below the cockpit, empty and max take-off weights being 2,314 lb (1 050 kg) and 3,792 lb (1 720 kg). Estimated performance included a max speed of 124 mph (200 km/h) at sea level, a range of 534 miles (860 km), an initial climb rate of 748 ft/min (3,8 m/sec), and a service ceiling of 14,110 ft (4 300 m). Overall dimensions included a span of 39 ft 4½ in (12,00 m), a length of 26 ft 10¾ in (8,20 m), a height of 12 ft 0½ in (3,67 m), and a wing area of 258·3 sq ft (24,00 m²).

The HAL LAS (Logistic Air Support) monoplane was an 8-10 seat utility transport built to meet the requirements of a specification drawn up by the Indian Defence Services for an air support aircraft. Work on a prototype of the LAS began early in 1959 and the prototype was flown for the first time in September 1960. Consideration was given to the replacement of the 600 hp engine by a turboprop to attain the improved high altitude performance demanded by the Indian services, but the extent of the necessary redesign motivated against this and further development of the LAS was abandoned.

### Saab's first fighter

*Can you please publish photographs and details of the Saab 19 which I understand to have been designed in Sweden immediately prior to World War II. I believe that it was a radial-engined low-wing monoplane.*

J Beresford
Ventnor, I-o-W

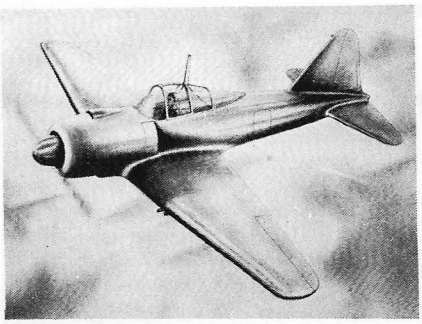
The Saab 19 single-seat fighter was designed by the then Svenska Aeroplan Aktiebolaget shortly before WW II for production in the event that the *Flygvapen* failed to obtain fighters from abroad as planned. In the event, the Seversky EP-1-106 was purchased and the Saab 19 project was abandoned in order that design effort could concentrate on the Saab 17 and Saab 18. The Saab 19 was designed around the Bristol Taurus sleeve-valve radial air-cooled engine which it was anticipated would afford 1,215 hp. Armament was to have comprised four 13,2-mm machine guns mounted in the wings, and it was somewhat optimistically anticipated that, at a loaded weight of 5,952 lb (2 700 kg), the maximum speed would be 373 mph (600 km/h). Estimated service ceiling was 34,450 ft (10 500 m), and overall dimensions were: span, 34 ft 5 in (10,50 m), length, 27 ft 9 in (8,56 m), height, 9 ft 7 in (2,90 m), wing area, 204 sq ft (18,95 m²).

### First Canadian jet

*Looking through an aviation book of 1953 vintage recently, I came across a photograph of the Avro Canada C.102 jet airliner. It is claimed in the book that the first mail officially transported by turbojet-powered aircraft in the USA was carried by this aircraft. Can you publish full details of the C.102 ariliner.*

E A Bryant
Pontardawe, Swansea SA8 3EJ

The C.102 represented a bold attempt on the part of A V Roe Canada Limited to build a transport aircraft with a cruising speed twice that of transports then in service, and preliminary design work was begun in the summer of 1946 when it was proposed to employ a pair of Rolls-Royce AJ 65 (Avon) axial-flow turbojets then under development. When, in the autumn of 1947, it became apparent that these engines would not be available in time for installation in the prototype, the design was modified to accommodate four 3,600 lb



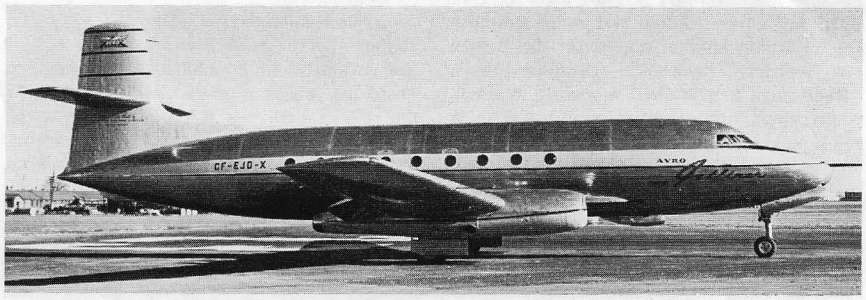
*An impression of the Saab 19 single-seat fighter projected shortly before WW II.*

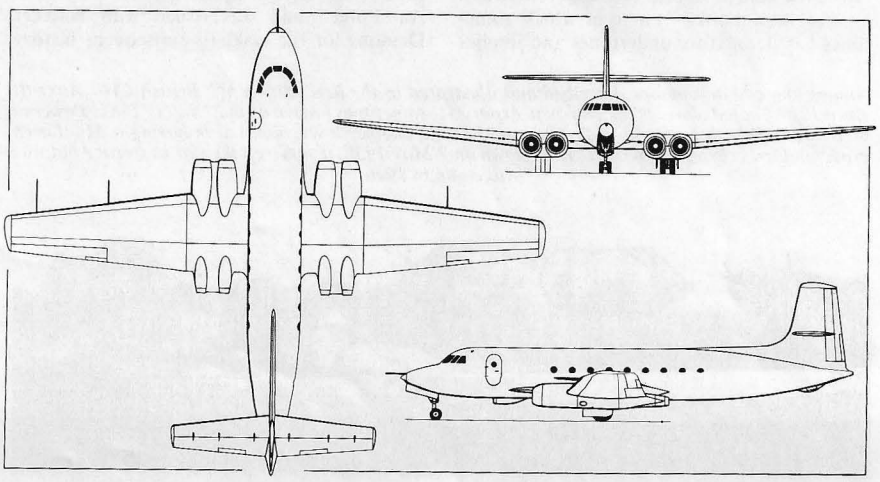
(1 633 kg) Rolls-Royce Derwent 5 centrifugal flow turbojets which, at that time, possessed the longest overhaul lives of any turbojets extant.

A low-wing cantilever monoplane of conventional construction with the four turbojets carried in paired nacelles by the wing centre section, the C.102 Jetliner was intended to accommodate 36-50 passengers and operate over stage lengths of the order of 1,100 miles (1 770 km). A flight crew of two was carried and all the fuel was housed by four integral tanks in the outer wing sections, these having a total capacity of 2,352 Imp gal (10 479 l). The prototype (CF-EJD-X) was flown for the first time on 10 August 1949, two weeks after the prototype Comet, and was subsequently demonstrated extensively, on one occasion flying the 365 miles (587 km) between Toronto and New York in 59 minutes with a cargo of airmail. The C.102 was intended primarily for TCA but several US airlines evinced interest — one of these proposing to purchase 10 — and it was planned to increase the fuel capacity of the projected production model to 4,000 Imp gal (18 184 l), but the outbreak of the Korean War and the Canadian government's decision to allocate the highest priority to production of the CF-100 fighter in consequence precluded further work on the C.102 programme, which was abandoned after government investment of $Can 6,568,363 and A V Roe expenditure of $Can 2,317,772, a partially-built second prototype being scrapped.

The C.102 had belly landed at Malton as a result of undercarriage failure on 16 August 1949, but was repaired and had completed 10 hours flying prior to its first public demonstration on 5 October 1949. It was subsequently re-engined with Derwent 8s (starboard outer and port inner) and 9s prior to flying between Toronto and Ottawa on 11 April 1950 in 36 min at 418 mph (673 km/h); the previously mentioned Toronto-New York mail flight was made on 19 April 1950. By December 1950, it had flown a total of 150 hours, had exceeded 500 mph (805 km/h) in level flight and had reached an altitude of 39,800 ft (12 131 m). For four years it was used largely as a research vehicle and observation platform, a variety of missions carrying it from northern Canada to southern California, and its tasks included the development of the de-icing equipment for the CF-100. It was finally scrapped at Toronto in 1956.

The C.102 had an official maximum speed of 417 mph (671 km/h) at 30,000 ft (9 144 m) and a cruising speed of 376 mph (605 km/h) at the same altitude. Maximum range was 1,680 miles (2 703 km), initial climb rate was 2,220 ft/min (11,28 m/sec), and ceiling was 40,300 ft (12 283 m). Tare weight was 27,427 lb (12 440 kg), max take-off weight was 55,000 lb (24 948 kg), and overall dimensions were: span, 98 ft 1 in (29,89 m); length, 82 ft 5 in (25,12 m); height, 26 ft 5½ in (8,06 m); wing area, 1,097 sq ft (100,91 m²).



*(Above and below) The Avro Canada C.102 was the world's second commercial transport designed from the outset for turbojet power to commence its flight test programme.*