

Confidence in the Arrow

Confidence that the Arrow aircraft and its Iroquois engine will be ordered into production when Canada's air defence program is reviewed next March, was expressed by A. V. Roe Canada Ltd., at the company's annual meeting in Toronto, Oct. 27. A. V. Roe Canada is the parent company of Avro Aircraft Ltd. and Orenda Engines Ltd.

A. V. Roe President Crawford Gordon said that there were three main reasons for this confidence. The first was that: "for the foreseeable future, the manned interceptor will continue to be an essential part of the North American defence system. Pilotless interceptors, such as the Bomarc, complement it, but cannot effectively replace it."

In support of this view, Mr. Gordon cited recently stated opinions by such

military and technical authorities as Air Marshal C. R. Slemmon, deputy commander-in-chief of NORAD and former chief of the air staff of the RCAF, and Hon. James H. Douglas, secretary of the United States Air Force.

The second reason was the fact that "the Arrow was specifically designed to fit the RCAF requirement for a manned interceptor in the time period involved; and we believe that it still best fits that requirement."

The third reason was that a decision to produce the Arrow with its Iroquois engine for squadron service with the RCAF would involve an actual cost from this point on of about one-third the amount most people seemed to expect — \$3.5 million per aircraft against \$9 million per aircraft on the basis of 100 being ordered.

Mr. Gordon put particular emphasis on the question of cost, and suggested

ZURA STEPS DOWN

Jan Zurakowski has relinquished his position of chief experimental pilot for Avro Aircraft Ltd. — in which capacity he was the first man to fly the Arrow 1 — to take on new duties with Avro's technical design office. In his new post, Zurakowski will provide engineering liaison between the design office and the flight test section.

Avro's new chief experimental test pilot is W. J. (Spud) Potocki.

Janusz Zurakowski, generally recognized as one of the world's most brilliant test pilots, has been with Avro since 1952 and during most of this period has been engaged in experimental test flying.

Quiet, affable and completely unassuming, Zurakowski is extremely popular with his associates, and is as highly respected for his engineering abilities as for his more publicized talent as a pilot.

Born in Poland, he learned to fly in 1929 and served with the Polish Air Force between 1935 and 1939. When the Nazis overran Poland he managed to make good his escape and in 1940 joined the RAF. He saw service in the Battle of Britain and was attached to a number of fighter squadrons during the next few years. By the time he was posted to the Empire Test Pilots School in 1944, he was credited with six enemy aircraft destroyed.

Zurakowski has been continuously engaged in test flying since 1945, first with the Aeroplane & Armament Establishment at Boscombe Down, then with Gloster Aircraft Co. Ltd. It was during this period that he began to attract world-wide attention with such flying feats as his



"Zurabatic Cartwheel", first performed in public at the SBAC Flying Display.

Zurakowski's successor as Avro's chief experimental pilot, Spud Potocki, is also of Polish origin. Like Zurakowski, Potocki saw service with the Polish Air Force then transferred to the RAF following the collapse of Poland.

Between 1941 and 1944 he flew on fighter operations. He remained in the RAF following the cessation of hostilities and in 1951 graduated from the Empire Test Pilots School with honors. In 1953 he joined the aerodynamics flight at Farnborough, then in 1954 moved over to aero flight as commander. Potocki retired from the RAF in 1956, at which time he joined Avro Aircraft as experimental test pilot.

a more realistic public appraisal of what they would be. He said: "The change in the fire control system and armament has resulted in substantial reductions in the overall cost of the program, as indicated in the Prime Minister's statement," and added that analysis of the implication of these changes had "reflected further savings in the program."

In addition, Mr. Gordon said that the figure previously mentioned for 100 aircraft (\$9 million each) included the whole basic development and tooling costs. These expenditures, he said, should be eliminated from a realistic appraisal of the possibility of continuing the program, because they have "already substantially been incurred or committed", and could not be recovered whether the program was continued or not.

By considering only those costs which would be incurred from this point on, in the actual production of Arrows for combat use, and including the new savings, it is presently estimated that "we can produce 100 Arrows, complete in every respect, including the cost of the engines and fire control system, and excluding only the missile armament, for a cost of approximately \$3,500,000 each," Mr. Gordon said.

• A. V. Roe Canada's 1958 annual report, mailed to shareholders shortly before the annual meeting, showed that the company's program of growth and diversification produced a 57.8% increase in consolidated net sales; a 15.2% increase in consolidated net profits, and a 113% increase in consolidated assets, during the fiscal year ended July, 1958, as compared to the similar period ending in 1957. Percentages reflect inclusion of Roe's share of the earnings of Dosco for only 10 months ending July 31, 1958. Consolidated net sales were \$370,856 compared with \$234,811,024 for the 1957 year. Net profits were \$8,283,071 compared with \$7,177,001 in 1957. The 1957 figures do not include the operations of Dosco, whereas the consolidated net earnings for 1958 include Roe's share of the earnings of Dosco for the 10 months ending on July 31, 1958.

DHC Beaver Honored

The Australian Minister for External Affairs, the Hon. R. G. Casey, recently informed The de Havilland

Aircraft of Canada Ltd, that three physical features on the Antarctica Continent have been named in honor of the DHC-2 Beaver. The three features which were discovered in 1956 will henceforth be known as Beaver Lake; Beaver Glacier; and Beaver Island.

The first of three Beaver aircraft used by the Australian Antarctic Expedition went to the cold continent in 1956. It compiled a very remarkable and versatile record in operations, which included photographing 350,000 sq. miles of terrain; 1200 miles of coastline; and transporting nearly 15 tons of food, fuel and equipment.

Operating under the most adverse conditions in the world, the Beaver of 1956 frequently flew 16 hours a day during the October to February summer season of 24 hours daylight. Utilization gradually diminished as the daylight hours shortened from February total darkness in June.

Early Warning CL-44?

An American news source states that Convair Division, a sister company of Canadair Limited, is submitting a team proposal in the USAF's competition for a new early warning contract. The bid is centred around Canadair's turbo-prop CL-44.

With Convair acting as systems manager, General Electric would provide the radar installation, Hughes Aircraft the communications equip-

ment, Litton Industries the computer, and North American Aviation the navigation equipment. Other entries in the competition include Boeing, Douglas and Lockheed.

Integrate Defence Production

The first step towards an increased measure of integration of Canadian and American defence production firms was taken last month at a meeting in Ottawa between defence procurement officials of both countries. Though no decisive results were immediately forthcoming, a Canadian spokesman said that several working groups were established to get things moving as quickly as possible.

General topics of discussion were the problems associated with the providing of Canada with Bomarc missiles, the improvement of the Pinetree radar line, and the installation in Canada of



LOCKHEED P3V-1: Prototype of U.S. Navy's newest anti-submarine patrol plane. The P3V-1 is seen on its maiden flight. Based on the turboprop Electra, the P3V-1 has a top speed of 460 mph; will be fitted with Allison T56-10-W turbine engines rated at 4500 hp each. Tail stinger houses a magnetic anomaly detector unit used in detecting metallic bodies submerged in water.

the SAGE electronic control and computing system. The meeting was a result of the Canadian Government's pressure on Washington for greater interdependence in defence procurement. An American spokesman at the meeting said that the U.S. Administration has already made the decision to explore the possibility of closer production integration.

Achieving this goal is extremely difficult for the U.S. Administration, since it is under constant heavy pressure from powerful aviation, missile and electronics industries' lobbies in Washington. On the other hand, Canadian defence production planners are faced with the problem of retaining the design and research teams which have been built up in connection with the development of the Arrow and the Iroquois engine, the future of which is in some doubt.

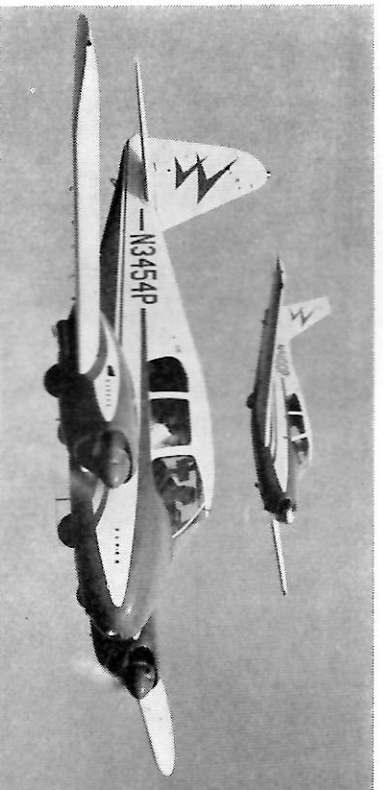
Another Government spokesman, Minister without Portfolio J. M. Macdonnell, has stated that negotiations are already underway to get the Bomarc missiles from the United States at an initial cost of \$264 million.

Profile Recorder in U.S.

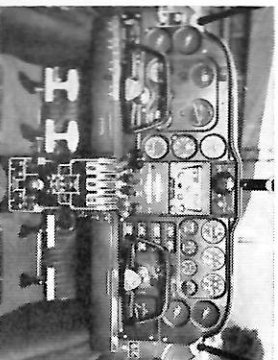
Canadian Applied Research Limited's radar aid to surveying and mapping techniques, the Airborne Profile Recorder, has successfully completed its operational tests in the Lockheed RC-130 aircraft. This is the type of aircraft which will carry out to the USAF's program of bringing the world's geography up to date.

When the grant mapping project is fully underway, 15 APR-equipped RC-130's will be taking part. They will be flown by the 1370th Air Photographic Group based at Palm Beach, Fla.

The Profile Recorder consists of two measuring systems: a highly accurate radar altimeter for measuring terrain



1959 PIPER APACHE: Two major design changes and improvements have been incorporated in the 1959 Apache. Above: aircraft features super-sound-proofing, made possible by double-thick windshield and windows, and fibreglass lining of exhaust augmenters. Right: Redesigned instrument panel has radios located in centre, flight instruments to left in front of pilot, other instruments on right. Radio Mk II Omnirotator (top); Narco Mk II Simplexer (bottom).



clearance, and a sensitive pressure altimeter for measuring variations from a chosen pressure altitude. Continuous radar altimeter for measuring terrain clearance and profile readings are indicated on a high speed paper chart recorder. At heights up to 35,000 feet, the APR is capable of measuring terrain profile with an accuracy of plus or minus 10 feet.

This high degree of accuracy is achieved by using the hypsometer system for obtaining height deviation information. Another modern technique used in the APR is the application of plug-in printed circuitry to the radar timing and control circuits, which simplifies servicing while in flight.

Barden Rep in Canada

Philip French Sales, Ltd., Montreal, has been appointed Canadian representative for The Barden Corp., manufacturer of precision ball bearings. The Canadian firm is a new organization headed by Philip B. French, president, who was formerly associated with Lyman Tube & Bearing Ltd.

Turboprop Beech 18

A turboprop-powered version of the familiar Beech 18 series light transport aircraft is now flying in France. The Beech, a D18 type, is being used as a flying testbed for the new Turboméca Bastan turboprop, which first ran on the test bench just slightly over a year ago.

First flight of the Bastan Beech took place on Sept. 19 at Bordeaux-Mérignac.

The Bastan has a take-off rating of 716 chp (650 shp plus 172 lb./th.). A scaled-up version of the Atarouste 3 turboprop, it has a one-stage axial and

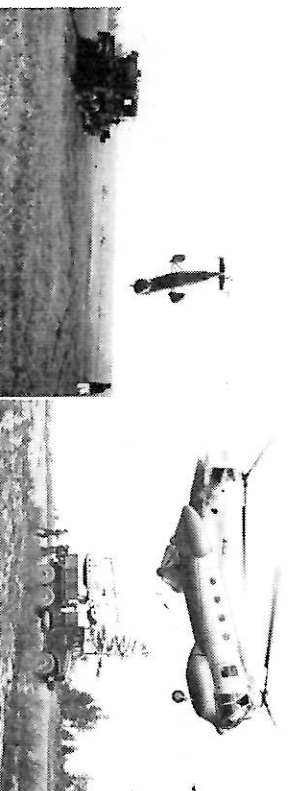
a one-stage centrifugal compressor. The combustor is of the annular type, and there is a two-stage turbine. The engines used on the Bastan Beech are fitted with Raiter-Figeac propellers.

The 18 series Beech is normally fitted with two Pratt & Whitney R-985 Wasp Jr., having a take-off rating of 450 hp each.

U.S. Contracts Here?

Frank Coffin, a U.S. Congressman who was recently in this country studying Canadian-U.S. economic relations, said, in a Vancouver speech, that the United States is studying a plan which will allow Canadian manufacturers to bid on defence production contracts. At the present time, Canadians generally are allowed only to bid on the production of components. The American government is considering a procedure that will permit Canadian bidding on whole items.

"Also, we are anxious to create an atmosphere in which Canadians will feel they are participating fully in de-



VERTOL 44 DEMONSTRATED: Vertol Aircraft Co. (Canada) Ltd., recently demonstrated a float-equipped Vertol 44 transport to representatives of the armed forces. Left: Helicopter tows an Army M-62 medium 17-ton truck wrecker out of the mud. Right: Precision drop of a two-piece articulated light snow tractor (Kat) onto back of stake truck.

fence production programs." Mr. Coffin said the over-all temperature of Canadian-American economic relations is better than prior to a report on the situation made to the U.S. Congress last spring.

Ultra Light Visitor

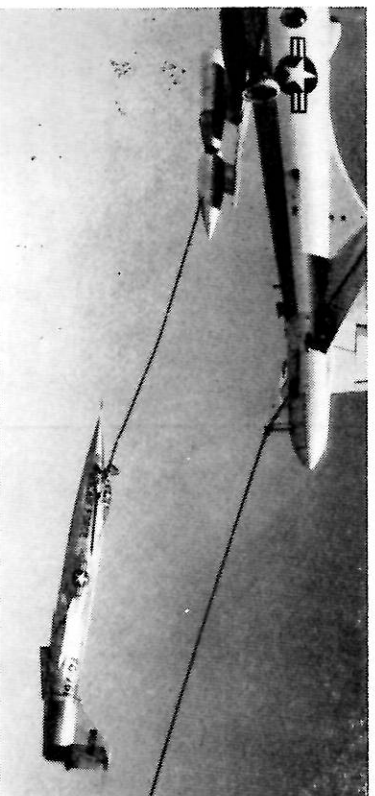
A British military jet helicopter, the Fairey Ultra Light, is being demonstrated this month in Canada. The helicopter is powered by Fairey pressure jet units mounted at the tips of the two blade rotor. These are supplied with compressed air by a Blackburn Palouste gas turbine air generator.

The demonstration flights to the RCAF are being flown at Uplands, outside of Ottawa. The helicopter is then scheduled to be flown to the Canadian Army Proving Ground, Ottawa, where it is to be fitted as a casualty pick-up and air ambulance. For the Navy it is required to take off and land from a tiny platform on the afterdeck of a frigate. Civil authorities and civilian operators will also be given demonstrations of the Fairey Ultra Light's capabilities. The entire demonstration has been organized by The Fairey Aviation Co. of Canada Ltd.

New Digital Computer

Standard Telephones & Cables Mfg. Co. (Canada) Ltd. has released details of the latest electronic digital computer, Stantec-Zebra. Among the lower priced computers, it nevertheless offers great flexibility in wide variety of different applications.

One use of Stantec-Zebra is to facilitate the making of geographical surveys by analyzing aerial photographs. It is also being used in the calculations



STARFIGHTER REFUELING: First aerial refueling photo of the F-104C Starfighter shows the world speed record holder easing up to the drogue of an FB-50J tanker. Unique feature of the F-104's refueling equipment is that it has a removable probe. When extra-long missions, or ferrying purposes, require it, probe is fitted on left side of forward fuselage.