Planes

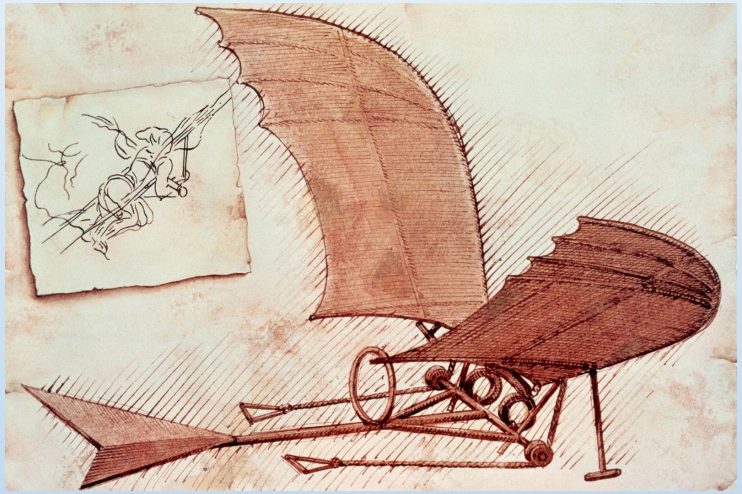
BBHHS

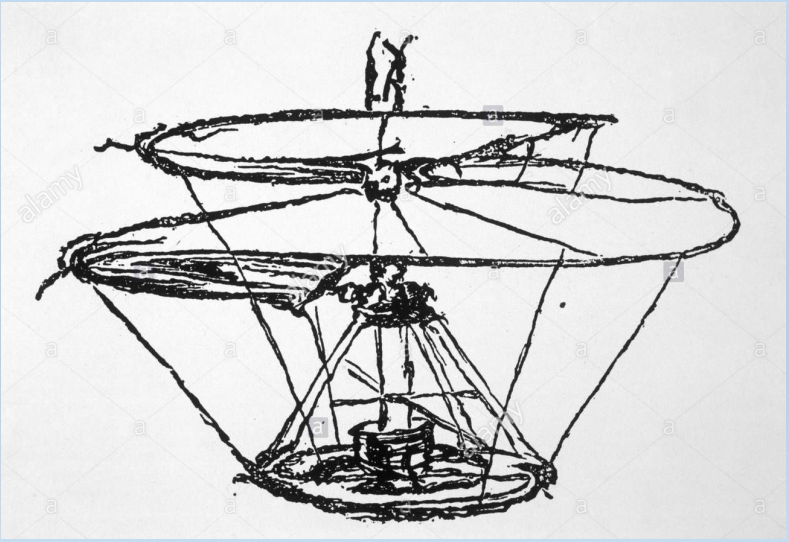
Goubeaux

How many people have been on a plane?

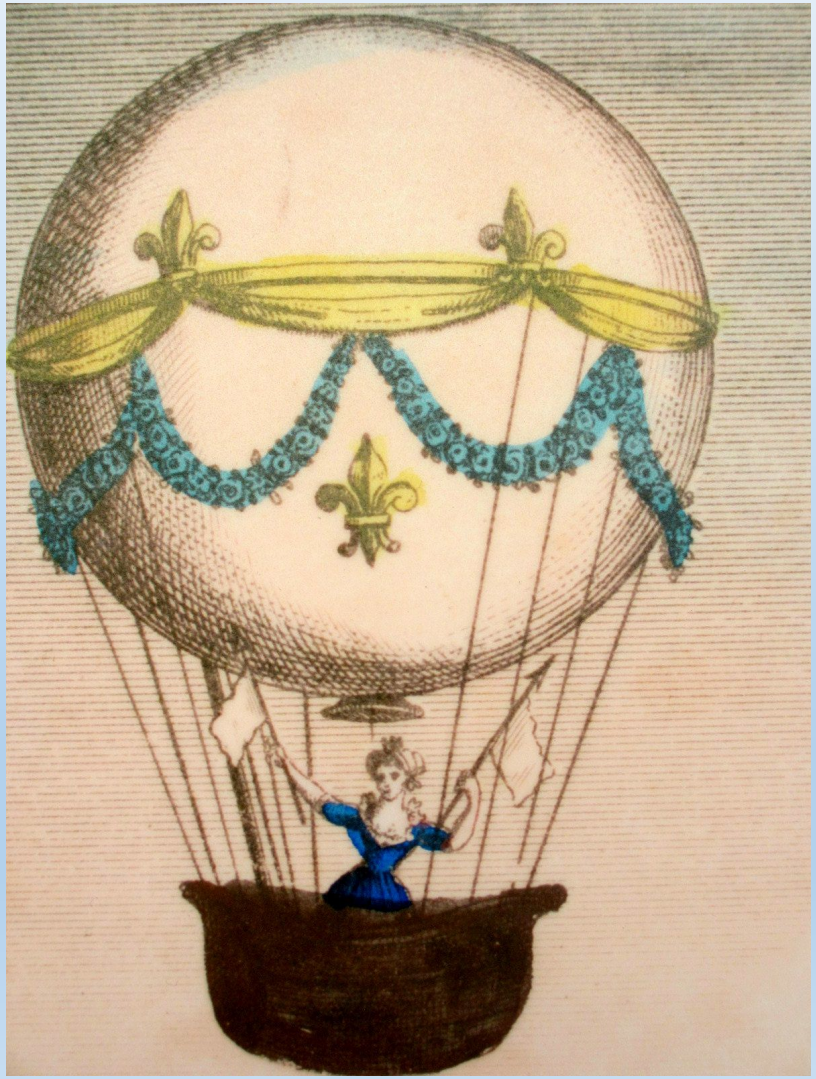

HISTORY OF
AVIATION

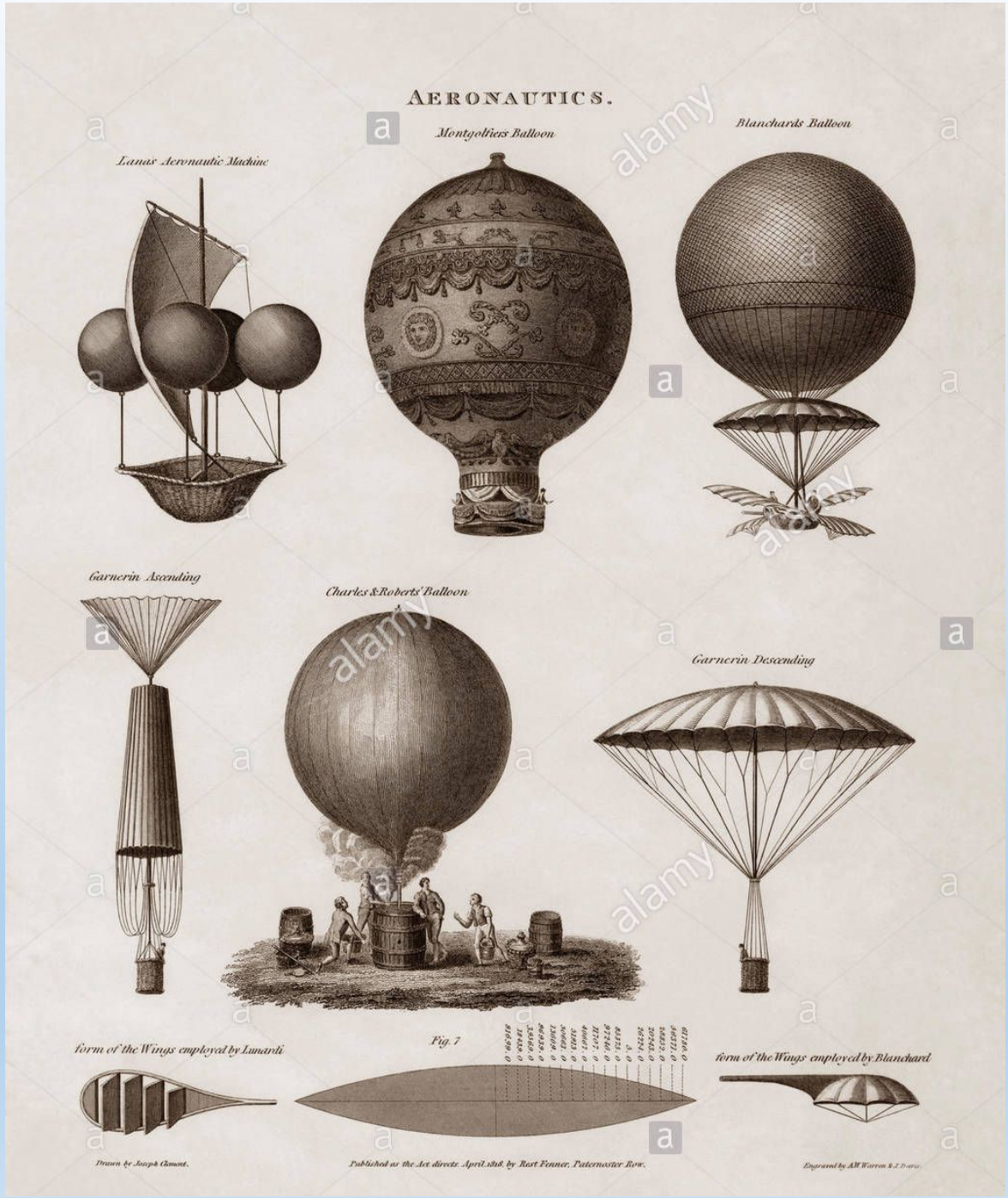
Early Flight Attempts + DaVinci





Hot Air




AERONAUTICS.
Lanas Aeronautic Machine
Montgolfiers Balloon
Blanchards Balloon
Garnerin Ascending
Charles & Roberts' Balloon
Garnerin Descending
Form of the Wings employed by Lunardi
Fig. 7
Form of the Wings employed by Blanchard
Drawn by Joseph Clement.
Published as the Act directs April 28th. by Rest Fenner, Paternoster Row.
Engraved by AH Warren

Wright Brothers 1903

- 1903 Wilbur and Orville Wright of Dayton, Ohio, complete the first four sustained flights with a powered, controlled airplane at Kill Devil Hills, 4 miles south of Kitty Hawk, North Carolina. On their best flight of the day, Wilbur covers 852 feet over the ground in 59 seconds. In 1905 they introduce the Flyer, the world's first practical airplane.

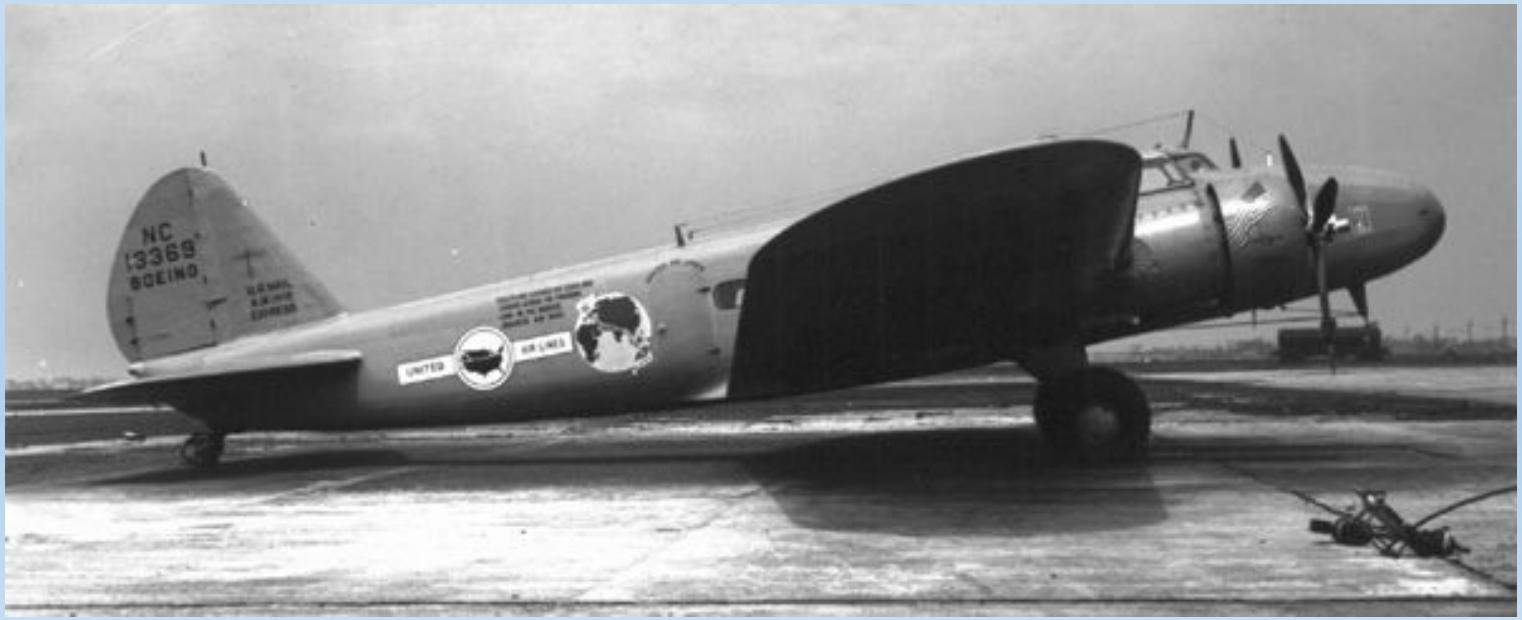

WORLD WAR I AIRCRAFT

First nonstop solo flight across the Atlantic

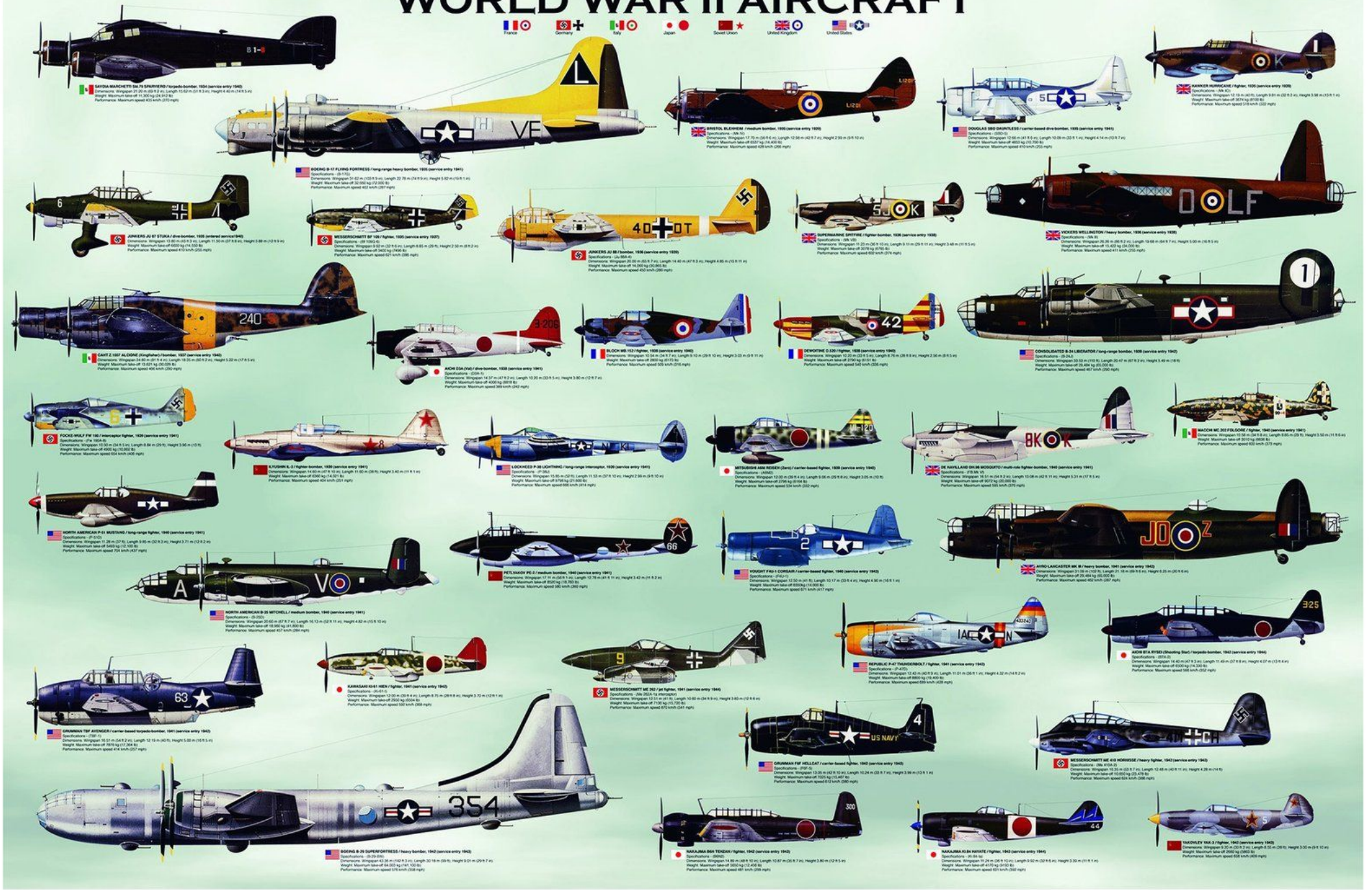
- On May 21 1927, Charles Lindbergh completes the first nonstop solo flight across the Atlantic, traveling 3,600 miles from New York to Paris in a Ryan monoplane named the Spirit of St. Louis.

First Modern Commercial Airliner

- In February 1933, Boeing introduces the 247, a twin-engine 10-passenger monoplane that is the first modern commercial airliner. With variable-pitch propellers, it has an economical cruising speed and excellent takeoff. Retractable landing gear reduces drag during flight.

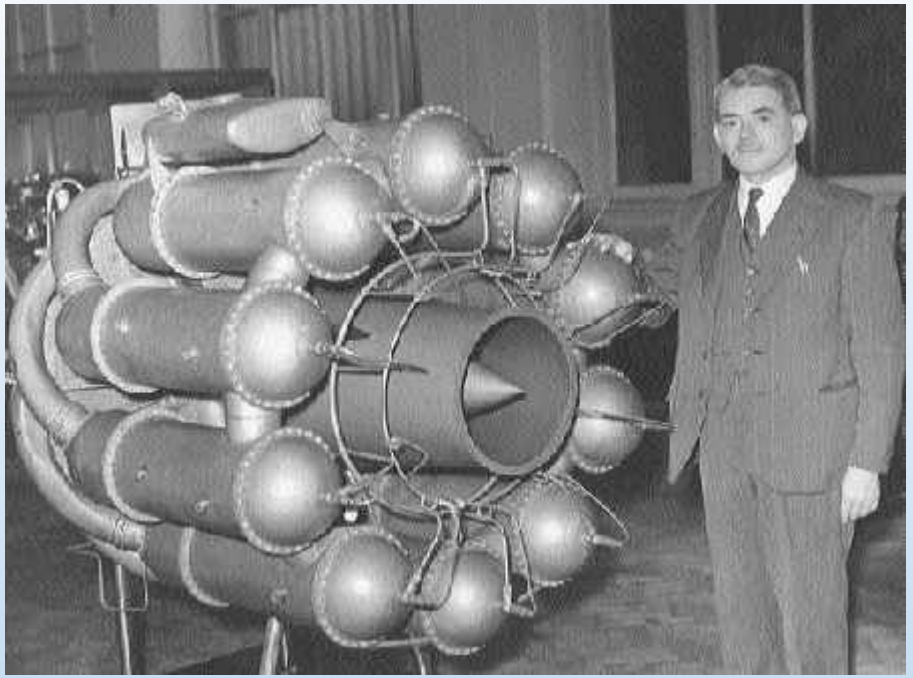


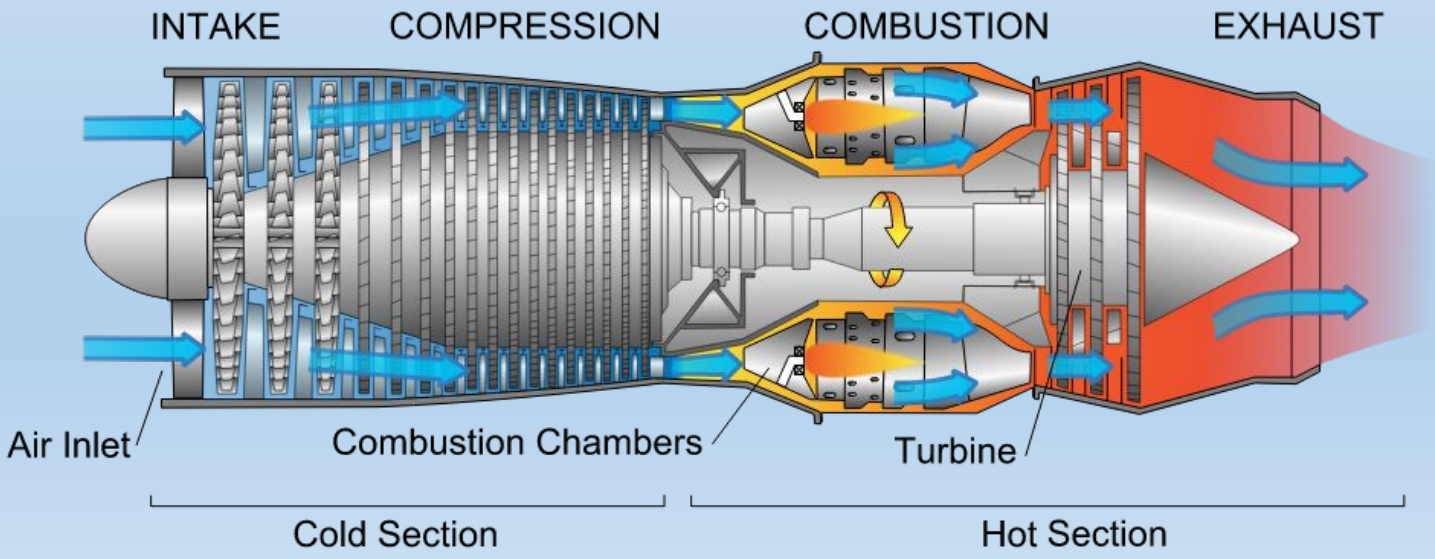
WORLD WAR II AIRCRAFT



Jet Engine

- 1937 Jet engines Designed & Tested

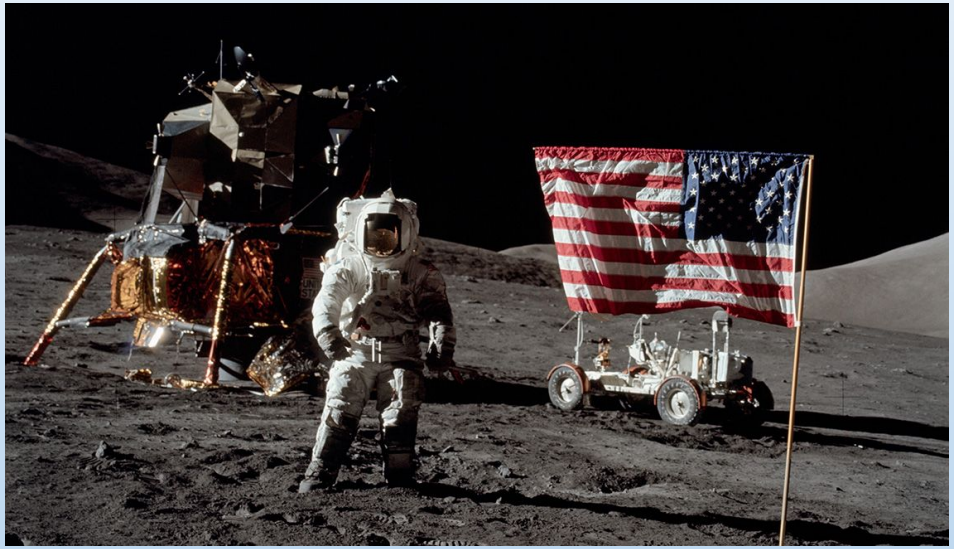




Flight Is Cool

- 1947 U.S. Air Force pilot Captain Charles "Chuck" Yeager becomes the fastest man alive when he pilots the Bell X-1 faster than sound for the first time on October 14 over the town of Victorville, California. (770 mph)

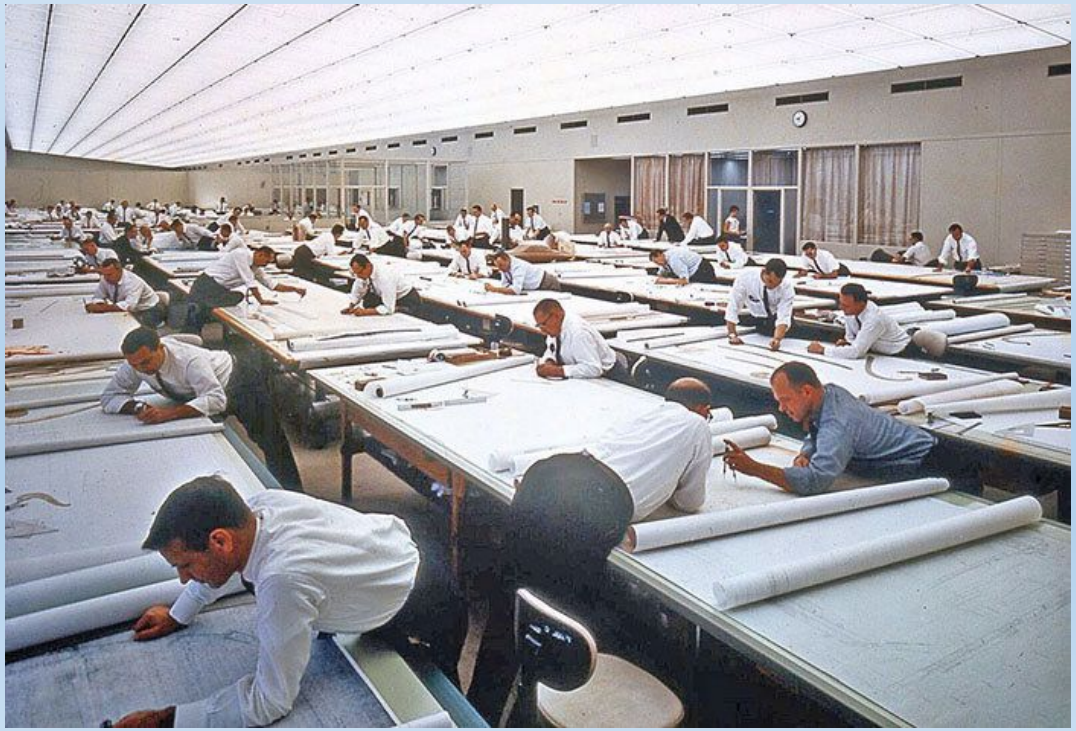
Flight Is Cool (Astronauts)



Boeing 747 (1969)

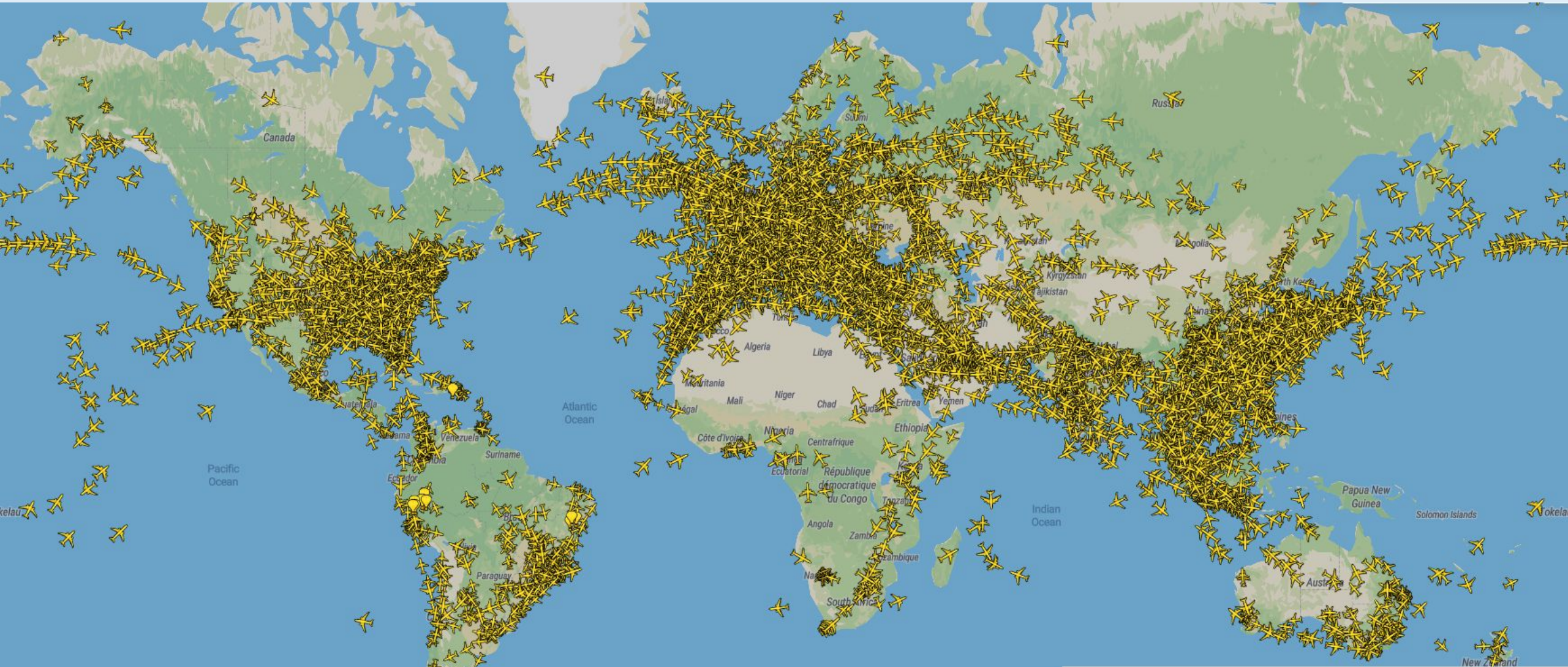
First Aircraft Produced Using CAD

- In 1995 Boeing debuts the twin-engine 777, the biggest two-engine jet ever to fly and the first aircraft produced through computer-aided design and engineering.



Modern Military

Aircraft Wed 11/20 @6:46am



National Aeronautics and Space Administration

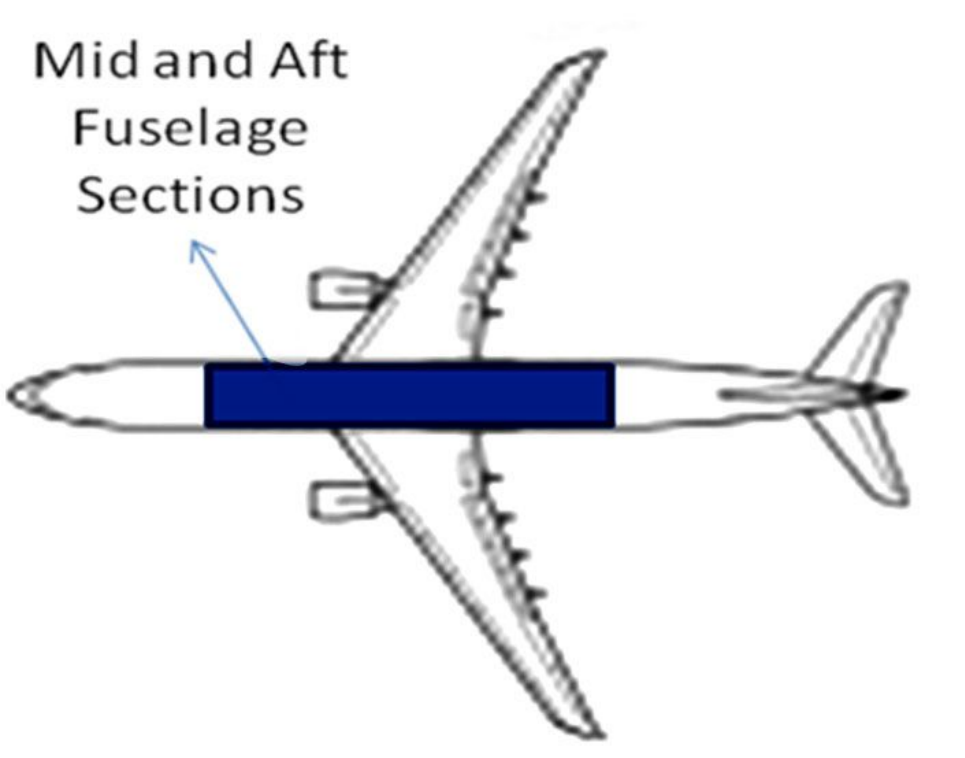
Airplane Parts and Function

Cockpit

- The compartment for the pilot and sometimes also the crew in an aircraft

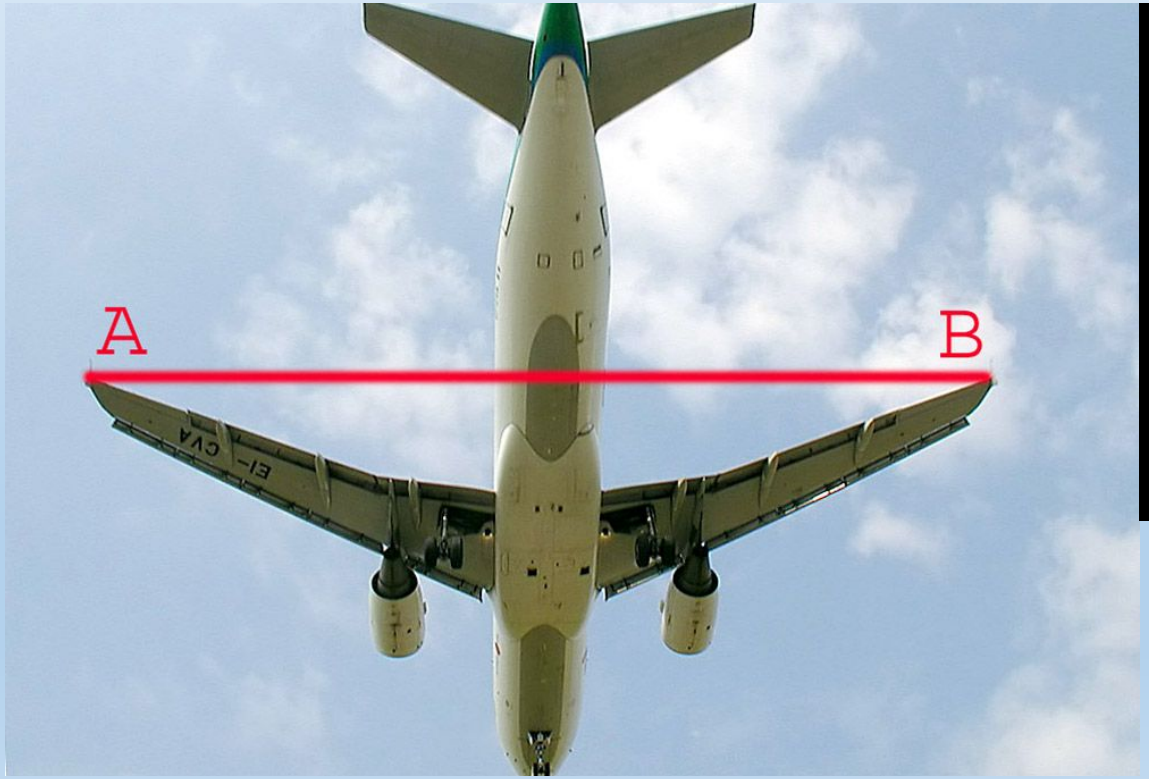
Fuselage

- The main body of an aircraft. This is where the wings are attached, and on a large airliner where passengers ride.



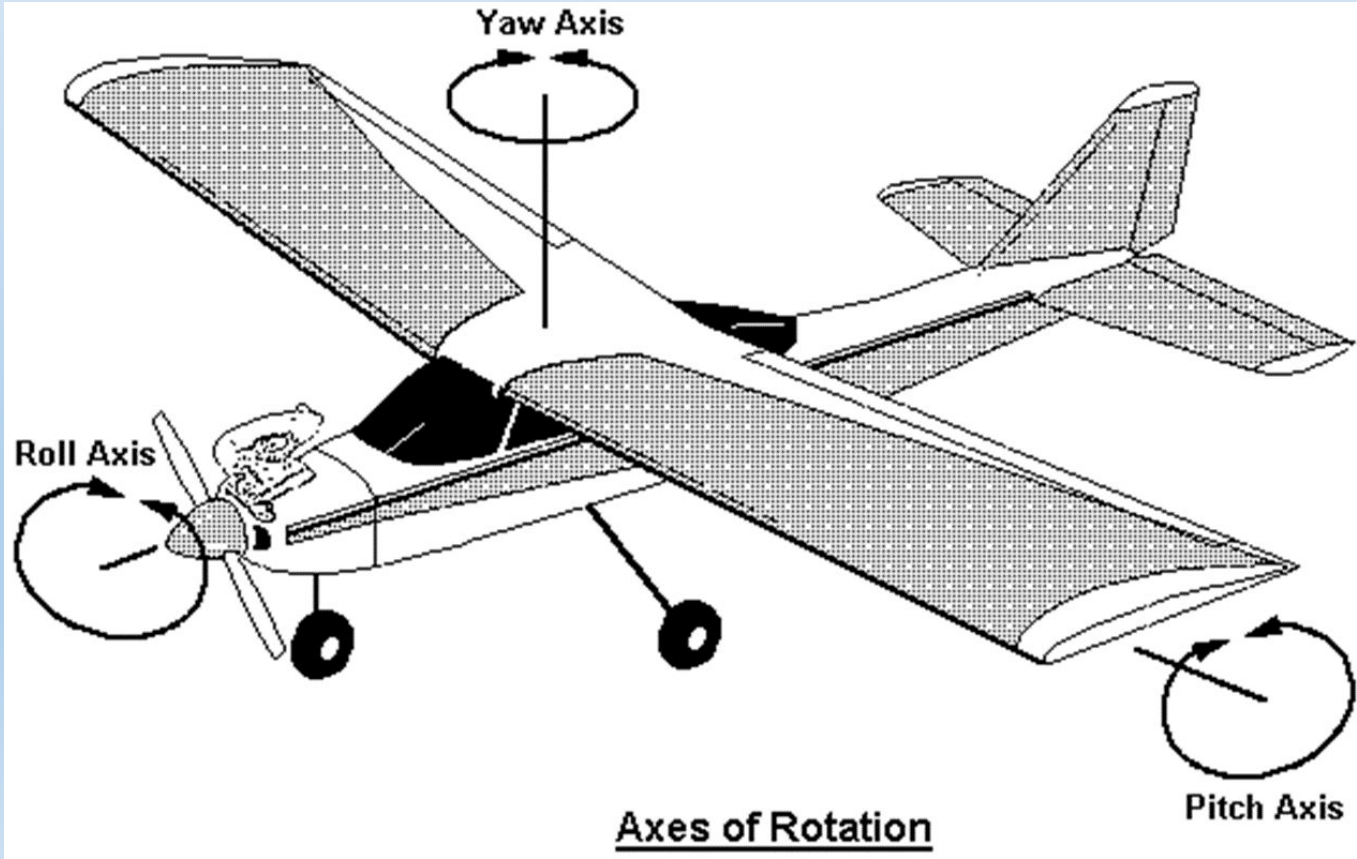
Wingspan

- The linear distance between the extremities of an airfoil.



Rotations

- YAW – are movements to the left or right.
- PITCH - is movements up or down.
- ROLL – is to bank left or right.



Axes of Rotation

Tail Wing

- The stabilizers' job is to provide stability for the aircraft, to keep it flying straight. The Tail Wing prevents an up-and-down motion of the nose (pitch). The Elevators are located here.

Rudder

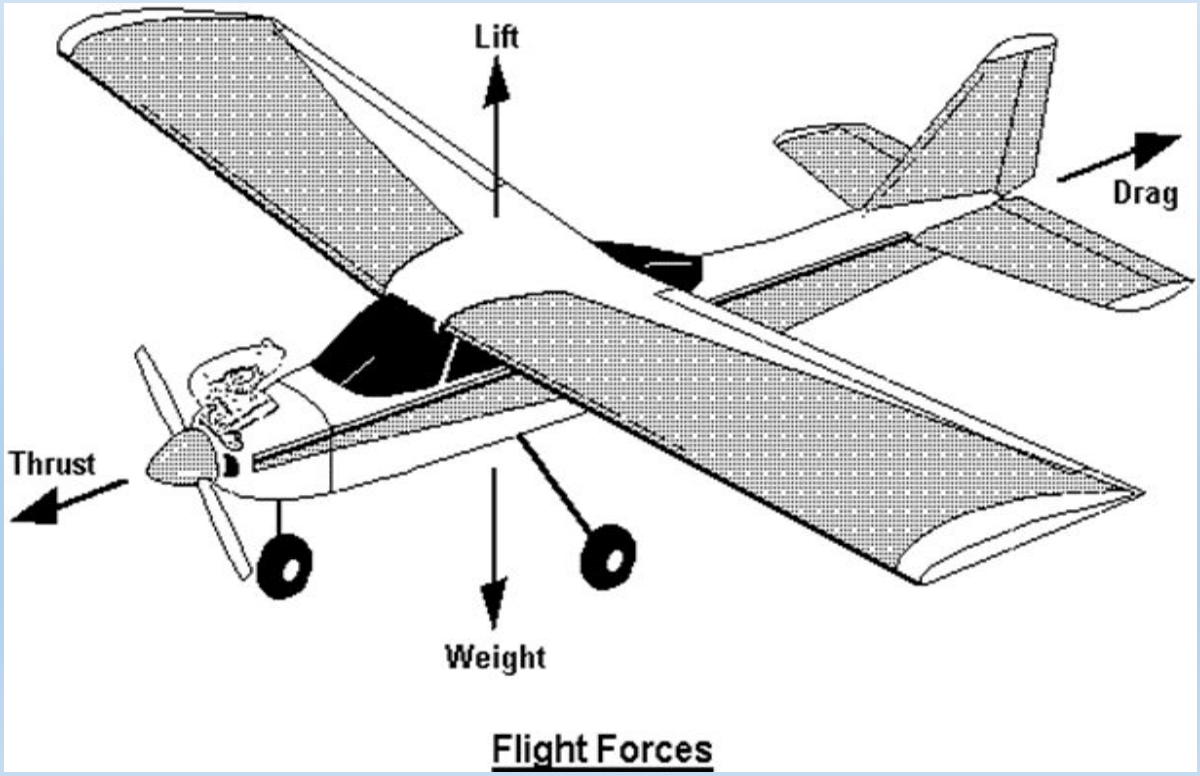
- A hinged vertical airfoil mounted at the tail of an aircraft and used to make horizontal course changes. (yaw) (Blue)

Aileron

- Two flaps located on the back side of each wing to control the roll of an airplane.

Four Main Forces

- An airplane in flight is the center of a continuous tug of war between four forces: lift, weight or gravity force, thrust, and drag.



Lift

- The energy of air on the top and bottom of the wing create LIFT which keeps the airplane UP.

Thrust

- The pulling power of the propeller and the strength of the motor create THRUST which pulls the airplane FORWARD.

Weight

- The weight of the airplane is acted upon by GRAVITY which pulls the plane DOWN toward the earth’s surface.

Drag

- The displacement of the air by the plane itself, and the friction of the plane’s surfaces against the air create DRAG which holds the airplane BACK.

Air Flow

- When the wings of an airplane are pulled through the air (by the motor and propeller) they create LIFT. This “LIFT” is actually a “bulge” in the flow of the air.
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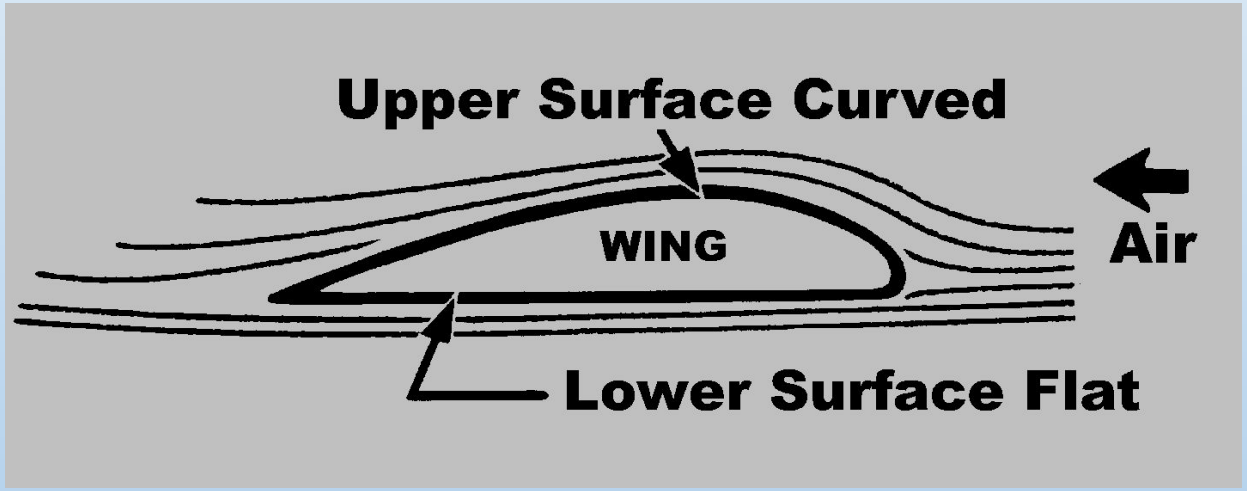
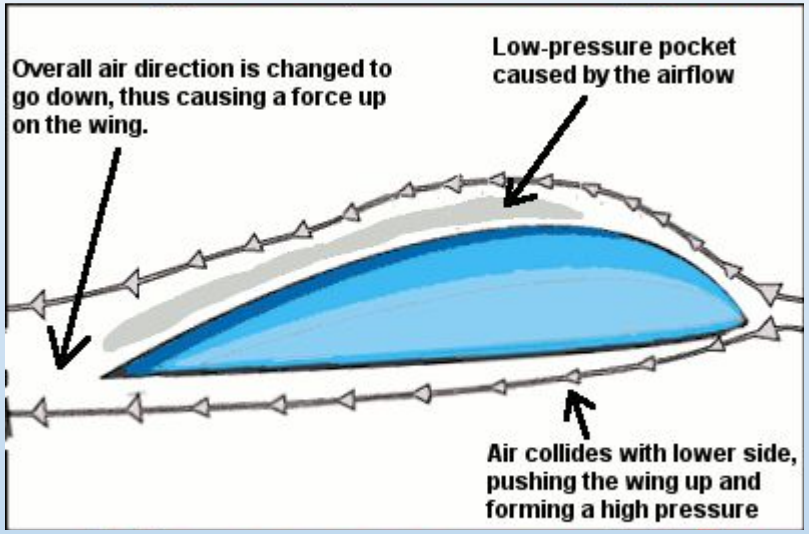
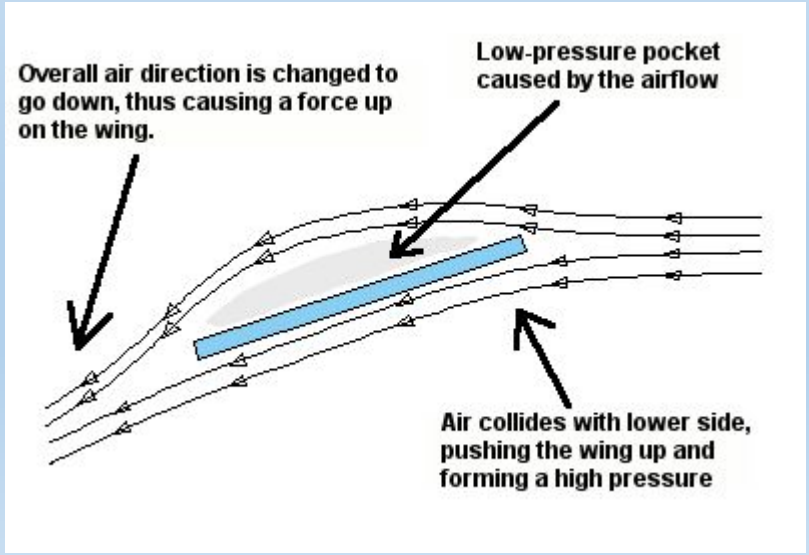


Air Flow (Laminar Flow)

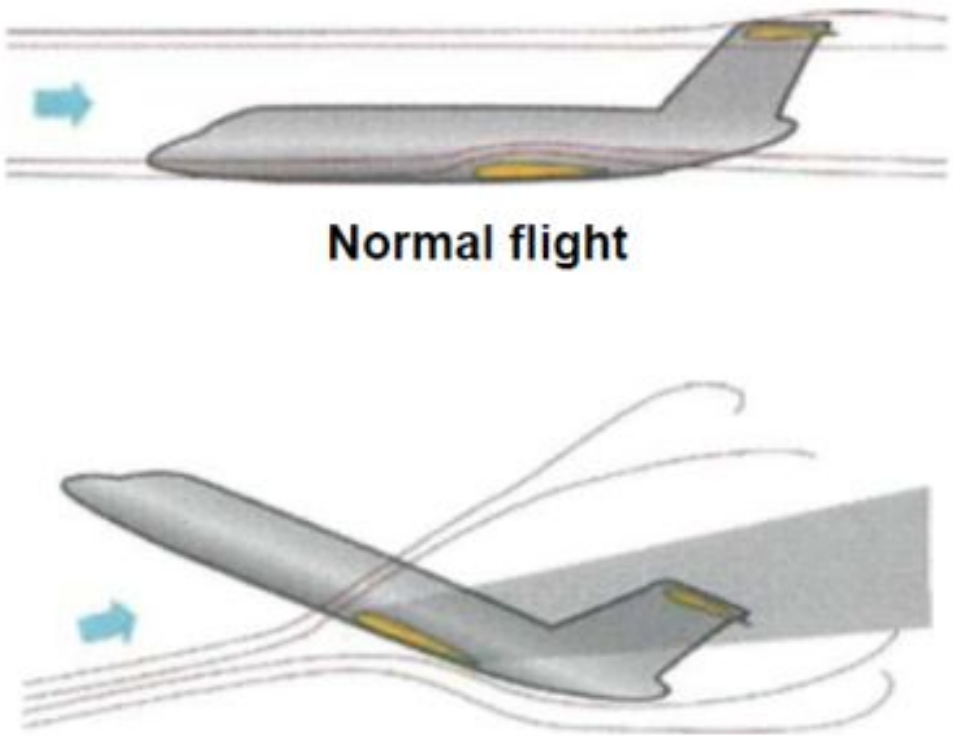




- When this occurs the air travels more rapidly over the top of the wing, creating LOW PRESSURE AREA A HIGH PRESSURE area is created below the wing.

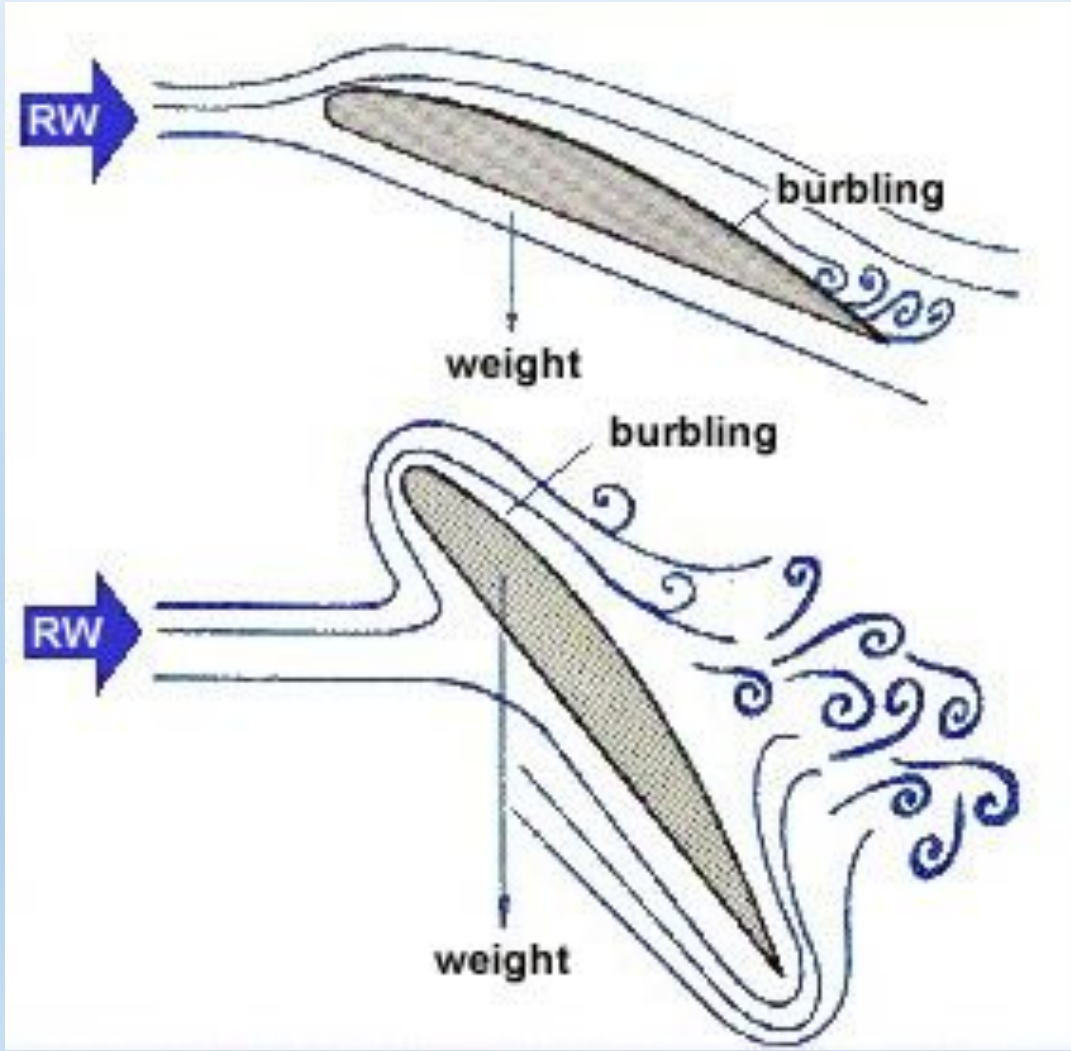
Stall

- Stall occurs when the angle of attack is increased to the point where the airfoil is no longer making lift.



Normal flight

Deep stall condition - T-tail in shadow of wing



Many Different Airfoil Designs

Stability

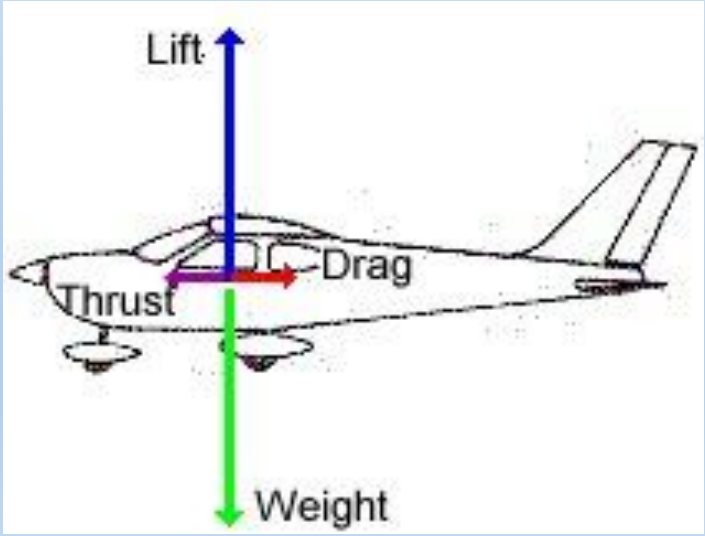
- Vertical & Horizontal control surfaces are important to the stability of the aircraft
- These surfaces at the tail of the aircraft act like feathers on an arrow to keep the nose pointed in the direction of travel, and to keep the wings at the correct angle of attack.
- Both the rudder and the stabilizer on an aircraft help to increase the stability.

STRAIGHT DIHEDRAL

TIP DIHEDRAL

CENTER OF GRAVITY

- The center of gravity is the point where the yaw, pitch, and roll axis intersect.
- On most airplanes, the CG is slightly forward to achieve the most stability in normal , level flight.




BOEING
LIFT
TAKE OFF