

# Dayton Aviation Heritage

National Park Service  
U.S. Department of the Interior

Dayton Aviation Heritage  
National Historical Park



## Did you know...



The brothers taking a break at Huffman Prairie Flying Field in 1904.

### ...the world's first successful airplane flew in 1903?

On December 17, 1903, the Wright Flyer became the first power-driven heavier-than-air machine to achieve free, controlled and sustained flight. Orville Wright, the first to pilot the craft, flew 120 feet in 12 seconds. Three other flights were made that day. Wilbur Wright piloted the aircraft for a fourth time for a distance of 852 feet, 59 seconds. All were straight flights with no turns. The brothers did not make a fifth effort because the stiff winds of Kitty Hawk, North Carolina, caught the craft unguarded, flipping and damaging the machine. The four flights proved to the Wrights and others that flight in a heavier-than-air machine was indeed possible.

### ...the world's first flying field is in Dayton, Ohio?

When the Wright brothers returned from the Outer Banks of North Carolina they had a machine that flew. Flying a straight line for a few hundred yards was fun but not practical. The work of experimentation and learning to fly was far from over. Realizing that trips to Kitty Hawk would be time-consuming and expensive, the brothers decided to conduct experiments closer to home.

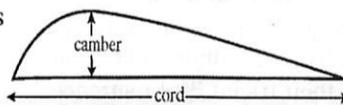
They chose a small 84 acre cow pasture, known as Huffman Prairie, nine miles northeast of Dayton. It was owned by a West Side banker named Torrence Huffman. The brothers commuted to the field daily using the Dayton, Springfield & Urbana Electric Railway (DS&U) trolley. The trolley stop was called Simms Station. The brothers often referred to Huffman Prairie as Simms Station.

### ...the Wright Flyer went through many changes?

The 1903 Flyer was very short relative to its wing span; its rear vertical rudder and horizontal front stabilizer were also much smaller than those of the 1905 Wright Flyer III. Both planes took off from a rail and landed on skids. The skids for the 1903 Flyer turned up sharply in front.

was difficult since they did not have the constant wind Kitty Hawk provided.

The 1904 Wright Flyer II was a new, slightly modified version of the 1903 Wright Flyer. Modifications included replacing the white pine wing spars with spruce, moving the gas tank and radiator rearward, increasing the propeller width, and decreasing the wing camber from  $1/20$  to  $1/25$  (camber is the rise or curve of an airfoil -- it is usually expressed as the ratio of the rise to the length of the chord of the airfoil). The controls were coupled which meant that the vertical rudder controls were connected to the wing warping wires so that both would move when the pilot moved the hip cradle. A separate controller operated the front horizontal stabilizer.

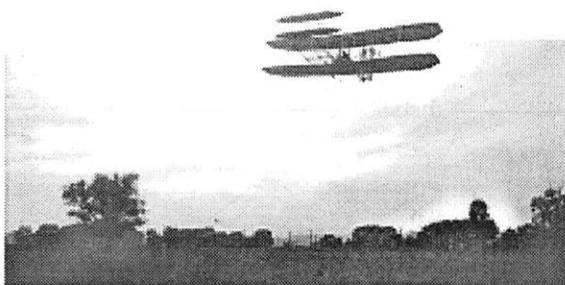


On September 7, 1904 the brothers began using a catapult with 1,200 to 1,600 lbs. of falling weight to launch the plane. The two best flights of the 1904 season exceeded 5 minutes and about  $2\frac{3}{4}$  mile (almost four circles of the field). The Wrights made the first circle in the air on September 20, 1904. The wooden parts of the 1904 Wright Flyer II were burned in 1905, and the mechanical parts were reused in the 1905 Wright Flyer III.

The 1905 Wright Flyer III was 7 feet longer than the 1903 model, and it had a considerably larger horizontal stabilizer and vertical tail surfaces. Its skids curved upward in a long, graceful arc. The elevator was lengthened to add pitch stability. In September 1905, the Wrights decoupled the rudder from the wing warping mechanism. Now pitch, roll and yaw were each separately maneuvered, making it the first aircraft controllable in the three axes of rotation.

From May 23 to December 1, 1904 the Wrights flew 105 times at Huffman Prairie. Getting off the ground

In September and October 1905, Wilbur and Orville logged over three and one-half hours of flying time at Huffman Prairie and made 33 consecutive takeoffs and landings without mishap or damage of any kind -- the first airplane to achieve that degree of sturdy construction and reliable performance. During these flights, they solved their last major control problem -- how to prevent stalling in a turn. By October 5, 1905 the Wright Flyer III could bank, turn, fly circles and figure eights, and stay aloft for over one-half hour. The 1905 Flyer was the airplane in which man really learned how to fly.



Ah, the wonders of controlled flight -- Huffman Prairie 1905

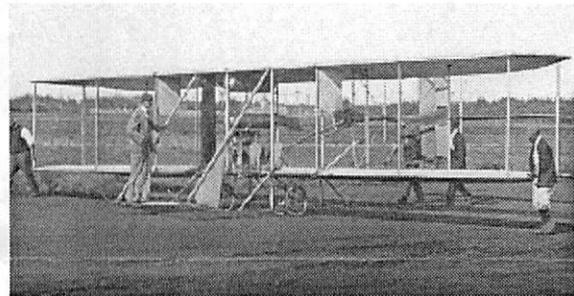
**...the Wright Model B Flyer was the first mass produced airplane?**

Five years later (1910-1911) the Wright Model B became the first production model made in The Wright Company factory. The first Model B was completed June 29, 1910 on Dayton's West Side in the Speedwell Plant, the first Wright Company Factory site.

The Model B had both the horizontal and vertical stabilizers in the rear, just as conventional airplanes do today. Earlier Wright planes used landing skids; the Model B had wheels attached to the skids. In place of the graceful forward horizontal stabilizer there was a short triangular structure with triangular vanes called blinkers. Initially, two pitch control levers were interconnected through a shaft, and the warping/rudder lever was shared by the pilot and student. Thus, early pilots were either "right-handed" or "left-handed" depending on the

seat in which they were trained. True dual controls were put on later "B" models.

This model was used by Wright Exhibition Company members at all meets, including the Asbury Park (NJ) meet August 10-20, 1910. Wright B airplanes were also used beginning in 1910 at The Wright School of Aviation for training pilots.



The Wright Model B

**...you can still see original Wright airplanes today?**

The 1903 Wright Flyer was restored several times, most recently in 1985. It was installed at The Smithsonian Institution in Washington, D.C., on December 17, 1948, after it left its temporary home of many years in England. Why did the 1903 Flyer go to England in the first place? In 1915, the Smithsonian Institution published a report stating that Samuel P. Langley's Aerodrome was "the first aeroplane capable of sustained free flight with a man." The inaccurate statement led to a controversy between Orville and the Smithsonian Institution that lasted 27 years. In protest of this claim, Orville sent the 1903 Flyer to London in 1928. In 1942 The Smithsonian published a report titled *The 1914 Tests of the Langley "Aerodrome"* which retracted and apologized for former statements, marking the end of the Smithsonian-Wright controversy. Today, the 1903 Wright Flyer is displayed in the National Air and Space Museum.



The Wright Flyer III on display at Wright Hall, Carillon Historical Park.

The 1905 Wright Flyer III was restored 45 years later with Orville Wright's close involvement. Orville also

contributed to the design of Wright Hall, where the Flyer is displayed. Wright Hall opened to the public in June 1950 in Carillon Historical Park, Dayton, Ohio.

An original Wright B is on exhibit at the Franklin Institute in Philadelphia. A modified look-alike Wright B is flown at events throughout the Dayton area and is housed in a special hangar at Dayton-Wright Brothers Airport.

**...at first the Wright Flyer only had room for the pilot?**

The 1903, 1904 and 1905 Wright Flyers carried only one person, the pilot, lying prone on the lower wing. However, in 1908 the 1905 Wright Flyer III was refitted with a more powerful engine and reconfigured controls in order to carry the pilot and a passenger seated upright on the lower wing surface. On May 14, 1908, Wilbur and Orville each

took their mechanic, Charlie Furnas, on an airplane ride at Kitty Hawk.

The Model B carried both a pilot and a co-pilot seated upright with dual controls. The Model B was fitted with dual controls which permitted the pilot to teach the co-pilot how to fly.

**...you can learn more about the legacy of the Wright Brothers in Dayton, Ohio?**

If you like all facets of aviation, then Dayton, Ohio, is a great area to explore and Dayton Aviation Heritage National Historical Park is a great place to start. With four units that share different components of the Wright brothers' story, the park offers insights into the lives of Wilbur and Orville, the Wright family and their friend Paul Laurence Dunbar. The National Park operates two sites: The Wright Cycle Company Complex, in downtown Dayton, and Huffman Prairie Flying Field Interpretive Center, in partnership with Wright-Patterson Air Force Base, at Wright Memorial Hill. This affiliation also allows visitors to explore the Huffman Prairie Flying Field which can be visited on most days. Other sites operated by park partners where you can learn about the Wright brothers and Dayton heritage include: Carillon Historical Park

where the Wright Flyer III awaits visitors and the Paul Laurence Dunbar State Memorial which tells the story of another Daytonian, like the Wrights, who met challenges head on and became an accomplished and internationally known writer and poet. Another partner, Aviation Trail Inc., will guide you to over 40 aviation related sites in the Dayton area. You can learn more about those sites at the Aviation Trail Visitor Center in The Wright Cycle Company Complex.

To learn more and to begin your journey, visit Dayton Aviation Heritage National Historical Park, located at the corner of South Williams and West Third Street, Dayton, Ohio or call 937.225.7705 or 937.425.0008 for more information.

