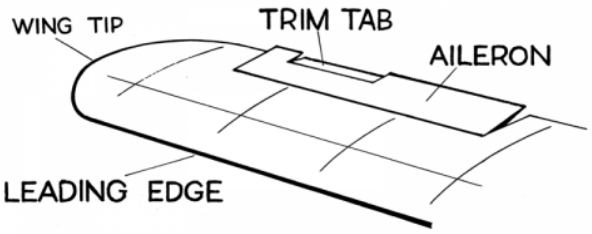
AWESOME stories

AIRCRAFT CONTROL



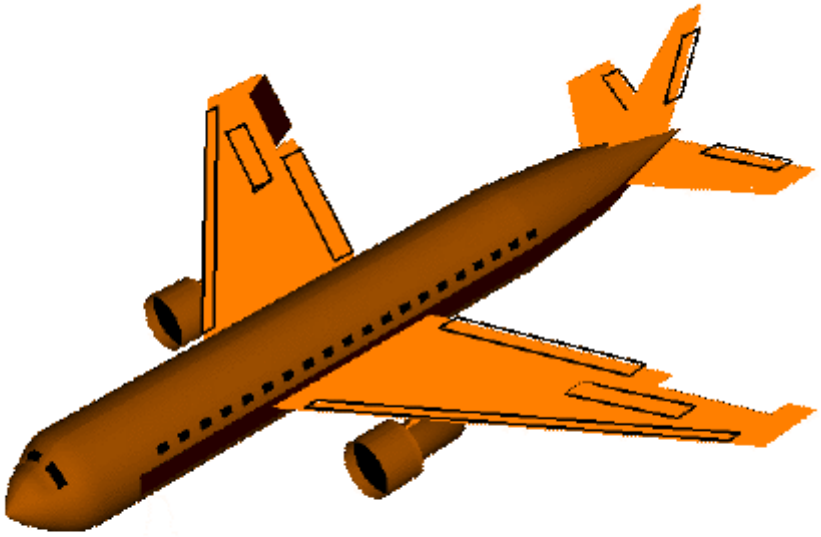
While helping a bike shop customer in 1899, Will Wright discovered an important new principle: how to give a flying machine the ability to execute a balanced, coordinated turn.

From watching birds fly, the Wright brothers knew a bird rolls right or left when it changes the angle where the wind meets its wings. The change in angle causes one wing to tilt up while the other wing simultaneously tilts down. No one before the Wrights had ever figured out how to translate what a bird can do naturally into what a plane could do mechanically.

Puzzled how to make a piece of machinery do what he knew it had to do, Will was fiddling with the packaging box of an inner tube he had just sold to his customer. When he squeezed opposite diagonal corners of the box, it twisted.

It occurred to Will that the top and bottom of the box were just like the wings of a biplane. If he used cables to draw the spars and struts of a biplane's wings together, he could do to flying machines what he had done to the box. And - if it worked as he imagined - he would warp the wings so one side tilted down while the other side tilted up. The side that was tilted down would give the biplane more lift, thereby enabling him to roll it right or left - imitating birds in flight.

Wilbur had come upon the first of many Wright discoveries. "Wing warping" (or, the aileron principle of flight) gave the Wright brothers a way to properly control one significant aspect of a biplane's movement. The Glenn Research Center, at NASA, demonstrates the aileron principle in action.



Armed with their discovery, the brothers made gliders. In 1901 they took one to Kitty Hawk, North Carolina. They figured the wind along the seashore would help them get more lift as they launched their glider, while the sand would provide a soft-landing if they crashed. During their trials, they flew their gliders more than 700 times.

While their glider was impressive, as were their flights, they still had to solve the main problem. How would they create and control a heavier-than-air, engine-powered machine that could take off, fly and land safely? Just being able to tilt the wings so the plane could properly roll was not enough. The glider flights had not produced the kind of lift the brothers expected.

Wilbur was discouraged. He told Orville man would not fly for another thousand years. He was off by 999.

See Alignments to State and Common Core standards for this story online at:
http://www.awesomestories.com/asset/AcademicAlignment/AIRCRAFT-CONTROL-History-of-Flight

See Learning Tasks for this story online at:
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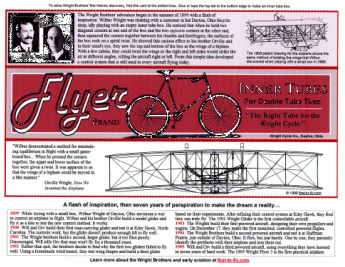
Media Stream



Inner Tube-Packaging Box Leads to Wright Inspiration
Image online, courtesy the wright-brothers.org website.
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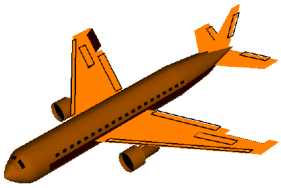

Aileron Principle of Flight
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Wilbur Wright

Image online, courtesy the U.S. Library of Congress.

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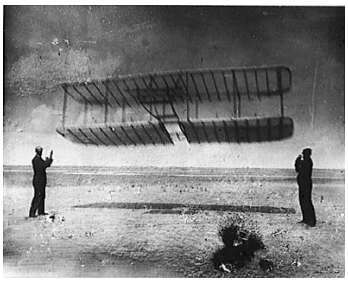

Wright Brother's Glider - Photo

Image online, courtesy kitty-hawk.com website.

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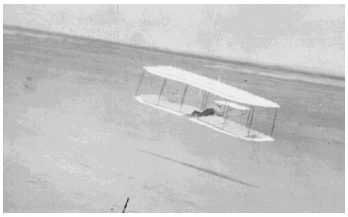

Flying the Glider

Image online, courtesy the wright-brothers.org website.

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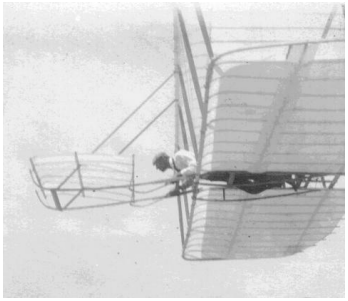

Flights in the Glider

Image online, courtesy wright-brothers.org website.

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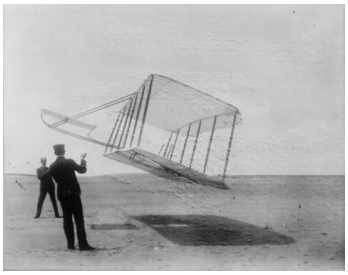

Launching the Glider

Image online, courtesy the U.S. Library of Congress.

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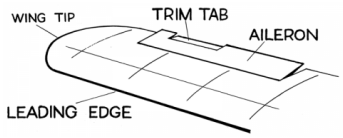

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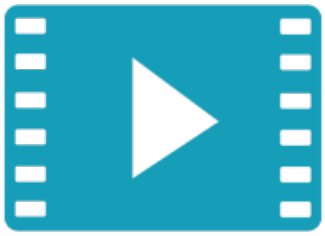

Wright Brothers - Testing Gliders at Kitty Hawk

Excerpt from the PBS program, Kitty Hawk - The Wright Brothers' Journey of Invention (by David Garrigus Productions).

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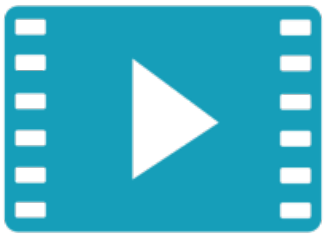

Wright Brothers - How Wilbur Discovers Wing Warping

Video online, courtesy NASA Connect.

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