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Fantastic Flying Machines



Written by John Meyer and Elizabeth Austin

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Fantastic Flying Machines



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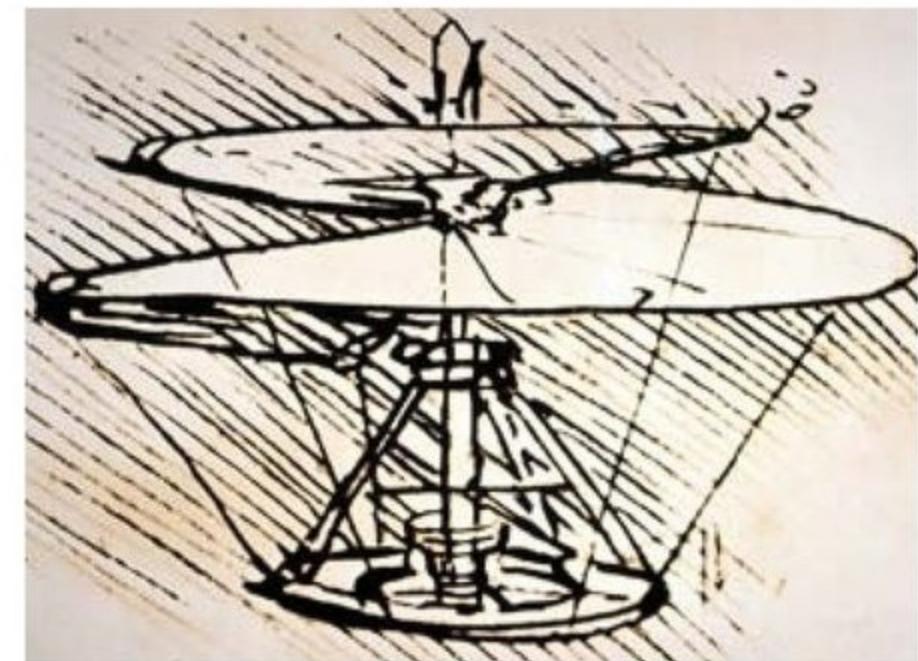
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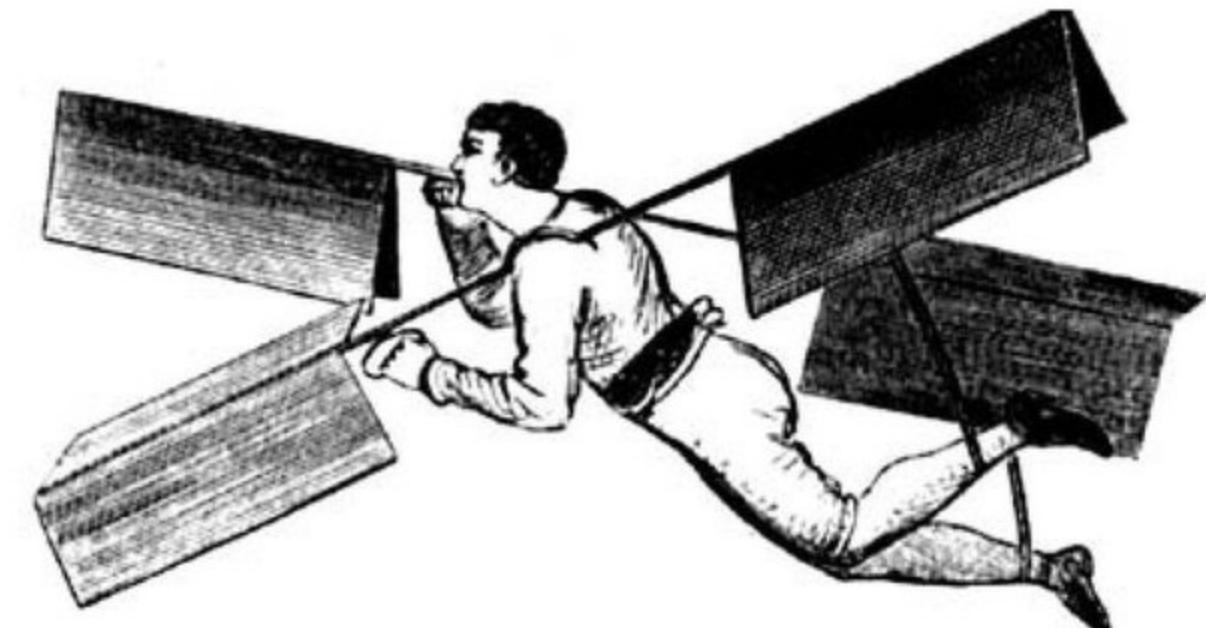
Introduction

Close your eyes and imagine if you could fly like a bird. Where would you go? What would you see? If you had never seen or heard of an airplane, could you imagine what it would be like to fly? Let's look at some of the fantastic machines that make flying possible.

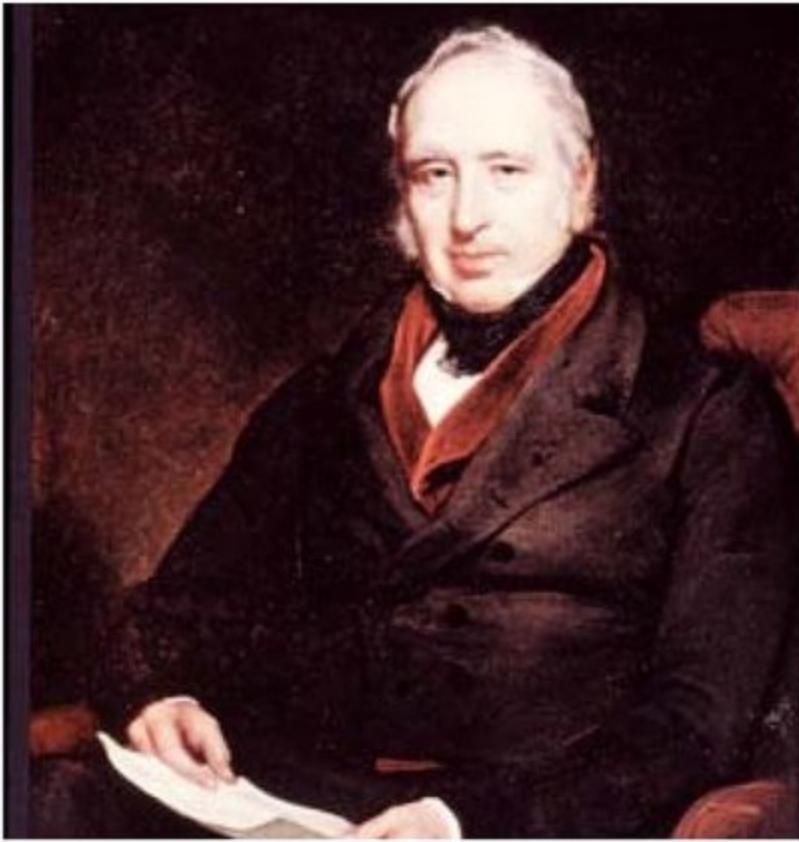
People have always wanted to fly. They watched birds fly. They dreamed about how wonderful it would be. A few people had good ideas about what made objects move through the air. One man made a small toy propeller that could spin through the air. In the 1400s, Leonardo da Vinci, an artist, drew amazing plans for a helicopter. It might have worked—but he never built it. People experimented. Some strapped wings onto their arms and flapped. A few tied themselves to big kites. Almost everyone crashed over and over—but they wanted to fly!



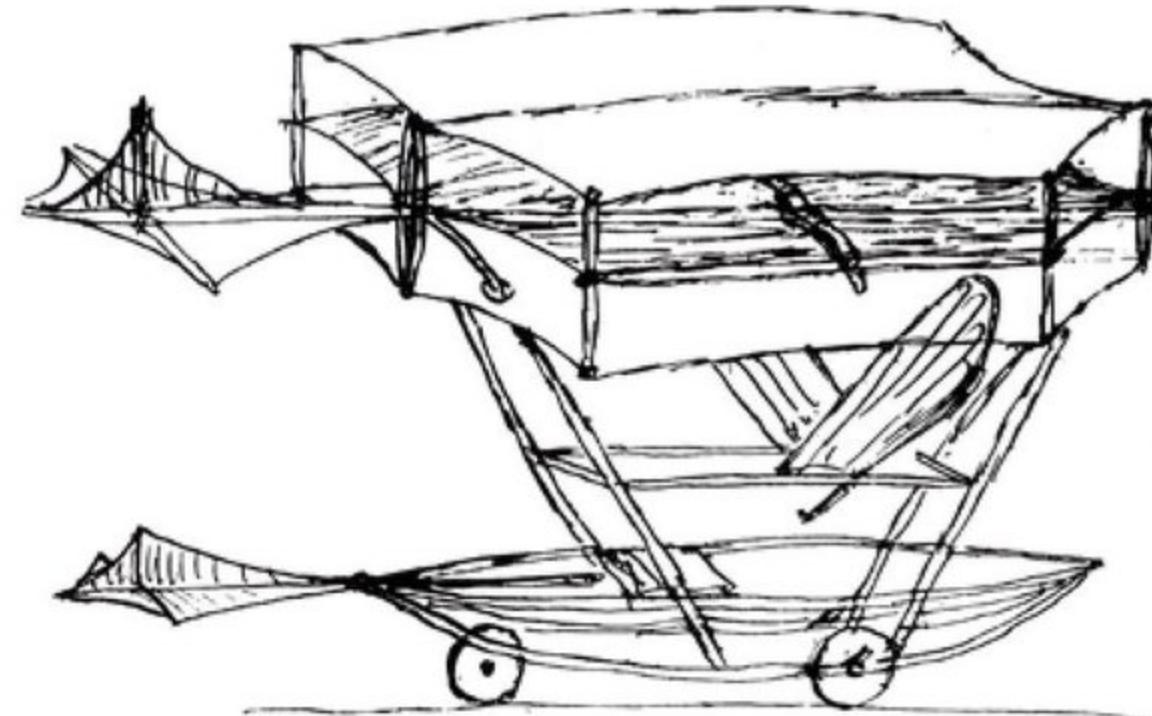
Leonardo da Vinci's helicopter drawing



These wings flapped when the person moved his arms and legs.



George Cayley built the first glider that carried a person.



A sketch of one of Cayley's first gliders

History of Flight

In 1783, two French brothers invented the hot-air balloon. Their first passengers were a sheep, a rooster, and a duck. George Cayley built the first glider that carried a person. Later, an engineer invented a better glider and published his ideas in 1859. A few years later, his ideas and notes inspired many of the designs of the Wright brothers.



Wilbur Wright watches his brother Orville make his historic flight.

Orville and Wilbur Wright thought about all of these early ideas. They thought about why most of them didn't work. After many tests, the Wright brothers built the first successful airplane that was powered by an engine. It could only carry one person, so they took turns testing it. On December 17, 1903, it was Orville's turn. That day, he flew for one full minute and went 260 meters (850 ft). People could fly!



This commercial airplane carries hundreds of passengers around the world every day.

Airplanes

Planes have improved a lot since the early days of flight. Large passenger airplanes are the first type of flying machine that most people see. Have you flown in an airplane on a vacation trip? These types of planes can carry about 450 passengers and their luggage. They can take you across the country or around the world.



A Navy jet fighter takes off from an aircraft carrier.



Jet gases form streaks of cloud in the sky.

Many planes that are built to fly high or fast use jet engines. Jet engines are powerful. They push an airplane forward by forcing a stream, or jet, of hot gas out behind them. Some jets can fly faster than the speed of sound.

Many slower or older airplanes have propeller engines. Each blade on a propeller acts like a wing. The blades create air suction when they spin, like blades on a fan. This force pulls the plane forward. Stunt pilots use small propeller planes to do tricks at air shows. Farmers use them to spray crops.



This crop duster uses a propeller engine.

Some planes are built for a particular task. Mail planes deliver packages overnight. Military cargo planes move trucks, supplies, and troops. Planes set up as offices allow people to work while they fly to business meetings.



This plane can hold 132,000 kilograms (291,000 lbs) of cargo.

Helicopters

Helicopters are another common type of flying machine. They can fly and land almost anywhere. Most helicopters have two rotors. The large rotor on top lifts the helicopter. A smaller one on the tail helps the pilot steer. Unlike planes, helicopters can fly backward and rotate. They can even hover in midair!



A helicopter lands on top of a building.



Troops board a military helicopter.



A large helicopter carries a big bucket of water over a wildfire.

Some helicopters are designed to lift heavy loads. These helicopters need two rotors on top. Firefighters sometimes use these helicopters to fight forest fires in remote areas.



A helicopter ambulance transports sick and injured people.

Helicopters travel faster than cars. Hospitals use helicopters as ambulances to reach injured people quickly. Police use helicopters to find and chase criminals. Rescue teams use them to look for people who are lost.



Beautiful balloons dot the sky.



Hot-air balloon passengers ride in a basket.

Blimps and Balloons

Hot-air balloons fly very slowly. They can't be steered, so they drift where the wind pushes them. Gas burners warm the air inside the balloons, making them rise in the colder air around them. People fly in hot-air balloons for fun. It's a quiet and unusual way to see the countryside from above.



Blimps are often used to film sporting events.



Riding in a blimp gives an amazing view.

Blimps are flying machines that are often seen above large sporting events. Blimps are large, long balloons filled with lighter-than-air gas, such as helium. They usually have two small propeller engines and can be steered by a pilot—but they fly slowly. Blimps attract attention, so companies put their names on them for advertising.

Rockets and Spaceships

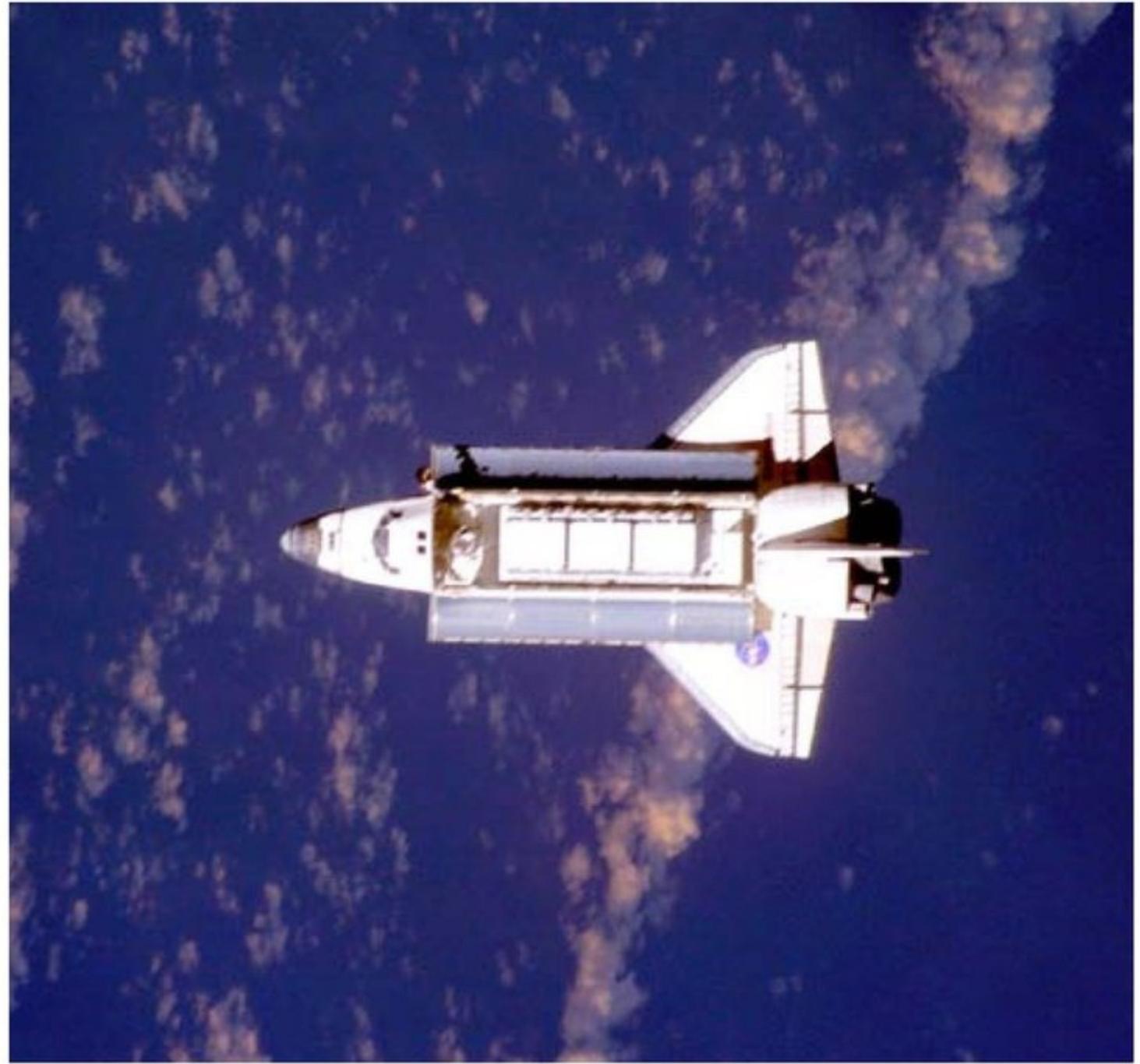
Rockets are very powerful engines that force hot gases out behind them to create thrust. In 1957, the Soviet Union surprised the world when it used a rocket to launch the first satellite. The satellite's name was Sputnik. It captured everyone's imagination. People thought about space travel—and being astronauts. Since then, rockets have carried people to the Moon and have helped to build a space station.



The Saturn V rocket carried astronauts to the Moon.



A space shuttle uses rockets to lift off.



A space shuttle in orbit

A space shuttle rides a rocket into space. It carries astronauts and supplies to the International Space Station. On its return trip to Earth, its wings let it land like an airplane.



A hang glider flies over a beach.



A modern glider aircraft soars in the air.

Other Ways to Fly

Today, there are many ways to fly. Hang gliders take off from cliffs and glide to the earth, drifting on air currents. In sleek, thin glider aircraft, people can soar for hours. Long ago, people could only imagine flying like birds. Now, many people have the chance to fly. Where would you like to fly?

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Front cover: The Proteus, a very high-flying observation airplane

Back cover: A military helicopter

Title page: The Lockheed Constellation, used to carry the U.S. president in the 1950s

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