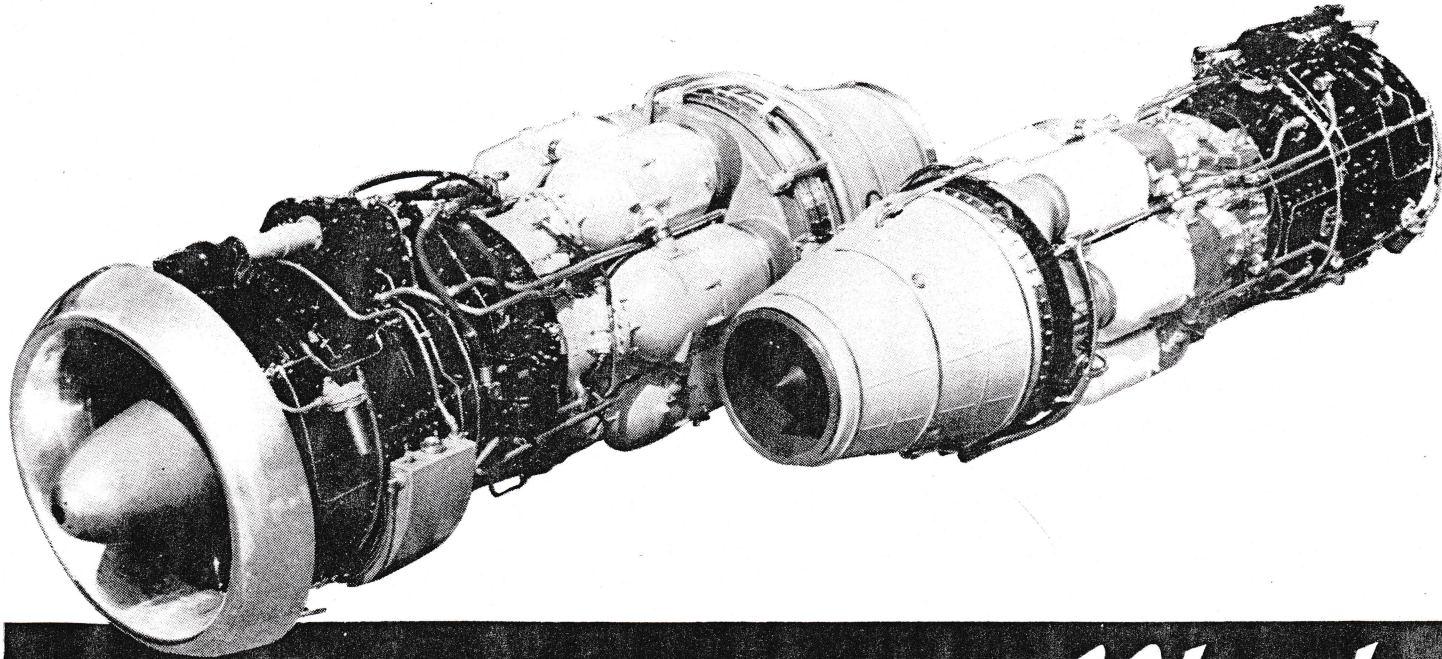
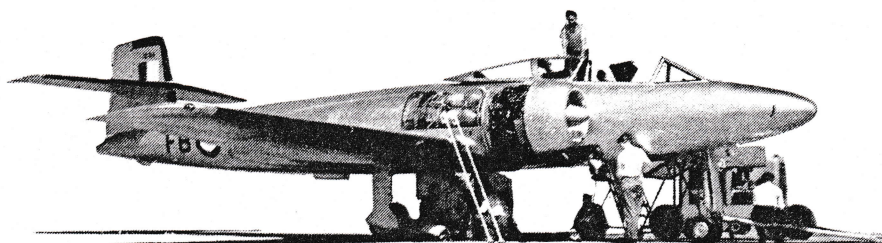


With the CF-100, Canada
takes its place
in the forefront of world
engine and aircraft makers.



Avro Canada's new Orenda jet engine, left above, beside its immediate predecessor, the Chinook. The Orenda has just been installed in the CF-100 fighter shown below.

Black



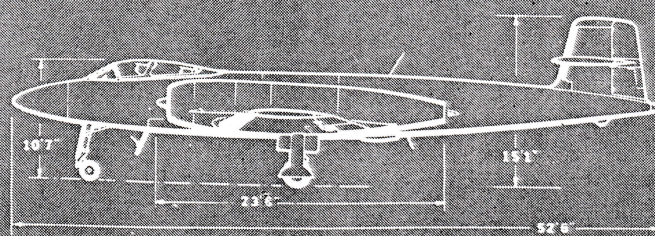
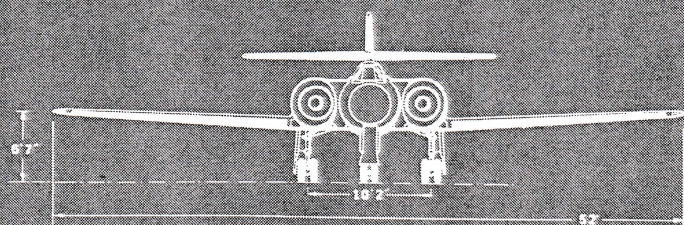
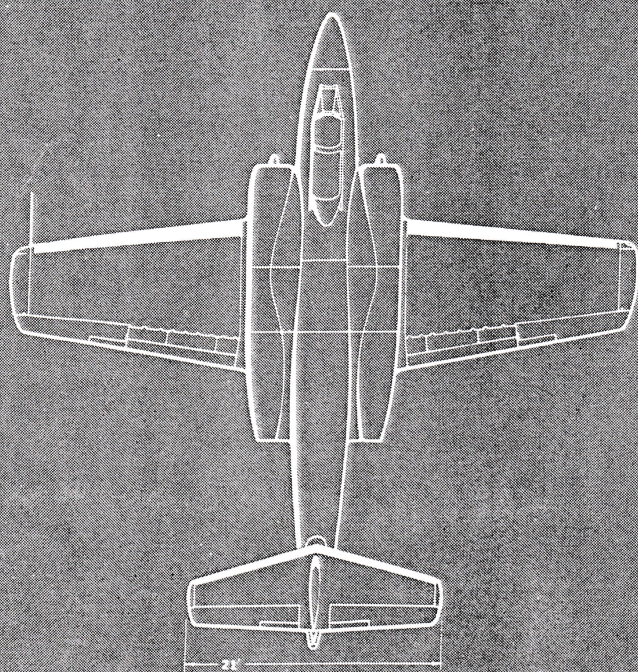
IT IS SIGNIFICANT that the first all-Canadian aircraft of the post-war period should be an all-weather jet fighter with exceptional long range, fire power, maneuverability and rate of climb—plus transonic speed.

The plane is, of course, Avro Canada's twin-jet CF-100, a big black fighter that is shaping up as one of the most versatile combat planes developed since World War II.

With the military air requirements of the North Atlantic Treaty Organization in mind, Avro planned the CF-100 for duty on the strategic far northern air routes over the top of the world. Its primary job, working closely with the radar defense network now being pre- (Continued on page 59)



Lightning



Black Lightning

(Continued from page 18)

pared, would be interception of attacking enemy bombers striking across the Arctic.

Although it is particularly adapted for defensive assignments over the vast reaches along the northern rim of the North American continent, the CF-100 also can play an important role as an offensive fighter.

Numerous tests have revealed that this streak of black lightning can serve, too, as tactical support for ground forces, as a bomber and as a long-range reconnaissance aircraft.

The CF-100's ability to get down to comparatively low speeds points up its tactical support possibilities. It is big enough (it's actually the first of a new breed of big post-war fighters) to take a considerable bomb load.

Performance of the plane is secret, but it has been authoritatively described as being at least two years ahead of anything similar in the United Kingdom or the United States. It averaged 638 m.p.h., not its top speed, on a flight from Toronto to Montreal, but that was before the Rolls Royce Avons were replaced by the new Canadian-built Orendas gas turbines. The CF-100 with Orendas flew for the first time late in June, and there was a marked improvement in performance.

★★★★★★★★★★★★★★★★

"Air trains coming? Visions of giant air trains crossing continents and unloading passengers and express at local stations by the simple method of detaching a glider, were awakened by the success of the Russian pilot, Fediosev, in a flight of 930 miles from Moscow to Koktebel, Crimea, with three gliders attached to his plane."—Literary Digest, June 9, 1934.

★★★★★★★★★★★★★★★★

The Orenda has had several thousand hours of ground tests, some of unprecedented length, and was flight tested in a Lancaster and an F-86 Sabre fighter. It is the successor to the Avro Chinook, the first jet engine designed and built in Canada. The Chinook was primarily a development engine to be used to improve the design and supply answers for building larger engines for the RCAF.

The Orenda, first turbojet engine to be put into quantity production in Canada, has firmly established Canadian engine industry in competitive world markets. Its development was accomplished within 4½ years. It was earmarked from the beginning for the CF-100 and there is a possibility it may also power the Canadian-built F-86, standard day fighter of the RCAF.

Douglas Knowles, chief development engineer in Avro's gas turbine division, reports the rated thrust of the Orenda is in excess of 6,000 lbs. and its fuel consumption is about 1 lb. per hour for each lb. of thrust, both under sea level static conditions.

The Orenda has an axial flow compressor, six combustion chambers, single stage turbine, and an exhaust assembly. An interesting feature of the design is a flexible rubber thrust-ring, which allows some degree of angular misalignment of the center bearings to handle deflections of the engine structure during aerobatics.

Canada's role in air defense of the continent was strengthened by a change in government policy. During World War II, Canada produced more aircraft per capita than any other western country, but had to import its engines. Under government sponsorship after the war, an engine industry was begun and the decision made to concentrate on a new engine. From that new industry came the Avro Chinook and now the Avro Orenda.

Like its engines, the CF-100 is an original design which incorporates the best features in design and construction evolved in the United States and the United Kingdom. Much help was given Avro Canada by the Hawker Siddeley Group, of which Avro Canada is an independent member.

Designers of the aircraft are Edgar H. Atkin and John Frost, backed by a skilled team. Atkin was responsible for structures and armament of the Boulton-Paul *Defiant*, which did so much damage to the German fighters at the beginning of the last war. He also worked on the geometry of the R-101 airship and on design of the *Sidstrand* and *Overstrand* biplanes. He was in charge of the design of the Avro York and worked on the Avro 6, 8 and 18. Frost was assistant designer on the initial long range *Vampire* and supervised design of the DH-108 flying wing. He was responsible, too, for the wartime glider, the *Slingsby Hengist*, sister ship of the *Horsa*.

In planning the aircraft, care was taken not to duplicate aircraft building plans elsewhere. Equipment which could easily be obtained in North America in case of emergency was chosen. More than 300 suppliers and manufacturers throughout Canada have been organized to furnish components and equipment for Avro Canada. Almost daily, new sources of supply are being found for products which at one time were obtained abroad.

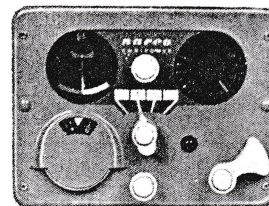
To insure that work on the CF-100 will go on uninterrupted and to help establish Canadian industrial and material sources from a national defense viewpoint, it has been Avro Canada's policy to keep looking in Canada until such sources are located, or to go out and set them up. As a result, many companies, such as George Godfrey, Dowty, Dunlop, Rotax, Shawinigan Chemicals, Delora Smelting, Aluminum Company of Canada, Atlas Steels, and Acme Gear and Screw, have been encouraged to set up new factories to supply materials for Canada's new jet aircraft and engine industry.

Of Avro's large yearly expenditure for materials and equipment, the largest proportion has been spent in Canada. The Orenda engine, for instance, is 95 percent built from Canadian materials. The Avro Jetliner is 80 per cent and the CF-100 about 90 percent Canadian built.

For the first time in Canada's history aircraft engines are being manufactured alongside the aircraft in which they will be used.

END

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