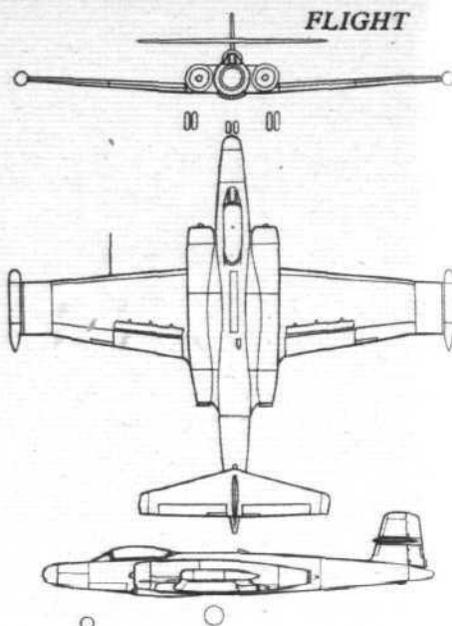


CF-105 Arrow 1: Powerplant, 2 P. and W. J75; span, 50ft; length, 77ft 9½in; gross wt, over 65,000 lb; max. speed, over M=2.



CF-100 Mk 5: Powerplant, 2 Orenda 11; span, 56ft; length, 54ft; gross wt, about 37,000 lb; max. speed, about 660 m.p.h.

Iroquois engine is lowered into place in one of the Orenda company's test-cells.

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weapons system, however, small numbers of a modified CF-100 Mk 5 known as the Mk 5M have begun test-firing of Sparrow 2 missiles at Point Mugu, California.

Orenda Engines, Ltd., Box 4015, Terminal A, Toronto.

WITH the last Orenda delivered and a current programme to provide "an appropriate number" of two-spool Iroquois for the 37 pre-production Arrows on order, it is clearly to the hoped-for Arrow production order in the near future that Orenda Engines are now looking. The first step towards a policy of diversification came during the past year with the formation of a subsidiary company with industrial-engine interests.

The last Orenda engine—an Orenda 11 for the CF-100, and the 3,794th of all models produced—was turned over to the R.C.A.F. on June 18. Orenda production had begun in 1952; volume production was achieved early in 1953; and the 1,000th engine was off the line by February, 1954.

During production, thrust increased to 7,500 lb from an original 5,800 lb; and weight was reduced to 2,400 lb from 2,700 lb despite the addition of a second-stage turbine.

A pre-production batch of Iroquois engines is now going through the Orenda plant, and the first production unit is scheduled for next month. A total of over 5,800 hours' bench running has been logged by development engines to date, and an Iroquois should come together with a Mk 2 Arrow for the first time round about February next. Some 25 hours' flight-running time has been obtained by various Iroquois engines rear-fuselage-mounted on the B-47 test-bed on loan from the U.S.A.F.

The Iroquois has performed well in high-altitude tests during the year, achieving in the NACA Lewis Flight Propulsion Laboratory in Cleveland what are probably the highest dry thrusts for turbojets ever recorded in North America. No difficulty was encountered with the Orenda-patented re-light system up to 60,000ft, the altitude limit of the Cleveland tunnel.

Orenda's own high-altitude tunnel, which can test-run advanced engines in an atmosphere equivalent to 100,000ft altitude over a wide range of Mach-number conditions up to M=2.9, is expected to be in operation toward the end of 1958.

A new development was the formation of **Orenda Industrial, Ltd.**, on May 2, 1958, as a wholly owned subsidiary of Orenda Engines to sell and service in Canada the line of diesel engines produced by the Brush Group of Britain.

A programme of technical assistance was arranged in May with Bavarian Motor Works (BMW) of Munich on a "where and when needed" basis. BMW is the company designated by the West German Government to repair and overhaul its Orenda engines.

The entry of Orenda into the small, lightweight turbojet field is made possible by the appearance of the Canadair CL-41 jet trainer. If this aircraft went into production, and if the production versions were powered (as are the two prototypes) by Fairchild J83s, then Orenda might well produce these engines under licence, following-up the existing technical link between the two companies.

Canadian Car Company, Ltd., (Head Office) 621 Craig Street West, Montreal 3; (Plant) P.O. Box 67, Fort William, Ontario.

WHILE CanCar's main development at Fort William over the last two years has been the impressive build-up of its commercial road-trailer business, the company's aircraft work continues on the same basis as last year. The two main projects, both under contract to de Havilland Aircraft of Canada, are the construction of the complete centre-section and outer wings for the CS2F Tracker, and the manufacture of wings and tail assemblies for the Otter. The CS2F programme is approximately 65 per cent complete, and should continue until the end of 1959.

A new factor this year has been the company's entry into the field of ground-equipment for aircraft. An R.C.A.F. contract for 30 emergency fuel-pumping trailers has been received, and design work on other types of ground equipment has been carried out.

CanCar has exclusive world sales rights (excluding U.S.A.) for North American Harvards and spares, and the spares section has continued strongly. The plant has reconditioned during the year 25 R.C.A.F. Harvards for export to Europe for NATO use.

Canadian Steel Improvement, Ltd., 41 Horner Avenue, Etobicoke, Ontario.

CANADIAN Steel Improvement has continued its contribution to the Canadian and American defence picture with the supply of specialized engine and structural forgings in a wide range of alloys in the past year. The company is the only Commonwealth source to be manufacturing on a large scale the stress-free 7079T65 aluminium-alloy forgings used as major structural items on the latest supersonic aircraft.

C.S.I. was very successful in Phase 1 of a U.S.A.F. Air Materiel Command research project on the development of precision structural forgings in titanium alloys. Components were supplied to the primary contractor and have contributed valuable information on this subject. In the production of these specific components, techniques were developed which made possible the manufacture of the forgings to very close tolerances.

A further major contribution has been the manufacture of precision-forged high temperature alloy turbine-blades. Development is continuing on fabrication techniques for the newer high-temperature alloys coming into being in missiles and turbo-jet engines in the form of discs, shrouds and other components.

Canadian Applied Research, Ltd., 1500 O'Connor Drive, Toronto.

FORMERLY P.S.C. Applied Research, Ltd., this company was acquired by A. V. Roe Canada last year. It designs and manufactures electronic, mechanical and optical instruments and equipment and provides environmental test facilities. At present operating from a 58,000 sq ft plant in East Toronto, the company has planned a new 100,000 sq ft facility for occupation in 1959.

For the Lockheed Electra and the Convair 880 the company is producing specially developed versions of its automatic ice-detection system. Among other current C.A.R.L. products are the R-Theta navigation computer, a recent order for which has been received for Belgian Air Force CF-100s; automatic tri-film processor, now in full production for the U.S.A.F., U.S.N., R.C.A.F. and civilian companies; and Mk 5 airborne profile recorder, also being supplied to the U.S.A. and currently the subject of an M.O.S. evaluation. C.A.R.L. is also a subcontractor on the Sparrow 2 missile programme.