

AVRO TYPE 707

The Avro 707 series of delta-wing aircraft were built as scale-models of the Avro Vulcan high-speed medium bomber. The first version, the Type 707, made its first flight on September 4, 1949, powered by a 3600-lb. thrust Rolls-Royce Derwent turbo-jet, and was the first British aircraft to feature the delta planform. This plane, intended to explore the handling characteristics of the delta-wing airplane at low speeds, was destroyed in a crash on September 30, 1949, killing its pilot. This necessitated the building of a second machine, the Type 707B, intended for a similar purpose of investigating stability and control at low speeds. It had a wing-tip drag parachute used to "apply a known yawing moment" and a wing ballast, housed under the leading edge of the wing used to "apply a known rolling moment." Some of the other testing instruments of interest are: a smoke generator, fitted to the underside of the wing, with a special pipe feeding smoke to the top surface of the wing in order to ease the observation of the airflow around the airfoil; wool tufts and pressure plotting orifices, also in the wings, and a recording movie camera in the dorsal fin. The 707B flew for the first time on September 6, 1950.

Both of these early deltas had a single air intake on the upper surface of the fuselage at about one-half of the total length from the nose. The third aircraft of the series, the Type 707A, was built to test the high-speed flight handling characteristics of the delta planform and flew in July, 1951. Two 707A's

were built, both having wing-root air intakes and extensively modified control surfaces, the second one flying on February 20, 1953. One of the Avro 707A's was shipped by sea to Australia in 1956. There, boundary-layer control experimentation has been continued by the Australian Aeronautical Research Laboratory. The final Avro Type 707 model, the 707C, differed from the A version mainly in having two side-by-side seats in a broadened cockpit. It is remarkable that the fuselage dimensions remained the same in spite of the increased size of the cockpit enclosure. This was accomplished by carefully deleting some of the automatic observer equipment of the earlier 707 models. The 707C is intended for instructing pilots in the flying characteristics of a delta-wing aircraft, and was first flown on July 1, 1953. It utilized the same wing-root air intakes and was a mid-wing monoplane similar to the earlier versions of the 707 series of high-speed delta aircraft.

Although the primary mission of the 707 series, that of investigating the features of delta wings preparatory to the design of the Vulcan, has been completed, these pioneer deltas are still serving the dual purpose of research and training. The Technical Data table applies to the 707C version.

TECHNICAL DATA — Maximum speed: App. 600 mph. Range: App. 500 miles. Ceiling: App. 50,000 ft. Weight: App. 10,000 lbs. loaded. Engine: 3600-lb. thrust Rolls-Royce Derwent. Armament: None. Wingspan: 34 ft. 2 in. Length: 42 ft. 4 in. ■

Research aircraft

