



One of the services provided by NRC's National Aeronautical Establishment provides valuable information on whether aircraft structures will stand up to impact with birds, a common hazard of the airways. A large pneumatic cannon fires chicken carcasses at speeds up to 990 km/h. On the basis of the information gained from these tests, Canadair can now be certain that its Challenger will safely withstand bird strikes. (Photo: Canadair Ltd.)

L'un des services offerts par l'Établissement aéronautique national du CNRC consiste à recueillir de précieuses données qui permettent de savoir si la cellule d'un appareil résistera aux impacts d'oiseaux, qui menacent tous les avions du monde. Un gros canon à air comprimé tire des poulets morts à des vitesses pouvant atteindre 990 km/h. L'analyse des données résultant de ces essais a permis à Canadair de s'assurer que le Challenger survivra à ce genre de rencontre. (Photo: Canadair Ltd.)

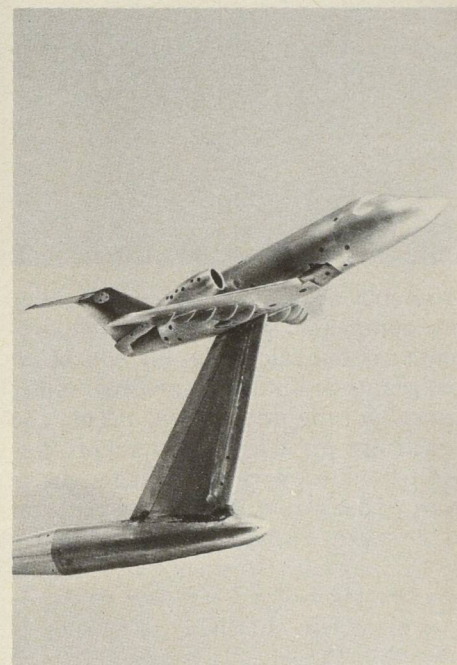
fuel efficient. Aircraft weight has also been kept down by the extensive use of kevlar, an extremely strong yet lightweight organic fiber. These factors together contribute to the 30 per cent increase in fuel efficiency, yet the aircraft flies faster (800 km/h or Mach 0.79) and farther (over 5 000 km) than its competitors. In spite of all the measures taken to improve performance, passenger comfort has not been sacrificed. The wide body design allows much greater passenger comfort due to its unprecedented roominess, which includes standup headroom.

But before the aircraft could actually be sold, it had to pass the certification requirements of Transport Canada, including 732 items of design and operational safety, noise and emissions standards and reliability tests. It was during one of many stall tests that Challenger One crashed due to an extremely unfortunate incident, taking the life of the pilot and injuring the co-pilot. In-

vestigators found that the accident was not caused by the aircraft itself, which was judged sound; rather, it was due to a malfunction of a releasing mechanism designed to disengage an experimental parachute, installed specifically for testing stall maneuvers. The parachute is not part of the production configuration, but the aircraft is fitted with a duplicate stall protection system.

After the investigation, certification tests continued and Canadair received its Canadian Type approval in the summer of 1980, after more than 800 flights and 1500 hours flying time. Since Canadian regulations are basically the same as those of the American Federal Aviation Authority U.S. Type certification followed quickly. To January, 1981, Canadair had sold 180 aircraft, including 50 with the new G.E. engines and a few of the stretch versions of the Challenger.

Sadiq Hasnain



Tests on scale models of the Challenger were done at NRC's wind tunnels operated by the National Aeronautical Establishment. Altogether, it took 1,800 hours of wind tunnel time to arrive at the final configuration, a design close to aerodynamic perfection.

Les essais sur maquettes du Challenger ont été faits dans les souffleries de l'Établissement aéronautique national du CNRC. Il a fallu en tout 1 800 heures d'essais en soufflerie pour arriver à la configuration finale, c'est-à-dire à un dessin proche de la perfection aérodynamique.