

LEADING THE FIELD

Jetliner Progress

In recent weeks Avro Canada announced that the C-102 had completed more than 100 hours of flight tests and simultaneously gave a brief resume of the findings during those first 100 hours.

During the latter part of these tests, the Jetliner was making as many as five flights in one day, with excellent serviceability being reported. The aircraft has been flown at more than 500 mph in level flight, a new North American speed record for its type. It has further attained a height of 39,500 feet, 9,500 feet higher than its cruising height. Many three-engine take-offs have been carried out at various speeds and at maximum gross weight; a number of times the aircraft has been flown with only one engine at about 200 mph with no loss of altitude.

Three Sides: Avro says that a number of test flights have been made over a triangular course of about 800 miles between Toronto, North Bay, and Montreal, and the average time has been about two hours. On these flights, carried out at cruising altitude, about 1,600 Imp. gallons of fuel were used. The Jetliner production version will have a fuel capacity of 3,330 Imp. gallons. One flight of over 1,100 miles has been made.

Demonstration flights have been made to New York, Ottawa and Montreal in half or less than half the time taken by present airliners on the same routes. The 365-mile flight to New York was particularly interesting as the first official mail ever carried on a jet transport was taken on this trip. The Jetliner's first passenger, G. R.

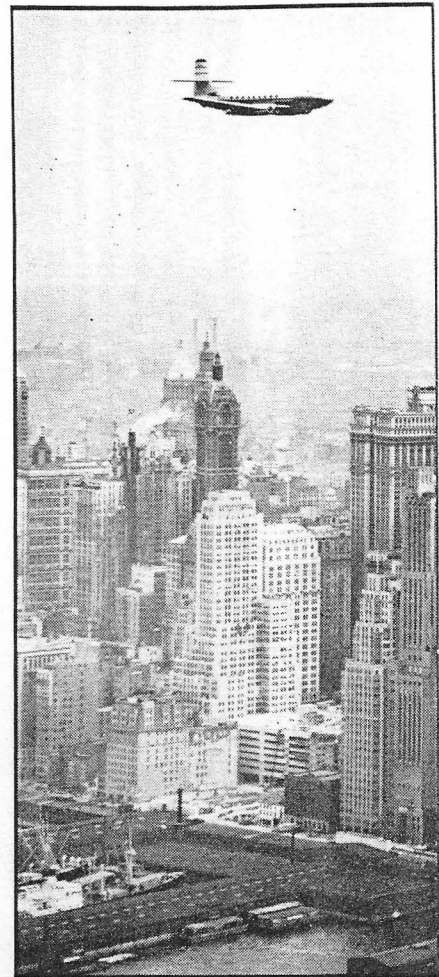
McGregor, OBE, DFC, president of TCA, was also taken on this flight. Since that time, the aircraft has been inspected and flown by leading airline officials and pilots in the U.S. and Canada.

No Problems: In the flights carried out to date, there have been no unusual handling problems either in the air or on the ground. At Malton Airport, where the test flights are normally carried out, there are all sorts of airplanes ranging from helicopter and light aircraft to conventional twin and four-engined transports, yet there has never been any trouble fitting the Jetliner in with local traffic.

In spite of the high top speed of this machine, Avro experience has been that it can be flown very easily at 140 to 150 mph in the circuit, and as a result of light, responsive, and well-harmonized controls, 360-degree turns can easily be made inside the perimeter of modern airports.

Margin of Safety: Final approach speed is 125-130 mph, which is safely above the stalling speed. This speed tapers off to about 115-120 mph over the edge of the field and actual touchdown is at 95-100 mph, making stops in normal runway lengths quite easy. The exercise of great judgment on the approach is claimed not to be required, as the Derwent engines respond very well to the throttle.

The practice is to approach at a minimum rpm of about 7,500, which provides little thrust but allows the throttles to be opened just as fast as in the case of reciprocating engines. Even from minimum idle the response is said



C-102 OVER NEW YORK.

to be excellent and the throttles can be fully opened in well under ten seconds. Once the throttles of propeller-driven aircraft are closed there is a sharp deceleration and sink due to the drag of the propellers, but jet aircraft give the feeling of free-wheeling, so that there is not the same urgency about restoring full power.

Little Float: On the other hand, the designers have incorporated sufficient drag into the flaps so that with them fully-lowered the Jetliner does not float so badly that the throttles must be closed very early. It has not been found necessary to throttle back fully on the Jetliner until just before round out for landing.

Under certain conditions the aircraft's endurance can be increased by stopping two of the four engines. This is said to be quite practical with Derwent engines, since relighting in flight can be accomplished as a normal operation. No starting troubles have been experienced and all four engines can be

started in less than two minutes. There is no flame from the pipe and experience has shown that it is possible for the aircraft to move away from a ramp with no danger and no discomfort to observers close at hand.

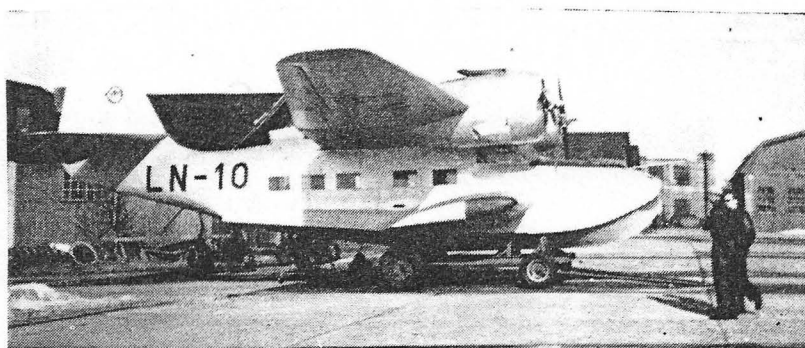
Slight Damage: Because of the level attitude of the aircraft, there is no particular heat problem as regards runway surfaces. No damage at all is done to concrete runways and none to asphalt surfaces during the run-up for take-off. Prolonged engine runs, however, should not be carried out on asphalt, especially if the weather is hot.

The length of the Jetliner's take-off run compares favorably with that of conventional transports. The aircraft accelerates very quickly, thus allowing an unusually steep angle of climb for obstacle clearance. It has been found possible to use high climb speeds when climbing through turbulent air. As a result of the stiffness of the wing, which was designed to withstand severe gusts at high cruising speeds, the aircraft rides through normal turbulence at a much higher speed than conventional transports and there is no uncomfortable wallowing and much less jolting.

A pleasant surprise is in store for operators with regard to the economic aspects of the Jetliner, according to Avro. The results of flight-proven study showed its earning power is higher than that of present air transports despite the relatively high fuel consumption of jet engines. Avro claims two C-102s can do the work of three conventional transports.

This low-slung aircraft has been designed for the highest degree of efficiency for servicing and maintenance. Engines, landing gear, and flaps can be serviced from the ground without the necessity of ladders or stands. The lower halves of the engine cowlings are hinged and quickly detachable to permit ready access to the engines and engine accessories. A complete engine change can be carried out in forty minutes.

Extended Life: Avro reports that while it is considered too early to evaluate the expected extended life of instruments and equipment on the Jetliner due to its almost complete lack of vibration, nevertheless there has been remarkably little trouble with the aircraft's instruments, accessories, and equipment to date.



LANDING GEAR FOR ALL OCCASIONS

Versatile Scandinavian

Designed and built by Norsk Flyindustri of Lysaker, Norway, a new aircraft of pleasing appearance has recently been going through a program of initial flight tests. With over 72 hours of flying time now to its credit, the Finnmark 5A shows promise of being an outstanding and versatile aircraft. The Finnmark is an all purpose amphibian intended for use in northern and arctic regions. It meets the requirements of the CAA, according to the designers, and will also satisfy special Canadian and Scandinavian requirements with respect to the ski-wheel undercarriage.

An all-metal cantilever wing monoplane, it is fitted with sponsons and is powered with two P & W R-1340 engines of 600 hp each, turning Hamilton Standard constant speed propellers. The sponsons accommodate the retractable ski-wheel undercarriage; in the retracted position the skis are flush with the underside of the sponsons and the wheels protrude slightly below. The hydraulically operated undercarriage was designed and built by Dowty

Equipment.

If desired, the undercarriage can be removed, thus changing the aircraft into an ordinary flying boat with sponsons. Each sponson is held on with only four bolts and at the same time the wings are furnished with fittings for ordinary wing tip floats, thereby turning the Finnmark into a conventional flying boat. The tail wheel is fully retractable and is combined with a small ski.

The aircraft has seats for twelve passengers and a crew of two. The cabins are soundproofed and provided with controlled heating and ventilating system. The seating may be removed so that if necessary all the space can be used for freight and ambulance work. Span of the Finnmark is 55 ft. 9 ins. and length 43 ft. 7 ins. with skis and wheels installed it has a disposable load of 3,000 pounds, whereas as a flying boat with sponsons alone, the disposable load is raised to 3,930 pounds. Maximum speed is 190 mph, and cruising speed at 65% T.O. power, 156 mph.

