NEW RESEARCH CENTRE AT UPLANDS TO SPARK CANADIAN DESIGN EFFORT

CONSIDERABLE progress has been made in setting up facilities for the National Aeronautical Establishment, which was announced by the government last January and is to be located at Uplands Airport, Ottawa. Development of the airport has already commenced. The plan calls for two runways this year, one 200 by 8,800 ft., the other 200 by 6,000 ft.

Meantime, the design of the flight research facilities is nearing completion and construction is expected to commence this summer. A concrete arch hangar is planned, with administrative, laboratory and workshop facilities integral with the hangar and extending around three of its sides. A heating plant, a storage and motor transport building and a cafeteria will complete the first stage of the Flight Research Unit, with occupancy planned for the summer of 1952.

As the need for new research equipment or new laboratories develops, these will be located on the new site at Uplands where sufficient land is available for development over the years of an aeronautical research centre which can meet the major requirements of Canadian aviation.

The decision to create the NAE had its origin in the changing character of our postwar aircraft industry. During the war, considerable expansion took place in the industry but the effort was devoted almost to the contruction of military aircraft designed and developed initially in the United Kingdom or the United States.

Since the war, however, it has been felt that grave risks would be involved in any policy that left Canada fully dependent on the U.K. or the U. S. A. for her defensive aircraft. Accordingly, the government established a policy of supporting the design and development of transport aircraft, military aircraft and engines in this country.

The aircraft industry has always leaned heavily on its own and government research facilities. The extremely rapid development of military aircraft and the science of aeronautics in the last five to 10 years has placed military aviation on the threshold of a new era of unbounded possibilities. At the same time, the problems facing the aircraft designer have grown in magnitude and in many cases he is working in hitherto unknown territory.

If the industry is to progress, the designer must be more than ever dependent on the results of aeronautical research. On the other hand, if they are to serve the needs of industry, the research facilities must be of the highest order.

The impressive postwar growth of the aviation industry to its present high level of activity and the present world situation have produced an urgent need for increased effort in aeronautical research for defense purposes. In view, however, of the mutual dependence of military and civil aeronautical development and the importance which civil aviation now enjoys in its own right in Canada, it is necessary to provide continuing research and development support for the problems posed by civil aviation.

There has been therefore an awareness of the need for a co-ordinated plan for the improvement of aeronautical research facilities in order that the maximum benefit may be derived for both military and civil aviation.

The aeronautical laboratories of the National Research Council came into being in 1929 but, mainly because of the depression of the 1930's, they remained undeveloped until the war necessitated their growth and expansion. These laboratories are still modest in both equipment and staff in relation to the overall importance and magnitude of aviation.

With the object of achieving an orderly development of the facilities and a closer integration of the requirements for military and civil aeronautical research and development. the National Research Council and the Defense Research Board had for some time been exploring the possibilities of creating a National Aeronautical Establishment which could be administered as a joint military and civil establishment.

It was finally decided that the National Research Council would operate the Establishment as a separate agency along lines somewhat similar to those on which it operates the Atomic Energy Project at Chalk River.

Detailed administration will be the direct responsibility of the NRC, with policy determined by the National Aeronautical Research Committee. This committee was made responsible to a subcommittee of the privy council committee on scientific and industrial research.

On defense matters, however, the National Aeronautical Research Committee will report directly to the Cabinet Defense Committee.

As in other countries, Canadian aeronautical research was confronted with the problem of obtaining expanded airdrome facilities to cope with new aircraft projects. Hence the decision to select, and expand, the Uplands airport as the site for the NAE.

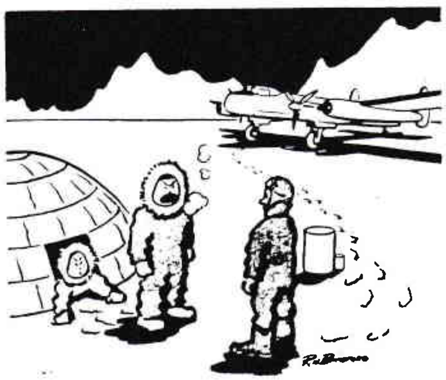
The existing aeronautical laboratories of the Division of Mechanical Engineering, together with new flight research facilities to be provided at Uplands by the Defense Research Board, will form the nucleus of the National Aeronautical Establishment which will be operated by the NRC.

J. H. Parkin, C.B.E., the present director of the Division of Mechanical Engineering, National Research Council, has been appointed Director of the new Establishment.

The National Aeronautical Research Committee, which provides the direction on broad policy matters for the National Aeronautical Establishment, is a four-man committee consisting of the president of the National Research Council, the chairman of the Defense Research Board, the Chief of the Air Staff, RCAF, and the chairman of the Air Transport Board.

The Committee has already held its

(Continued on page 40)



"Don't tell me you forgot to bring my copy of Canadian Aviation!"

NEW JET TRAINER FOR CANADA

(Continued from page 16)

heads of the two occupants and it is locked in position.

The push-pull rod also contains an explosive charge which will jettison the canopy during flight if the instructor and student have to make a parachute jump from the plane. The charge is set off when a handle is pushed down by the pilot. When the canopy blows off the plane, the two occupants pull up on the handles of their seats, and other explosive charges shoot them out of the aircraft.

Seven months after work was started on the prototype, the trainer made its first flight.

In addition to its training functions, the T-33 can be used for VIP transport and, with fighter performance, could be used in combat if necessary. For long-range escort duties, a 200-gal. fuel tank can be installed in the rear seat, increasing the combat radius to 580 miles.

The trainer version was developed after more than 1,000 P-80's had been delivered. As of last August, combined deliveries of the single and two-place versions had totalled nearly 2,000.

The T-33 has been designed for ready accessibility of all major components. The entire tail cone is removable, permitting engine work to be accomplished with a minimum of structural interference. A complete engine change actually has been made in six and a half minutes.

The low position of the airplane on the ground assists maintenance as well as fuelling operations and gun servicing. The guns are located in the nose and are reached by raising the side of the nose.

PLAN DEVELOPMENT AIR RESEARCH

(Continued from page 32)

first meeting, with Dr. C. J. Mackenzie appointed as the chairman. A technical advisory panel of deputies under the National Aeronautical Research Committee will be responsible for the consideration of technical matters involving policy and will serve as an advisory panel to the directors of the Establishment.

This panel will be composed of the Director of the Establishment; the Chief of Division (B) of the Defense

(Continued on page 46)

rop's F-89 Scorpion, where it is used to control automatic selection of fuel tanks, according to the manufacturer.

Results of qualification testing, now complete, indicate that Meletron's new pressure switch is extremely rugged, yet sensitive to a high degree, as well as being resistant to high frequency vibration, say Meletron officials. It meets AMC environmental and qualification requirements, and is explosive proof per U. S. A. F. spec. 41065-B.

Other applications of Meletron Model 431 include installation across fuel filters to control alcohol deicer pump; to control fuel tank pressurization; and in jet engine fuel control systems.

PLAN DEVELOPMENT AIR RESEARCH

(Continued from page 40)

Research Board, who is also the scientific adviser to the Chiefs of the Air Staff; the Air Member for Technical Services of the RCAF, and the chief aeronautical engineer of the Department of Transport.

Correspondence should be addressed to the Director, National Aeronautical Establishment, Montreal Road, Ottawa.

ORENDA JET ENGINE FIRST DETAILS

(Continued from page 22)

2. Fifth Stage Air: (a) centre bearing; (b) front face of turbine disc.

3. Tenth Stage Air: rear face of turbine disc.

Starting—Starting is effected by a 32-volt electric motor housed in the nose bullet. An over-riding clutch disengages the starter motor when the engine reaches self-sustaining speed. The rest of the starting system consists of the booster coils for the torch igniter spark plugs and the control circuit for the torch igniter reducing valve. An external sequence control is necessary to ensure that starting current, fuel for the torch igniters, and power for the torch igniter spark plug are provided at the correct times to permit clean starts.

Historical Highlights

Layout commenced	Sept. 3, 1946
Layout design finalized & detailing commenced	Dec. 6, 1946
Detail drawing issue commenced	May 1, 1947
Detail drawing issue completed	Jan.15, 1948
First engine delivered to Test House	Feb. 8, 1949
First run	Feb. 10, 1949
100 hrs. running completed	Apr. 4, 1949
Engine first ran at design take-off speed	May 3, 1949
Engine first delivered design performance	May 10, 1949
500 hrs. running completed	July 21, 1949
1,000 hrs. running completed	Sept. 23, 1949
2,000 hrs. running completed	Feb. 10, 1950
First official flight clearance at design rating	Mar. 2, 1950
First flight (in Lancaster flying test bed)	July 13, 1950
First flight in service type aircraft	Oct. 5, 1950
First 100 hours flying	Oct. 20, 1950
5,000 hrs. running completed	Feb. 5, 1951

Background — The beginnings of the Avro Orenda extend much further back in history than the discussions which produced the first design layout. To appreciate the project fully it is necessary to start in 1942 when reports about the Whittle jet-propulsion engine began to reach Canada.

The information received through