

# The Wright Brothers - The First flight!

On December the 17<sup>th</sup> 1903 Wilbur and Orville Wright flew for the first time



The world would never be the same again.

# The Wright Brothers Early Life

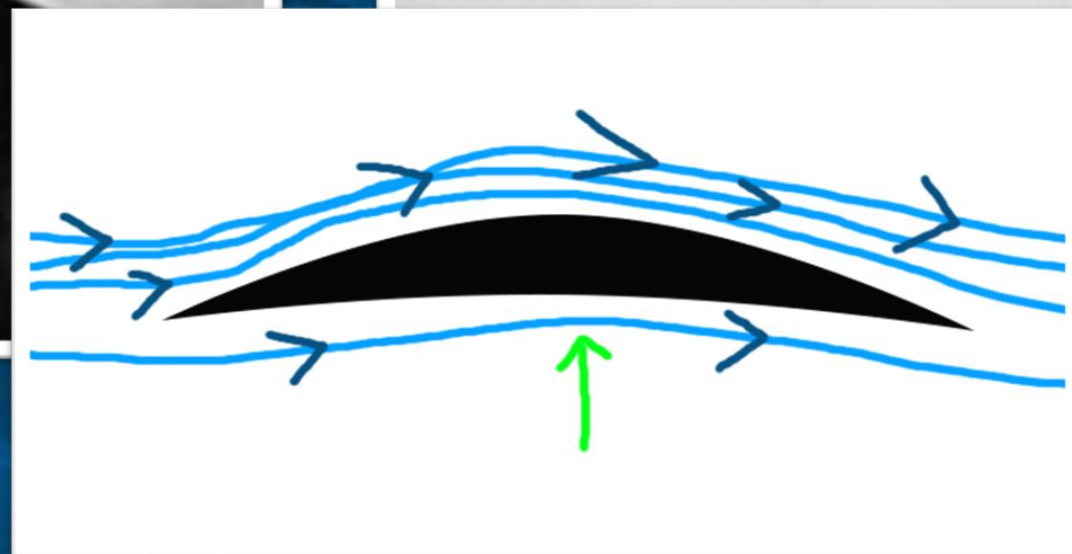
- Born in Dayton, Ohio: Wilbur (1867) and Orville (1871)
- Early fascination with mechanics – toy helicopter inspired their dreams
- Opened a printing business as teens; later transitioned to bicycles

The Wright Brothers grew up in a household buzzing with curiosity. Their father, a bishop, and their mother, a mechanically inclined woman, encouraged exploration. A toy helicopter powered by rubber bands ignited their imaginations. Though they started with printing and bicycles, their mechanical tinkering laid the groundwork for something much bigger: conquering the skies.



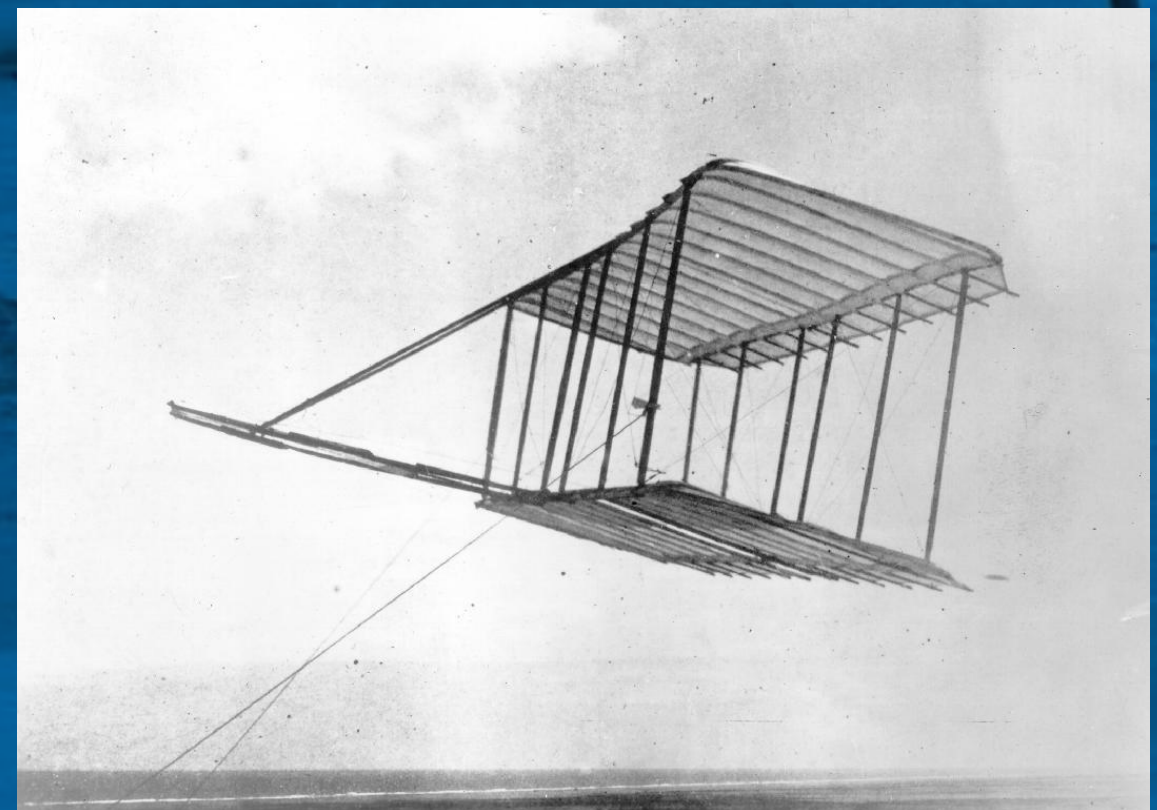
# The Dream of Flight

In the late 19th century, flight was the stuff of fantasy. The brothers were inspired by pioneers who dared to dream, especially Otto Lilienthal who used Bernoulli's principle of pressure to glide. But unlike others, Wilbur and Orville believed the real challenge was control. They spent hours observing birds, realizing that mastery of pitch, roll, and yaw was crucial to navigating the skies. They then started building gliders with limited success.



## The Breakthrough 1899.

The Wright brothers consider methods to twist the wings of an aircraft like a bird to change the angle of the wing, that way increasing the lift on one side of the aircraft while decreasing the lift on the other and that would make a turn. All the methods they can imagine, however, seem too heavy or too complex. But in June Wilbur Wright sells a customer a bicycle inner tube in a small rectangular box. Wilbur notices that when he squeezes together the opposing corners, the box assumes a helicoidal twist. In his mind's eye, he sees the top and the bottom of the box as the wings of a biplane with the ends twisting in opposite directions.

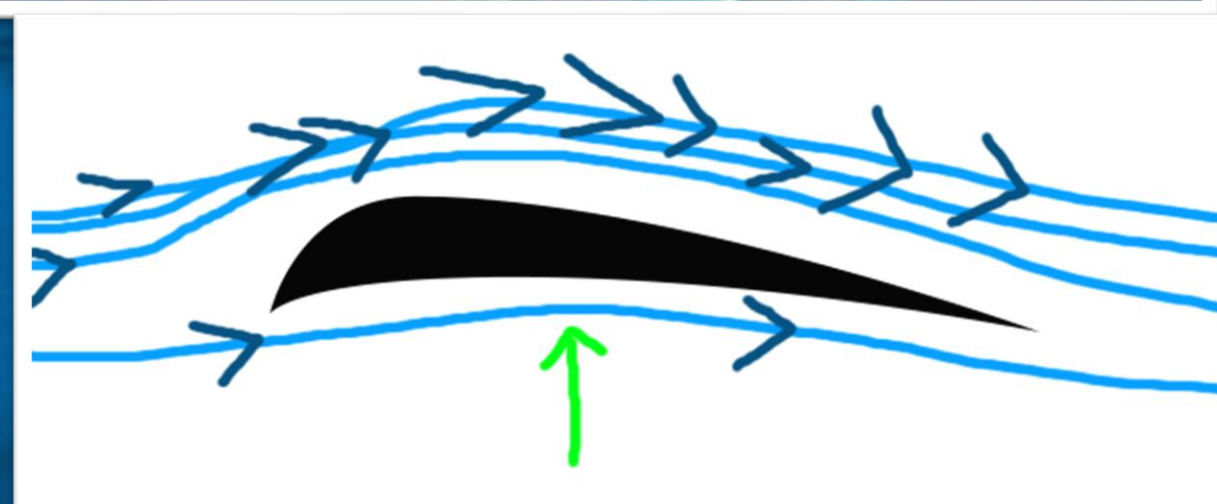
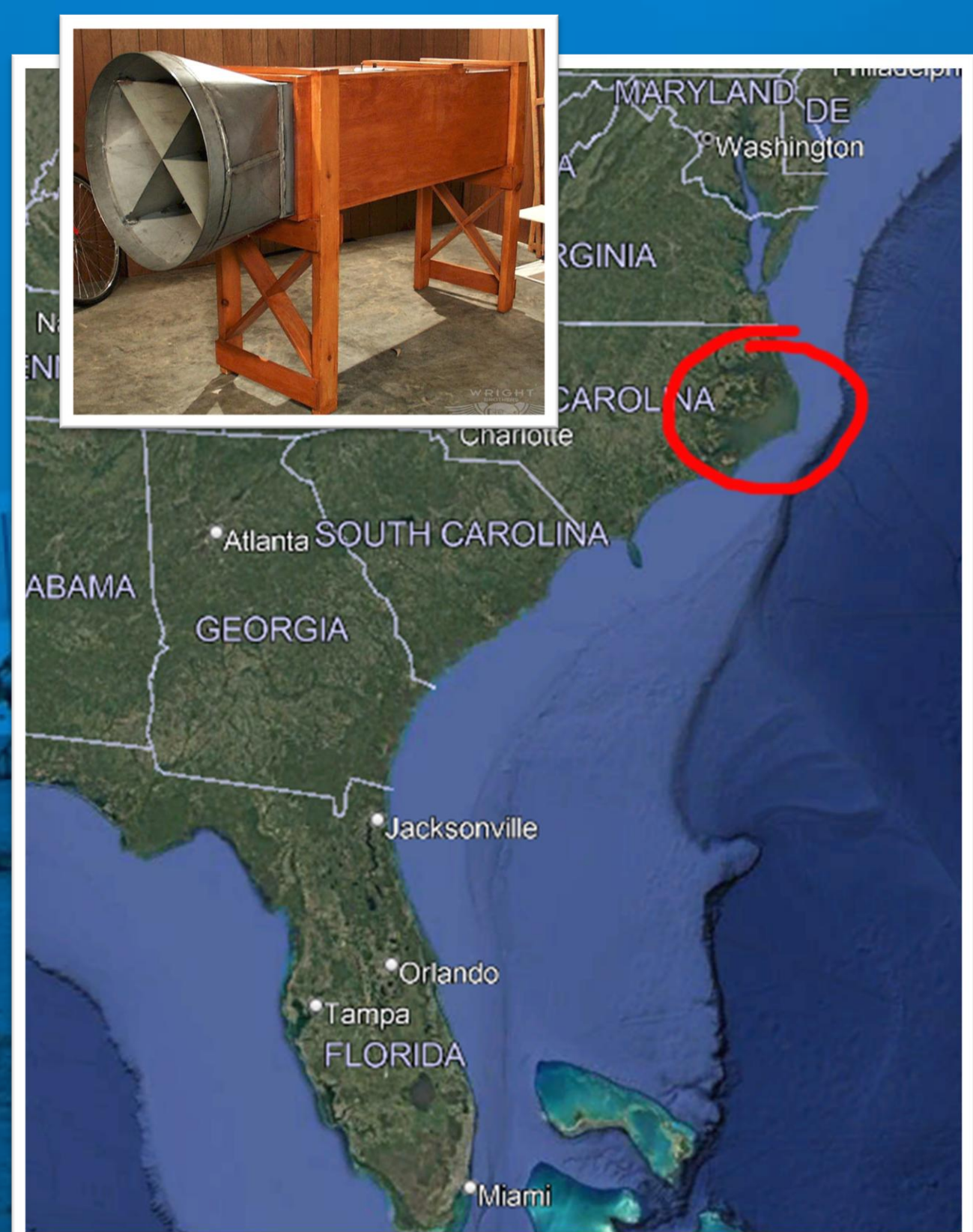


He builds a 6 foot replica of the box with control line and it works! He can steer!

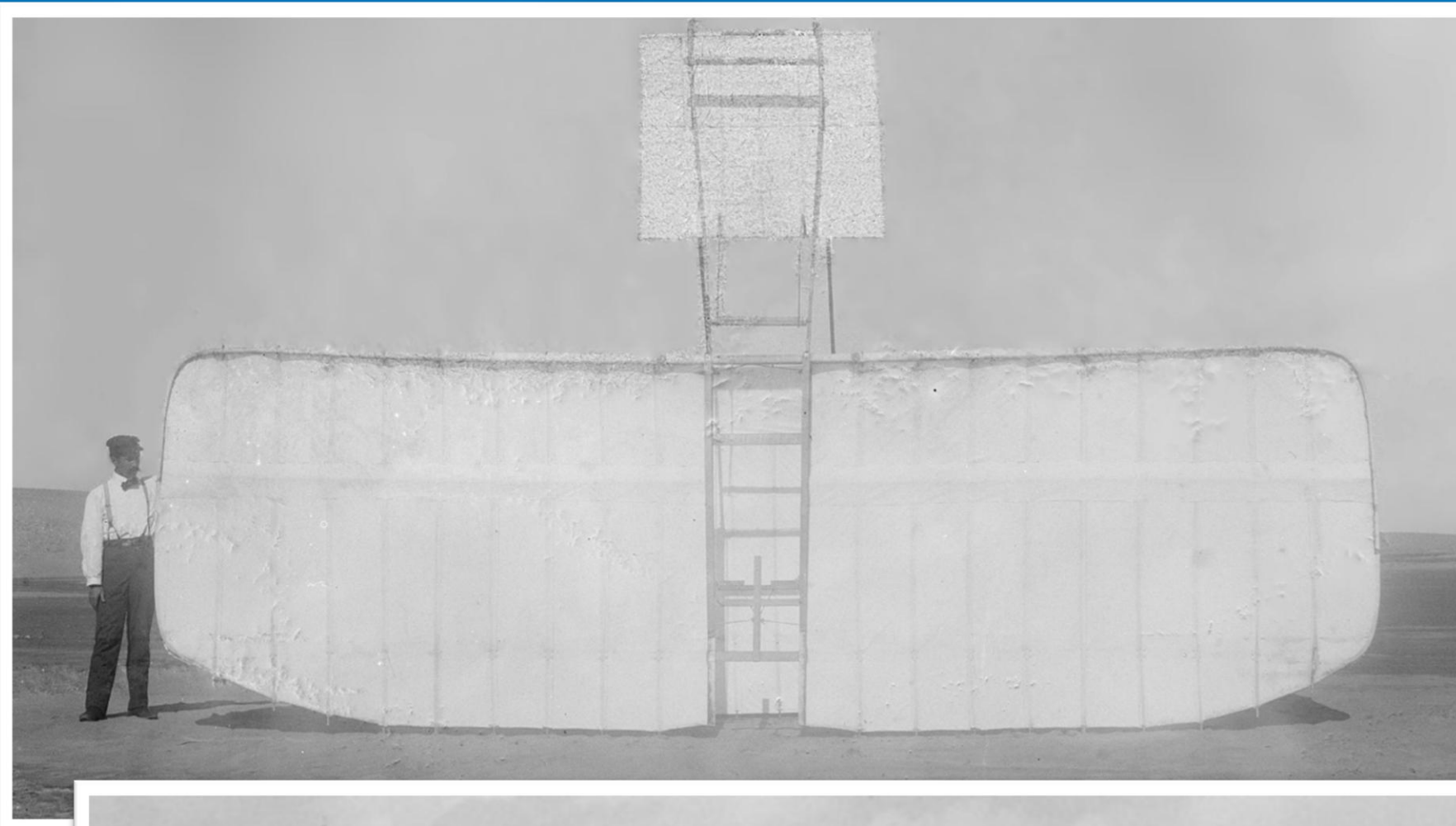
## Kitty Hawk - Real progress

Now to build a life-size working glider! In pursuit of steady winds and soft landings, the Wright Brothers studied maps and locations until finally settling on Kitty Hawk North Carolina to continue experiments.

That was a journey of 700 miles and several trips by train and boat! With a glider in parts! But that's how dedicated they had become. Kitty Hawk had constant stiff sea breezes and a nice soft sand to land on. Between 1900 and 1902, they built three gliders, each better than the last. They also built a homemade wind tunnel that allowed them to test and perfect their wing designs. They realised that the top of the aero foil should not be at the centre, but at the front of the wing! This is still used in aircraft today! For a couple of Bicycle makers, this was engineering ingenuity at its finest!



# Kitty Hawk - Real progress



*Left - The 1901 Glider (nose pointing up)*

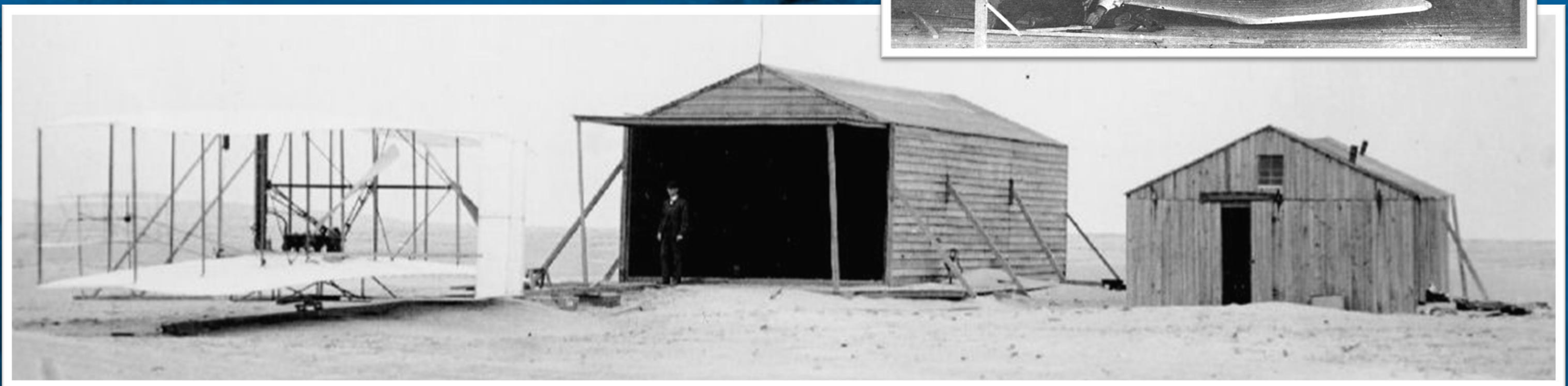
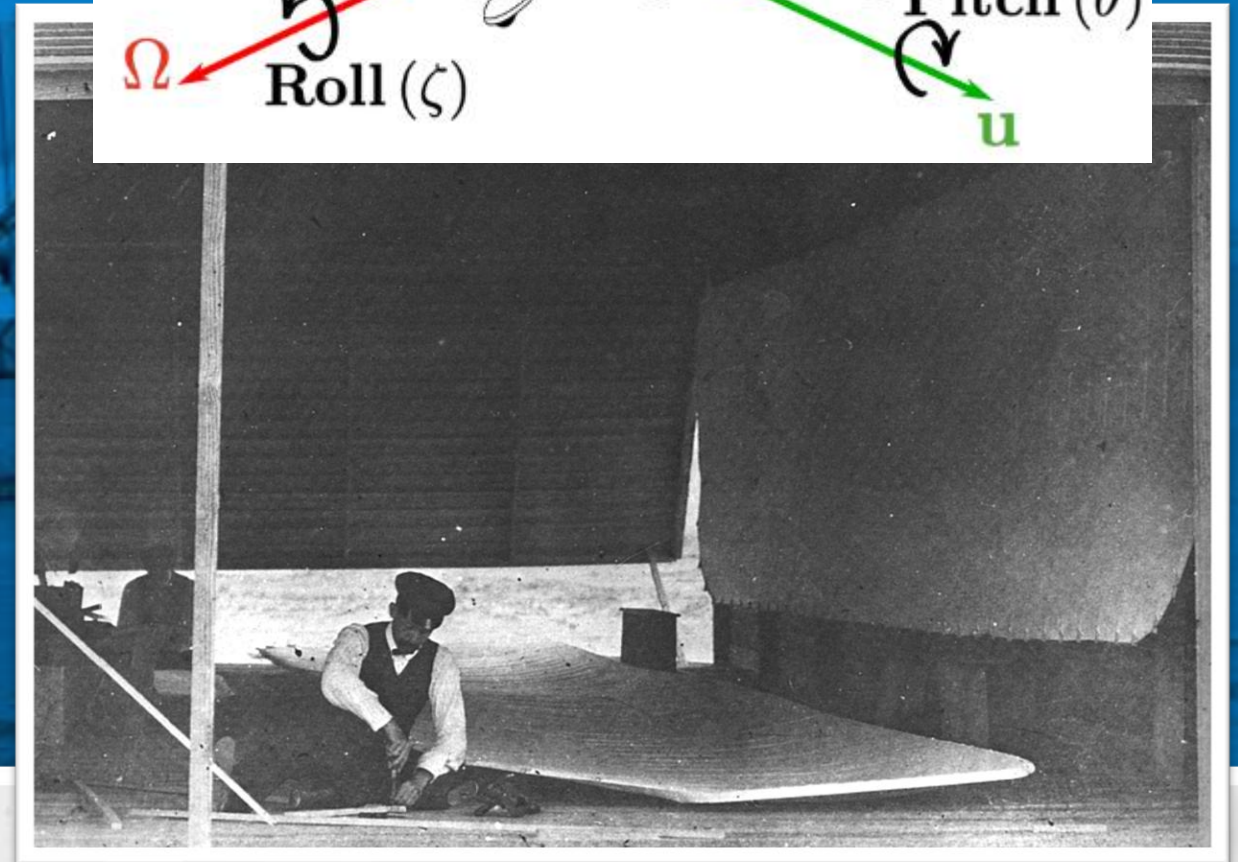
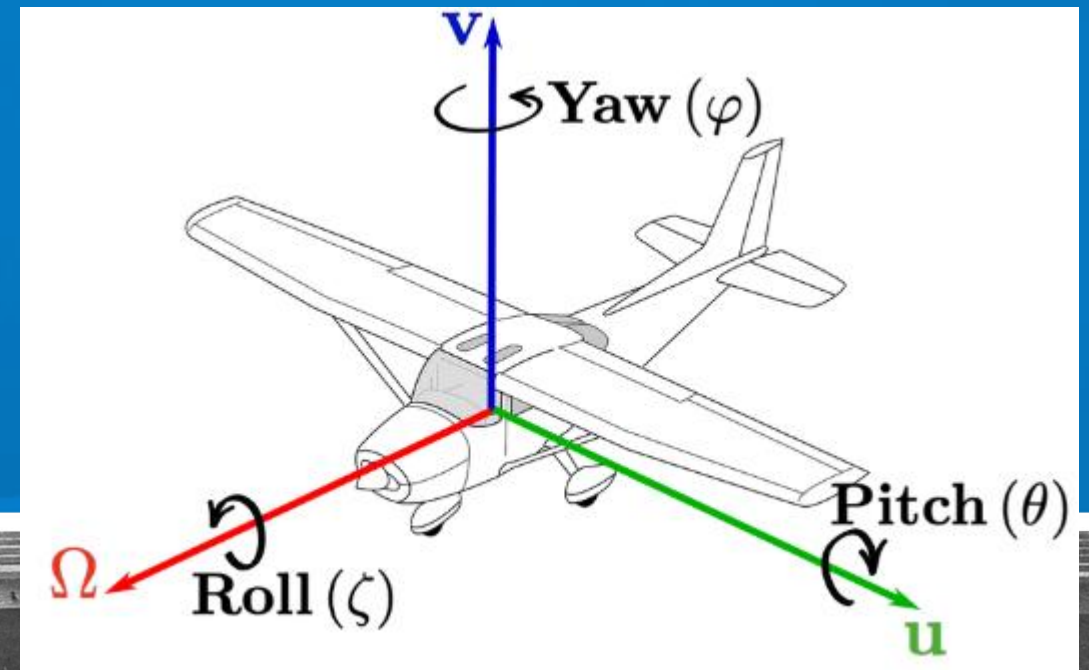
*Bottom - Wilbur Wright on the glider just after landing, its skid marks visible behind it.*



# A reliable control system!

Two problems remained. In 1903 Engines with enough power were way too heavy and still they needed to go up and down not just left and right! The Wright Brothers' breakthrough came with adding (what they called) elevators and a rudder! This three-axis control system, solving the problem of stability, still used today, was Roll, Pitch and Yaw.

Spending more and more time in Kitty Hawk, they upgraded the tent to two large sheds!



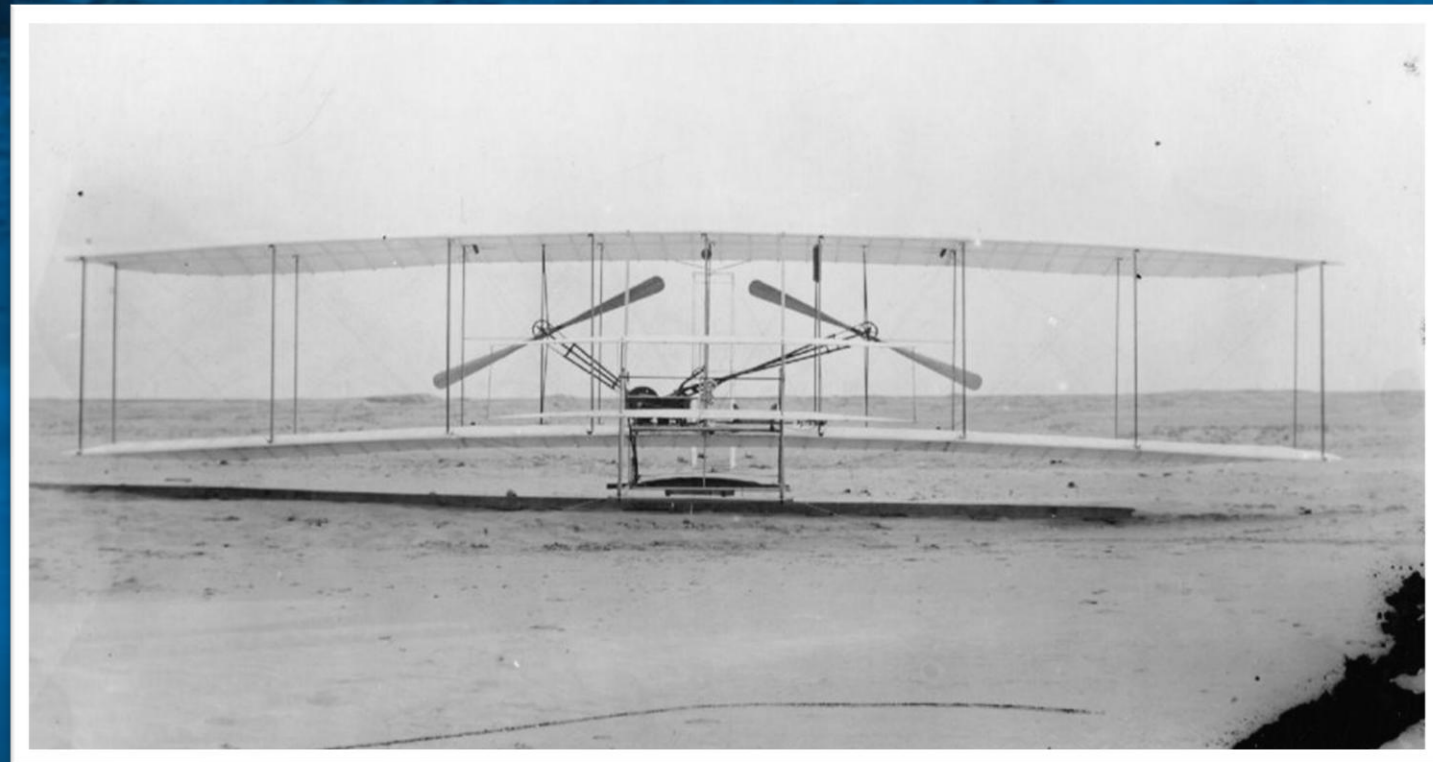
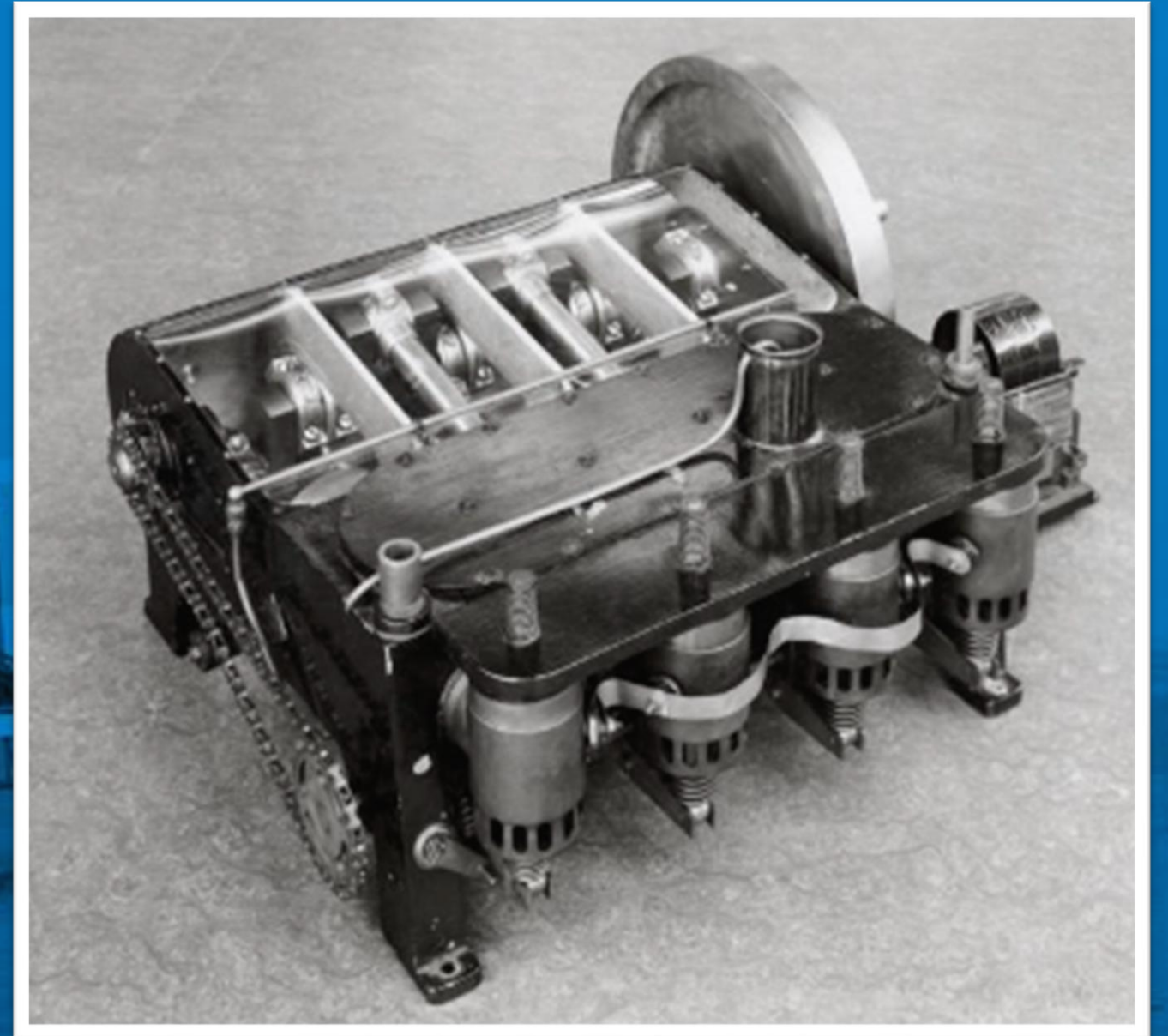
## Add **POWER!**

Now they needed sustained power to keep them in the air! But all engines were way too heavy! They were all from cars and would never be light enough.

Collaborating with their bicycle mechanic, Charlie Taylor, they built a lightweight engine made of Aluminium (Aluminum for the Americans) with enough power to give them what they needed in just 6 weeks! Then they built the "Wright Flyer" prototype and attached the engine to it. On December 17, 1903, they tried it for the first time....

*Top Right - The 1903 Wright Flyer Engine.*

*Bottom Right - The Wright Flyer ready for it's first flight.*





December 17<sup>th</sup>, 1903 - 10:35am



## So sudden fame worldwide awaits!

Well.... Actually no. They telegraphed the local paper in Dayton Ohio and the newspaper replied a flight of 58 seconds is not “newsworthy” and refused to print the story!

A telephone operator who was listening in, took the story elsewhere and gave a wildly exaggerated account! To the point that they were accused of making things up! They were described in the papers as “Liars, not Fliers!”

Ever the modest pair, they returned to Dayton to continue their experiments. Wait...what happened next? We will reveal how they – eventually – took the world by storm! But that is for next week! In part 2 of the Wright brothers!



**Congratulations!**

**You have completed the history of the:**

**Wright Brothers First Flight!**

***Homework.***

Build a model airplane! Or failing that; try the aerodynamic properties of a spoon in running water!

Send in your pictures to [history@nathanandhazel.com](mailto:history@nathanandhazel.com)