



## Kitty Hawk and the Problem of Flying



“...for the wind is a

treacherous fellow who follows his own inclinations and laughs at our art”.

From “The Problem of Flying” Otto Lilienthal, 1893.

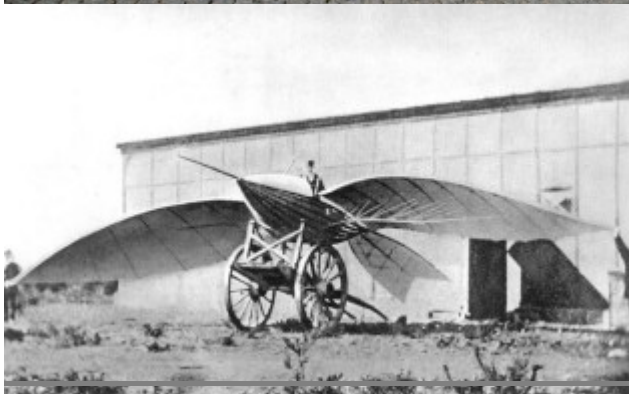
Man has always looked up at the birds and dreamt of flying. From Daedalus and his wings of wax and feathers and his ill fated son Icarus in Greek mythology to da Vinci's 1485 Ornithopter and countless other references in fiction and science flight has been both a dream and a challenge.



Here in the windy Outer Banks near Kitty Hawk (today it is actually the neighboring village of Kill Devil Hills) man actually took to the air under the name. And fittingly there is a beautiful monument to mark the spot and

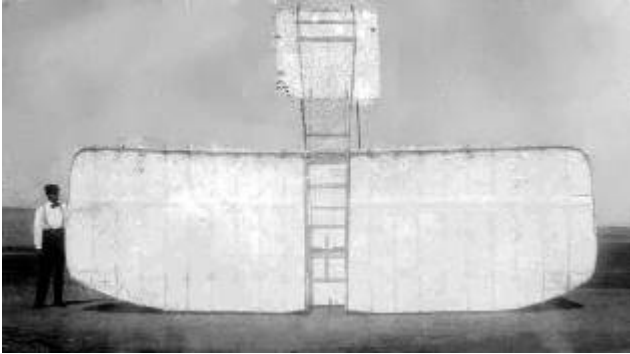


The Wright Brothers National Memorial.



in the late

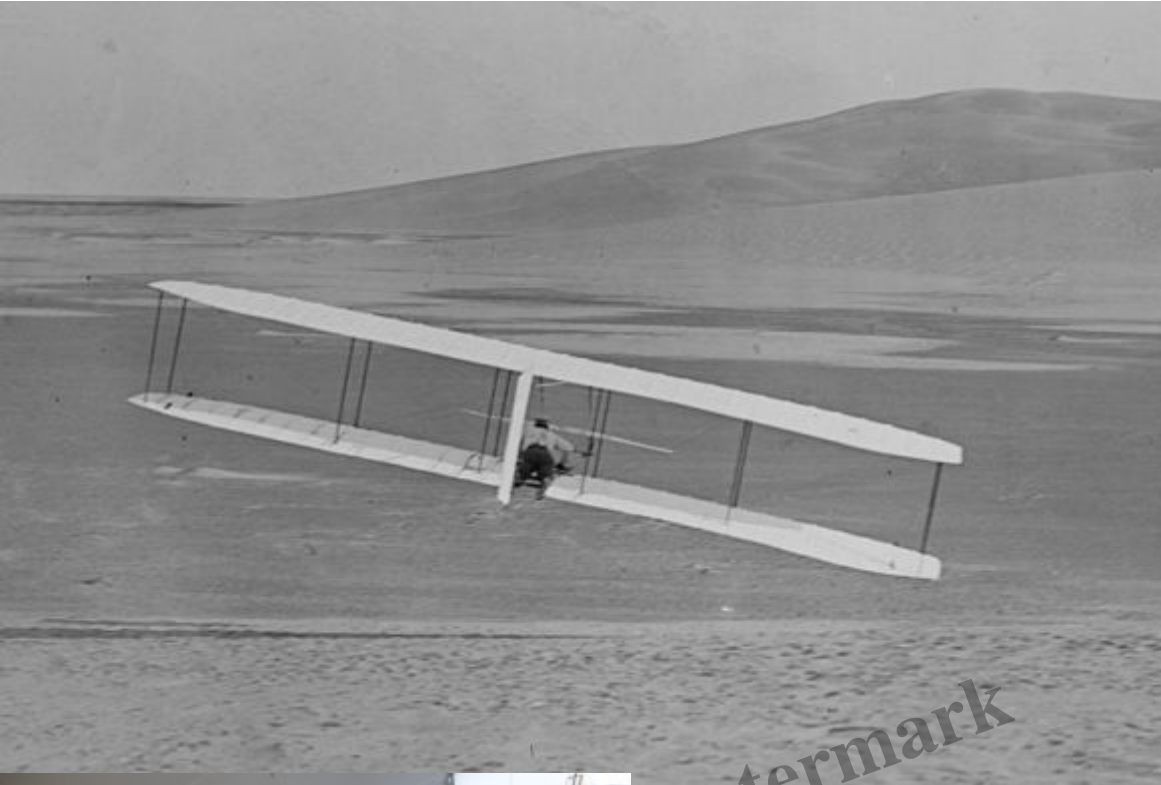
1800s, there were many practical efforts to solve the problems required for a successful flying machine. There were several scientific journals (ie. The Aeronautical Annual, “Devoted to the encouragement of experiment with aerial machines and to the advancement of the science of aerodynamics”). Langley, Lilienthal, Whitehead and many others made all manner of beautiful and elaborate contraptions that were able to glide and advanced knowledge but without ultimate success.



1901 Glider

The challenges of flight can basically be boiled down to three things: lift, propulsion, and stability. The Wright brothers' approach was to solve these systematically. They started with kites to help refine the shapes for lift. They built a wind tunnel (a first) to measure the effectiveness of the various wing shapes.

In 1901 they built a Glider to test their work and brought it to Kitty Hawk. The soft dunes and steady winds were just what they needed for their shaky attempts at flight. Here they built a small hangar and camp for their stay away from their home in Dayton, Ohio. The 1901 Glider was a disappointment but they learned.



And the next year they returned with a new and improved

1902 Glider. In many ways this was the true breakthrough, even more so than the powered craft they made history in. With this glider they basically solved the challenge of control in flight. In the fall of 1902 from the large dunes at Kill Devil Hills, they repeatedly launched and flew this glider over 1000



A rudder, an



elevator, and warping wings (an early version of ailerons) are all incorporated. To this day, essentially the same control techniques are still employed in every airplane. Amazing.

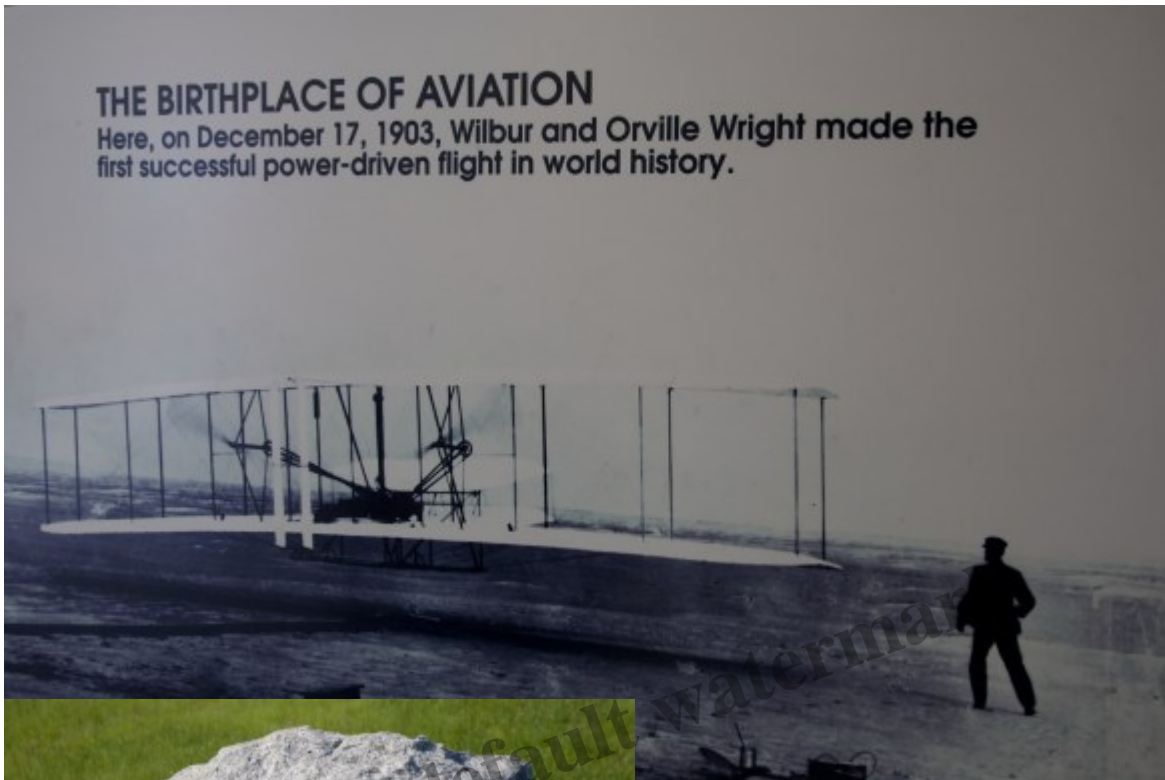


The 1903 "Flyer" incorporated an engine and two

propellers linked together with lots of bike parts. The engine had to be light enough of course, but their propeller design was innovative as they came to the realization that the correct shape for a propeller was more like a rotating wing. Genius at work. What most others were doing was to emulate marine



they were ready to try again in a few days. On the morning of December 17, 1903 it was Orville's turn. The first flight lasted only 12 seconds. But for the first time a man made craft took off under its own power rose into the air and landed smoothly at the same elevation.



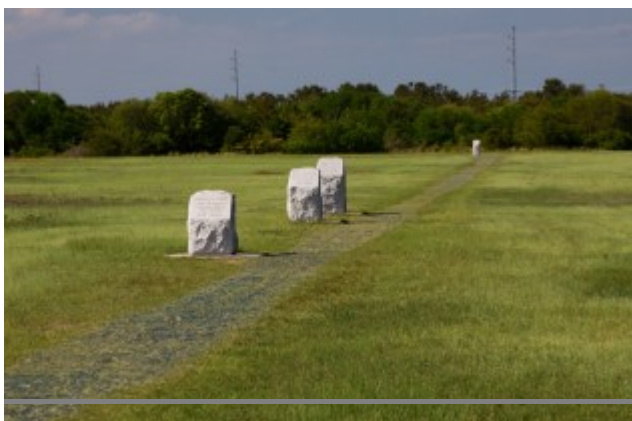
They made 4 flights that day, two by each of the two

brothers, each progressively longer.

There is a granite boulder marking the take off location of each of those 4 flights. There are also replicas of their 2 cars



at the end of each of those 4 flights. There are also replicas of their 2 cars at the same locations.





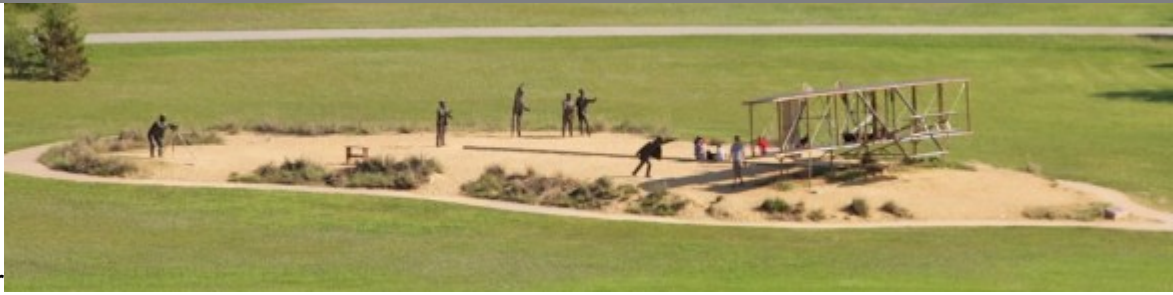
The Memorial is simply done and for an aviation buff like

me, quite moving.

The day we were there was beautiful, with a stiff breeze blowing from the north at exactly the right direction for the original flight.

One can just imagine ...





~ Hector

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