

History of Aviation

- Motivation from Birds Flight
- Ornithopters
- Montgolfier Hot-air Balloon
- Sir George Cayley
- Otto Lillienthal
- Wright Brothers



**For thousands of years,
people have looked at birds
flying in the sky and wished
they could fly, too.**

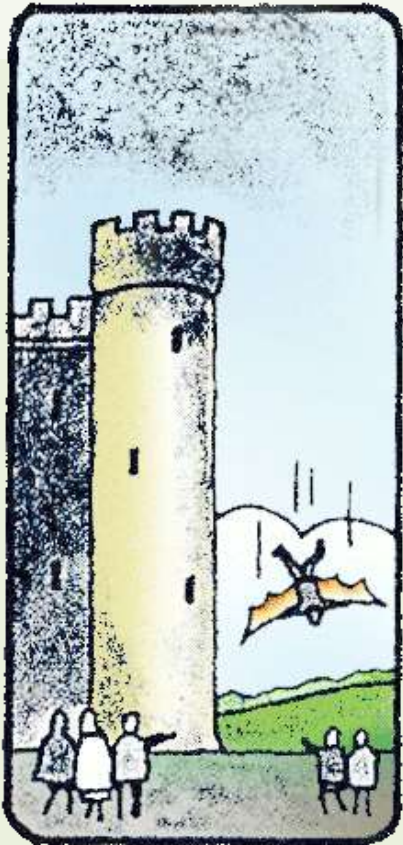
MOTIVATION FROM BIRDS FLIGHT

All early thinking of human flight centered on the imitation of birds.

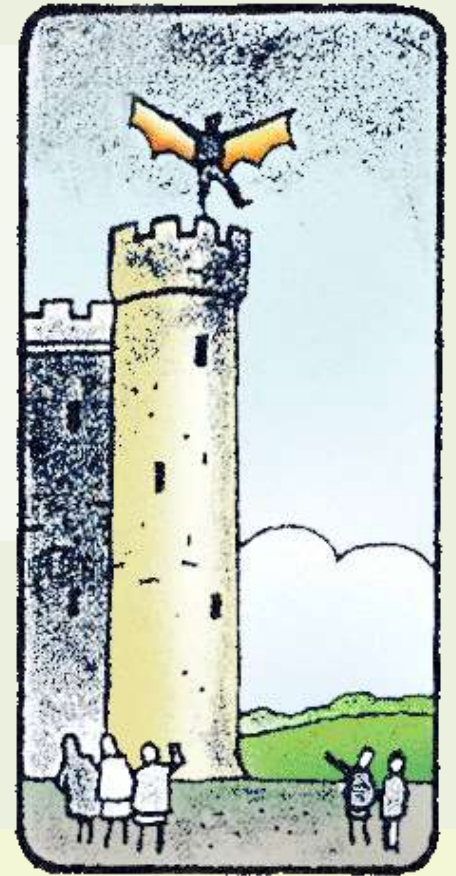


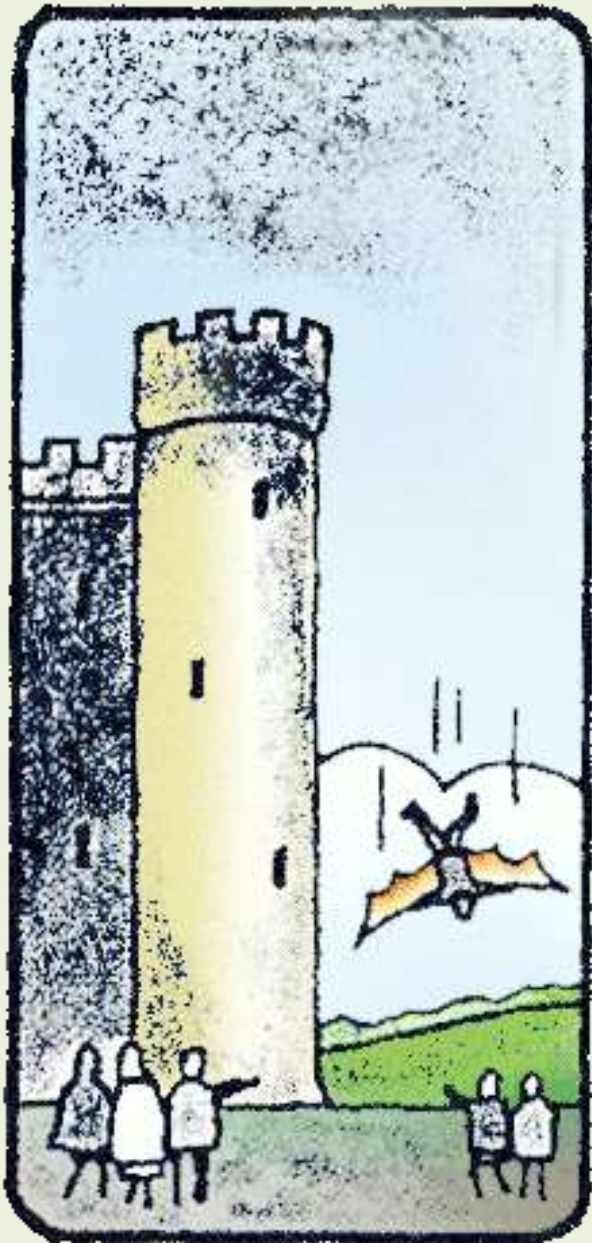
- Met with sometimes disastrous and always unsuccessful in leaping from towers or roofs, flapping vigorously.
- Greek myth of Daedalus and his son Icarus..... wings fastened with wax

For centuries, people have wanted to fly. At first, they tried to fly like birds.



They fixed on wings and flapped them like birds, hoping to fly.





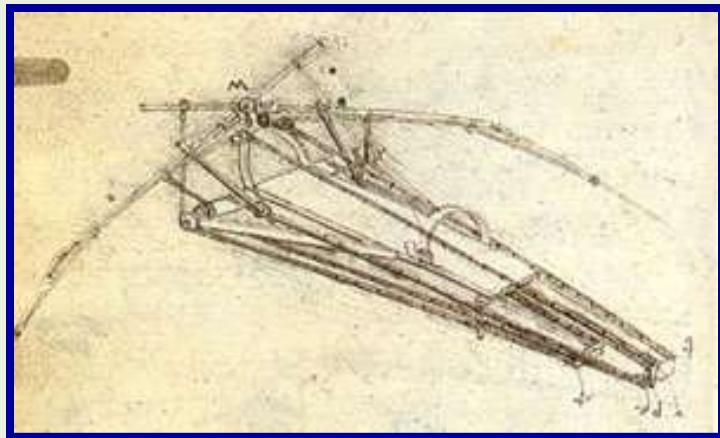
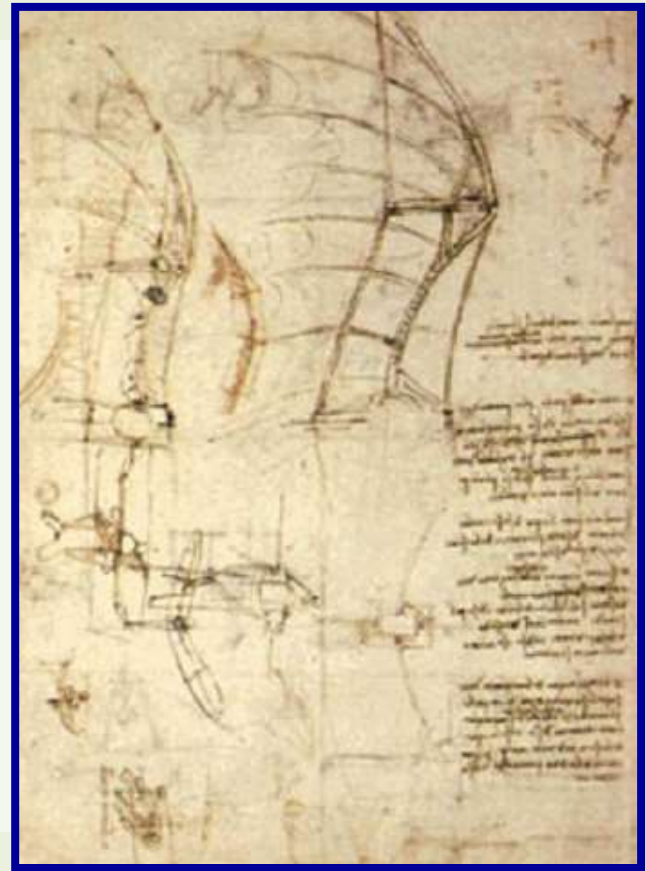
But people are too heavy and not strong enough to keep flapping big wings.



MOTIVATION FROM BIRDS FLIGHT

Ornithopters - Wings flapped up and down by various mechanical mechanisms, powered by some type of human arm, leg or body movement.

Leonardo da Vinci, a very famous artist, was born in Italy in 1452. He tried to solve the mystery of flying. Take a look at his flying machines.



IMITATION CAN LEAD TO MENTAL BLOCK

Balloons fly, too!

**When we blow up a
balloon with helium
gas, tie it up and let
go, it will fly.**

**200 years ago, a Frenchman
Joseph Montgolfier,
filled a large balloon with
gas. He fixed a large
basket to the balloon and
sent it up with a sheep, a
duck and a rooster in it.**



**They traveled 3 kilometers in eight
minutes before the balloon came
down.**

**A hot-air balloon has
3 important parts:**

- the envelope
- the burner
- the gondola

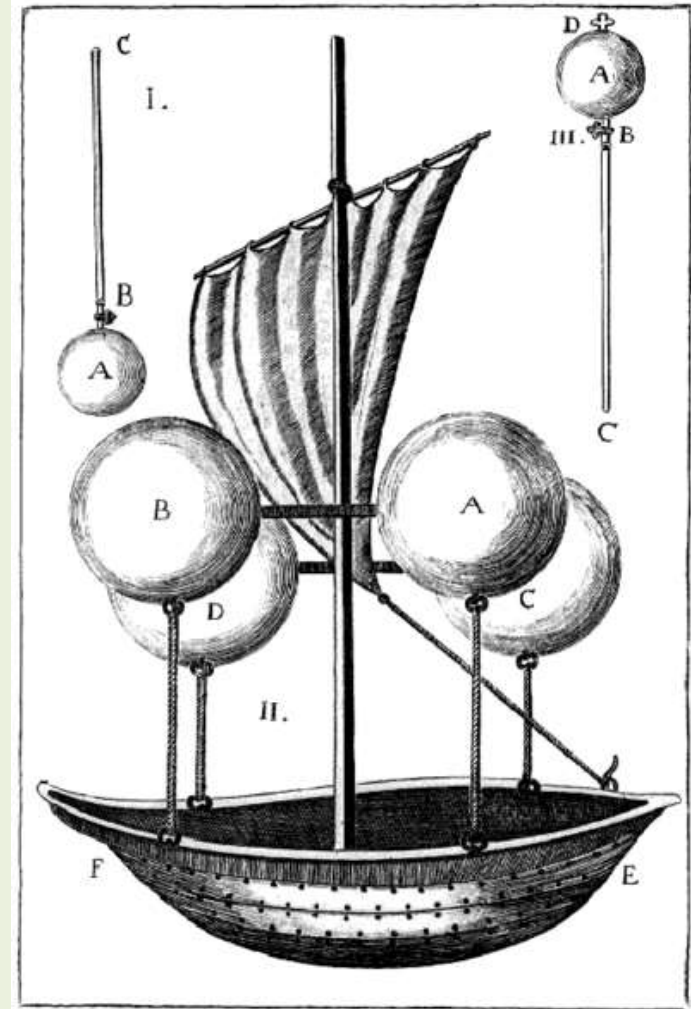






Early pioneers

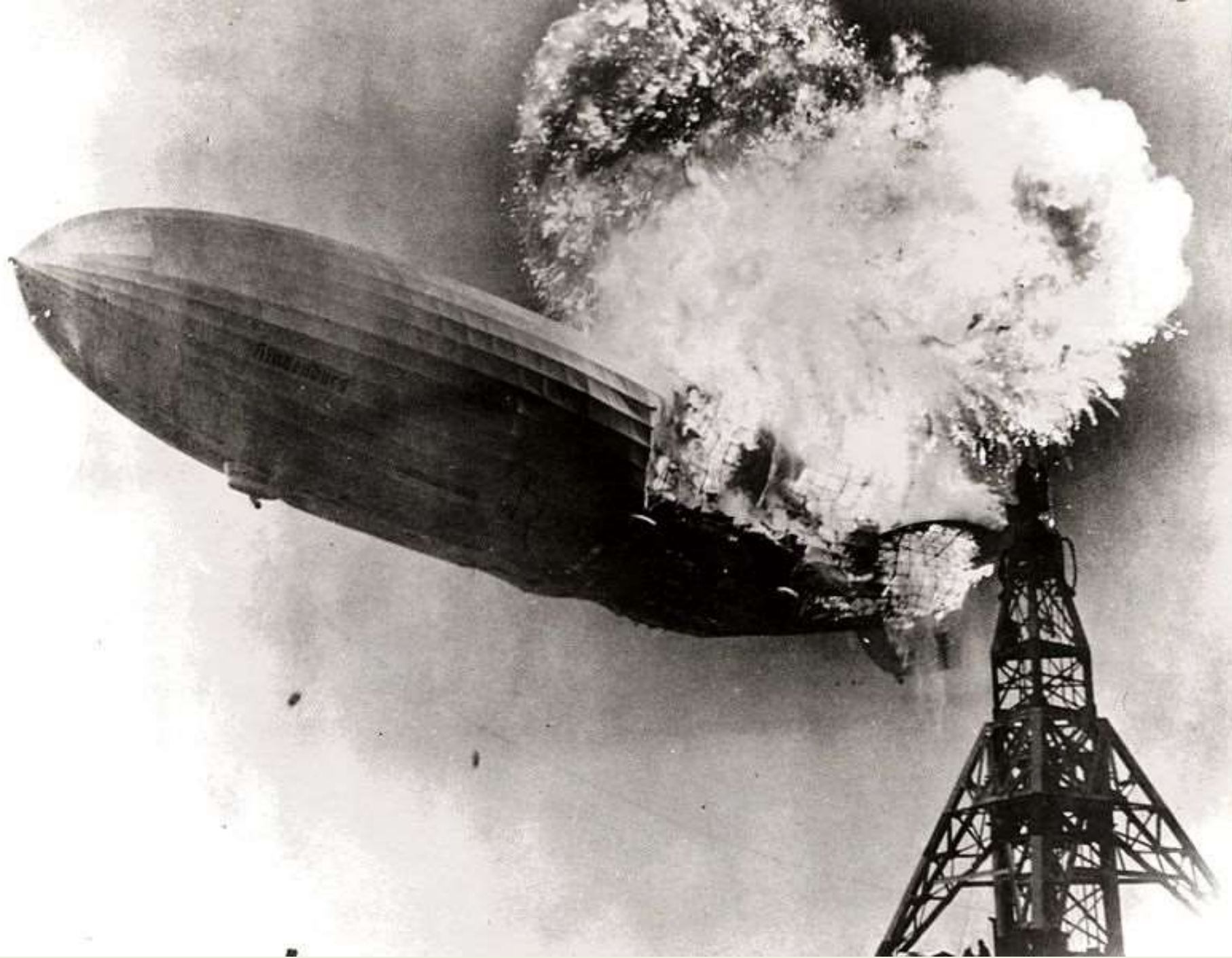
Francesco Lana de, in 1670 he published a description of an "Aerial Ship" supported by four copper spheres from which the air was evacuated.



A more practical dirigible airship was described by Lieutenant Jean Baptiste Marie Meusnier











MONTGOLFIER HOT-AIR BALLOON

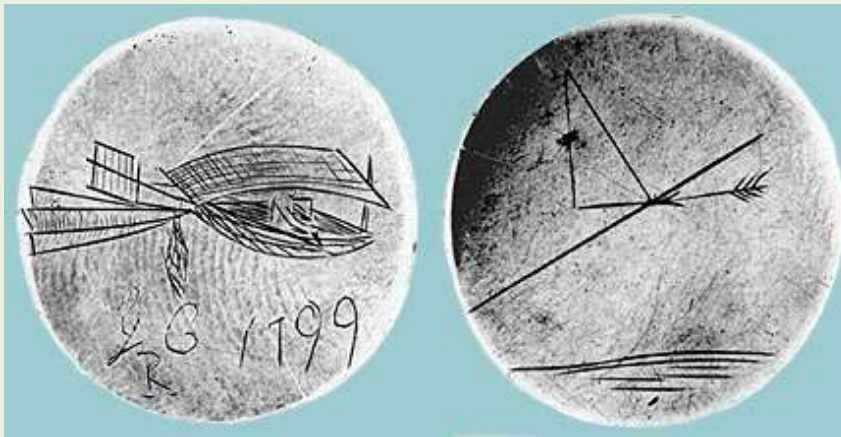
Lighter than air (or) heavier than air



First aerial voyage in history - 21 Nov 1783
Near Paris

SIR GEORGE CAYLEY (1773 – 1857)

- Separated the concept of lift from propulsion
 - . Fixed wing for lift
 - . Separate mechanism for propulsion
- Horizontal and vertical tail for stability



In the year 1799

SIR GEORGE CAYLEY (1773 – 1857)

- A surface inclined at some angle to the direction of motion will generate lift

e.g., Kite

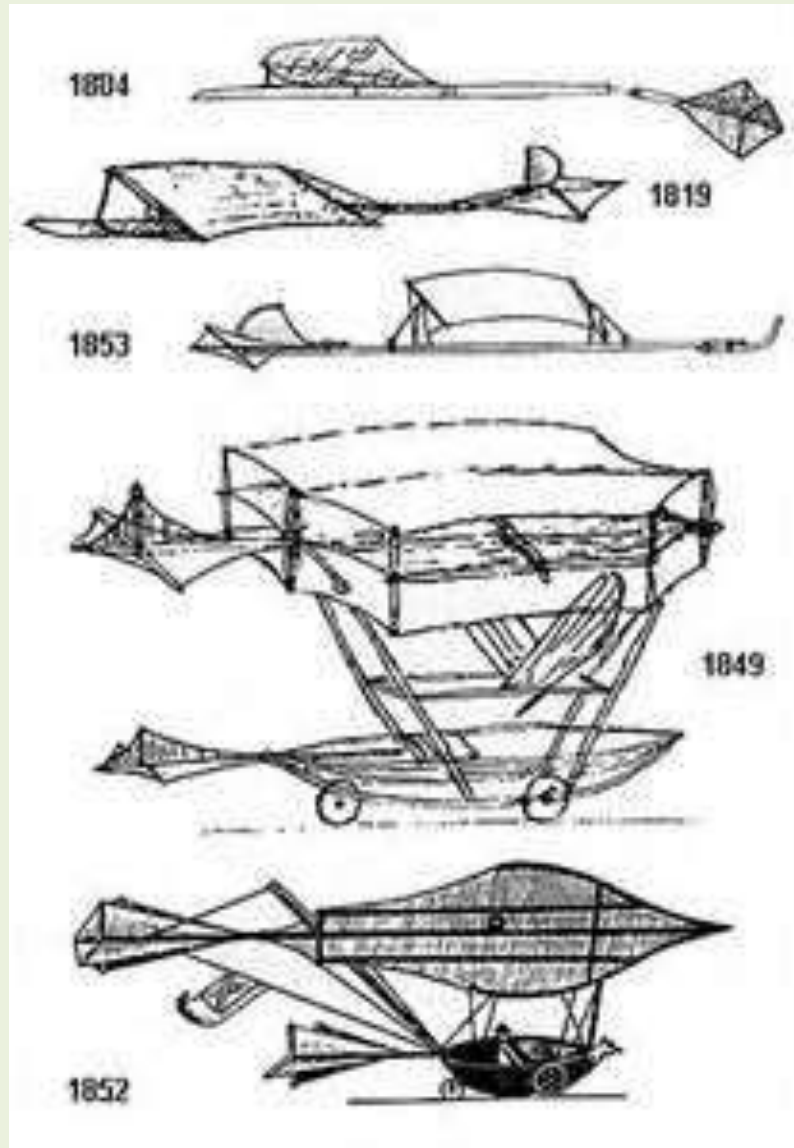


- A curved surface will do this more efficiently than a flat surface.

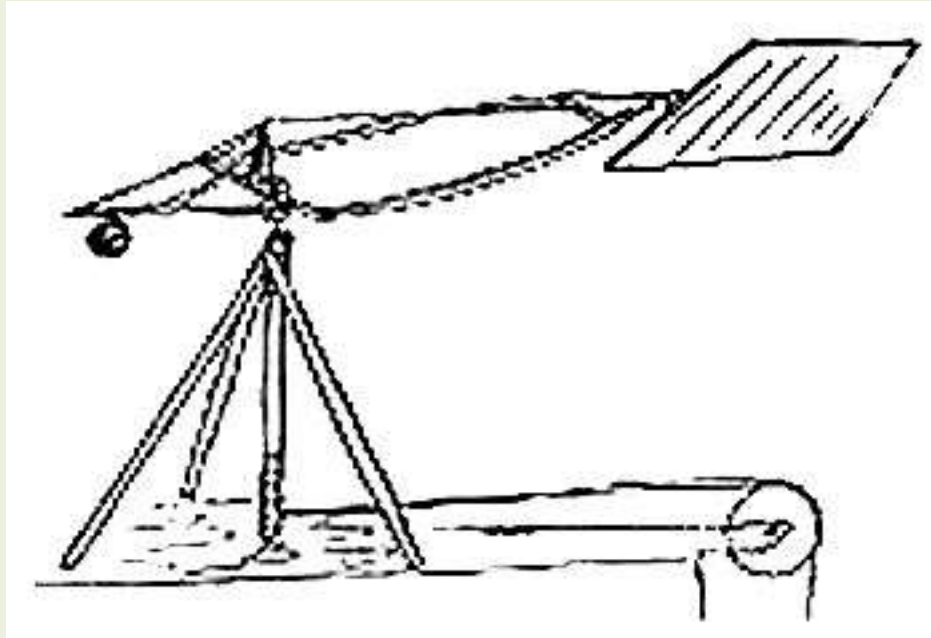
The first heavier-than-air craft capable of controlled free-flight were gliders.

A glider designed by Cayley carried out the first true manned, controlled flight in 1853.

SIR GEORGE CAYLEY (1773 – 1857)

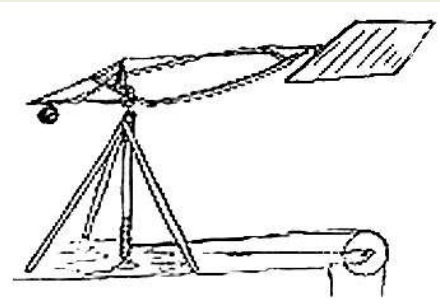


SIR GEORGE CAYLEY (1773 – 1857)



Whirling Arm Apparatus for Testing Aerofoils

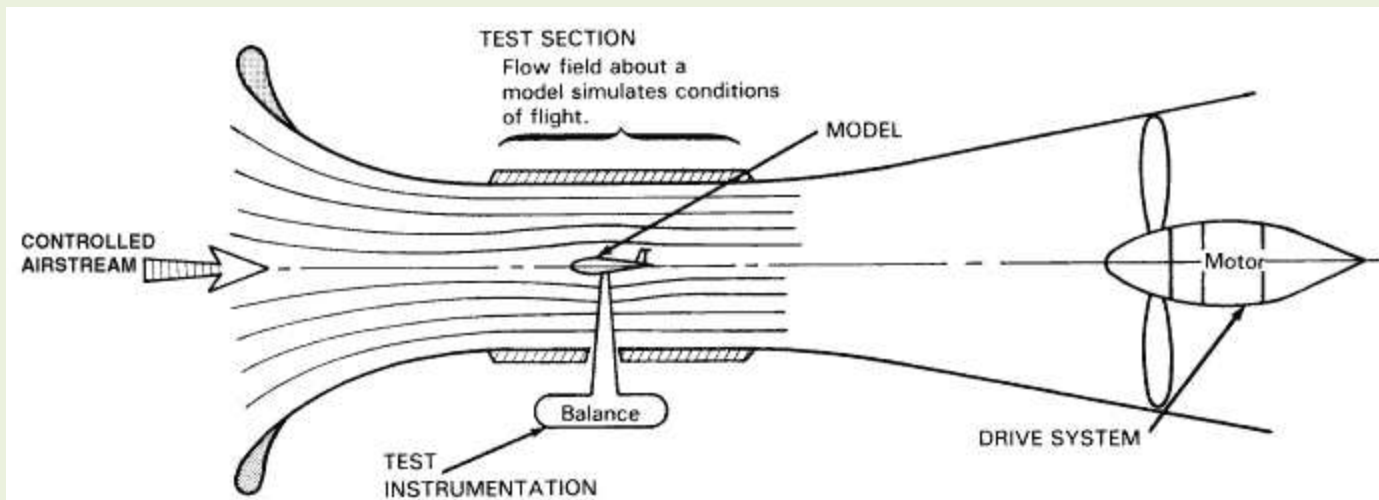
SIR GEORGE CAYLEY (1773 – 1857)



Whirling Arm Apparatus for Testing Aerofoils



Wind Tunnel



SIR GEORGE CAYLEY (1773 – 1857)



- Parent of modern aviation
- First true Aeronautical Engineer

OTTO LILIENTHAL (1848 – 1896)

THE GLIDER MAN

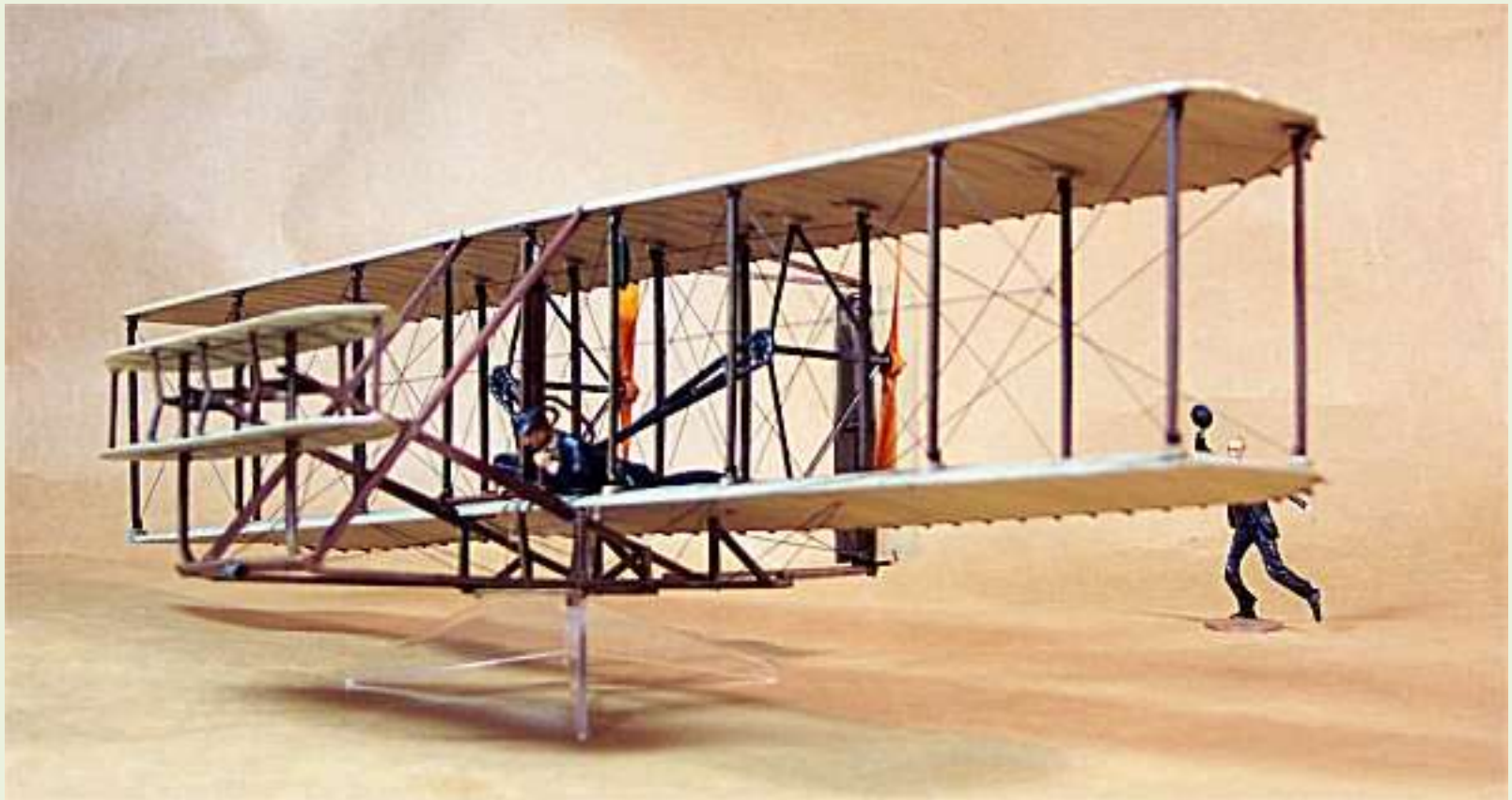


INVENTORS OF MODERN AEROPLANE



Wilbur (1867 – 1912) and Orville (1871 – 1948) Wright

INVENTORS OF MODERN AEROPLANE



WRIGHT BROTHERS ACHIEVEMENT

First heavier than air, powered,
manned and sustained flight on
17 December 1903

- 12s
- 120 ft distance

WRIGHT BROTHERS ACHIEVEMENT

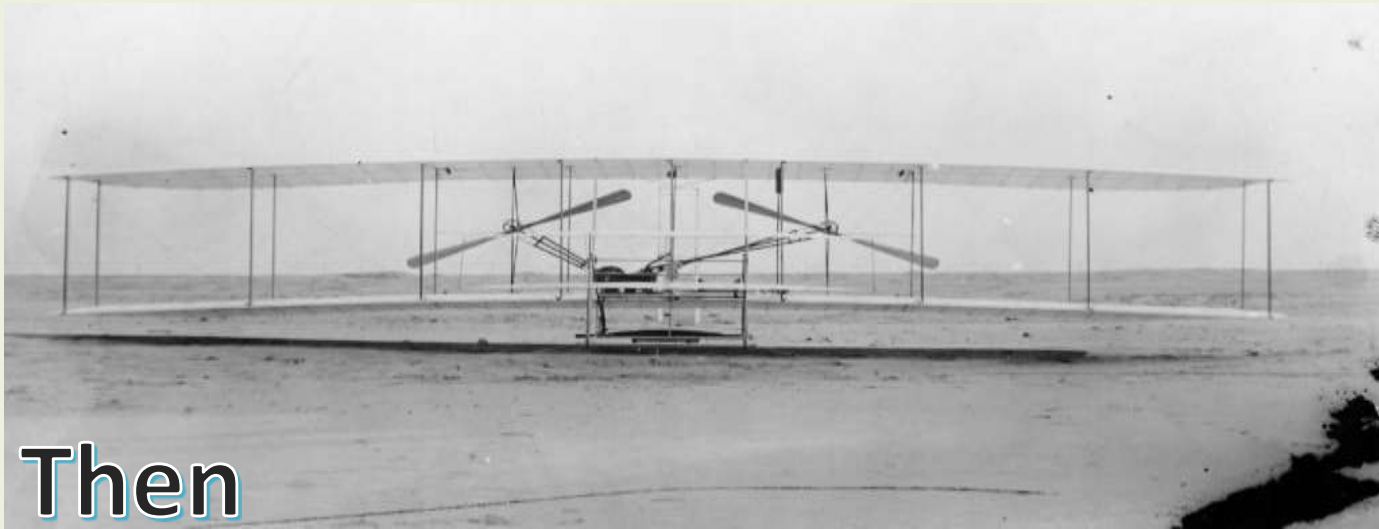


17 December 1903

“The first in the history of the world in which a machine carrying a man had raised itself by its own power into the air in full flight, had sailed forward without reduction of speed, and had finally landed at a point as high as that from which it started”.

INVENTORS OF MODERN AEROPLANE





PRESENT AEROSPACE ENGINEERING

