first is scheduled to be turned out about mid-1954. Deliveries of both British and Canadian engines are expected to be completed early in 1955.

The company also holds a substantial DDP contract covering the overhaul of RCAF Nene engines.

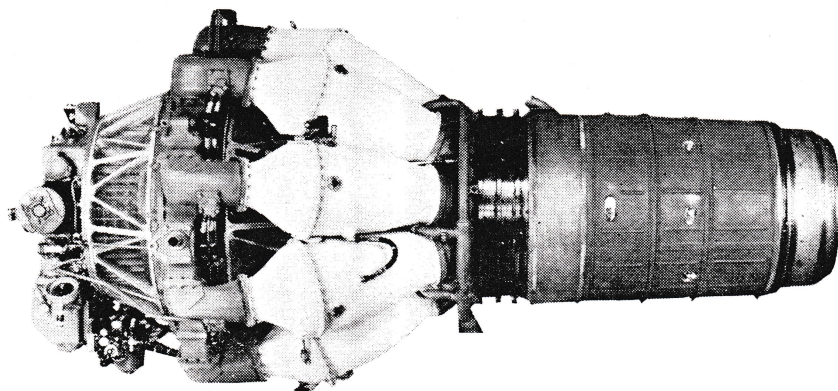
A large part of the Rolls-Royce business in Canada involves the providing of spares and technical service for the Rolls-Royce engines already in use. In fact, from 1947 until 1951, when the Nene contract was placed, the spares and service operation represented the company's entire activity in Canada, though admittedly this constituted a fairly substantial business. This work has mainly concerned Merlin engines as used by the RCAF and TCA, and the Griffon, which was for a time in service with the RCN.

With the coming introduction of the Vickers Viscount on TCA's routes later this year, Rolls-Royce will also be called upon to provide spares and technical service for the Dart turboprops which power these airliners.

Employment at the 54,000 sq. ft. plant, which is near Dorval, is now over 300.



FROM AVRO CANADA'S Gas Turbine Division come Orendas in quantity.



FROM ROLLS-ROYCE come Nenes (above); from P & W, Wasps (below).

