



## Tasmanian Aviation Giants – Harold Gatty

### Prince of Navigators

*Author: John Livermore, December 2021*



Harold Gatty was born in Campbell Town Tasmania on the 6<sup>th</sup> of January 1903. His father was headmaster of the local government school. In 1915 Harold with a bursary entered St Virgil's College, Hobart as a boarder. While in Hobart, he developed a love of Hobart harbour, all things connected with the sea and being a sailor.

In January 1917, aged 14, he enrolled in Jervis Bay Naval College. The course was a tough one. He was not a star pupil and had most problems with maths and navigation. He had difficulty concentrating on technical subjects.

A seagoing posting was offered to Gatty due to less demand for officers in the Navy. In June 1920, he joined Patrick SS Co as an apprentice and served on the SS Gabo plying between Australian ports and New Zealand. He spent hours at night noting that by observing the stars, a man could navigate by their position.

After three years Gatty signed on to the United SS of New Zealand and was posted to an oil tanker working between New Zealand and California. Crossing the Pacific, he studied celestial navigation and experimented with using his senses as navigational aids, for example the smell of coconuts, guano and the new mown hay 80 miles out from New Zealand.

In 1926 he started running a floating ship on Sydney harbour but competition from established providores proved fatal to his business. On the 3<sup>rd</sup> of June 1926 he married Vera McCulloch and faced with struggling to find a job, he applied for a visa to enter the US.

Arriving in San Francisco on Christmas Eve 1927 Gatty found his seagoing papers were only valid for British Empire ships. After working on a private yacht owned by the sports millionaire Spaulding, Gatty opened his new business, a navigation school based in Los Angeles.

Operating as an agency for the Pioneer Instrument Co, Gatty came into contact with aviators using airlines around Los Angeles. Air navigation was then primitive. To work out where you were in a plane, land-based features such as rivers, roads and railways were markers, but they invisible in bad weather.



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After running his own pilot school in San Diego Gatty teamed up with Lt. Commander Philip V.H. Weems a serving naval officer. He worked to improve Weem's table of calculated position line (Weem's Curves). These had been used by Admiral Byrd in the Antarctic and the Australian explorer Hubert Wilkins in the Arctic. The Weems Curves could only be used at night, so he looked to develop dead reckoning for aviation navigation.

Gatty invented the air sextant and then the aerochronometer which was designed to overcome the effect of rapid air speed on a calculation. He also designed and built the Gatty Draft Sight to fix the determination of ground speed of an aircraft and the angle of drift, the so-called crosswind effect. All these inventions are the basis of the modern automatic pilot. Weems published a textbook "Weem's System of Air Navigation" giving credit to Gatty for much of its data processing describing him as 'a compass and map expert who has done more practical work on celestial navigation than any other person in the world today.'

In 1929 Gatty flew as navigator with Roscoe Turner from Glendale California to Roosevelt Field in New York in a Lockheed Vega. The flight took 19 hours 51 minutes, which was 2 hours short of the record. It was his first experience in long distance navigation and boosted his reputation as a talented and reliable navigator.

In 1930 Gatty acted as navigator to a Canadian flyer Harold Bromley in his attempts in *The Spirit of Tacoma* to cross the North Pacific to the islands of Japan. The attempt to make the crossing failed, as did a flight from Japan which had to turn back near the Kurile islands in the north Pacific. However, on those flights with Bromley, he proved endurance and capability flying through fog and using the dead reckoning skills developed with Weems and Gatty's own maritime experiences crossing the Pacific.

Gatty resumed his navigation instruction in Los Angeles and his client numbers increased. In January 1931, Wiley Post, a pilot with experience in oil surveying in remote parts of the US met Gatty offering him the position of navigator in the plane *Winnie Mae* for Post's planned round the world flight.



**Post (L) and Gatty (R) with the Winnie Mae**

The *Winnie Mae* was Lockheed Vega 5B with a cruising speed of 160 mph and a maximum speed of 185 mph. It had a prefabricated fuselage and a Wasp engine with a powerful supercharger. This enabled the plane to reach 16,000 feet to take advantage of the fast flowing jet stream. Post was one of the first to consider using this altitude to boost air speed. A giant fuel tank was installed in the fuselage.



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Flight instruments were grouped for easier reading during blind flying. A bank and turn indicator, a rate of climb indicator and artificial horizon were also installed with duplicate instruments for Gatty. These included an airspeed indicator, a compass and a master aperiodic compass.

Gatty planned the route, arranging facilities at airports, obtaining metrological information, detailing fuel needs and emergency landing sites. Maps of the USSR, over which they would fly, could not be obtained and outdated British War Ministry maps proved inaccurate. Until May 21 the USSR refused to let the aviators fly over its territory, but they relented based on the help the US gave Soviet flyers on the Alaska stages of their flight from Moscow in October 1929.



Leaving Roosevelt Field at 4.55 am on 22 June 1931, both pilots were in suits not flying gear and with \$1 in respective pockets the *Winnie Mae* headed out in light showers. After landing at Grace Harbour in Newfoundland, the *Winnie Mae* flew into the north Atlantic, fog bound flying at 50-100 feet above the waves, too heavy to rise with near full fuel tanks. Post took the plane to 1,600 feet but found no break from the fog. 16 hours later from Newfoundland the *Winnie Mae* landed at the UK RAF base of Sealand near Liverpool. They then crossed to Holland refuelled at Hanover and landed at Templehof in Berlin for an overnight stop.

Arriving in Moscow the pair were met by the USSR Society for Aviation and Chemical Defence. A long dinner at the Moscow Savoy tested the tired fliers with nine courses of food and plentiful vodka toasts. The Moscow aircrew pumped 324 imperial gallons into the *Winnie Mae* instead of the smaller US gallons so the extra gallons had to be siphoned off before take-off.

From Moscow the flight went to Irkutsk in Siberia. Checking a bend in the Amur River Gatty navigated into Blagoveshchenk where the airfield was a muddy lake which bogged the plane. The next day the lake was drained and the *Winnie Mae* was pulled out from the runway with horses. Following the Trans-Siberian Railway east the flight reached Khabarovsk. From here Post and Gatty decided to head across the Pacific to Solomon Alaska.



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The *Winnie Mae* had NW headwinds over the Kamchatka Peninsula. Off Sakhalin Island the plane was making 140 mph. The leg across the Aleutian Islands and the Bering Sea was the most dangerous of the whole flight, which was at wave height. Landing at Solomon Alaska the plane refuelled, however on take-off, it dug into soft sand and bent two propellor tips. Post fixed these with a hammer and a wrench while Gatty bruised his shoulder on the propellor when the engine backfired. Even so he was still prepared to navigate to Fairbanks. There the propellor was replaced and the *Winnie Mae* refuelled and the fliers got a few hours' sleep.

Over Canada the next day the *Winnie Mae* hit rain and mists. Following the Canadian Pacific Rail line, Post and Gatty reached Edmonton which had a flooded airfield. Despite a large crowd greeting them there the fliers were grossly weary at the official reception. After a good night's sleep with baths and shaves the pair were in high spirits. The *Winnie Mae* had been hauled from the flooded airfield by a caterpillar tractor. The take-off was on the main road in Edmonton where council crews had helpfully by removing telephone and power cables.

The *Winnie Mae* touched down at Roosevelt Field in the afternoon of 30 June 1931, after a trip of 8 days 15 hours and 53 minutes. The New York Times reported "Gatty whose unerring navigation enabled the expedition to maintain a perfect schedule on their 15,474 mile flight around the world, hauled himself up through the cockpit and was sitting, with a grin on his oil-smearred face on the high wing of the ship when the crowd swarmed around it."

Gatty and Post and their wives were given a special lunch by President Hoover in the White House. In August 1932 Gatty received the Distinguished Flying Cross with Post from President Hoover at the National Aeronautic Convention. He became a celebrity in the US and on 15<sup>th</sup> of January 1932 he was appointed to the specially created civilian position of Senior Engineer in the Air Corps and the requirement of US citizenship was waived. Gatty flatly refused in all his time in US to change his Australian citizenship.

From 1934 Gatty was involved in developing air routes for the American airline TWA. He conceived two Pacific routes which used land-based aircraft and ran from the US to Australia from San Francisco to Honolulu, Jarvis, Pag Pago Suva, Auckland to Sydney. The other run was planned to run to Japan via Honolulu, Midway and Wake.

Backed by aviation company Douglas, Gatty found that key Pacific islands on the San Francisco to Auckland route were of doubtful British claims. These islands had been colonised earlier by US guano miners and so, on that basis, could be claimed by the US. It was this activity by Gatty that conflicted with the Australian Government's preference for the London to Sydney route and made Gatty an outcast as far as Canberra and its bureaucrats were concerned.

In 1935 Gatty contracted with the New Zealand government to develop the proposed route. The New Zealand government of the time nearly cut off relations with the Australian Government's air route policy. The US government on its part had defence reasons for



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backing the Pan Am route. On the 17<sup>th</sup> of March 1937, a Pan Am's Sikorski's S-42 flying boat took off from Oakland California arriving in Auckland on March 31.

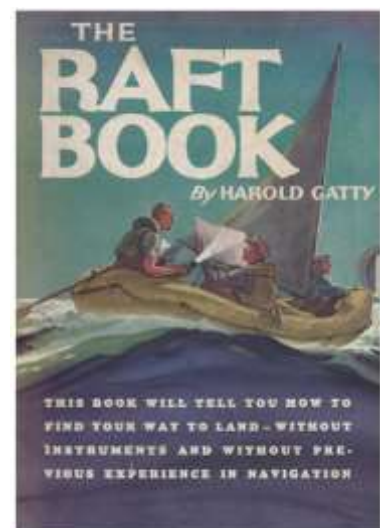
Gatty went on to serve in the US Army Air Corps during World War 2. He wrote the *Raft book* in 1944 for downed US fliers in the Pacific. It was based on his early interest in natural navigation which was later fully explored in his book *Nature is Your Guide* (published by William Collins in 1958), which gave Polynesian seafarers credit for their navigational skills.

Gatty moved to Fiji in 1947 and started a tuna fishing operation, which failed. In July he established Fiji Airlines and brought in three twin-engined De Havilland DH 89a's. Gatty served two terms on Fiji's Legislative Council.

Gatty died near Nausori Airport, Fiji at 11am August 30 1957, aged 54. He was buried in Suva.



**The Harold Gatty Memorial in Campbell Town**



He deserves a memorial in a better state than the one in Campbell Town.

Acknowledgement: this article is based on the book "Gatty: Prince of Navigators" by Bruce Brown, Libra 1997.

Notes: A copy of the "Raft book" is in the Tasmanian Public Library, Hobart. Charles Lindberg gave Harold Gatty the title of "Prince of Navigators."