

RICHARD PEARSE – PIONEER AVIATOR YOUNG ENGINEER, INVENTOR, GENIUS.

The Pearse Memorial on Waitohi Road



The Citation reads:

Richard William Pearse
1877 – 1953
New Zealand's Pioneer Aviator
The first powered flight by a
British Citizen in a heavier than air machine

Richard Pearse was born in NZ in 1877 of a Cornish immigrant Digory Pearse from Trewarlet Cornwall and an Irish Mother from Belfast. He lived at a time when great inventions were being developed in Cornwall and not far from his Father's birthplace by renowned men such as Sir Humphrey Davey and Trevithick. These would no doubt have been in his mind and often spoken of in the family circle and possibly have been a motivating force in the life of Richard. His passion for Engineering began to develop at an early age even possibly as early as 8 yrs. He is understood to have desired to have studied for an Engineering degree at Canterbury University but the family had committed themselves to supporting an elder brother Tom to do a Medical degree in Edinburgh and so insisted that Richard remain to work on their farm at Waitohi near Timaru. They were a talented family, of 9 children, very musical Richard playing the Cello, and keen on sport Richard excelling at tennis and golf. Richard read extensively in libraries and subscribed to the Scientific America magazine. Though untrained he manifested a remarkable analytical aptitude.

His first patent was gazetted on the 27th Nov. 1902 and was for a novel bicycle propulsion replacing the rotary motion of pedals by up and down motion of bell cranks which by levers operated pawls engaging with ratchet wheels attached to the rear wheel. By adjusting the point of attachment of the levers to the bell crank a veritable variable gear ratio could be obtained. The specification also included an integral rear wheel rim brake and air compressors in each wheel to maintain air pressure.

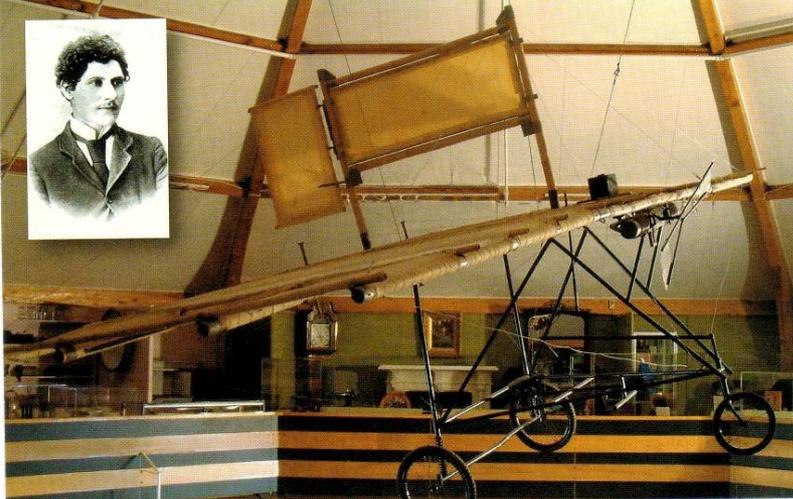
He also developed an instrument for recording music on wax coated disks evidently to perpetuate the sound of the unique family orchestra. He also made musical boxes which could play selected tunes. Nothing of these instruments remains.

From this time on Richard devoted his time to the development of powered flight in heavier than air craft. Being conscious of competition in the field and lack of understanding of his family and contemporaries he became secretive about his activities but not a recluse. The only power source with which he was familiar was steam. He was however aware of the internal combustion engine and that existing versions were very heavy. He recognised that a first prerequisite of powered flight was an engine with a high power to weight ratio. He then initially, possibly as early as 1899, applied himself, as the Wright brothers had done, to building such an engine. This he achieved with nothing more than hand tools and a lathe made by himself from scrap materials and possibly some advice from the local blacksmith, and Cecile Wood an engineer in Timaru who was the first man in NZ to construct an internal combustion engine. This in itself was a remarkable achievement. His first effort was two opposed cylinders consisting of 300mm offcuts of 100mm cast iron irrigation pipe, with flat plates bolted on the ends and sealed with brazing and with a single piston rod with a cross head in the middle and with a piston at each end and with stuffing boxes. Thus each cylinder was double acting akin to the steam engines with which he was familiar. With this engine he achieved a power to weight ratio of 3 kg per kW. He then constructed a high wing monoplane with tricycle under carriage of light steel tubing using bicycle wheels with the single front wheel steerable. The aircraft frame was of bamboo connected by light weight metal clips and the rectangular wing covered with canvass. With this or similar machine Richard became air born on the 31st March 1903 unaided after taxiing on the Waitohi road as has been established by thorough research by the late Mr George Bolt former chief engineer with Tasman Empire Airways (TEAL) and supported by sworn affidavits by witnesses. Mr Bolt was convinced that Pearse had achieved at least powered take off 8 months before the Wright Brothers. Then 2 letters were discovered written by Pearse and published in newspapers stating that he had commenced his experiments on aerial navigation about February 1904 as had the Wright Brothers. At this point Bolt gave up insistence that Pearse had flown before the Wright Brothers. If we understand that he meant by the expression "aerial navigation" fully controlled flight then his statements concerning his work and that of the Wright Bros would be consistent and would not preclude either his or the Wright's earlier successful take offs.

Subsequent careful research by C.G.Rodliffe and recorded by himself suggests that Pearse successfully took off even earlier than established by Bolt. The previously recorded first flight was that on the 31 march 1903. The plane rose bore left and the motor failed and the plane landed on top of a 3 metre high hedge. A further flight occurred shortly before a big snow fall in July 1903, confirmed as having occurred, by meteorological records, and the plane was confirmed by many witnesses as having been seen on top of a hedge covered in snow. Possibly on this occasion he was coming in to land and misjudged the height of the hedge. Richard's statement recorded in the newspaper could not have referred to his first flight as there was no other snow fall in the district between 1902 and 1905 according to meteorological records. I would take from these statements that Richard did not consider his earlier flights as successful flights as he didn't have the opportunity to successfully land the plane.

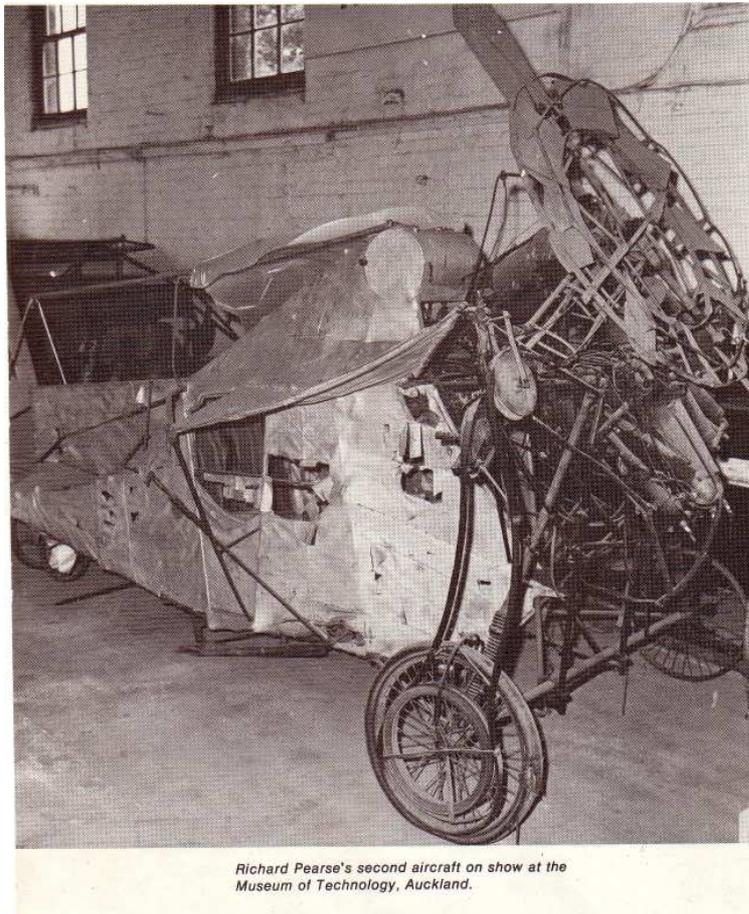
A number of full size replicas of this plane have been constructed and one is preserved suspended in the Timaru museum, as shown below together with a scale model of his first engine and a number of parts recovered from rubbish deposits on display. Another is suspended in the Motat museum in Auckland. A memorial has been erected on the Main Waitohi road at the point at which the plane landed in the hedge on the 31st March 1903 flight and is comprised of a tall substantial pole on which is mounted a full size replica in metal

which swings in the wind as in the opening photographs. This can be accessed by taking the Temuka-Waitohi Rd. from the Temuka by-pass for about 6 km to Waitohi. Turn left into



Crombie Rd. and almost immediately right into the main Waitohi Rd and the monument is approximately 4 km on the right hand side. It is not surprising that Pearse landed in or on hedges as near all fences in the district at that time were comprised of gorse hedges and in the case of Richards property untrimmed as a consequence of his preoccupation with flying.

Richard proceeded to produce a 4 cylinder engine which developed 25hp and which has been recovered and with other exhibits and a full size replica of his two cylinder opposed engine are preserved in the Motat museum in Auckland. Models of his plane are on display at the Heritage Museum at the Timaru Airport. Richard described his plane in a letter to the Christchurch star of 1928. "This machine was a monoplane mounted on three air-tyred wheels



Richard Pearse's second aircraft on show at the Museum of Technology, Auckland.

for starting and landing with a horizontal rudder behind for balancing fore and aft, a vertical rudder for steering, and also two small horizontal rudders at the wing tips to prevent side tipping. The propeller was in front and was mounted directly on the engine crank-shaft thereby rendering clutches and gearing unnecessary." This latter feature was in itself a world first. It is clear that all these features were not incorporated in his first plane but some as the rudders on the wing tips and the vertical rudder were added later as he experimented and developed his plane. In 1910 Richard was struck with typhoid fever and after recovering went south for a holiday and bought a farm near Milton. He continued working on his plane though the area was not very suitable for flying.

From here in May 1917 he was conscripted for service in world war one. He locked up all his possessions and abandoned the farm. On his return the farm was overcome by weed growth

and Richard sold it to a neighbour and moved to Christchurch where he purchased land on the 28th November 1921. He built and let 3 houses which netted him an income. In a garage on one property he built his final utility plane a revolutionary concept. It was designed to fold and fit into a domestic motor garage, with a tilting motor set in trunions, to operate between vertical and horizontal, to take off and land vertically on a front lawn and subsequently travel horizontally.

There is no record of this plane having flown but the engine had been heard running. His latter years were devoted to protracted negotiations to obtain a patent for this machine. On his death this plane was purchased by the Aero club and stored in a hangar at Wigram. An NAC pilot had seen it and mentioned it to George Bolt who on viewing the plane promptly acquired it for the museum he was establishing at Motat in Auckland and persuaded the crew of a US Navy Deep Freeze Globemaster transport plane to fly it to Auckland who jokingly said they were delivering a new plane for TEAL. This and a number of other articles including a 4 cylinder engine built by Pearse are on display at Motat. In addition on display at Motat is a power cycle built and regularly used by Pearse. Further displays including models of Pearse's plane which are on display at a heritage museum at the Timaru airport.

It seems well established then that Pearse succeeded in taking off and attaining a height of at least 3 metres some 8 months or more before the Wright Brothers and that from a rough road surface and grassed paddock. There is evidence that he achieved controlled flight subsequently and before the Wright Brothers first flight. Furthermore he developed flaps and ailerons as on modern aircraft while Wright Bros were still using wing warping techniques. Had Richard had the privilege of a formal training at Canterbury University the world history of flight may have been very differently recorded.

References:

- Gordon Ogilvie; "The Riddle of Richard Pearse, NAC Airline Review Number 59
- Timaru Museum.
- C.G. Rodliffe; "Wings Over Waitohi."
- C.G. Rodliffe; "Richard Pearse - New Zealand Pioneer Aviator."