


**Commercial
Aircraft
of the World**

 Explanatory Notes Page
781. Index by Aircraft
Page 827.


Douglas DC-3 of BEA (P & W R-1830)

take-off, and with two would be overpowered in the cruise"). The broad strategy of the 121 might be summed up as a 600 m.p.h. jet with a 6,000ft take-off and "optimized" economics for the shorter trunk-route stages of up to 1,000 miles.

A firm contract for 24 aircraft, for delivery to BEA from mid-1963, was signed on August 12, 1959. All 24 aircraft should be delivered by September 1965. First flight of the 121 should take place in December 1961. Six more aircraft will join the flight test programme in 1962. From the outset the Trident, with its triplex control system (Smiths), is designed for autoflare, with full automatic landing envisaged before 1970. Value of the BEA contract is £28m with spares.

Flight references: August 21, 1959, p. 57; August 28, 1959, p. 91; September 4, 1959, p. 102; January 22, 1960, pp. 102-104 and 120; February 19, 1960, pp. 238-240 (blind landing).

Powerplant: Three Rolls-Royce RB.163 by-pass turbojets of 10,100lb static thrust each.

Dimensions: Span, 89ft 10in; length, 114ft 9in; height, 27ft; wing area, 1,358 sq ft; sweepback, 35°.

Weights: Max take-off, 105,000lb, or 112,000lb with centre-section tankage; landing, 100,000lb; zero fuel, 85,500lb; capacity payload, 22,370lb; weight less fuel and payload, 63,130lb.

Payload accommodation: Cabin volume, 4,412 cu ft; baggage and freight volume, 620 cu ft; cabin length, 66ft 10½in (port side), 65ft 8in (starboard side); max width, 11ft 7½in; max height, 6ft 8in; max usable floor area, 708 sq ft; largest door, 62½in x 28in; max seats, 100 at 34in pitch.

Fuel capacity: 3,840 Imp gal, or 4,840 Imp gal with centre section tankage.

Performance: Opt. cost cruising speed at 32,000ft and 100,000lb, 508kt (585 m.p.h.); corres. fuel consumption, 7,300lb/hr; range A (max payload), 1,460 n.m. (1,680 st.m.) or 2,420 n.m. (2,790 st.m.) with centre-section tankage; range B (max fuel), 3,050 n.m. (3,520 st.m.) with 9,325lb payload; cruise Mach, 0.875; V_{NO}, 360kt (415 m.p.h.) EAS.

D.H.121 Trident Mk 2 First referred to by Sir Roy Dobson of Hawker Siddeley in March 1960, this is a project-study for a stretched development of the basic short-range Mk 1 intended for the medium-range market (2,000 miles-plus with max payload) at which the Boeing 727 and Vickers VC11 projects are aimed. Span and lift coefficient would be greater and, according to one report, sweepback would be reduced to 30°.

D.H.125 A project for a twin-jet (aft-mounted developed BS Vipers?) "Dove replacement," with 6-8 seats, the D.H.125 is one of two de Havilland tentative designs aimed at the small transport market, the other being:—

D.H.126 This is a larger twin-jet project, with aft-mounted fan engines, in the Heron-replacement category.

Ambassador The Airspeed A.S.57 Ambassador first flew on July 10, 1947 and entered service in 1952 with BEA, who named it Elizabethan. Until 1957, BEA was the only operator, but in that year three were sold to Butler Air Transport of Australia. Only 21 of these high-wing monoplanes were built, and today BKS Air Transport operate four, Dan-Air three, Overseas Aviation four, Shell two, Rolls-Royce one (Tyne test bed). Four Elizabethans are at present in BEA storage awaiting sale at £69,500 each with zero-time engines and airframes.

Powerplant: Two Bristol Centaurus 661s of 2,625 b.h.p. driving D.H. Hydromatic four-blade 16ft propellers.

Data appeared in *Flight* of November 20, 1959, page 597.

DE HAVILLAND AIRCRAFT PTY P.O. Box 30, Bankstown, N.S.W., Australia.

DHA.3 Drover First flown on January 23, 1948, the Drover was designed to Australian requirements as a post-war successor to the D.H.84 Dragon, with emphasis on simplicity (e.g. fixed undercarriage), ruggedness and a good performance with one engine inoperative. Only 20 Drovers were built, of which eight are in service with Fiji Airways, Qantas and TAA. The latter's Drovers are among six operated by the Royal Flying Doctor Service which have been re-engined with more powerful Lycoming O-360-A1A engines driving Hartzell propellers in place of the three Gipsy Major Mk 10s.

THE DE HAVILLAND AIRCRAFT OF CANADA Downsview, Toronto, Ontario, Canada.

DHC.2 Beaver The Beaver first flew on August 19, 1947. It has been found suitable for outback operation all over the world, and about 1,500 Beavers have been delivered and are in use in some 60 countries; 918 of these are L-20As of the USAF and US Army. An order has been placed by the British Army. Commercial Beavers have been used not only for passenger carrying, but for countless other duties. The one and only Beaver 2 is fitted with a 550 b.h.p. Alvis Leonides 502/4; standard powerplant is the 450 h.p. Wasp Junior.

DHC.3 Otter Developed, like the Beaver, for Canadian conditions, the Otter first flew on December 12, 1951 and, like the Beaver, is offered in landplane, seaplane, amphibian, skiplane or wheel-skiplane versions. The Otter is also used by airlines in Norway, Vietnam, Laos, Japan, the Philippines and New Guinea, while military Otters equip the air forces of Canada, Norway, Colombia and India, as well as the US Army (U-1A utility versions) and US Navy (UC-1 utility versions). Over 300 Otters

have been built so far, of which more than 200 are UIAs. Powerplant is the 600 h.p. P. & W. R-1340 Wasp.

DHC.4 Caribou The Caribou had its origin in design studies for a "Twin Otter" grossing 13,000lb, with two Otter-type powerplants and a fixed undercarriage. The Caribou's ultimate configuration was determined by US and Canadian Army desires for rear loading, and the need for good STOL characteristics and climb after take-off, together with a reasonable single-engined ceiling. The first of three prototypes made its maiden flight on July 30, 1958, and the first of a good number of YAC-1A Caribous for the US Army was delivered on October 8, 1959. Production aircraft feature a 3ft 9in longer fuselage. So far no commercial sales have been made.

Powerplant: Two Pratt & Whitney R-2000-7M2 Twin Wasps of 1,450 b.h.p. each driving 13ft 1in Hamilton Standard propellers.

Data appeared in *Flight* for November 20, 1959, page 597.

DOUGLAS The Douglas Aircraft Company, Santa Monica, California, USA.

DC-3 The most famous and widely-used airliner ever built, the DC-3 occupies a unique position in air transport. It is a twin-engined unpressurized aeroplane capable of carrying 20-30 passengers on stages of up to about 1,000 miles at a cruising speed of about 170 m.p.h. It set entirely new standards in airliner design and operation which were universally accepted and copied.

The DC-3 is a development of the DC-1 and DC-2 (designed for TWA) which, with the Boeing 247 (designed for United), were the first airliners of the modern stressed-skin all-metal cantilever low-wing monoplane formula. It made its first flight on December 22, 1935, having itself originally been designed to meet an American Airlines requirement for a sleeper version of the DC-2 suitable for use on the longer trunk US domestic routes. However, it was the "Day Plane" model of the "Douglas Sleeper Transport" which became the DC-3. All told, a total of 10,928 DC-3s and military C-47s were built in the United States, in addition to about 2,000 under licence in Russia and 450 in Japan. Some 1,672 are still in service with 235 airlines—nearly as many as all other types of airliner taken together. The DC-3 in 1936 cost £18-23,000 and resale prices today are around £25,000.

Powerplant: Two Pratt & Whitney R-1830-92s of 1,200 b.h.p. driving three-bladed Hamilton Standard Hydromatic 11ft 6in propellers.

Dimensions: Span, 95ft; length, 64ft ½in; height, 16ft 11½in; wing area, 987 sq ft.

Weights: Max take-off, 25,200lb (US passenger), 26,900lb (US freight), 28,000lb (UK); landing, 24,400lb (US passenger), 26,900lb (UK and US freight); no zero fuel restriction; capacity payload, 5,380lb; weight less fuel and payload, 17,720lb.

Payload accommodation: Cabin volume, 1,245 cu ft; baggage and freight volume, 160 cu ft; cabin length, 30ft ½in; max width, 7ft 8in; max height, 6ft 7in; max usable floor area, 191 sq ft; dimensions of largest door, 5ft 10in x 7ft (C-47); max seats, 28.

Fuel capacity: 670 Imp gal (805 US gal).

Performance: Cont cruising speed, 155kt (178 m.p.h.) at 10,000ft and 25,200lb; corres consumption 73.5 Imp gal/hr; balanced field length, max take-off weight, SL, ISA, 4,050ft; at SL, ISA + 15°C, 4,400ft; landing distance from 50ft, 1,980ft; range A (max payload), 173 n.m. (199 st.m.); range B (max fuel), 1,780 n.m. (2,505 st.m.); corres payload, 8,600lb; corres cruise speed, 155kt (178 m.p.h.).

DC-4 The DC-4 has been to long-haul air transport what its stablemate the DC-3 was to the growth of the short-haul sector of the business. It is a four-engined unpressurized aeroplane capable of carrying 40-86 passengers on stage lengths of up to about 2,500 miles at a cruising speed of about 200 m.p.h.

The origins of the DC-4 go back to a requirement for a larger medium-haul transport issued by the four largest American carriers (American, United, TWA and Pan American) in mid-1935. Douglas produced a prototype—the DC-4E—to meet this requirement; this first flew on June 7, 1938, but did not prove satisfactory and was rejected by the airlines. Douglas thereupon started an entirely new and rather smaller project which became the DC-4. This flew for the first time on February 14, 1942. Orders for 61 were placed by American, Eastern and United early in 1940 but deliveries were diverted to military purposes and the type went into large-scale production and use as a military transport until the end of the War. Some 1,163 military DC-4s were delivered as C-54s before production was switched to a civil model at the end of the War, and 79 of this version were built before manufacture of the DC-4 was stopped in favour of the DC-6. The DC-4 cost between £140,000 and £160,000 in 1946/47. A typical used price today is about £80,000.

Powerplant: Four Pratt & Whitney R-2000-2SD-13Gs of 1,450 b.h.p. driving three-bladed Hamilton Standard Hydromatic 13ft 1in propellers.

Data appeared in *Flight*, November 20, 1959, page 606.

DC-6 The DC-4 design achieved its full potential as a civil transport only after the end of the Second World War when it appeared in a more powerful stretched and pressurized form known as the DC-6. The DC-6 carries 50-70 passengers on stage lengths of more than 2,500 miles at cruising speeds of up to 280 m.p.h. It is thus considerably faster than its predecessor because of the higher installed power (9,600 h.p. for take-off