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AVIATION

A VISUAL HISTORY OF AIRCRAFT



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INTRODUCTION

Humans have dreamed about flying for thousands of years. It's not hard to imagine our primitive ancestors, who possessed the artistic skills to create beautiful cave paintings of the world around them – the landscapes, animals and each other – staring into the skies to watch birds wheel and swoop overhead and thinking to themselves: 'How does it feel to fly? And what does this world look like from up there?'. You've probably had a similar daydream yourself: visualising your house from above, then turning towards the sun, feeling the wind flow over your wings, and soaring towards the horizon and the unknown world beyond.

The first true aircraft capable of lifting people in relative safety and carrying them for decent distances were hot air balloons. The first was launched to great fanfare in France in 1783. Suddenly it was possible for people to take to the skies, and it kickstarted a frenzy of public interest in the notion of flight. Many more designs followed. Tethered balloons were immediately put to use by armies to spy on enemy movements from afar. But balloons are entirely at the mercy of the wind, and pilots have no control over their direction of travel.

This changed one fateful day in 1903, when the first powered flight in an aeroplane called the *Flyer* was made. It only lasted for 12 seconds, but it was enough to change our world. From that moment on, the development of the aeroplane has never stopped. This constant advancement in aviation technology, funded with so much money, energy, materials and technical expertise, is carried out because aeroplanes are so useful. They transport people and cargo faster than any other vehicle. They are a vital part of military campaigns. They help us map, explore and learn about our world. They entertain us with **aerobatic** displays of speed and manoeuvrability. They rescue people lost in the wilderness and help put out wildfires.

Don your aviation goggles and prepare for a breath-taking journey through the skies!



- AMAZING AIRCRAFT -
WRIGHT FLYER



On December 17th, 1903, Wilbur and Orville Wright changed the world forever. For years, these mechanically minded American brothers had shared a vision of creating a machine that could fly further and more reliably than a glider, and, unlike a hot air balloon, wasn't forced to fly in a particular direction by the wind. In short: the first flying vehicle that the pilot had complete control over. After years of planning and countless experiments, their vision became a history-making reality on the sandy flats of Outer Banks, North Carolina, USA.

Orville Wright lay on his stomach, gripping the *Flyer's* control stick. Two propellers whirled on either side of him. These were connected by bicycle chains to a lightweight petrol engine designed specially by the Wright brothers' mechanic friend Charlie Taylor; the engine had no throttle control: it was either 'on' or

'off. Wilbur ran alongside as the *Flyer* trundled down a wooden launch rail, took off and flew close to the ground for 12 seconds. Three more flights occurred that day, the last being the longest at 59 seconds and 260m. Unfortunately, the *Flyer* was damaged on landing and never flew again.

But this was only the beginning. News of the Wright brothers' incredible achievement spread, and soon other inventors were building on their ideas to create even more airworthy powered aeroplanes. The first circumnavigation around the world was completed in four Douglas World Cruiser seaplanes only 21 years later. By the 1940s, jet aircraft were roaring through the air. Today, we use aircraft to defend ourselves, ferry cargo, carry out life-saving rescue operations, and explore and travel the world - miracles of flight all kickstarted by the Wright brothers.

WOOD, CANVAS AND STRING

The aeroplane was only 11 years old and had hardly ever been used in combat when the First World War broke out in 1914. But over the course of the next five years, both sides realised just how useful these flying machines could be. Aeroplane technology advanced rapidly as each side strove to gain air superiority.

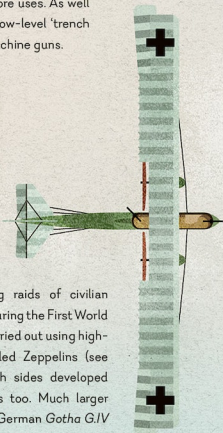
Aeroplanes were first used for reconnaissance missions. Flying high over the battlefields, 'spotters' (or 'observers') could look down and take photographs of enemy positions and trench systems, and help artillery hit their targets more accurately. This French *Nieuport 12* biplane had a pilot and observer, and a rear-firing machine gun to fend off attackers.



Most aircraft were unarmed at the start of the war. Pilots had to shoot at enemy planes with pistols, rifles or hand-held machine guns. Some later aircraft had rear-firing machine guns for defence, but a true fighter plane needs guns that fire forwards. Introduced in 1915, this German *Fokker E.III* monoplane had forward-firing guns designed to shoot bullets between the propeller blades as they rotated.



As the war progressed, both sides developed aircraft that were more manoeuvrable, could fly and gain altitude faster, and take more damage. As technology improved, combat aircraft could be put to more uses. As well as a fighter, this British *Sopwith Camel* was also used as a low-level 'trench straffer': attacking targets on the ground with bombs and machine guns.



The first bombing raids of civilian targets occurred during the First World War. Most were carried out using high-flying airships called Zeppelins (see page 21), but both sides developed bomber aeroplanes too. Much larger than fighters, this German *Gotha G.IV* biplane dropped bombs from under its fuselage and defended itself with machine guns.

The pilots who duelled over war-torn Europe needed calm nerves and skill. However, many had very little training, and life expectancy was short. Pilots who shot down more than five aircraft were called 'aces'. This *Fokker Dr.I* triplane was flown by German ace Manfred von Richthofen – also known as the Red Baron.