



1902: Success at Last

When the Society hears of the Wright Brothers' logical approach to overcoming the 1901 disappointments and their successful wind tunnel trials, excitement builds about human flight. Arrangements are again made for you to resume your position as a lookout with the Kill Devil Lifesaving Station. Your friends at the station are glad to see you again.

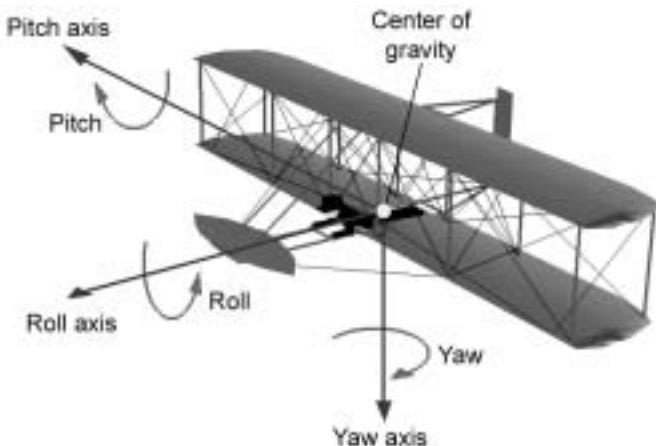
At the end of August the Wrights arrive and rebuild their camp. When they uncrate and assemble their glider, it is indeed a changed machine. The wingspan has grown to 32 feet and the width has been decreased to 5 feet. A control device called a "hip cradle," which the pilot operates by moving his hips, controls the wing-warping. The front rudder has been modified to look more like a wing. In addition, a tail with two 6-foot-high vertical tails has been added. On your first visit, Orville explains that they are hoping the tails will give the pilot more control in turning. You help to carry the craft up the hill—it weighs a good 120 pounds.



Testing the 1902 Glider.

The glider flies wonderfully, much better than the one last summer. A new problem, however, soon arises. In about one flight in fifty, the glider spins out of control and crashes after making a turn. The brothers make several adjustments, but nothing seems to help.

When you return in a few days, the brothers have removed the two vertical tails and replaced them with just a single tail. Wilbur has also rigged the tail to the hip cradle control that warps the wings. Now when the pilot shifts his hips to bank, the tail also turns. "Orville reasoned that in low-speed turns, the tail was acting like a vertical wing, providing a sideways force that caused the glider to spin," said Wilbur. "I thought up how to rig the wing-warping to the tail-turning." That's just one example of how the two brothers thought and worked so well together.



When Wilbur takes off, your jaw drops. The glider banks left and then right, rises up and down on command, and then glides to a smooth landing. They've done it! The brothers have achieved complete control in the air. You're watching the first machine in history that can be controlled in three dimensions: pitch, yaw, and roll.

Over the next few weeks, the brothers make several hundred glides, becoming better and better at controlling their craft. You are sending glowing letters back to the Society and helping Orville develop some of the pictures he has taken. The brothers feel that they only need to add an engine and propellers and they will become the first in the world to fly a powered aircraft.

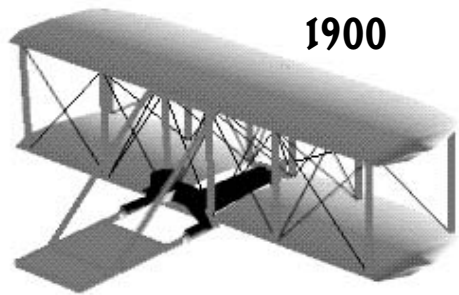
Activity 13—Build a Model of the 1902 Glider

To make a model of the 1902 Glider, follow the instructions beginning on page 55.

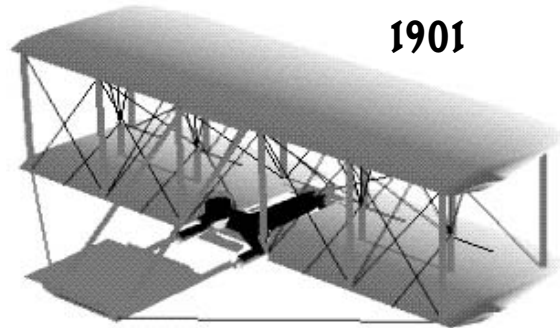


Activity 14—Compare the 1900, 1901, and 1902 Gliders

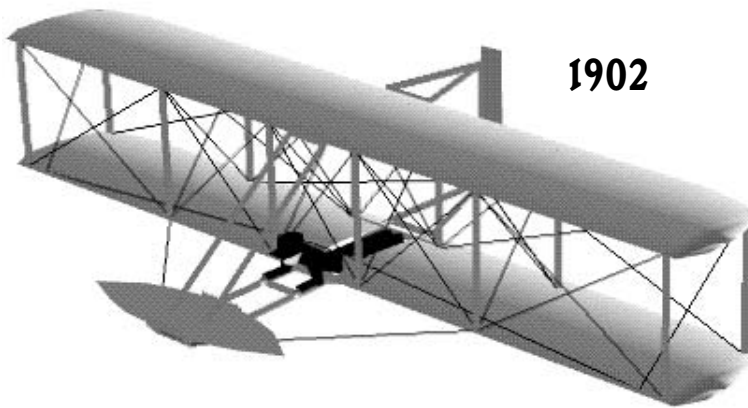
Below are drawings of the gliders the Wright Brothers tested in 1900, 1901, and 1902. Notice that Wilbur Wright is the same size in all three, which means all three are drawn to the same scale.



1900



1901



1902

1. Try to list five ways in which all the gliders are alike.
2. What are some of the ways that they are different?
3. The 1901 and the 1902 gliders both have about the same wing area and they weigh nearly the same. Why do you think the 1902 is a better glider?
4. Notice that in all three gliders, Wilbur is lying down. What do you think the effect would be if he sat up while flying them?



Activity 15—Prices Then and Now

The pictures at the Wrights' camp were captured by something called a "box camera." The Wright Brothers also took pictures on 5- by 7-inch glass plates, which they developed and printed themselves. Over 300 of these images are on display at the Carillon Historical Park in Dayton, OH.

The year that the Wright Brothers decided to build their first kite, 1900, was the year that a very popular box camera was offered for sale, the Eastman Kodak Brownie. Brownies were the first cameras most amateur photographers ever owned. Many of the first owners of Brownies were kids. Brownie cameras were sold, modeled, and remodeled (about 100 times!) for six decades. Your family probably owned one too!

The 1900 Brownie camera cost \$1. In 1900, a laborer might have worked a month to earn \$50. A professional might have earned \$100 or \$200 a month. Do you think the Brownie camera cost about the same amount (the same percentage of a monthly salary) for a buyer in 1900 as a \$100 camera would cost us today?

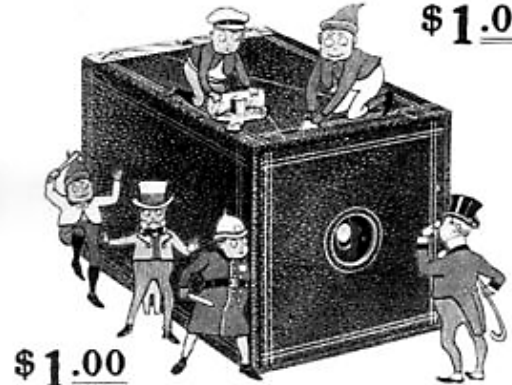
1. If you made \$100 a month in 1900, and a camera cost \$1, what percentage of your monthly salary would it take to buy a camera in 1900?
2. If your yearly salary today is \$36,000 and you want to buy a camera that costs \$100, what percentage of your monthly salary would you have to spend? How does this compare to 1900?
3. The Wright Brothers had to buy all the food to stock their camp and ship it by boat and horse-drawn wagon. In 1900, a loaf of bread cost 5 cents. Today it costs about \$1, or 100 cents. The price of bread has increased by 100 cents divided by 5 cents, or 20 times. Find out how many times these items have increased in price since 1900 by completing the table. You will need to find out today's prices.

Food	1900 price	Price today	Increase
5 pounds flour	13 cents		
1 pound butter	26 cents		
1 dozen eggs	21 cents		
1 gallon milk	27 cents		

Which item showed the biggest change in price?

Any school-boy or girl can make good pictures with one of the Eastman Kodak Co.'s Brownie Cameras

\$1.00



Brownies load in daylight with film cartridges for 6 exposures, have fine meniscus lenses, the Eastman Rotary Shutters for snap shots or time exposures and make pictures 2 1/4 x 2 1/4 inches.

Brownie Camera, for 2 1/4 x 2 1/4 pictures,	\$1.00
Transparent Film Cartridge, 6 exposures, 2 1/4 x 2 1/4,	.15
Faded Film Cartridge, 6 exposures, 2 1/4 x 2 1/4,	.15
Brownie Developing and Fixing outfit,	.75
Brownie Removable Finder,	.25

Take a Brownie Home for Christmas.

Brownie circulars and Kodak catalogues free

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