

INFORMATION SHEET



museum
VICTORIA

The Duigan aircraft

The original Duigan aircraft is one of the outstanding objects in the Technology Collection of Museum Victoria. A full-size replica of this aircraft hangs inside the entrance of Melbourne Museum.

On 16 July 1910, John Robertson Duigan made the first flight of his aircraft with a seven metre hop at his family's property near Kyneton, Victoria. Duigan's flight is acknowledged as the first of an Australian designed and built aeroplane.

Duigan's feat occurred less than seven years after the Wright Brothers' *Flyer* lifted off at Kittyhawk, North Carolina. Powered flights had also been achieved in France, Great Britain and Germany, where considerable technical resources were available. Duigan's effort is all the more remarkable because he accomplished the flight with little outside help.

Designing and building the Duigan aircraft

Duigan based his aircraft design on the French Farman plane, which flew one kilometre in 1908. Duigan prepared his own plans and specifications and constructed the frame of the plane from Red Pine and Mountain Ash, in a farm shed.

Duigan also made the wheels, propeller shaft, and the races for ball bearings. He later cast his own water-pump and made his own radiator. The J E Tilly Engineering Company of Melbourne supplied the 20 horsepower four-cylinder engine, and Mr J Fulton of Melbourne made the 2 m \times 15 cm propeller.

To be flown, the aircraft had to be taken from its shed, down a steep hill and across two creeks, over which special bridges were built. The take-off field was 1183m long and 91m wide, so that flights could be no farther than 800 m and had

to be fairly straight. Three people were required to move the aircraft back up the hill to the shed.

The first long flight

After the successful flying 'hop' on 16 July 1910, Duigan applied to the Defence Department for details of the Commonwealth prize of £5000 then being offered to the builder of a suitable military aircraft. He made further improvements to the plane by rebuilding the engine to increase the power and providing greater balance to the wing design.



The Duigan aircraft in flight

On 7 October 1910, Duigan made his first sustained flight of 178 metres at a height of about three metres, before half a dozen spectators. Duigan described this achievement as his first successful flight under full control.

Duigan's application for the Commonwealth prize was rejected because he missed the close of entries in March 1910. However, the Defence Department requested a demonstration of the machine in May 1911.

Along with his brother Reg, John Duigan continued to fly the aircraft locally, reaching distances of two kilometres and altitudes of

between two and 18 metres. The plane completed 60 flights before being placed in a hangar, where it remained through the years of World War I. In 1920 Duigan donated the aircraft to the Industrial and Technological Museum of Victoria, which later became part of Museum Victoria.

John Robertson Duigan

Born on 31 May 1882 at Terang, Victoria, John Robertson Duigan studied electrical and motor engineering at Finsbury College in London. He returned to live at *Spring Plains*, where he started experimenting with aviation in 1908.



John Duigan at the aircraft's controls

After the first successful plane, Duigan and his brother Reg constructed a second aircraft in the backyard of their parents' home at Ivanhoe in Melbourne. Its design was based on the Avro ENV and was a two-seat tractor biplane. The machine crashed on its maiden flight at Keilor Plains in February 1912. Duigan was badly bruised and did not rebuild the aircraft.

Duigan was awarded the Military Cross for gallantry in action during World War I. He later opened his own motor engineering business in Yarrowonga. In World War II he served in the Quality Control Branch of the Royal Australian Air Force. Duigan retired to Melbourne, where he died in 1951.

The Duigan Flight Memorial was unveiled in 1960, about six kilometres from Mia Mia on the Mia Mia – Lancefield Rd.

The Duigan replica

In January 2000, Museum Victoria received the donation of a complete Duigan replica, built by flight mechanic Ron Lewis (1919–1995). Mr Lewis handcrafted the plane between 1984 and 1990, using his own specially made tools.

Duigan aircraft specifications

Overall wing span:	10.5 m
Engine:	Tilley four-cylinder air/water-cooled, 18.6 kW (25 hp) at 1800 rpm
Fuel tank capacity:	4.55 L
Maximum speed:	64 km/h
Take-off run:	About 90 m in a 6 km/h wind

Further reading

Aviation Heritage 26(1), 1990.

Parnell, L. and Boughton, T. 1988. *Flypast: A Record of Aviation in Australia*, AGPS, Canberra.