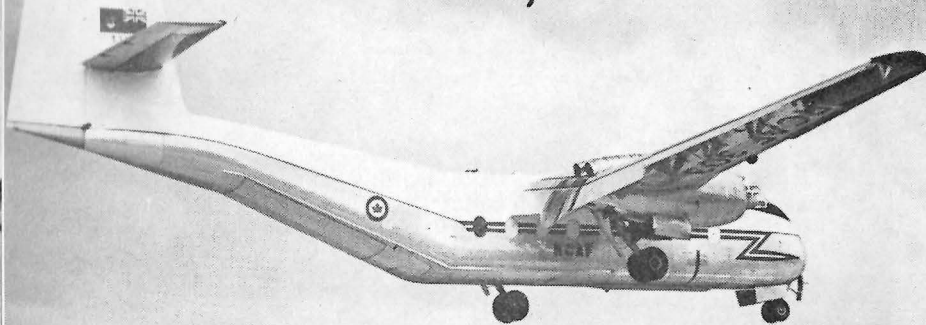


The Industry



FIRST CARIBOU IN RCAF MARKINGS, one of four purchased for air support of Canadian Army units serving in the Belgian Congo, is shown during crew familiarization flight from Downsview, de Havilland Canada's base of operations. Six pilots and 36 groundcrew took Caribou conversion course.

Avian No. 2 Readied

A second prototype of the Avian 2/180 gyroplane will soon start pre-flight ground running trials. The first machine was destroyed last spring when it made an unplanned flight during taxi tests by a test pilot undergoing type familiarization.

The second machine, which incorporates some minor changes in exterior design, was to be rolled out of the Georgetown, Ont., plant of Avian Industries Ltd. early this month. The pre-flight tests which were interrupted by the accident last spring, will be started again from the beginning.

104 Simulators by CAE

Contracts totalling approximately \$18 million have been placed with Canadian Aviation Electronics Ltd. for F-104G simulators by the governments of West Germany and The Netherlands. Confirmation has been received from both countries together with commitments of funds necessary for the immediate commencement of work.

The total value of the overall program is estimated at \$18 million with the simulators being built by CAE with technical and administrative supervision being the responsibility of the RCAF and DDP officers. This is the same arrangement existing with the work being done on the RCAF CF-104 simulator program which began last May.

The decision of Germany and Netherlands to purchase simulators in

Canada resulted from RCAF and DDP co-operation with German and Netherlands Air Force experts to investigate the possibilities of a joint program. The choice of CAE was based on a tender competition for RCAF CF-104 simulators early this year. Price and technical proposals were obtained at the same time for Germany and The Netherlands at their request.

There are prospects of further simulator orders from other countries adopting F-104 Starfighter aircraft.

CF-104 Prototype Flies

Bearing the RCAF's maple leaf roundel, the Lockheed-built prototype of the CF-104 made a successful first flight at Palmdale, California, Sept. 1. Piloted by C. A. Kitchens of Lockheed's engineering flight test department, the Mach 2 fighter was aloft over Southern California for 43 minutes.

The prototype CF-104 is actually a modified early-model Starfighter. It is fitted with an advanced electronics system which provides a true all-weather capability. The prototype program will flight test the fire control and flight control systems.

Initial flight of the first Canadair-produced CF-104 is scheduled for late spring of 1961.

More 104 Work for CL

Canadair Ltd. has received a sub-contract worth \$4 million for the supply of 86 sets of wings, rear fuselages and empennages for F-104

aircraft being assembled at Lockheed for ultimate delivery to the Netherlands, Belgium and Japan. Of the 86 aircraft involved in the new order, Japan is to receive 40, Holland 31, and Belgium 15.

Canadair's share of the project is in the form of subcontracts as in the case of the earlier order for 80 sets of the same components for the West German Air Force. As before, the work will be carried out in parallel with the program by which the company is producing 200 CF-104's for the RCAF.

The latest orders mean that Canadair Ltd. is now engaged in production, in whole or in part, of 366 aircraft of the CF-104 family.

Ghana Buys Beavers

Fourteen DHC-2 Beaver utility transport planes have been ordered by the government of Ghana from de Havilland Canada. The initial delivery of the first two aircraft on the million dollar contract will be made in December of this year.

The Beavers will be operated by the Ghanaian Air Force and will be used primarily to fly government personnel to remotely located administrative areas, for emergency air ambulance work, and aerial surveys.

Two of the aircraft will be fitted with dual controls for training purposes and six will be equipped for camera installations. The camera-equipped Beavers will be employed on an extensive aerial survey, mapping and photographic project being planned by the Ghanaian government.

Napier O/H by Can. P & W

Overhaul facilities for Napier engines in North America, including the Eland turboprops used in the Canadair/Convair 540 airliner series, are being provided by Canadian Pratt & Whitney Aircraft Co. Ltd., Montreal.

Avro in Marine Field

Avro Aircraft Ltd. and United Marine Inc. jointly announced last month that the two organizations have become associated in a manufacturing agreement. Under it, Avro will manufacture aluminum hulls for the power cruisers of United Marine's Richardson Boat Div., North Tonawanda, N.Y.

Avro has established a new marine division devoted entirely to the en-

gineering, testing and construction of the aluminum hulls. The operations of the new division, in its own facility at Malton, will be separate from the company's continuing participation in the aircraft industry, which Avro emphasizes will continue to be its principal raison d'être.

For the U.S. market, Avro will furnish the hulls including tanks and bulk heads and fittings. The hulls will then be transported to the Richardson Boat Division at North Tonawanda, N.Y., for completion of the superstructure and all other work necessary to complete the craft for U.S. delivery.

For the Canadian market, the cruisers will be completely assembled by Avro with the interiors, decks, superstructures and the like being forward to Avro by United Marine. The completed cruisers will then be delivered by Avro to the United Marine dealers in Canada.

Canadian Steel Improvement Ltd., an associated A. V. Roe Canada Group company, is joining Avro in the project by supplying boat fittings. The first Avro aluminum hulls are scheduled to come off the production line this autumn in time for the opening of the 1961 Boat Show in New York in January.

- Another diversification note is that Lucas-Rotax Ltd. has entered the consumer field with the "Pulsamatic" natural gas furnace. Features of the Pulsamatic, which was developed by Lucas-Rotax a few years ago, is that it is 90% efficient (compared to 75% for a conventional system) and measures 13 in. by 20 in., with a height of less than four feet.

Turbine Caribou

A General Electric T-64 turboprop is to be installed experimentally in a DHC-4 Caribou by the U.S. Army, according to a recent U.S. news report.

Almost from the time the first reports of the DHC-4 design program began to filter out to the aviation field from de Havilland Canada, there has been active speculation about a turbine-powered version. A Canadian operator recently expressed the opinion to *AIRCRAFT* that his company would be interested in the Caribou only if it were powered by turboprops.

Studies of a turbine-powered Caribou vis-a-vis the piston-powered

version have in fact been continuous right from the start of the aircraft's design program. However, until recently at least, de Havilland Canada felt that a suitable turboprop engine was not available. With a number of new small turboprops in the over 1000 hp range under development, it may be that this situation will soon change.

R. D. Hiscocks, DHC assistant chief engineer, a year ago told the joint Anglo-American RAeS/IAS

meeting in New York that . . . "we consider a piston engine to be the correct choice for this type of aircraft at the present time due to the high fuel consumption of current small turboprops under cruising conditions, and the large power losses at high ambient temperatures."

Mr. Hiscocks said that the argument would change in favor of the turboprop when the fuel consumption typical of current small engines is reduced. Improvements in specific

to
meet
the
challenge



of
the future

Normalair Ltd., who pioneered and developed the cabin pressure control equipment for the first British pressurized aircraft over 20 years ago, are now investigating problems connected with man's conquest of space.

As Europe's largest and most experienced aircraft pressurization, air conditioning, and oxygen breathing equipment specialists, Normalair has unrivalled facilities for research, development and production of high altitude survival equipment of all kinds.

Important contributions have already been made towards the solution of many space travel problems and Normalair will continue to take an increasing part in the development and production of equipment which will enable man to survive in space.

NORMALAIR

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NORMALAIR (CANADA) LTD., 1425 THE QUEENSWAY, TORONTO

fuel consumption would lead to gains in payload range. These improvements were believed to be within the state of the art and engines designed to attain such specifics were under development. "We look forward to their arrival with enthusiasm."

Canadian Radars to Swiss

Installation began last month of two air traffic control radar systems, produced by Raytheon Canada Ltd., Waterloo, Ont., to cover Switzerland's major air routes.

The long-range radars for Switzerland are similar to those produced by Raytheon Canada for the DoT, and the 41 produced by the parent Raytheon Co. in the U.S. for the FAA's nationwide network. Particularly suited to meet Switzerland's air route surveillance needs, those purchased by Radio Suisse, S.A., will serve control centres at Geneva-Cointrin Airport and Zurich-Kloten Airport.

Mountainous Swiss terrain would

normally produce ground clutter on radar scopes, making accurate tracking of aircraft difficult. To help solve this problem, a moving target indicator is an integral part of the system.

By means of microwave relay systems, it has been possible to mount the radar antennae on mountain-top sites near both airports to obtain maximum range from the radar systems.

New Lease on Life

Defence Production Minister O'Hurley said Aug. 31 that the aircraft parts factory at Haley Station, near Renfrew, Ont., will remain in operation.

Dominion Magnesium Ltd., which leases the plant from the federal Government, had been reported ready to close the plant Sept. 1 because it had been operating at a loss.

"We will be announcing the placing of new contracts with the plant that will not only keep the current working force of 100 men on the job but

could provide employment for some of those who previously were laid off," Mr. O'Hurley said.

Before the Government abandoned the Arrow, the plant employed 400 men.

Contracts Awarded

Contractors awarded business in excess of \$10,000 by the Department of Defence Production during the period July 1-31, 1960, include the following. The list does not include orders placed by the Department outside Canada, or with other agencies or increases in orders placed earlier — nor do orders classified as secret appear here.

Names appearing in bold face are current AIRCRAFT advertisers.

Aviation Electric Ltd., Montreal, \$13,122 for aircraft spares.

Aviation Electric Ltd., Montreal, \$11,890 for pressure gauges.

Avro Aircraft Ltd., Malton, Ont., \$2,495,258 for aircraft fuel tanks.

Avro Aircraft Ltd., Malton, Ont., \$400,000 for technical support for aircraft.

Canadair Ltd., Montreal, \$240,000 for airframe spares during year ending March 31/61.

Canadian Aviation Electronics Ltd., Montreal, \$260,351 for field maintenance for operational flight and tactics trainers and technical representative during year ending March 31/61.

Canadian Aviation Electronics Ltd., Montreal, \$63,329 for technical representatives during period ending March 31/61.

Canadian General Electric Co. Ltd., Toronto, \$247,453 for production inventory and production engineering for sight/missile launch computers.

Canadian Marconi Co., Montreal, \$145,688 for navigational computers.

Computing Devices of Canada Ltd., Ottawa, \$595,767 for indicators.

BOUNDARY LAYER BREAKTHROUGH

New BLC-130 takes off or lands in five times its own length



DeHavilland Aircraft of Canada Ltd., Downsview, Ont., \$89,435 for satellite development contract.

Electronic Materials International Ltd., Ottawa, \$22,575 for engineering investigation of preventive maintenance tests for airfield traffic control system.

Genaire Ltd., Malton, Ont., \$13,133 for toilet servicing units.

Genaire Ltd., St. Catharines, Ont., \$16,507 for aircraft spares.

Gould-National Batteries of Canada Ltd., Toronto, \$24,675 for aircraft batteries.

Walter Kidde & Co. of Canada Ltd., Montreal, \$30,000 for repair, overhaul, recharge and retest of oxygen cylinders during year ending March 31/61.

MEL Sales Ltd., Toronto, \$45,650 for radar test sets.

Orenda Engines Ltd., Toronto, \$5,000,000 for aero engine spares during year ending March 31/61.

Ross-Smith Co. Ltd., Montreal, \$159,872 for aircraft towed target gear.

Sampson Mathews Ltd., Don Mills, Ont., \$11,012 for exterior markings for aircraft.

Servomechanisms (Canada) Ltd., Rexdale, Ont., \$84,535 for development contract.

Shell Oil Co. of Canada Ltd., Toronto, \$200,955 for aviation gasoline.

Aviation Electric Ltd., Montreal, \$21,766 for aircraft spares.

Aviation Electric Ltd., Montreal, \$26,652 for aero engine spares.

Aviation Electric Ltd., Montreal, \$22,844 for oxygen containers.

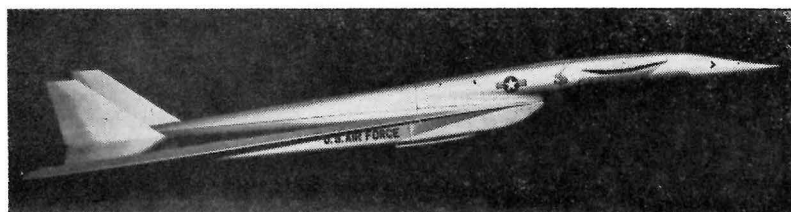
Canadair Ltd., Montreal, \$250,000 for engineering studies, development, manufacture of prototype and production of aircraft modification kits during year ending March 31/61.

Canadair Ltd., Montreal, \$45,000 for engineering assistance on development contract during year ending March 31/61.

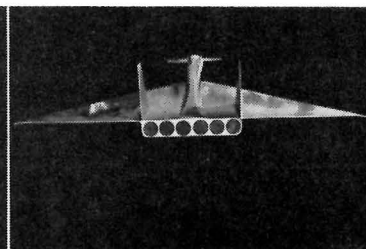
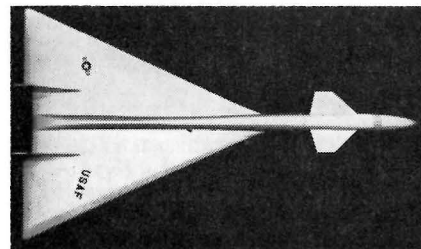
Canadair Ltd., Montreal, \$56,206 for technical publications.

Canadian Aviation Electronics Ltd., Montreal, \$132,400 for repair & overhaul of operational flight and tactics trainers during year ending March 31/61.

Canadian Car Co. Ltd., Port William, Ont., \$80,875 for airframe spares.



B-70 VALKYRIE: Special features of the North American B-70 now under development are shown in these views of a scale model. Above: Side view of the Mach 3 Valkyrie bomber. Below right: The aircraft's six GE J93 jet engines are shown centred under the wing. Other features of the B-70 include canard control surfaces near the crew compartment, and large triangular wing surfaces.



Canadian Flight Equipment Cobourg Ltd., Cobourg, Ont., \$89,715 for aircraft personnel catapults.

Collins Radio Co. of Canada Ltd., Toronto, \$20,709, for technical publications.

Collins Radio Co. of Canada Ltd., Toronto, \$37,298 for aircraft navigational instruments.

Computing Devices of Canada Ltd., Ottawa, Ont., \$154,413 for air cameras.

DeHavilland Aircraft of Canada Ltd., Downsview, Ont., \$45,150 for engineering

support for aircraft during period ending March 31/61.

Measurement Engineering Ltd., Arnprior, Ont., \$884,146 for control tower consoles.

Shell Oil Co. of Canada Ltd., Toronto, \$16,440 for aircraft engine oil during year ending March 31/61.

Sparton of Canada Ltd., London, Ont., \$518,248 for sonobuoy transmitters.

Sperry Gyroscope Co. of Canada Ltd., Montreal, \$16,014 for aircraft spares.

Imagine a 50-ton Hercules airfreighter lifting off in just 500 feet, from a standing start on an unprepared field. Or picture the big prop-jet stopping after touchdown in 520 feet. This performance of Lockheed's Boundary Layer Control C-130, at mid-point of a 2000-mile round trip mission, is truly remarkable. But its significance goes far beyond the spectacle itself.

The BLC-130 brings true STOL capability to Air Force support missions. Whether it has to rush 92 combat troops to a spreading brush-fire fight, or airlift 18 tons of food to some remote hunger

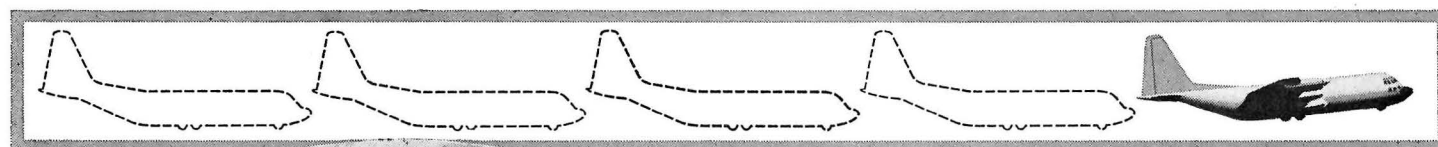
spot, the huge airlifter will be able to deliver its payload closer to the action than ever before possible.

A test bed BLC-130 has completed advanced flight tests, clearly illustrating the feasibility of boundary layer control on big planes.

LOCKHEED

GEORGIA DIVISION

MARIETTA, GEORGIA



High speed air—supplied from pylon-mounted turbojet compressors and blown over flaps, ailerons, elevator, and rudder—causes the airstream to hug the surfaces instead of being separated from them. The energization of this boundary layer of air gives the BLC-130 its extraordinarily high lift.

