

# AIR POWER

WINTER 2002 - Volume 49, Number 4

# History

Testing the Military Flyer at Fort Myer, 1908-1909 <i>David R. Chenoweth</i>	<b>4</b>
Wright Military Training at College Park in 1909 <i>Catherine Wallace Allen</i>	<b>12</b>
The “Wright Stuff”: Pilot Training at America’s First Civilian Flying School <i>Jerome A. Ennels</i>	<b>22</b>
“Kept Alive by the Postman”: The Wright Brothers and 1st Lt. Benjamin D. Foulois at Ft. Sam Houston in 1910 <i>Roger G. Miller</i>	<b>32</b>
From Infant Technology to Obsolescence: The Wright Brothers’ Airplane in the U.S. Army Signal Corps, 1905-1915 <i>A. Timothy Warnock</i>	<b>46</b>
<hr/>	
Book Reviews	
<i>Science and Technology: The Making of the Air Force Research Laboratory</i> by Robert W. Duffner	58 Reviewed by John H. Barnhill
<i>A Dance with Death: Soviet Airwomen in World War II</i> by Anne Noggle	58 Reviewed by David F. Crosby
<i>Combat: The Great American Warplanes</i> by Jim Wilson	58 Reviewed by William A. Nardo
<i>Veterans Benefits: A Guide to State Programs</i> by R.E. Armstrong and Terry P. Rizzuti	59 Reviewed by Bill Russo
<i>Birds from Hell</i> by Wilbur H. Morrison	60 Reviewed by Scott A. Willey
<i>The Korean War</i> by the Korea Institute of Military History	61 Reviewed by John H. Barnhill
<i>I Always Wanted to Fly: America’s Cold War Airmen</i> by Wolfgang W.E. Samuel	62 Reviewed by William A. Nardo
<i>Voices from the Rear: Vietnam 1969-1970</i> by George M. Watson, Jr.	64 Reviewed by Robert W. Duffner
Books Received	66
Coming Up	68
History Mystery	71
Letters, News, Notices, Reunions, and In Memoriam	72

# The Air Force Historical Foundation



**Air Force Historical Foundation**  
1535 Command Drive – Suite A122  
Andrews AFB, MD 20762-7002  
(301) 981-2139  
(301) 981-3574 Fax  
**E-Mail: [afhf@earthlink.net](mailto:afhf@earthlink.net)**  
**<http://afhistoricalfoundation.com>**

## Officers

### President

Gen. William Y. Smith, USAF (Ret)

### Vice-President

Gen. John A. Shaud, USAF (Ret)

### Secretary-Treasurer

Maj. Gen. John S. Patton, USAF (Ret)

### Executive Director

Col. Joseph A. Marston, USAF (Ret)

## Advisors

Gen. John P. Jumper, USAF  
Lt. Gen. John R. Dallager, USAF  
Lt. Gen. Donald A. Lamontagne, USAF  
Brig. Gen. Ronald T. Rand, USAF  
CMSAF Gerald R. Murray, USAF

## Trustees

Col. Kenneth J. Alnwick, USAF (Ret)  
Mr. F. Clifton Berry, Jr.  
Lt. Col. Maynard Y. Binge, USAF (Ret)  
Lt. Gen. Devol Brett, USAF (Ret)  
Lt. Gen. William E. Brown, USAF (Ret)  
Lt. Gen. Charles G. Cleveland, USAF (Ret)  
Lt. Gen. John Conaway, USAF (Ret)  
Gen. Bennie L. Davis, USAF (Ret)  
Brig. Gen. Michael DeArmond, USAF (Ret)  
Gen. Robert J. Dixon, USAF (Ret)  
Gen. Michael J. Dugan, USAF (Ret)  
Gen. Howell M. Estes, Jr., USAF (Ret)  
Gen. Ronald R. Fogleman, USAF (Ret)  
Mr. John E. Greenwood  
Brig. Gen. Brian S. Gunderson, USAF (Ret)  
Maj. Gen. John P. Henebry, USAF (Ret)  
Col. George A. Henry, Jr., USAF (Ret)  
Gen. Robert T. Herres, USAF (Ret)  
Dr. I. B. Holley, Jr.  
Maj. Gen. Jeanne M. Holm, USAF (Ret)  
Lt. Gen. Bradley C. Hosmer, USAF (Ret)  
Dr. R. Gordon Hoxie  
Brig. Gen. Alfred F. Hurley, USAF (Ret)  
Brig. Gen. James A. Jaeger, USAF (Ret)  
Gen. David C. Jones, USAF (Ret)  
Mr. John Kreis, USAF (Ret)  
Lt. Col. Kathy La Sauce, USAF (Ret)  
Maj. Gen. Charles D. Link, USAF (Ret)  
Lt. Col. Donald S. Lopez, USAF (Ret)  
Hon. Hans Mark  
CMSgt Norman A. Marous, USAF  
Hon. John L. McLucas  
Col. Kenneth Moll, USAF (Ret)  
Gen. Thomas S. Moorman, Jr., USAF (Ret)  
Col. Helen E. O'Day, USAF (Ret)  
Hon. Verne Orr  
CMSgtAF Sam E. Parish, USAF (Ret)  
Maj. Gen. John S. Patton, USAF (Ret)  
Maj. Gen. Ramsay D. Potts, USAF (Ret)  
Gen. Bernard A. Schriever, USAF (Ret)  
Gen. John A. Shaud, USAF (Ret)  
Gen. Jacob E. Smart, USAF (Ret)  
Gen. William Y. Smith, USAF (Ret)  
Dr. George K. Tanham  
Col. Robert E. Vickers, Jr., USAF (Ret)  
MSgt. Charles J. Warth, USAF (Ret)  
Col. George R. Weinbrenner, USAF (Ret)  
Col. Sherman W. Wilkins, USAF (Ret)  
Maj. Gen. Richard A. Yudkin, USAF (Ret)

## Contributing Members

The individuals and companies listed are contributing members of the Air Force Historical Foundation. The Foundation Trustees and members are grateful for their support and contributions to preserving, perpetuating, and publishing the history and traditions of American aviation.

### Benefactor

Mrs. Ruth A. (Ira C.) Eaker Estate

### Patron

Maj. Gen. Ramsay Potts  
Quesada Foundation

### Sponsors

Maj. Gen. William Lyon  
Maj. Gen. John S. Patton  
Gen. William Y. Smith

### Donors

Mr. John F. Donahue  
Emerson Electric  
Rockwell International  
Gen. Bernard A. Schriever

### Supporters

The Aerospace Corporation  
Allied-Signal Aerospace Corporation  
Arthur Metcalf Foundation  
CSX Corporation  
Brig. Gen. Brian S. Gunderson  
Maj. Gen. John P. Henebry  
Gen. & Mrs. Robert T. Herres  
Maj. Gen. Harold E. Humfeld  
McDonnell Douglas Foundation  
Maj. Gen. Kenneth P. Miles  
Northrop-Grumman Corporation  
Mr. William O'Rourke  
Mr. James Parton  
Mr. George Pendelton  
Pratt & Whitney  
United Technologies  
Capt. William C. Ward  
Maj. Gen. Richard A. Yudkin

### Annual Contributing Members

ANSER  
ARX, Inc.  
ASTECH/MCI Manufacturing, Inc.  
Beech Aircraft Corporation  
Boeing Defense & Space Group  
General Electric Company  
Instrument Systems Corp.  
Litton Industries  
Lockheed Martin Corp.  
The Mitre Corporation  
Northrop Corporation  
Vinell Corporation

# AIR POWER *History*

The Journal of the  
Air Force Historical Foundation  
Winter 2002 Volume 49 Number 4

### Publisher

Brian S. Gunderson

### Editor

Jacob Neufeld

### Technical Editor

Robert F. Dorr

### Book Review Editor

Scott A. Willey

### Layout and Typesetting

Richard I. Wolf

### Advertising

Mark D. Mandeles

### Circulation

Richard I. Wolf

**Air Power History** (ISSN 1044-016X)  
is produced in March, June, September,  
and December by the Air Force Historical  
Foundation.

Prospective contributors should consult the  
GUIDELINES FOR CONTRIBUTORS at  
the back of this journal. Unsolicited manu-  
scripts will be returned only on specific  
request. The Editor cannot accept responsi-  
bility for any damage to or loss of the man-  
uscript. The Editor reserves the right to  
edit manuscripts and letters.

Address **Letters to the Editor** to:

Air Power History  
P.O. Box 10328  
Rockville, MD 20849-0328  
e-mail: [jneufeld@comcast.net](mailto:jneufeld@comcast.net)

Correspondence regarding missed issues  
or changes of address should be addressed  
to the **Circulation Office**:

Air Power History  
P.O. Box 151150  
Alexandria, Virginia 22315  
Telephone: (301) 981-2139  
Fax: (703) 923-0848  
e-mail: [airpowerhistory@yahoo.com](mailto:airpowerhistory@yahoo.com)

### Advertising

Mark Mandeles  
8910 Autumn Leaf Ct.  
Fairfax, VA 22301  
(703) 426-5147; fax 426-5149  
e-mail: [mandelm@erols.com](mailto:mandelm@erols.com)

Copyright © 2002 by the Air Force  
Historical Foundation. All rights reserved.  
Periodicals postage paid at Lexington, VA  
24450 and additional mailing offices.

**Postmaster:** Please send change of  
address to the Circulation Office.

As *Air Power History* goes to press, the celebration of the centennial of the first powered flight, by the Wright brothers on December 17, 1903, kicks off with a major event at the Smithsonian Institution's National Air and Space Museum. Military aviation in the United States, too, paralleled these momentous times. In 1898, the government had invested \$50,000 in Prof. Samuel P. Langley's experimental aerodrome; next, it launched the Army air arm on August 1, 1907, when it established the Aeronautical Division of the Signal Corps; finally, it demonstrated its serious intent about aviation with the purchase of Signal Corps No. 1 and the beginnings of pilot flight training.

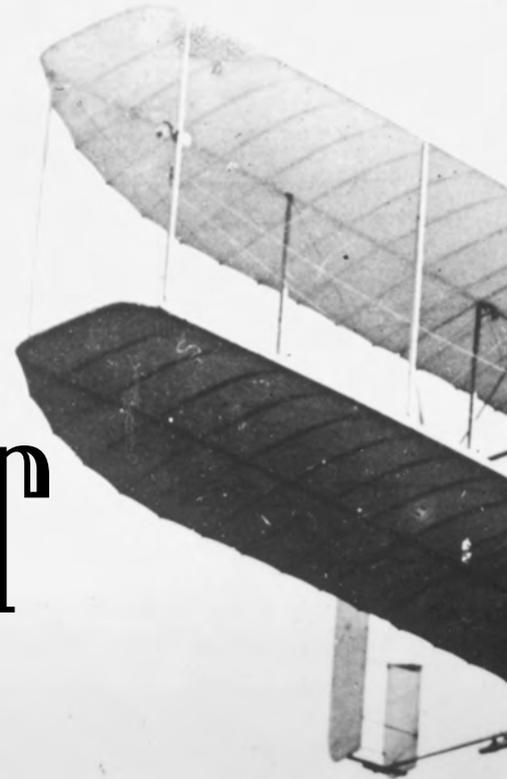
This issue commemorates the onset of the first century of flight. David Chenoweth, a senior editor with the Air Force History Support Office and a keen student of early aviation, leads off with the story of "Testing the Military Flyer at Fort Myer, 1908-1909." Few people today associate the Army post next to Arlington Cemetery, Virginia, with air power history. However, Fort Myer turned out to be a less than ideal site for the flight training and the exhibitions proved disruptive to Army routine, the flyers moved on. Appropriately, Catherine Wallace Allen, the director of the museum at College Park Airport, Maryland, picks up the story of "Wright Military Training at College Park in 1909." As with Fort Myer, the trials at College Park recorded several "firsts" in military aviation. Jerome Ennels, chief historian at the U.S. Air Force's Air University at Maxwell Air Force Base, Alabama, follows on the Wright brothers' trail by recounting their activities in 1910 at the old Kohn plantation, nearby Montgomery, Alabama. In "The 'Wright Stuff': Pilot Training at America's First Civilian Flying School," Mr. Ennels tells how the Wrights trained not only pilots, but flight instructors as well. Dr. Roger Miller, a frequent contributor to *Air Power History* and an expert in early military aviation history, tackles the difficult assignment of finding new materials on the career of the air power great Benny Foulois. In "Kept Alive by the Postman": The Wright Brothers and 1st Lt. Benjamin D. Foulois at Ft. Sam Houston in 1910," Miller succeeds admirably by examining and commenting on several "myths." In the fifth article, Dr. Timothy Warnock, chief of Organizational History, Air Force Historical Research Agency, at Maxwell AFB, Alabama, traces the rise and fall of the Wright brothers' airplane technology in the decade from 1905 to 1915. This article is certain to inform and enlighten students of U.S. Army aviation in World War I.

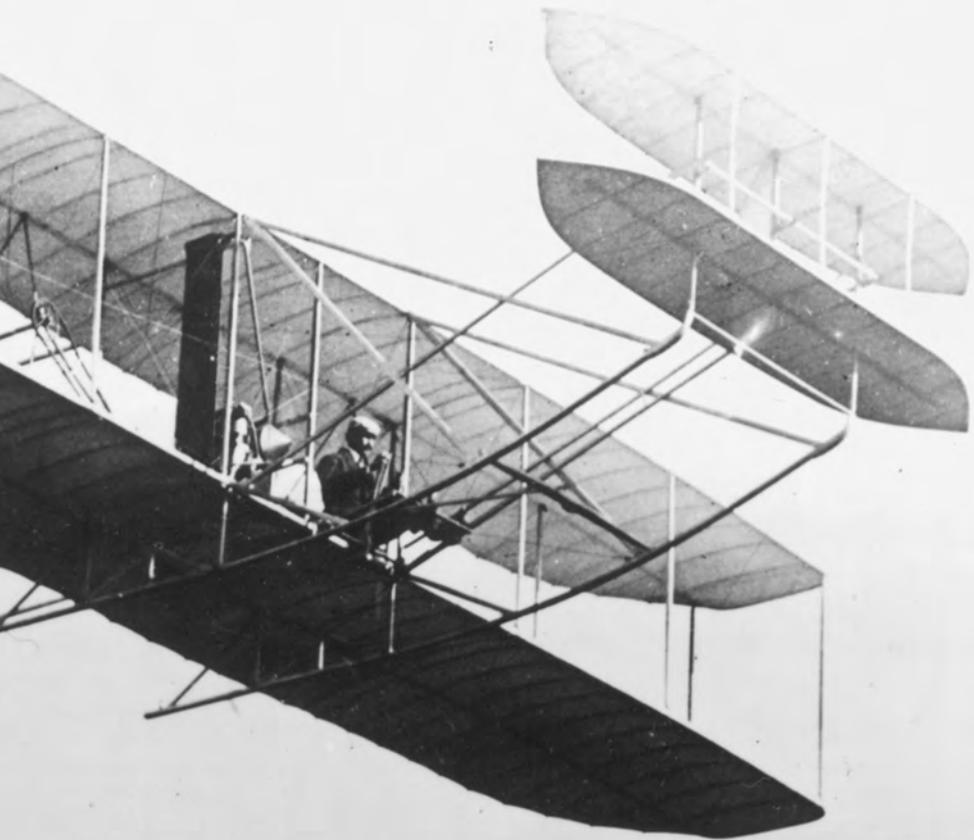
Readers will also find in this issue a calendar of "Major Centennial Events," "Referees for the year 2002," the usually informative book reviews, Bob Dorr's "History Mystery," upcoming events, reunions, notices, news, and letters. Also, we note with sadness the death of one of the great historians of the U.S. Air Force, Dr. Maurer Maurer. (See page 76)



*Air Power History* and the Air Force Historical Foundation disclaim responsibility for statements, either of fact or of opinion, made by contributors. The submission of an article, book review, or other communication with the intention that it be published in this journal shall be construed as prima facie evidence that the contributor willingly transfers the copyright to *Air Power History* and the Air Force Historical Foundation, which will, however, freely grant authors the right to reprint their own works, if published in the authors' own works. In the case of articles, upon acceptance, the author will be sent an agreement and an assignment of copyright.

# Testing the Military Flyer at Fort Myer, 1908-1909





David R. Chenoweth

(Overleaf) Orville flying over Ft. Myer in 1908.

(Below left) Close-up of controls of 1908 aircraft. Lever on right controls vertical movement; two on left control rudder and wing warping.

(Below right) Orville in 1908 machine above wall of Arlington Cemetery.

## IN DECEMBER 1907, THE U.S. ARMY ISSUED ... AN ADVERTISEMENT FOR A HEAVIER-THAN-AIR FLYING MACHINE

Following their successful flights in 1903 at Kitty Hawk, North Carolina, the Wright brothers found an area near Dayton where they could continue their experimentation and development closer to their home. By the end of 1904, they began to think that their machines might have practical applications and began to make attempts to sell their machines and their knowledge. Nothing came of these attempts, and they continued experimenting for another year. However, because they did not yet have a patent to protect them, they had decided not to fly exhibitions or demonstrations. Thus, in late 1905, they put their machines away, not to fly again until 1908, and began to search seriously for buyers. Even after the patent was granted in 1906, they preferred not to fly publicly lest others see and use their unique wing-warping control system.

In December 1907, the U.S. Army issued Signal Corps Specification Number 486, an advertisement for a heavier-than-air flying machine. The aircraft had to be supported entirely by the dynamic reaction with the atmosphere and had to be sufficiently simple for an intelligent person to learn its operation in a reasonable amount of time. The machine had to carry two people, remain in the air for an hour, carry sufficient fuel to fly 125 miles, and had to average 40 miles an hour in a speed test. It was also desirable that the machine could be transported on Army wagons.<sup>1</sup>

Successful in their response to this advertisement, the Wright Brothers signed a contract with the federal government in February 1908 that required delivery of a flying machine to Fort Myer,

Virginia, within 200 days. Following delivery, they had an additional 30 days to demonstrate that the machine complied with all specifications. At about the same time, they signed another contract to provide aircraft to the French.<sup>2</sup>

The Wrights' previous machines carried only a single person, who lay prone in a cradle that moved side-to-side on the lower wing. Cables connected the cradle to the wings, and by moving the cradle, the pilot changed the shape of the wings, allowing him to control the flight. This was natural and instinctive — the pilot moved on the wing in the direction he wanted to turn. The machine built for the Army carried two people, who sat upright on the lower wing, and the controls were moved to three levers placed alongside the seat, one on the pilot's left and two on the right. The lever on the left moved the front horizontal surfaces, controlling vertical movement, while the two on right controlled the wing warping and the rear rudder with a forward and back movement that was much less instinctive than the cradle. The Wrights also added a single fixed vertical surface between the two front horizontal surfaces to increase stability.

Wilbur and Orville returned to North Carolina in April 1908 to gain experience with the new control system. Despite mechanical problems and bad weather, they managed to make a few flights, including their first with a passenger. On May 17, Wilbur left Kitty Hawk for Europe to perform demonstration flights for the French contract. Orville returned to Dayton, stopping first in Washington to inspect the Fort Myer parade ground,



*David R. Chenoweth is an editor with the Air Force History Support Office, Washington, D.C. Previously, he worked with the Air Force Surgeon General's office at Bolling AFB, D.C., and with the U.S. Army's Corps of Engineers in a variety of locations. He has been the lead editor for most of the U.S. Air Force in Southeast Asia books, and its books on bases both domestic and foreign, as well as being the History Support Office's photograph expert. He has an interest in the early years of flight, and is excellent at aircraft identification.*

(Near right) Rear of 1908 machine shows two propellers, chain drive with crossed chain on left propeller to change rotation.

(Far right) Launching derrick and weight at Ft. Myer. Arlington Cemetery is at left, aircraft hangar at the rear.



where the flying tests for the Army would be made.<sup>3</sup>

Fort Myer today is a small, crescent-shaped area west of Arlington National Cemetery, which is directly across the Potomac River from the Lincoln Memorial in Washington, D.C. Many of the older buildings on Fort Myer were built between 1895 and 1908 and appear in photographs taken during the tests in 1908 and 1909. The large building in the background of some of the photographs was then the Fort Myer hospital, but is now the post headquarters. A low stone wall that still separates the cemetery and Fort Myer on the west side of the cemetery can also be seen in photographs taken of the tests.

The cemetery and the fort are both on land that originally was part of the Custis estate, the home of George Washington Parke Custis, grandson of George Washington. In 1861, during the Civil War, the federal government improperly seized the land for military purposes. The government later bought the land at auction when Custis' granddaughter, the wife of Confederate general Robert E. Lee, was unable to appear in person to pay taxes. Soon after the seizure, a fortification to protect Washington was established on the site where Fort Myer is now. In 1900, the Army collected all its balloon assets at Fort Myer; but in 1908, it was a cavalry post, and the tests took place on the post's parade ground.<sup>4</sup>

### Fort Myer, 1908

Orville and the crated aircraft arrived at Fort Myer on August 20; the engine got there on August 25. The Army provided a ground crew to assist Orville, and the machine was initially housed in a large balloon tent while a wooden hangar near the parade ground was completed. Orville was ready for flying on September 2, after he solved problems with the engine. The machine was first transported to the parade ground on a wagon, satisfying that portion of the Army's specifications.<sup>5</sup>

The machine resembled the Wrights' 1903 Flyer, but was longer, heavier, had a broader wing span, and had a more powerful engine. Like the 1903 machine, it had two propellers behind the wings that rotated in opposite directions to cancel

the torque generated by a single propeller. It had no landing gear, but used skids to enable it to land on any ground surface.

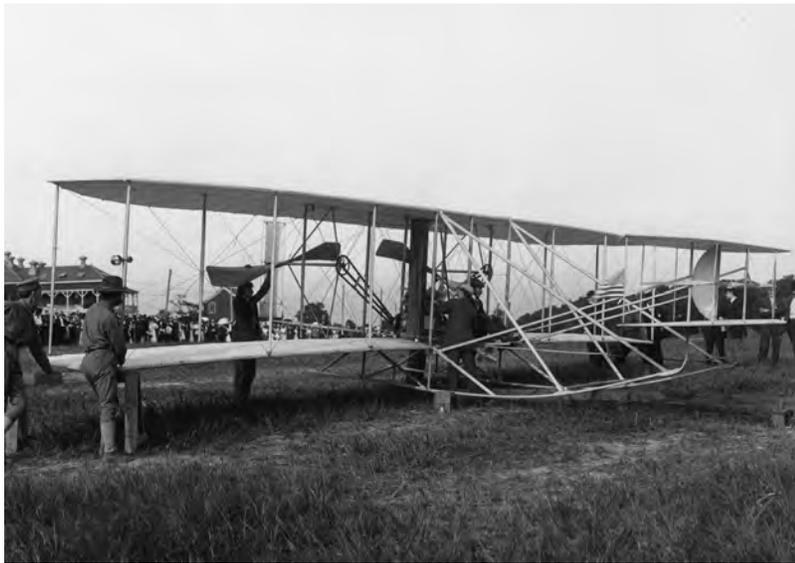
For takeoffs, the Wrights had devised a launch system that used a heavy weight suspended under a derrick. The weight was connected to a cable that ran through pulleys from the derrick to the end of the launch rail, then back to the frame of the machine. When the weight was released, the cable pulled the machine down the rail into the air. A hub from a bicycle wheel mounted on the machine's front crosspiece rolled on the rail, while the rear of the machine rested on a small carriage that rode on the rail. This carriage was not connected to the machine, but fell off the rail as the machine lifted into the air. This launch system was first used in 1904 at Huffman Prairie, but in 1908, it satisfied a requirement of the specifications that the machine be capable of flying from any terrain encountered by the Army.<sup>6</sup>

A board of Army officers that had just approved the tests of a dirigible were still at Fort Myer to monitor Orville's flights and make sure the aircraft met all the Army's specifications. The officers included Major George S. Squier, the board president; Lieutenant Frank Lahm, who had raced in and won balloon races; Lieutenant Benjamin Foulois, who had been placed on the board because of a thesis on dirigibles and airplanes he had written at the Signal Corps School; and Lieutenant Thomas Selfridge, who was a member of the Aerial Experiment Association. Squier, Foulois, and Lahm reached general officer rank; Squier and Foulois ultimately headed the Army's air arm, Squier as Chief Signal Officer and Foulois as Chief of the Air Corps. Selfridge was one of the Army's most experienced aviators: he had designed and flown aircraft for the Aerial Experiment Association, and he had been one of the pilots taught to operate the Army's new dirigible.<sup>7</sup>

Orville was very cautious; he began with very short flights, gradually increasing the time in the air; and he would not fly when wind speed was more than a few miles an hour. The second, on the 4th, was just over four minutes, but the wind was too strong for flying on Saturday the 5th. Orville and Wilbur, sons of a devout clergyman, would do no work on Sunday, and no flying took place on the

**THE MACHINE RESEMBLED THE WRIGHTS' 1903 FLYER, BUT WAS LONGER, HEAVIER, HAD A BROADER WING SPAN, AND HAD A MORE POWERFUL ENGINE**

**THE FIRST FLIGHT ON THURSDAY, SEPTEMBER 3, LASTED ONLY A LITTLE LONGER THAN A MINUTE**



Orville checks engine before start. Maj. Squier sits in passenger seat, Sept. 12, 1908.

**THE FLYING AT FORT MYER ATTRACTED LARGER AND LARGER CROWDS, INCLUDING PRESIDENT TAFT**

6th. On Monday, Orville flew for less than a minute; but on Tuesday, September 8, he made two flights: the first lasted over eleven minutes, the second, seven minutes and thirty-four seconds. Both flights could have lasted longer: he ended the first to come down for goggles; the second ended because of darkness.

These short flights were merely a prelude for the flights that were to come. Over the next four days, Orville made increasingly longer flights, the longest on Saturday, September 12, when he flew for over an hour and fourteen minutes. He took passengers up twice, Lieutenant Lahm on the 9th for six minutes and Major Squier on the 12th, when they stayed up for over nine minutes. On the 10th, he reached two hundred feet, the highest altitude an airplane had flown. During one of the

flights, Orville twice flew in a figure 8 pattern over the field, demonstrating the capability of the machine and his control of it.<sup>8</sup>

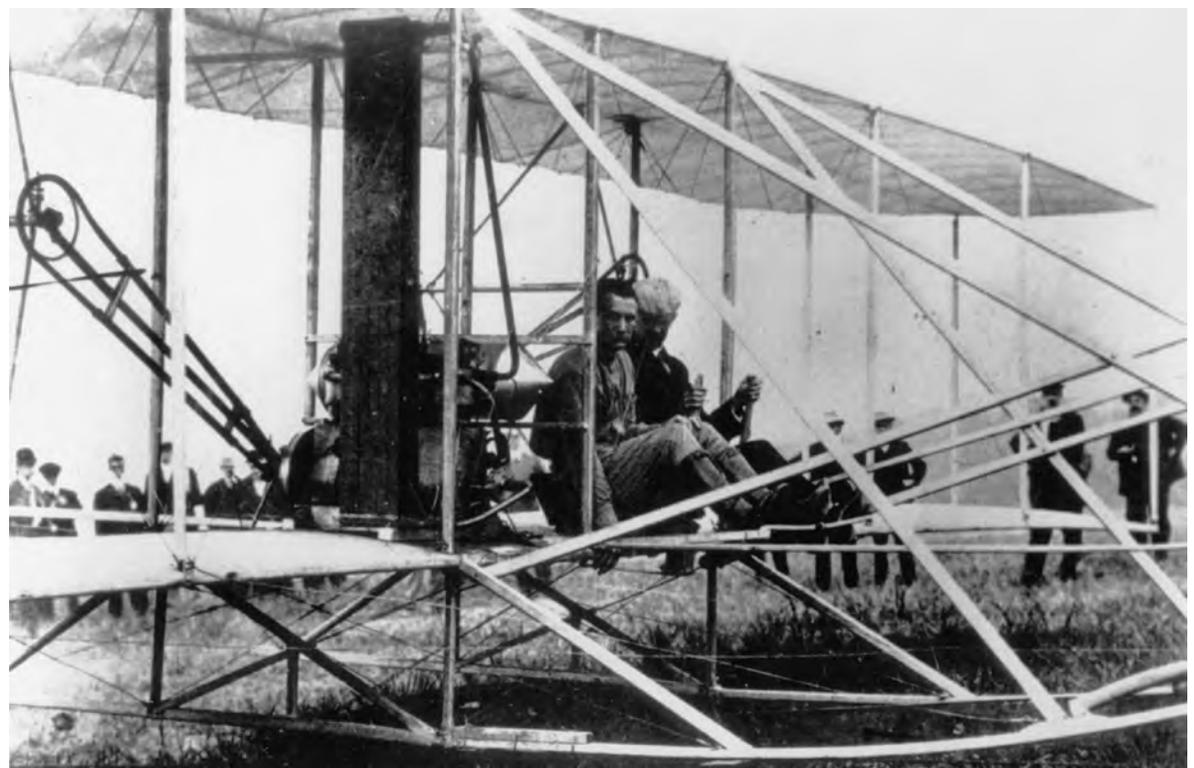
Orville was not the only person flying at this time — Wilbur had just begun to demonstrate an aircraft in France, and the brothers were almost in direct competition with each other for record flights. Other people were flying experimental aircraft in Europe, and the Aerial Experiment Association was experimenting in North America. However, the Wrights' wing warping system gave them control of their aircraft not possible with other aircraft. With their control, they could bank and turn in tight circles, while the others could only make wide skidding turns, and the Wrights' machines were able to fly farther, higher, and longer.<sup>9</sup>

The flying at Fort Myer attracted larger and larger crowds, including President Taft, members of his cabinet, and observers from the military of several countries. Also present were competitors of the Wright brothers, especially Alexander Graham Bell and Glenn Curtiss of the Aerial Experiment Association.<sup>10</sup>

There had been no flying for four days. Sunday was the 13th, with no flying. On Monday, Orville overhauled the engine, and the wind was too strong on Tuesday and Wednesday. On Thursday, September 17, because Lieutenant Selfridge and Lieutenant Foulois were going to St. Joseph, Missouri, to exhibit the Army's new dirigible, Orville took Selfridge up as a passenger.<sup>11</sup>

On the fourth circle of the field, part of one of the propellers flew off, Orville lost control, and the aircraft crashed. Selfridge died as a result of the crash, and Orville was badly injured, suffering a broken leg, broken ribs, and back injuries that

Lt. Selfridge and Orville in machine before takeoff on Sept. 17, 1908, the day of the crash.



**ON THE FOURTH CIRCLE OF THE FIELD, PART OF ONE OF THE PROPELLERS FLEW OFF**

Crash of Sept. 17, 1908. Lt. Selfridge was killed and Orville badly injured.

## IN SPITE OF THE CRASH, THE WRIGHTS' FLIGHTS IN EUROPE AND AT FT. MYER HAD STUNNED OBSERVERS



bothered him the rest of his life. He spent seven weeks in the Fort Myer hospital, not returning to Dayton until November 1.<sup>12</sup>

The cause of the accident was later determined to be the propellers. One had split during the flight, causing vibration. Orville related that he felt the vibration and decided to stop the engine. A few seconds later he felt two large jolts, followed by severe shaking. The vibration loosened the propeller, and it hit the supports for the rear rudder, breaking the propeller and causing the rudder to collapse. The combination of one broken propeller and the inoperative rudder made the machine uncontrollable.<sup>13</sup>

Orville inside machine about to get into seat. Wilbur at right wing tip. Engine is running and machine is connected to launch cable, June 29, 1909.



In spite of the crash, the Wrights' flights in Europe and at Ft. Myer had stunned observers. Major Squire said that no one could doubt that the problems of flight had been solved and that the Wright brothers' place in history was assured. The brothers requested and received an extension to their contract.<sup>14</sup>

While Orville recuperated, Wilbur continued to fly in France, establishing height and endurance records. In January, when he was finally able to travel, Orville joined Wilbur in Europe. They returned to Dayton in May to prepare a new machine for the postponed tests, but first tested the propellers to determine what had caused them to split. Though they had earlier tested the propellers, which they had designed and made, they had done so by placing weights on the blades equal to the force they estimated the propellers would generate. This time they tested them dynamically by spinning the propellers with an engine. They discovered that the blades were too thin, which caused them to flatten out and split during use. They made new thicker blades to prevent the splitting and reinforced the propeller mounts to prevent a blade from striking the rudder supports.<sup>15</sup>

### Fort Myer, 1909

Orville and Wilbur built a new machine for the 1909 tests with slightly smaller wings to increase its speed. It was higher off the ground, and the skids were turned up more in the front. The machine arrived in Washington on June 18, and Orville, with Wilbur accompanying him, got to Fort Myer on the 20th. They completed assembly of the machine by Thursday, June 24, and tested the engine on Friday and Saturday. They erected the



(Top) Orville in front of Lt. Lahm preparing for one-hour flight. Lt. Foulois is behind aircraft.

(Above) Wilbur watches clock at Ft. Myer during speed trial, July 30, 1909.

## AFTER THE CRASH ON JULY 2, THE WRIGHTS CHANGED THEIR CONTROL SYSTEM

launching derrick on Saturday, leading to expectations of flights on Monday, June 28.<sup>16</sup>

As in 1908, the flights started slowly. High winds prevented flying on Monday, disappointing the huge crowd that had gathered. On Tuesday, June 29, Orville made four very short flights, all under a minute, because of engine problems, and flew only one short flight on Wednesday. On Thursday, July 1, Orville made three flights, with the longest lasting only about nine minutes. The engine quit in the middle of a flight on the 2d, and Orville crashed again, hitting a tree behind the hangar. Structural damage to the frame was not severe, but the fabric covering the wing was badly torn, and Orville went back to Dayton for another one.

He returned on July 7 and again began making short flights, the first on the 12th, with others on the 13th and 17th. He made two flights of about a half-hour each on the 19th and made a flight of an hour and twenty minutes on the 20th, exceeding the length of the longest flight he made in 1908. Between the 21st and 26th, he made several flights, none longer than 20 minutes.<sup>17</sup>

Sometime after the crash on July 2, the Wrights changed their control system. Photographs taken of the machine on July 2 show three levers and a single front vertical stabilizer like the 1908 machine, while photographs taken later in July show two levers, the right lever with a top portion that could be moved left or right, and two vertical stabilizers between the front vertical surfaces. As before, the left lever controlled the front elevators and the right lever controlled wing warping. The moveable top portion of the right lever controlled the rear rudder in an instinctive action: the machine turned in the direction it was moved.

On July 27, in the first official flying test for the Army, Orville took Lieutenant Lahm up as a passenger. The flight lasted for one hour, twelve minutes, and thirty-seven seconds, satisfying the Army's requirement for a one-hour flight with a passenger. The final requirement was the speed test. The contract listed a range of prices for the aircraft based on the speed attained in the speed test. For every mile an hour under forty, ten percent of the bid price would be deducted, and for every mile an hour over forty, ten percent would be added. However, if the speed was less than thirty-six, the machine was unacceptable.<sup>18</sup>

The course that had been chosen was from Fort Myer to Shuter's Hill in Alexandria, Virginia, and back, a distance of ten miles. A balloon was anchored at the five-mile mark for the machine to circle, but the time required to turn around the balloon did not count against the speed. Orville selected Lieutenant Foulois to accompany him, partly because of his flying experience in the dirigible and his navigation skills, but also because of his small size. Everything was ready on July 28, but wind and rain on both the 28th and 29th held the test up until July 30.<sup>19</sup>

Lieutenant Foulois carried two stop watches to record the times going and returning, as well as a map, a compass, and a barometer. Orville circled the field twice to gain altitude, then headed south for Alexandria. Two members of the board had gone to Alexandria to record the times when Orville and Foulois passed the mark and when they started back; other members of the board recorded times at Fort Myer.<sup>20</sup>

The board averaged all the times recorded by the various members. The official speed for the trip to Alexandria was 37.735 miles per hour, that for the return trip was 47.431, an average of 42.583 miles per hour. With a speed of two miles per hour faster than the required 40, the Army purchased the Wright Brothers machine for \$30,000.<sup>21</sup>

The contract required the Wright brothers to instruct two people in the operation of the machine. Because the parade ground at Fort Myer was small and surrounded by trees, and because the post commander thought the flights were interfering with his drilling, another location was needed. Lieutenant Lahm located an acceptable area at College Park, Maryland, just north of Washington. Here the Army built its first air field and the Wrights conducted their first training.<sup>22</sup> ■

Wilbur (left), Foulois (center), and Orville (right) on day of speed trial to Alexandria, July 30, 1909.

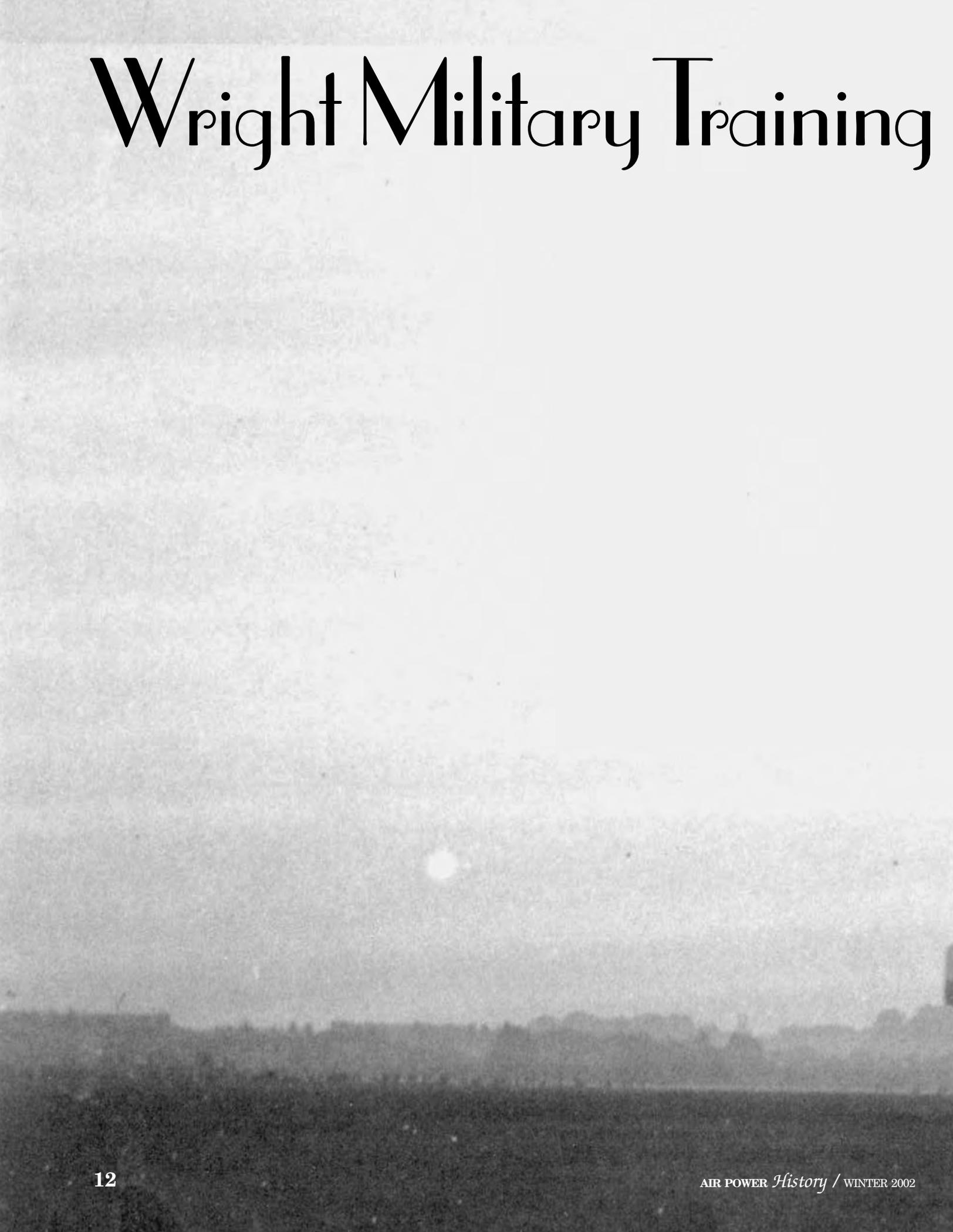
BECAUSE THE PARADE GROUND AT FORT MYER WAS SMALL AND SURROUNDED BY TREES, ... ANOTHER LOCATION WAS NEEDED



#### NOTES

1. Charles DeForest Chandler and Frank P. Lahm, *How Our Army Grew Wings* (New York: Ronald Press Company, 1943), pp. 295-98.
2. Chandler and Lahm, pp. 150-152; Marvin W. McFarland, editor, *The Papers of Wilbur and Orville Wright, Volume Two: 1906-1948* (New York: McGraw-Hill, 1953), pp. 859-60.
3. McFarland, pp. 860-80, 888-91.
4. Peter Andrews, *In Honored Glory: The Story of Arlington* (New York: G. P. Putnam's Sons, 1966), pp. 16, 19-20.
5. McFarland, pp. 913-17.
6. Chandler and Lahm, pp. 299-302; Tom D. Crouch, *The Bishop's Boys: A Life of Wilbur and Orville Wright* (New York: W. W. Norton & Company, 1989), pp. 283-84; McFarland, p. 1190.
7. Juliette A. Hennessy, *The United States Air Arm, April 1861 to April 1917* (Washington: Office of Air Force History, 1986), pp. 16, 33; Chandler and Lahm, pp. 169-78.
8. McFarland, pp. 917-22.
9. Fred Howard, *Wilbur and Orville: A Biography of the Wright Brothers* (New York: Alfred A. Knoff, 1988), pp. 269-71; McFarland, pp. 911-24.
10. Howard, p. 268; Chandler and Lahm, p. 153.
11. Benjamin D. Foulois, with C. V. Glines, *From the Wright Brothers to the Astronauts: The Memoirs of Major General Benjamin D. Foulois* (New York: McGraw-Hill, 1968) pp. 54-56; McFarland, p. 924.
12. Crouch, p. 379; Howard, pp. 273-74; Chandler and Lahm, p. 154.
13. Chandler and Lahm, p. 154; Foulois, p. 57; McFarland, pp. 936-38, 953-54.
14. Foulois, p. 57.
15. McFarland, pp. 953-55.
16. Hennessy, p. 33; McFarland, pp. 956-57, 1193-96.
17. McFarland, pp. 957-60.
18. Chandler and Lahm, pp. 156, 296; McFarland, p. 960.
19. Crouch, p. 397; Foulois, pp. 62-63; Howard, pp. 303-04.
20. Chandler and Lahm, pp. 156-59; Foulois, pp. 63-65.
21. Chandler and Lahm, pp. 160-61; Foulois, p. 65.
22. Chandler and Lahm, p. 162; Foulois, pp. 65-66.

# Wright Military Training

A grainy, black and white photograph of a landscape, possibly a field or airfield, with a bright light source in the sky. The image is very faded and has a high level of contrast, making details difficult to discern. The foreground is dark, and the background is light with some faint, indistinct shapes.

# at College Park in 1909



Catherine Wallace Allen

(Overleaf) Numerous times during flight training at College Park, Lts. Lahm or Humphreys or Wilbur Wright would continue flying until well past sunset. (Courtesy Wright State University Special Collections.)

(Below) Wilbur Wright in shirt sleeves with his two new students, Lts. Frederic Humphreys and Frank Lahm, surveying the field at College Park prior to flight training. (US Air Force Collection, National Archives (RG342))

Nestled among a growing industrial area and residential community in the heart of College Park, Maryland is a small airport of 40 acres. Looking no different than any other small airport of its size, the “College Park Airport” has a wonderful story to tell of the growing years of early aviation. Few would suspect that this beautiful field with about 100 modern aircraft was once witness to the triumphs and tragedies surrounding the birth of military aviation and those amazing pilots who captivated the nation’s attention in the first decade of the twentieth century.

In the summer of 1909, the country could not seem to get enough of the two brothers who had done what no one had believed could be done. The brothers, Wilbur and Orville Wright, had flown! And though this marvelous feat had occurred nearly six years previously, the Wrights were

pleased that after much hard work to gain recognition for their achievement, their success was now splashed across the headlines of almost every major newspaper here and abroad.

After the Wrights met the last specification of the government’s contract at Fort Myer, Virginia, the military accepted its first aeroplane into the inventory of the U.S. Army on August 2, 1909.

There remained one final condition of the Wright brothers’ military contract and that was the training of two military officers to fly the machine. On August 6, the Acting Chief Corps Signal Officer of the Army, informed the American Aeronaut, that it was probable that a field other than that of Fort Myer would be selected for this instruction, although a field had not yet been secured. This news was evidently a relief to the Post Commander of Fort Myer because he felt the flights and the crowds disrupted daily life on the drill field.<sup>1</sup>

Lt. Frank Lahm of the Cavalry, had been detailed to the Aeronautical Board—formed to oversee the Wrights’ acceptance trials—and assisted Orville Wright at Fort Myer during the military trials. Lahm was a noted balloonist and winner of the first Gordon Bennett Balloon Race and trophy (1906). Lahm had received much of the credit for the establishment of the Aeronautical Division, since many felt that it was developed “as a result of the pride and interest aroused when he won the Gordon Bennett Balloon race against the much more experienced aeronauts of Europe.”<sup>2</sup>

Lahm had made many free balloon ascents around the Washington, D.C. area in an effort to locate a more suitable airfield for the training. The site that had most caught his eye during these trips was a large, very flat open field in the town of College Park, Maryland, adjacent to the Maryland Agricultural College—now the University of Maryland.

Bounded on one side by the B & O Railroad tracks, the field was near to the electric rail line, and adjacent to a thriving town that would be important for providing lodging and supplies for the officers.

Lahm had been selected as one of the two pilots to receive training by Wilbur Wright, the other was Lt. Frederic Humphreys. Humphreys was also a member of the Aeronautical Board. Both men accompanied Wilbur Wright to inspect the field and they deemed it suitable for flying.

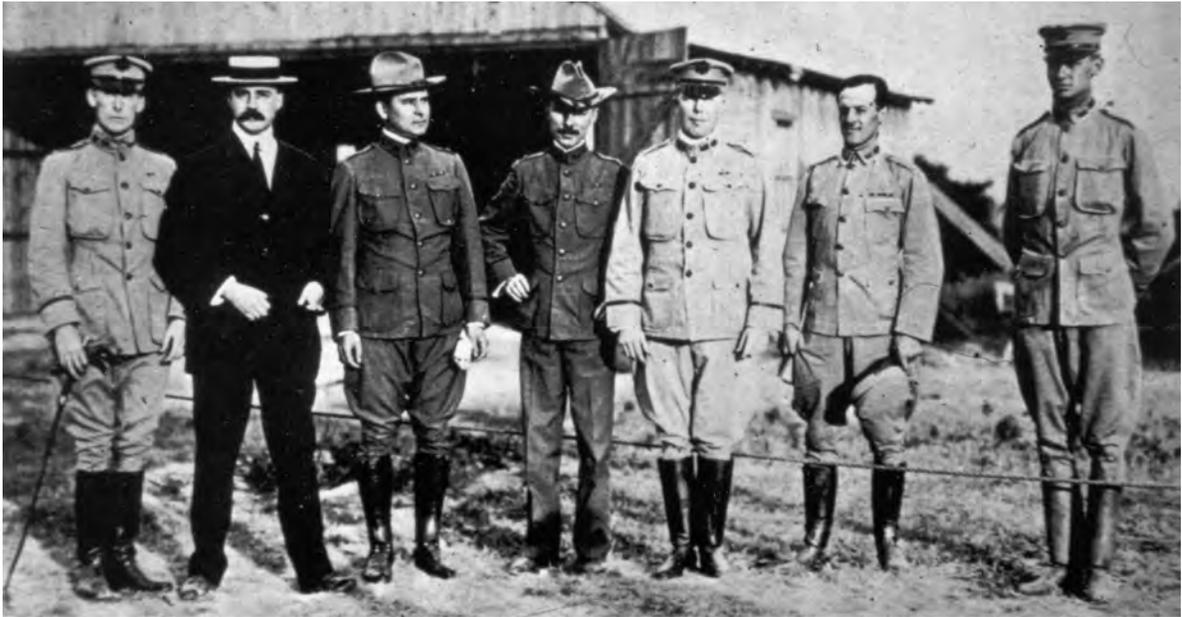
On August 25, 1909, the Army Quartermaster signed a renewable lease for 160 acres of property with one of the fields owners, Mr. Edward A. New-



*Catherine Allen has been involved in aviation history since 1980 when, as a historian for the Maryland-National Capital Park and Planning Commission’s Department of Parks and Recreation, she was asked to create a museum for College Park Airport. With her master’s degree in museum studies from The George Washington University, Ms. Allen assembled a wonderful collection of aviation artifacts, memorabilia, and photos that quickly outgrew their original site. When the museum opened in 1998, in a new 27,000 square feet facility, Ms. Allen was named its director. She has served as a mentor to numerous other aviation and history museums and is a frequent speaker on early aviation and the Wright brothers. She is currently working on a book on the history of College Park aviation.*

The Aeronautical Board was formed to oversee the Wright Trial and Contract that took place at both Fort Myer and College Park Airfield in 1908 and 1909. (US Air Force Collection, National Archives (RG342))

**THIS BEAUTIFUL FIELD ... WAS ONCE WITNESS TO ... THE BIRTH OF MILITARY AVIATION**



**ON OCTOBER 6, THE ARMY'S MILITARY AEROPLANE HAD ALREADY BEEN BROUGHT OVER TO THE NEW FIELD**

**SOME IN THIS DETACHMENT OF ENLISTED MEN HAD PARTICIPATED IN THE TRIALS AT FORT MYER**

man, for \$200 a month. A well and pump were installed in the middle of the field, some trees were removed, and the construction of a building to shelter the aeroplane was approved. By September 18, Major George Squier of the Signal Corps wrote that with the shed nearly complete, the aeroplane, Aeronautical Detachment, and officers to receive instruction in operating the machine would likely go to College Park the following week.<sup>3</sup>

While awaiting improvements to the airfield, and with Orville off to Europe with sister Katharine, Wilbur made news in New York with another Wright plane. As part of the Hudson-Fulton celebration at the end of September, he made headlines in that populous city with awe-inspiring flights down the Hudson River and around the Statue of Liberty. The tremendous "crowds that lined the Jersey shores of the river, as well as those watching from the assembled battleships over which he flew, gave him a tremendous ovation for his flights."<sup>4</sup> It is doubtful that anyone was left in the country who did not know who the Wrights were after those attention-getting flights.

Although the Chief Signal Corps Officer had chosen two pilots for instruction at College Park that autumn, Lt. Humphreys was not originally one of the two. Lt. Benjamin Foulois, also a member of the Aeronautical Board, had originally been selected for instruction with Lt. Lahm. It may be remembered that Foulois, keenly interested in the Wrights' flights, had accompanied Orville on several flights while at Fort Myer in both 1908 and 1909 and most recently participated in the final speed test around Shuter's Hill in Alexandria, Virginia, prior to the acceptance of the plane. Foulois was desperate to be one of the Army's first pilots, so it was a shock for him to get word that he was to be sent to Nancy, France, for the International Congress of Aeronautics at the beginning of September. Some have speculated that Foulois' last minute replacement was actually a reprimand for the outspoken opinions and rec-

ommendations he had earlier made about the future of military aeronautics, as well as his opinion on the usefulness (or lack thereof) of dirigibles.<sup>5</sup> Foulois' statements were in direct opposition to the prevailing opinions of the Signal Corps. Foulois quickly became enlightened about these facts when it became apparent that his trip was a waste of time since it did not provide his superiors or himself with any information that they did not already know.

By the time that Wilbur returned to College Park, on October 6, the Army's Military aeroplane had already been brought over to the new field on an Army wagon, and was stored in the newly built shed. Ten enlisted men—one corporal and nine privates—were assigned to the training field, to assist Wilbur Wright and his two students. Corporal Herbert Marcus was in charge of the detachment, which included Privates B. T. Hyde, E. O. Eldred, Bert Brown, Roy J. Hart, Eulle P. Gomerlinger, K. L. Kintzel, Bruce Pierce, F. O. Clarke, and Stephen J. Idzorek.

Some in this detachment of enlisted men had participated in the trials at Fort Myer, and some were members of the old balloon squad at that field. Now that the government owned the aeroplane (and it was not the property of the Wrights, as it was at Fort Myer), the enlisted men at College Park had much more responsibility for the aircraft than they did before. They looked after the tower, arranged the starting track with deference to the wind, operated the weight, moved the aeroplane, made a preliminary inspection, tested the working parts, and started the motor. They were also responsible for procuring all the materials needed to make repairs. They were diligent in their work and took a real interest and pride in helping out with this ground-breaking aeronautical work.<sup>6</sup>

When Wilbur was not flying, the enlisted men spent their time practicing telegraphy, which was required of every Signal Corpsman. It was especially important for them "because of the impor-



As two men spin the propellers, Wilbur in typical dress of coat and hat, checks out the engine. (US Air Force Collection, National Archives (RG342))

tant work in wireless and other telegraphy which the U. S. Army officers proposed to carry on by means of the airships." The *Washington Evening Star* further went on to say that in order to qualify the men for this work, short telegraph lines had been constructed at the College Park Airfield, with sending and receiving stations at opposite ends of the building and at almost any hour of the day, members of the detachment could be found at the keys of these stations.<sup>7</sup>

The enlisted detachment stayed in the shed, which was twice as big as the shed at Fort Myer. They slept in the rear of the building behind the aeroplane. Behind the shed was a double-wide tent that served as both a kitchen and mess hall. A cook, William Abolin, was hired for them; and a large stove was ordered from Fort Myer.<sup>8</sup>

Once the training began, Wright and the two lieutenants stayed at private homes across the railroad tracks in the town of College Park. The two officers stayed in the Eversfield home, with Wilbur next door at E. S. Fletchers, with all of them taking their meals at Mrs. Eversfield's.<sup>9</sup>

The first order of business, once everyone was settled, was to reassemble the biplane that had come from Fort Myer, which Wilbur did in the presence of his students on October 7. They were there as early as seven in the morning adjusting the engine, unpacking crates, and putting together the forward and rear sections of the aeroplane. Just after five in the evening, Wilbur asked Lt. Lahm if he wanted his first lesson in cranking the engine. Lahm, was given this honor because he was in charge of the military detachment at the field. After about eight attempts, the engine sputtered to life to the delight of all those who witnessed it. As it was near to 6 o'clock, Wilbur decided to leave further instruction until the following day.

As Wilbur and the others were packing up, he remarked to the newsmen (who were always standing by ready to record every comment and facial expression of the famous aviator), that he would have loved to take the aeroplane out for a flight. "This is an ideal day for flying", he said. "I would give \$100 a day if I could have this kind of weather for flying. He also remarked on the superiority of the College Park field over that of Fort Myer saying that the other was a little dangerous."<sup>10</sup>

There was a great deal of excitement in the air on October 8, with crowds of people arriving

throughout the day in carriages and automobiles. Brig. Gen. James Allen, Chief of the Signal Corps and Major Squier arrived for the first time to inspect the airfield and were greatly pleased with the improvements that had been made. They spent a great deal of time talking about the possibility of holding the 1910 International Air Meet at College Park, a topic that had dominated the news for the past few months. However, it had recently come to the attention of the Baltimore & Washington Aero Clubs—who were making this recommendation—that much to their disappointment College Park was a dry town. If this was to stand in the way of the movement they might have to get the state legislature to "wet it down" for the occasion!<sup>11</sup>

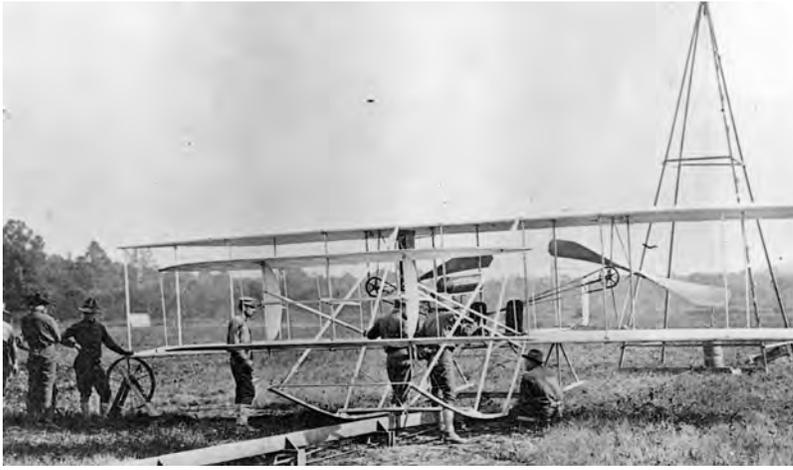
After a break for dinner about midday, Wilbur announced to the small crowd who had been waiting around, that there would likely be some flying that afternoon. Sure enough, with ideal conditions continuing, Wilbur took off down the starting rail about 3:30 that afternoon, circled the field for a few minutes and landed. When he was satisfied that the machine was performing up to expectations, he invited Lt. Lahm to join him, and they flew to an altitude of approximately 150 feet, returning after only about a five minute flight. He landed the aeroplane close to the monorail track and then Wilbur took up Lt. Humphreys for a flight of similar duration. And it was with these simple activities, as the papers reported that the College Park Aviation School was opened.

The following day, on October 9, "before many folks in the Capitol [sic] had finished eating breakfast...Wilbur Wright, the imperturbable, had broken one world's record for a heavier-than-air flying machine."<sup>12</sup> With both of his student pilots holding stop watches at either end of a closed-circuit one-kilometer course, Wilbur took off around the College Park field, almost slamming the grass with his quick, low turns. In doing so, however, Wright "broke the world's record for speed in an aeroplane over a 500 meter course, including a turn beyond the course, his time being 58 and 3/5 seconds, or 20 seconds less than that made by Leon Delagrangé over a similar course in France."<sup>13</sup>

Making headlines all over the country, witnesses hailed the feat as "a supreme test of navigational ability." Wilbur estimated that he had attained a speed of 55.82 miles per hour in the Army plane and afterwards predicted that he would see aeroplanes easily attaining speeds of 65-75 miles per hour. "This prediction was received with much interest, for the Wright's have not been much given to forecasts."<sup>14</sup>

Earlier in the day, Wright had decided to try another experiment—attempting to take off without the use of the catapult. However, while doing so, he forgot to release the trolley on which the aeroplane rode as it went down the track. After laughing at himself he decided to postpone this effort until after his attempt at the previously mentioned speed record. Once this was accomplished, he was ready to make a second attempt at lifting off without using the starting derrick.

**WILBUR ESTIMATED THAT HE HAD ATTAINED A SPEED OF 55.82 MILES PER HOUR ... AND AFTERWARDS PREDICTED THAT HE WOULD SEE AEROPLANES EASILY ATTAINING SPEEDS OF 65-75 MILES PER HOUR**



The Wright Military Flyer set up on the launching track. An enlisted man holds one of the two wheels that were placed under the bottom wing to help roll the aero to the track and catapult. (US Air Force Collection, National Archives (RG342))

**UP UNTIL OCTOBER 25, WILBUR MADE A TOTAL OF FORTY-SIX FLIGHTS AND ONLY FOURTEEN OF THEM WERE FLIGHTS HE MADE ALONE**

**IT WAS HARD TO RIVAL THE EXCITEMENT OF TRAINING ...EVERYTHING WAS NEW... AND THERE WERE THREE REPORTERS ASSIGNED TO THE AIRFIELD EACH DAY**

Wilbur easily rose off the rail and flew gracefully across the field, much to the delight and amazement of those who had come to witness these events.

Among these visitors, were the Chinese Prime Minister, Wu Ting Fang and his wife. The minister had arrived at the field in an automobile along with his bodyguard around midday, to witness two of the flights. The Associated Press in many reports of the day related that the Chinese diplomat was extremely curious:

*displaying amazement as the internal combustion engine was explained to him and inquiring particularly as to where the fire was. He asked Lt. Humphreys whether he could fly to New York, and ventured the opinion that the machine did not fly high enough, and that it made too much noise for utility in war. At the conclusion of the flights he warmly congratulated Mr. Wright. "When you get it finally perfected, bring it to China," said Mr. Wu.*<sup>15</sup>

Quickly sensing his own lack of diplomacy, the prime minister made a point of complimenting Wright on his and his student's fine flights, as well as commenting to the media on the future commercial and military uses of the machine. As usual, Wilbur took it all in stride. He seemed to be delighted at the accomplishments of the day, and how well his two demonstrations had succeeded.

It was experiments like these that occupied Wilbur's time when he took flights without his students. Up until October 25, Wilbur made a total of forty-six flights and only fourteen of them were flights he made alone. He was constantly evaluating and modifying how he flew the machine and these trials were always taken on flights without any passengers for safety reasons. October 9 and October 11 were the only full days he allowed himself to pilot the machine on every flight, alone.

The students and Wilbur flew nearly every day, except in the case of inclement weather or wind. They also never flew on Sunday, a day of rest when the Wright Brothers always refused to fly in deference to their father, who was a minister.<sup>16</sup> Most of the instruction was done in the very early morning hours, starting typically before 7:00 am, and later

in the afternoon when the winds were more favorable. Flights were typically of short duration, with Wilbur allowing his students to take over during the calmer portions of the flight.

Wilbur also included many "imaginary" flights as part of his training. Sitting in the aeroplane with one of his pupils next to him, he created scenarios for his student to follow. "We are going along now at a fast clip and want to turn to the left," he exclaimed, "and then he pushes forward a lever and yanks the boxlike rudder into a new position...then one of his pupil takes charge of the levers and in imaginary flight, maneuvers the machine up and down, in circles and sharp curves."<sup>17</sup>

Wilbur was quite pleased with the progress of the students so far, and in particular with Lt. Humphreys. Wilbur related that Humphreys was one of the most proficient pupils that he had taught. Wilbur attributed this to the fact that Lt. Humphreys was "a very daring automobile driver and was accustomed to handling a gasoline engine and steering wheel so that his chaperoning an aeroplane through the unobstructed air is not such a trick, seeing that he is used to dodging all sorts of wheeled vehicles on bad Maryland roads."<sup>18</sup>

Lt. Humphreys, for his part, was equally candid about his interest and enthusiasm for flying. After flying unaided through most of a training flight on October 19, he expressed his joy in being able to handle the machine on his own by exclaiming that "it was far better sport to ride in an aeroplane than to take a trip in a balloon or do anything else that was considered exciting."<sup>19</sup>

Certainly, it was hard to rival the excitement of training at the government's new training field. Everything was new, so everything was news, and there were three reporters assigned to the airfield each day to make sure that nothing got past them. Take the events of October 19, that made headlines across the country. After Wilbur had flown with Humphreys that morning for over ten minutes, he was going to make another short flight with Lt. Lahm before breakfast. About four to five minutes into the flight, the engine completely stopped, while Lahm was at the controls. Exhibiting great calm, Wilbur maneuvered the plane down to the field and glided gracefully to a stop. Once on the ground, Lahm told reporters that he could have brought the machine down, but that Wilbur was not taking any chances. Since they had not yet eaten, the typically nonplussed Wilbur had the privates return the plane to the shed as he and the officers walked over to Mrs. Eversfield's for a quick meal.

Upon returning, Wilbur speculated that the magneto had given out and that it would be only a small matter to put it into working condition again. He spent several hours examining the plane and its motor for problems, but he could not determine the problem. Suddenly, with many onlookers and reporters quietly standing by, Wilbur climbed onto the seat of the plane, opened the top on the gas tank and said laughing, "The joke is on me, boys," he said upon discovering there was no fuel in the tank. "The bird won't fly without gasoline."<sup>20</sup>



Wilbur Wright giving Lt. Humphreys instructions while still on the ground. (US Air Force Collection, National Archives (RG342))

**CROWDS WERE A CONSTANT PROBLEM AT THE COLLEGE PARK AIRFIELD AS THEY WERE AT FORT MYER**

**WILBUR ... TOOK OFF INTO THE NIGHT SOARING UP TO 150 FEET WHEN HE SUDDENLY SHUT OFF THE ENGINE**

This was not only an indication of both how seriously the Wrights took their work for the government, but how exaggerated were the stereotypes of the “humorless” Wilbur. Many mistook their quiet determination and perseverance in accomplishing their task as a character flaw or saw them as impersonal and unfriendly. However, the Wrights were doing a job, they were not there to entertain people. They also did not believe their machine should be used recklessly and were very clear about how important, and what a privilege, it was to fly.

In fact, after calling himself on his mistake with the empty gas tank, Wilbur was asked about the recent reports from Paris that Count de Lambert had flown over the Eiffel Tower in a Wright machine. Wilbur was quick to say that he did not approve of the flight “because there was always the possibility of someone being killed or injured.” He said that it was bad enough for the man in the aeroplane to risk his life without endangering the lives of others. He considered such exhibitions useless.<sup>21</sup>

The flights of the following day further served to support Wilbur’s comments. In the longest flight of the training, Wilbur had allowed Lt. Lahm to operate the machine for over one-half hour. As they were about to land, with Lahm at the controls, two spectators bounded across the line of flight “narrowly escaping death,” as the *Washington Evening Star* reported. Wilbur’s shouted warnings were unheeded, and he grabbed the controls and swung the machine sharply to the side. The paper further reported that “in avoiding a catastrophe, Wilbur displayed great skill as an operator. As an orator he distinguished himself for the forceful language in calling down the offending spectators.”<sup>22</sup>

Crowds were a constant problem at the College Park Airfield as they were at Fort Myer, though the remoteness of this aerodrome seemed to initially hold the promise of fewer visitors. There was a strict rule at the airfield against crossing the field while the aeroplane was in the air, and the enlisted men and even the young officer/students found themselves constantly trying to keep the crowds in line.

It was particularly crowded on the 23d when Lt. Benjamin Foulois was finally given an opportunity to get instruction from Wilbur Wright. Foulois had returned from Europe and reported to College Park on October 20th. Although it was not in his

contract, Wilbur agreed to give Foulois some initial flight instruction. Lieutenant Humphreys would take over his training after that. After short flights with his other students, Wright took Foulois up for his first flight which lasted about thirteen minutes. Due to his familiarity with the machine, from his Fort Myer flights, Wilbur allowed him to handle the control levers of the machine throughout much of the flight. With the wind springing up soon after, flights were suspended so that the aviators could get ready to attend a luncheon reception given on their behalf at the Maryland Agricultural College. Attending the reception were the luncheons hosts, the president and board of trustees of the college, as well as members of the joint committee of the Washington and Baltimore Aero Clubs, and others who were lobbying for the 1910 International Aeronautical Meet. Afterwards, Thomas Walsh, president of the Washington Aero Club and others accompanied Wilbur back to the airfield to assess for themselves its suitability for the meet and determined it to be ideal.

Two days later, Wilbur made one of his most daring flights when he took off into the night soaring up to 150 feet when he suddenly shut off the engine. As the propellers ceased to spin the crowd below gasped in concern. Everyone watched in awed silence as the skillful Wilbur Wright glided the machine to the ground where the crowd erupted in loud applause. Wilbur explained that such feats were useful to prove that if a similar situation, though unplanned, should occur to the engine with the plane in mid-air, then its pilot would be skilled in getting it safely back to earth.

Wright was not the only one to gain the attention of the country with spectacular feats while at College Park Airfield. On October 26, both Lieutenants Humphreys and Lahm were ready to solo, and the reporters were in attendance! Humphreys was given the first chance to take the plane up. Although Lahm was in command of the school, Humphreys was given the opportunity to solo because it was his turn to fly. “The mere fact that it was his turn was sufficient reason for his being given about the highest honor that his teacher could bestow. Humphreys took to the air at 8:15 in the morning. With perfect control and grace he maneuvered the aeroplane around the field and while making a landing, hurdled over a tree stump, eliciting commendations from Wright and the early morning crowd. Wilbur complimented the new pilot by saying, “I suppose I ought to congratulate you, but it is such a matter of course. You handled the machine very well.”<sup>23</sup> Lahm soon followed, staying in the air for about twelve minutes and again handling the machine exceptionally well, with a perfect landing. Both aviators made rather low altitude flights, being no higher than thirty feet, at the request of their instructor who had asked that they stay close to the ground.

Later in the day, each pilot again took to the sky in the presence of hundreds of spectators, who had come to see the government’s new military aviators.<sup>24</sup> Lahm made a particularly newsworthy



The Military Flyer as it arises from the monorail at the College Park Airfield, (US Air Force Collection, National Archives (RG342))

**WILBUR... WAS TO TAKE UP MRS. RALPH VAN DEMAN**

flight when he took to the rapidly darkening sky, circling for forty minutes in almost total darkness. Spectators at the field could not see the aeroplane, they only knew of its presence by the sound of its engine. Upon landing, Wright asked Lahm, "if he had a good appetite, to which Lahm replied that he came down only because it was suppertime."<sup>25</sup> It was also during this flight that Lahm challenged an express train to a race, keeping up with it the entire way across the airfield. This was a demonstration that Wilbur had done many times before him and always seemed to delight the crowd—this time being no exception!

Reporters, anxious to elicit further comments from Wilbur on their accomplishments, complained that it was "very difficult to get him to say anything about the progress of his pupils, but he admitted that Lt. Humphreys was handling the machine alone rather sooner than anybody else that he had taught"<sup>26</sup> including Lt. Calderara of Italy, who had formerly held that distinction.

Now that the contract with the military had been fulfilled, Wilbur no doubt gave a sigh of relief and turned his attention toward other things. First among them was to take up Mrs. Ralph Van Deman, a friend of Katharine Wright, who had made numerous requests for Wilbur to take her on a flight.

Times being what they were, Wilbur would not consent to the flight without first gaining permission from her husband, Capt. Van Deman of the 21st Infantry. A daily visitor to the fields at both Fort Myer and College Park, Mrs. Van Deman stepped up to the plane with little or no trouble. Once seated, she had her long skirts tied for her and they flew down the monorail track with relatively calm winds blowing on the field.

The plane failed to rise. Nine of the enlisted men pulled the aeroplane back down the track with Mrs. Van Deman still seated, so as not to impose upon her. On the second start the mechanical bird soared into the air reaching a high altitude before returning to earth after about only four minutes. Mrs. Van Deman immediately jumped down to a sea of applause. "Oh dear me, it was simply grand," she said to Mr. Wright. "Now I understand why birds sing when they can fly through the air," said Mrs. Van Deman. "It is simply ideal. There was no reason for fear," said Mrs. Van Deman, "with such a skillful navigator as Wilbur Wright at the helm. I had no thought of fear. I did not even think of how long I was up, except that I knew the time was too short."<sup>27</sup>

Capt. Van Deman remarked to reporters of the Washington Evening Star (October 27, 1909) that

he was very glad Wilbur had taken her up because this now ensured peace in his family! As can well be imagined, this flight made headlines across the country, with Mrs. Van Deman's words—so characteristic of the era—splashed across the front page of every paper. This flight, on October 26, made her the first woman passenger to fly in the United States.

The following day was a busy day at the airfield. At about 4:00 o'clock in the afternoon, Wilbur offered to take up Capt. Charles Chandler of the Signal Corps. Chandler, a noted balloonist like some of the other officers, was also a member of the Aeronautical Board formed to oversee the Wright trials. (Chandler would later go on to serve as Commanding Officer of the military's first Army Aviation School to be based at College Park in 1911.)

The last flight of this noteworthy day was made by new pilots Lieutenants Humphreys and Lahm—together for their first flight. After flying about 36 minutes while the aeroplane was about ten feet from the ground, one of the guy wires broke from where it was held, and Lt. Humphreys immediately shut off the engine and glided to earth safely, just as he had practiced numerous times before under the instruction of Wilbur Wright.

The need for this type of training was made evident, yet again, three days later when as Humphreys and Foulois were flying, the motor suddenly stopped in mid-flight. This was caused by a gear tooth on the engine magneto breaking off. As reported by the paper:

*the flight...came near ending disastrously. Had not Lt. Humphreys, who was at the helm, controlled the biplane with such splendid skill when the motor suddenly came to a stop in midair, the aviator might have had a serious accident.*<sup>28</sup>

Wilbur had said on many occasions that training of this sort was mandatory for the safe operation of the aeroplane, and his predictions were proven to be true over and over again.

It took Wilbur only one-half hour to temporarily repair the machine for the flights of the afternoon, which went on until well after 5:00 o'clock with Humphreys again flying with Foulois and allowing the fledgling pilot to operate the machine.

Humphreys was a splendid aviator but news had reached the field the previous day that as an officer of the Army Corps of Engineers, Humphreys' temporary detail to the Signal Corps for the purpose of aeronautical training, had come to an end. There was a great feeling of regret among those at the school on his imminent departure. Wright had already expressed his opinion that Humphreys was one of his best pupils, "and already his ability as an aviator ranks him among the best in the country."<sup>29</sup>

In fact, Lt. Lahm was also only temporarily assigned to the aeronautical unit, being detailed from the Cavalry. The so-called "Manchu Law"

**WILBUR WOULD NOT CONSENT TO THE FLIGHT WITHOUT FIRST GAINING PERMISSION FROM HER HUSBAND, CAPT. VAN DEMAN**

**LAHM HAD BEEN RELIEVED FROM DETAIL TO THE SIGNAL CORPS AND ASSIGNED TO THE 7TH CAVALRY ...**

which required all line officers to return to duty with troops in their original branch of the Army after detached service of four years was the reason for these actions.<sup>30</sup> However, both pilots continued to fly and break records until the weather would no longer permit flights, or until their orders detailed them to a new location.

The officers were not the only ones to leave the College Park Airfield. Wilbur expected to be leaving any day now that his contract with the government was completed. Wilbur felt that he had done all that he set out to do at the College Park field. His students had mastered the handling of the biplane and he was quite confident in their abilities.

On November 2, he confided to several of the reporters that he was considering leaving the airfield that day, however, for some reason he delayed his departure. Though the day was windy, he made two flights, each lasting about two minutes. His last flight with Lt. Lahm was to be the last time he would ever fly in public and one of the last flights he made as a pilot.<sup>31</sup>

The following day, he thought he would take up Lt. George G. Sweet, but it was not to be. Sweet was the naval representative on the Aeronautical Board and had been present during the trials at Fort Myer. After two attempts to take off with Wilbur did not work, Wright gave over the piloting

duties to Lt. Lahm. "Lt. Sweet was 17 pounds in excess of any other passenger that had been taken up here"<sup>32</sup> so it was assumed that his weight may have had some relevance to the flight, or lack thereof.

Lahm successfully got off the ground with Sweet for an eight-minute flight. This was Lahm's first opportunity to carry a passenger (who was not a pilot) and allowed Lt. Sweet to become the first naval officer to fly in an aeroplane.

On November 3, Lieutenants Humphreys and Foulois were in the air for over sixty-one minutes, nearly breaking the world's record for carrying a passenger that had been established by Wilbur Wright at Fort Myer. Unfortunately, when Lt. Lahm emerged from the shed and waved to his friend, the young aviator landed thinking Wilbur wanted him to quit. All expressed regret that they had not been more cognizant that a record was so close to being broken.

Following these notable flights Wilbur finally departed the College Park field for New York, to welcome his brother on his return trip from Europe. Newspapers reported that he would likely not return and that his departure showed how completely his students had mastered the handling of the biplane.

On November 5 events came to a close at the airfield, when Lahm and Humphreys were flying together. After making a low turn, the left side of the aeroplane dipped down just enough to touch the ground. In doing so, the plane was forced to cartwheel over, damaging both the right wing of the military flyer and its right skid. Fortunately, neither of its pilots was hurt.

Since Wilbur was no longer present at the field, he was not able to assess the damage or make repairs. In addition, the cloth covering the wing had been badly torn, and as this fabric had to be ordered from the Wright factory in Dayton, Ohio, activities came to a standstill at College Park.

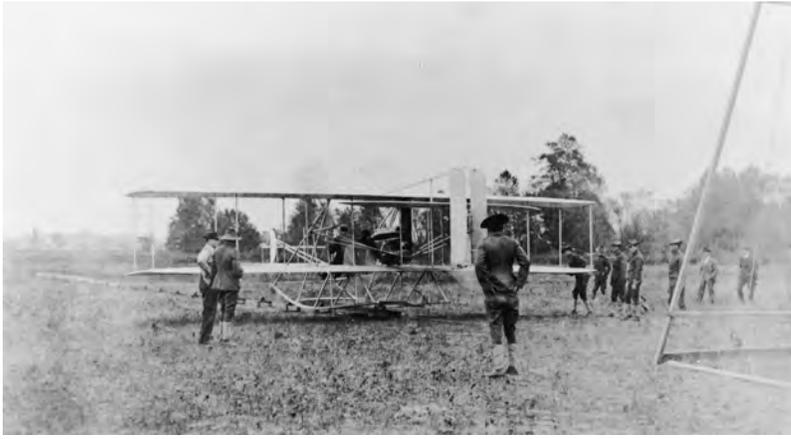
Within two weeks, Lahm had been relieved from detail to the Signal Corps and assigned to the 7th Cavalry at Ft. Riley, Kansas. Humphreys returned to the Washington Barracks, and it was said that he was so upset at this turn of events that he resigned his commission.

When this nation was called to war in 1917, Humphreys responded and served for several months as an officer of the Aviation Section of the Signal Corps. Of course, it was necessary for him to learn the new type of airplane control that had been adopted years after his first qualifications.<sup>33</sup>

The detachment of enlisted men were first sent to Fort Myer. Later, five of those men were put on temporary duty with Lt. Benjamin Foulois at Sandy Hook, New Jersey, in connection with the proposed tests of firing on captive balloons that was taking place there.<sup>34</sup> On November 20, the Wright plane was removed from College Park to Fort Myer, where it was stored temporarily in the balloon shed.

Mrs. Ralph Van Deman was a frequent visitor at Ft. Myer and College Park before Wilbur agreed to take her up for a short flight on October 26, 1909. (Photo courtesy Wright State University Special Collections.)





Wilbur and one of his students readying themselves for a flight as the unit of enlisted men look on. (Photo courtesy Wright State University Special Collections.)

In January the plane was put on exhibition at the Electrical Trade Exposition in Chicago and was then shipped to Fort Sam Houston, where Lt. Foulois and nine enlisted men from the aeronautical detachment were ordered there as well and such was the composition of the aeronautical detachment at the close of 1909. Since Foulois was originally with the Signal Corps, he remained as the lone pilot left of the three whom Wilbur had trained. Lieutenants Lahm and Humphreys both had approximately three hours and seven minutes and three hours and four minutes, respectively, in training before soloing. Although Foulois had

nearly the same amount of time in the Wright aeroplane (three hours and two minutes) at College Park, he never had an opportunity to solo.

While this was the end of an exciting year of groundbreaking events at the now well-known College Park Airfield, it was only the beginning of the significant role this field would play in aviation history. The military immediately received requests to use the field for flying experiments and activities from numerous would be aviators and civilian aviation companies. Most of these requests were granted as the "lease was to expire in February and it was not probable that it would be renewed."<sup>35</sup> Yet, unbeknownst to the military at the time, they would join these other inventors, aviation enthusiasts, and aviation pioneers in making this airfield the "Field of Firsts."

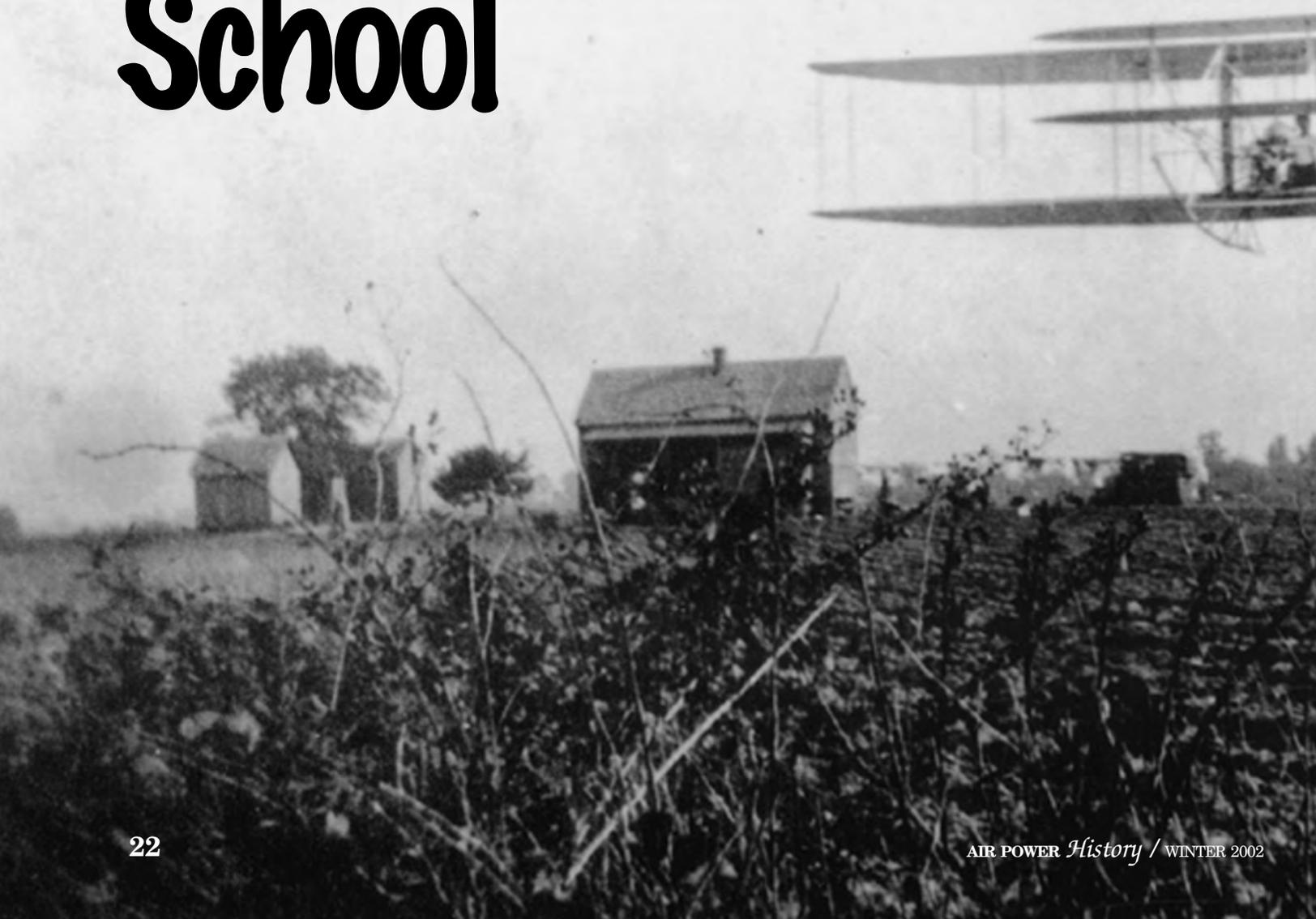
Returning in 1911, the Signal Corps would inaugurate the nation's first Army Aviation School. Many firsts, significant aviation events and activities would follow. A "Who's Who" of notable aviators and pilots would grace this beautiful airfield throughout its long history, which has operated continuously from 1909 through to the present day. Oh, the stories this airfield could tell! Who knew when it all began, that this airfield just outside of College Park, Maryland, would end up being so vital to the origins of military aviation and the growing years of aviation. ■

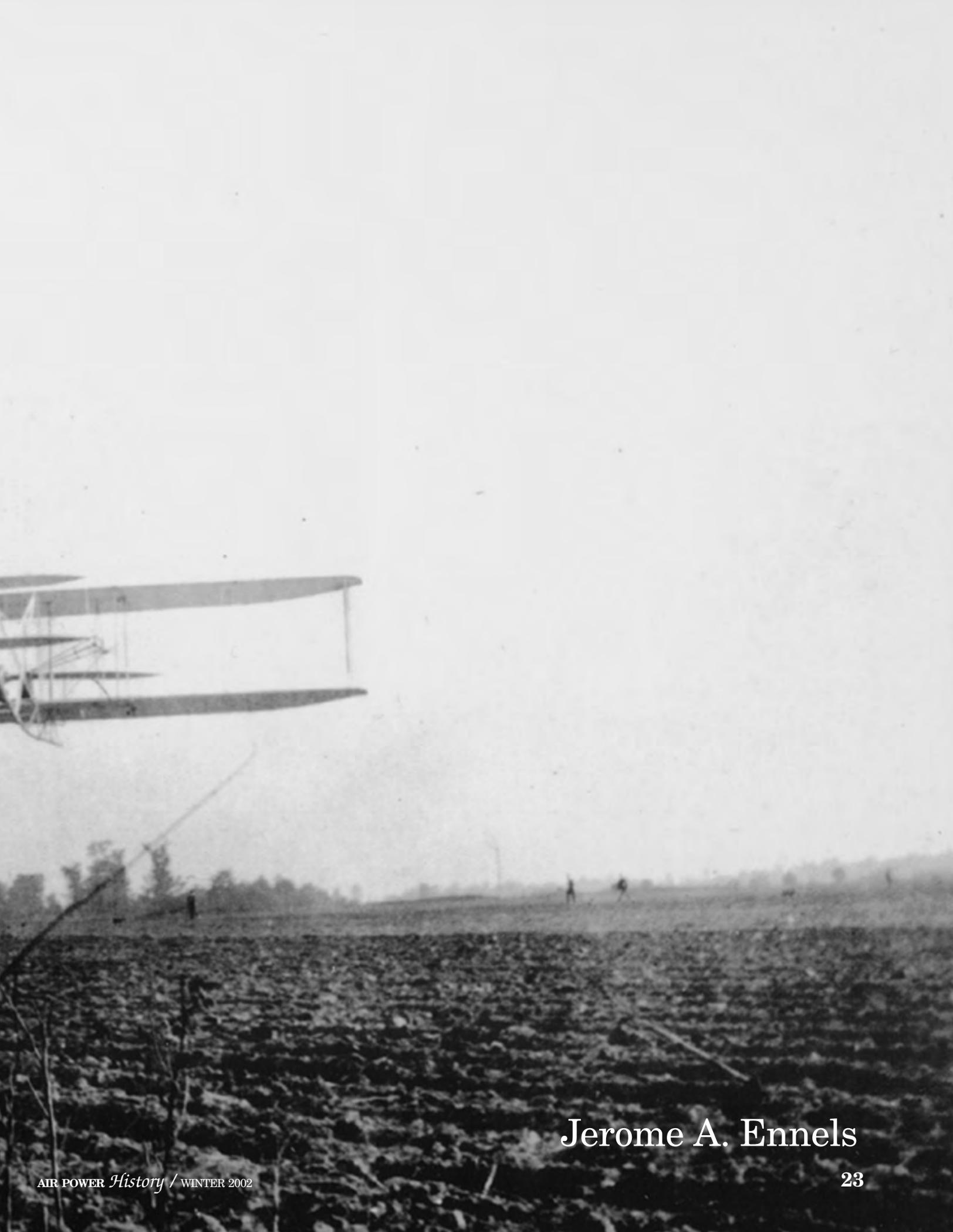
## NOTES

## HUMPHREYS RETURNED TO THE WASHINGTON BARRACKS, AND ... WAS SO UPSET ... THAT HE RESIGNED HIS COMMISSION

1. Records of the Office of the Chief Signal Officer, Record Group 111, Document File 1894-1917. National Archives, Washington, D.C.
2. *The Washington Evening Star*, Oct 18, 1919.
3. Ltr, Signal Corps to the Dienstbach-MacMarchen Publishing Co., New York, Oct 18, 1909, Records of the Chief Signal Officer, Record Group 111, National Archives, Washington, D.C.
4. "Wilbur Wright Here," *The Washington Post*, Oct 6, 1909.
5. Carroll V. Glines, *From the Wright Brothers to Astronauts: The Memoirs of Major General Benjamin D. Foulois* (New York: McGraw Hill Book Co., 1968), p.67.
6. "First Aeroplane Detachment of the U. S. Signal Corps is Organized," *The Washington Post*, Oct [17 or 18], 1909.
7. *The Washington Evening Star*, Oct 18, 1909.
8. "Wright Gives Lesson," *The Washington Post*, Oct 18, 1909.
9. "Wright Begins Work," *The Washington Post*, Oct 7, 1909.
10. "Wright Gives Lesson," *The Washington Post*, Oct 18, 1909.
11. "Depends on Weather," *The Washington Evening Star*, Oct 8, 1909.
12. "Record Smashing Begun by Wright," *The Washington Times*, Oct 10, 1909.
13. "World's Speed Record is Broken by Wilbur Wright at College Park," *The Baltimore News*, Oct 9, 1909.
14. "Mr. Wright Makes Aviation History in Record Flight," *The Washington Herald*, Oct 10, 1909.
15. *Ibid.*
16. Tom Crouch, *The Bishops Boys: A Life of Wilbur and Orville Wright* (New York: W. W. Norton & Co. 1989), p. 189.
17. "World's Speed Record is Broken by Wilbur Wright at College Park," *The Baltimore News*, Oct 9, 1909.
18. "Wright Makes Four Flights," *The Washington Evening Star*, Oct 18, 1909.
19. "Engine is Disabled," *The Washington Evening Star*, Oct 18, 1909.
20. "Joke Was On Wright," *The Washington Post*, Oct 20, 1909.
21. *Ibid.*
22. "Wright Avoids Hurting Two," *The Washington Evening Star*, Oct 20, 1909.
23. *The Washington Times*, Oct 26, 1909.
24. "Wright Students Fly," *The Washington Post*, Oct 27, 1909.
25. *Ibid.*
26. "Up in the Air Alone," *The Washington Evening Star*, Oct 26, 1909.
27. "Woman Sails in Air," *The Washington Post*, Oct 28, 1909.
28. "Avoids Mishap in Air," *The Washington Post*, Oct 31, 1909.
29. *Ibid.*
30. Glines, p. 69.
31. Crouch, p. 409.
32. "Pupils Handle Biplane," *The Washington Journal*, Nov 14, 1909.
33. Charles de Forest Chandler and Frank P. Lahm, *How Our Army Grew Wings: Airmen and Aircraft Before 1914* (New York: The Ronald Press 1943), p. 166.
34. General James Allen, Records of the Chief Signal Officer, Signal Corps Records, Record Group 111, (1909: Dienstbach-MacMechen Publishing Company).
35. Howard Gill, Correspondence to General Allen, Record Group 111, Dec 18, 1909.

# The "Wright Stuff" Pilot Training at America's First Civilian Flying School





Jerome A. Ennels

(Overleaf) The Wright biplane in flight in Montgomery, Alabama, in 1910, over the cotton fields of the old Frank D. Kohn plantation. Note the tin-top cabins of the black community of Douglasville in the background. (All photos courtesy of the author.)

## MONTGOMERY, ALABAMA, HAD THE GENIAL CLIMATE AND SUITABLE GROUNDS THEY NEEDED

## THE WRIGHT BIPLANE ARRIVED BY TRAIN IN MONTGOMERY ON MARCH 15

By early 1910, the monopoly the Wright brothers held on the flying market was being seriously challenged by other inventors of flying machines. In hopes of retaining at least a reasonable share of the financially promising aviation industry, the brothers formed a touring company to conduct flying exhibitions to promote the sale of their airplane over those of their ambitious competitors. For this they needed pilots to fly the exhibition flights they wanted to begin that summer. But, at a time when there were fewer than ten fully qualified aviators in the world, the only way to obtain pilots was to train them. With the weather in their hometown of Dayton, Ohio, too cold and windy for aviation training, Wilbur began touring the South in February 1910, in search of an area conducive to flight training during early spring.<sup>1</sup>

His journey took him to several southern cities before he finally decided that Montgomery, Alabama, had the genial climate and suitable grounds they needed. After visiting several locations in the area, he selected a former cotton plantation just west of the city as the site for their school. Frank Kohn, the owner of the property, offered him free use of the land for three months. The Montgomery Commercial Club then agreed to build a hangar on the property, furnish transportation to the field, and clear the land of trees and undergrowth within three square miles of the area. Wilbur immediately accepted the offers and sent a telegram to his brother telling him to “pack up a machine and send it to Montgomery.” He left for Dayton that evening where he and his brother completed the arrangements for opening the nation’s first civilian flying school.<sup>2</sup>

### Opening the School

Packed in seven large crates, the Wright biplane arrived by train in Montgomery on March 15. Four days later, Charles Taylor, the Wrights’ mechanic and long-time friend, also arrived in the city. With him were two students, Walter R. Brookins from Dayton and James W. Davis of Colorado Springs, Colorado. Orville Wright arrived in Montgomery on the morning of March 24 with Spencer Crane, a third student and also a family friend. Wilbur, who had come to Montgomery to locate the sight, remained in Ohio.<sup>3</sup>

Charles had already assembled the airplane, so Orville’s first order of business was to build a nearly 200-foot monorail, a device used to assist the biplane during takeoffs. Since the plane nor-

mally took off into the wind, the rail consisted of sixteen-foot sections that could be assembled easily and dismantled for shifting, as necessary. Under the wings was “a platform that had skate wheels” that “rolled along the ramp” until the airplane got up enough speed for the wind to lift it gently into the air. Though a weighted catapult or starting derrick was sometimes used to assist during takeoffs, none was constructed for the Montgomery launches.<sup>4</sup>

The next day, Orville made a major change to the airplane’s tail assembly. For the first time, he attached a horizontal plane behind the two upright stabilizers located to the rear. It was similar in size and shape to the front elevators and affixed in such a way that it could be moved easily up or down, at the pilot’s bidding. He hoped the change would “simplify the handling of the airplane” and improve the aircraft’s stability. It was the first significant modification to the Wright flying machine since its first successful flight nearly seven years earlier.<sup>5</sup>

After making final adjustments, Orville was satisfied the plane was ready to fly. Late on the evening of March 26, he and his assistants moved the biplane from the hangar and placed it on the monorail. Conditions for the pending flight were ideal with “the wind blowing about eight miles per hour.” Orville took his seat at the controls as two of his assistants held opposite sides of the wings to help balance the aircraft. Then the throbbing drone of the engine’s pistons was heard and soon the plane began moving down the track with the two men running alongside. Gradually, the plane began lifting from the rail and soon it was airborne, “ascending in a long graceful curve.” Within minutes, it reached a speed of about forty miles per hour and climbed to an altitude of about fifty feet. “Under perfect control,” the local newspaper later reported, “it followed the hand of Orville Wright turning, descending at his bidding.” The airplane remained aloft for about five minutes before landing with a hard thump and skidding slowly to a stop. Montgomery’s first powered flight was history.<sup>6</sup>

Following a quick check over, the men wasted no time in getting the plane back in the air. The second flight lasted about as long as the first before the airplane made another uneventful landing. During both flights, Orville was primarily “interested in the handling characteristics of the biplane with the modified tail assembly.” Though he was basically satisfied with the new rudder system, he indicated “one or two changes must be

*Mr. Ennels directs the Air University’s (AU) Office of History at Maxwell AFB, Ala. He holds an MA in History from Fisk University and is currently pursuing a doctorate. He entered government service in 1974 as an archivist with the Air Force Historical Research Agency, and later became a technical information specialist. Since 1977 he has been the AU command historian, except for a short stint in 1982 with the Air Force Intelligence Service. During his career, Mr. Ennels has published numerous histories, monographs, and articles, including co-authoring a book with Dr. Wesley Newton entitled Wisdom of Eagles: A History of Maxwell Air Force Base. His articles have previously appeared twice in Air Power History.*

Orville Wright (near right) and Wilbur Wright (far right). Although Wilbur located the site for the school, it was actually Orville who returned to Montgomery, Alabama in March 1910, to oversee its operation.



**HUNDREDS OF MONTGOMERIANS AND CITIZENS FROM THE SURROUNDING AREAS WERE AT THE FIELD IN FULL FORCE**

made as to the engine, to adjust it to the change in the system of rudders.” With these modifications, Orville announced that “bolder flights will be made Monday” since his religious upbringing precluded flying on Sundays.<sup>7</sup>

The next day the local newspaper, heralded the historic event. “A strange new bird soared over the cabins...and cotton fields to the west of Montgomery Saturday afternoon,” the *Montgomery Advertiser* reported. “It was the graceful aeroplane of Orville Wright, guided by the hand of the pioneer of the skies himself.” The paper also announced that flying activities would begin in earnest the following week. As expected, hundreds of Montgomerians and citizens from the surrounding areas were at the field in full force when flights began on Monday.<sup>8</sup>

#### **Flying Training Begins**

The first flight that day took place with an anxious audience looking on with great anticipation. All eyes were on the little biplane as it began moving down the track and became airborne. As the great mechanical bird circled the morning skies, most of the spectators were particularly intrigued by the strange manner in which the airplane changed directions. “In turning, the airship inclined upon one end, sometimes almost to the point where it seemed it would capsize,” the *Advertiser* reported. They were also fascinated by the plane’s up and down movement like a “ship on water” as it sailed like a gigantic kite “to the accompaniment of staccato explosions of its gasoline engine.” Each time the plane passed over their heads, the spectators cheered and applauded with excitement. At one time during the flight, the air-

plane dipped to within ten feet of the ground before ascending up “for scores of feet,” leaving the crowd literally gasping for breath. The flight lasted for several more minutes before ending with a near perfect landing.<sup>9</sup>

With the check flight over, Orville was ready to begin flying instructions. Walter was his first trainee and aboard the aircraft when the second flight began. Following a short trip down the monorail, the biplane rose gently into the air and circled the field once before the engine began misfiring. Then, the motor stopped completely. Spectators held their breaths in anticipation of the aircraft’s “precipitous drop.” Instead, Orville glided the airplane down slowly, trying to decide between “a badly water cut road and a newly plowed field” for a landing strip. He chose the latter, gently settling the plane’s skids down between two plow furrows. As it touched the ground, the plane’s transverse brace dragged across the ridges, throwing dirt and dust in the faces of both passengers before coming to an abrupt halt. Fortunately, neither man was injured, the aircraft was undamaged, and the crowd breathed a collective sigh of relief.<sup>10</sup>

After several attempts, they were finally able get the engine started again at about 5:30 that evening. Confident the problem was solved, Orville and Walter began the third flight of the day. “For fifteen minutes,” an observer reported, “the big white kite, chugging and throbbing with life, ...soared and dipped and curved and ascended at the bidding of the man who held his hands on its heart.” But after circling the field several times and traveling nearly ten miles, the motor stopped again. For a second time, Orville glided the aircraft down slowly, this time touching the ground so easily that the skids barely kicked up any dirt.

**EACH TIME THE PLANE PASSED OVER THEIR HEADS, THE SPECTATORS CHEERED AND APPLAUDED WITH EXCITEMENT**



Orville Wright and one of his students prepare for another flight at the old Kohn plantation.

**ORVILLE PREFERRED "ONLY THE MOST QUIET WEATHER FOR HIS FLIGHTS WHILE TRAINING 'NOVICES' "**

**THE WINDS HAD FREQUENTLY HAMPERED TRAINING AT THE FIELD**

Though the flight had come to a disappointing end, it was by far the longest of the evening. It was also the last flight of the day.<sup>11</sup>

The next day, the Mobile & Ohio Railroad began shuttle runs to the camp. Visitors arriving that morning, however, were sadly disappointed. They soon discovered that the engine had suffered major internal damage the previous day and could not be repaired with parts available at the field. Though Orville had already telegraphed Dayton for the needed parts, they were not expected to arrive in Montgomery until later that week. There would be no flying at the field for several days and the shuttle runs to the camp were temporarily discontinued.<sup>12</sup>

Engine failure, however, was not the only problem. A brisk wind blew continuously throughout the morning, creating conditions that were not conducive to flying, particularly flying training. Orville preferred "only the most quiet weather for his flights while training 'novices'" and felt that "a wind of six or eight miles an hour is most desirable." High winds, he said, tended "to confuse the novice, who becomes uncertain whether the sudden movements such as the aeroplane makes is a brisk wind or the results of his own manipulation of the gear, or of the wind current themselves." He went on to explain that "aeroplane sailing ... is not all mere manipulation of the engine" but that it also involved "judgment of currents to be taken, balancing to be gauged, and a dozen other little niceties of piloting that will come only with practice."<sup>13</sup>

Fortunately, the winds had died down by the time parts for the engine arrived on March 31. Early the next morning, the airplane was again ready to fly. Orville used the first flight to test the motor and to ensure the levers were working properly. Walter joined him on the second as training finally resumed. But shortly after the flight began, the winds again became too strong for flying lessons. Throughout the afternoon, Orville and his students climbed repeatedly to the top of the shed with a gauge to test the wind velocity, each time with disappointing results. By 4:00 p.m., however, the currents died down enough to resume training.

Walter was again the student trainee, but on the next flight James got his first flying lesson. Each flight, according to the local newspaper, was "marked by easy, graceful landings" that were accomplished with the power shut off and the plane sliding on its "curved runners for a score of feet, as smoothly as a sled, coming to a stop with a jar and a jerk."<sup>14</sup>

Engine troubles again grounded the plane the next day. Though the men tried desperately to repair the motor, their efforts were unsuccessful. A frustrated Orville later decided to have new parts sent from Dayton for completely overhauling the engine. He also admitted that he had experienced more trouble with this engine than any of the other twelve in their inventory. A dependable motor with sufficient power was critical to the successful performance of the aircraft. "What we are working for now is reliability," Orville said. "We are still experimenting on the motors for the aeroplane and when the reliability ... is established I expect they will be found more reliable than the automobile motor."<sup>15</sup>

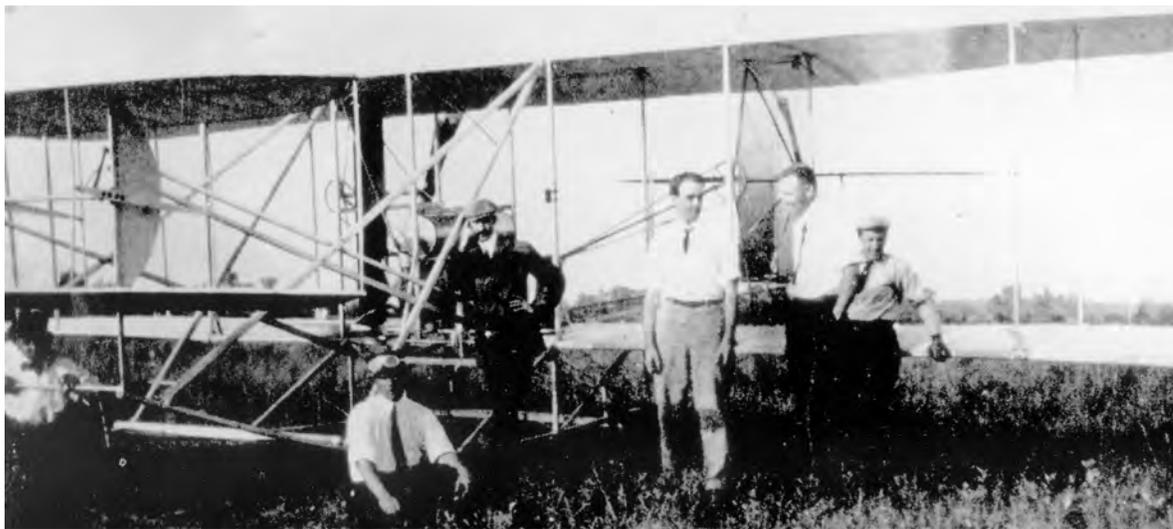
### Training Curtailed

The morning of April 6 brought renewed optimism when parts for the engine finally arrived. A third student named Archibald "Arch" Hoxsey also arrived from Pasadena, California, the same day. Repairs were made that evening in time for Orville to make six check flights to ensure the motor was running properly before training resumed. It is "best to postpone making [training] flights until we can get everything in perfect readiness for the spring work," Orville explained. "We do not want to be interrupted after we once get down to business in earnest."<sup>16</sup>

Though training resumed the next day, Orville's disappointment with the engine's performance continued to grow. After two frustrating days of limited training, Orville finally decided to ship the motor back to Ohio for a complete overhaul. He also left for Dayton apparently wanting to be personally involved in the engine's repair and to discuss with his brother the effects of the new rudder system on the engine's performance. Before leaving, however, he told the local newspapers that two of the students were making great progress and that he would return in a few days to begin training the others, including Arthur L. Welsh from Washington, D.C. who had just recently arrived at the camp.<sup>17</sup>

Orville also hoped the winds, which had frequently hampered training at the field, would be gone by the time he returned. With each passing day the prospects for better flying conditions did indeed improve. "It is expected that the weather will be more propitious to the angelic art of flying when the aviator returns," the local newspaper predicted. "It will be deeper into Spring, the March and early April winds will be spent, and the nasty little whirlwinds, of which one of Mr. Wright's assistant said there were more in the Montgomery

Orville Wright and his men pose in front of the Wright Flyer. Each man is wearing a shirt and tie, unlike the traditional garb worn by most pilots of the era.



## THE STUDENTS PRACTICED BALANCING THE AIRCRAFT ON THE MONORAIL

## IT WAS AN EARLY FORM OF FLIGHT SIMULATION, A TECHNIQUE THE WRIGHTS LATER MODIFIED AND USED AT HUFFMAN PRAIRIE

section than in any other place he had seen, will be gone with the milder touch of spring.”<sup>18</sup>

Whirlwinds in the area were certainly larger and stronger than any Orville had previously encountered. During one flight, for example, Orville suddenly realized that he was unable to descend even though his aircraft was pointed downward as far as safely possible. For “nearly five minutes he stayed there, in a puzzled state of mind bordering on alarm.” Then he realized that “the machine must have been in a whirlwind of rising current of unusual diameter.” Stirring the plane horizontally to move out of the wind currents, he was finally able to land.<sup>19</sup>

### Training Resumes

Orville returned to Montgomery on April 20, with the rebuilt engine. The next day he and his assistants installed the motor and once again the biplane was ready to fly. During the first flight, Orville circled the field twice, never rising more than about thirty-feet and dipping so low at one point that the biplane kicked up a cloud of dust. The flight lasted about four minutes before Orville guided the aircraft safely to the ground. Following adjustments to the lower wing, he completed a second flight of similar speed and altitude before again landing without incident. Satisfied that the engine was working properly, Orville announced that flying training would resume the next day.<sup>20</sup>

With news that the flying school had reopened, the crowds also returned. Since the engine’s noise and the strange appearance of the aircraft had previously frightened several horses, for the first time visitors were warned to leave their animals close to the shed in hopes of avoiding future incidents of this nature. They were also told not to venture out under any circumstances on any part of the course. As the number of spectators continued to grow, field guards were eventually used to chaperon the crowd and ensure that everyone adhered to the viewing policies. “But the tasks was easy,” the *Advertiser* reported, “for it was an orderly good natured throng.”<sup>21</sup>

Walter was at Orville’s side when training resumed on April 23. With each additional lesson, it was becoming increasingly more apparent that his first student was close to finishing the course. “So proficient has Mr. Brookins become in controlling the ‘aeroplane,’” the local newspaper reported, “that he directed the elevator planes during the flights and made one landing, accomplishing it in an easy manner.” James was also making great progress while Spencer and Arthur were expected to begin training early the following week.<sup>22</sup>

By the afternoon, the winds were again too strong for training so the students practiced balancing the aircraft on the monorail. With the plane pointed into the “teeth” of the wind, one student acted as the operator and another as ballast, as the airplane tilted from side to side in response to the movement of the elevators and stabilizers. In effect, it was an early form of flight simulation, a technique the Wrights later modified and used at Huffman Prairie, Ohio, to train pilots. When the winds finally died down that evening, Orville treated the patiently waiting crowd to a startling display of aerial demonstration flying. They were spellbound as the little biplane repeatedly made graceful sweeps, short turns, and figure eights until it finally became too dark to fly.<sup>23</sup>

For the next several days, flying activities continued at the field almost unabated. The engine was working fine and the winds were near perfect for flying. Taking advantage of the propitious weather conditions, Orville decided to take the plane to the unprecedented height of over 600 feet. Necks “craned to see every move of the great mechanical bird.” In fact, the plane was so high at one point that the spectators could barely hear “the quick explosions of the engine” and the aircraft itself “appeared only as a speck in the distant skies.” Later, Orville ascended even higher, reaching an altitude of over a thousand feet as the astonished crowd watched on. “This is his first high flying here,” one of his students remarked. “He has not been sure of the motor power so far but watch her work now.... [It is] as fine as I have ever seen.”<sup>24</sup>

Spectators gather in front of the airplane shed in Montgomery. The hangar was covered with advertising from local businessmen who sensed commercial potential in the flying school.



## ORVILLE RECEIVED A TELEGRAM FROM HIS BROTHER TELLING HIM TO CLOSE THE CAMP

With the largest crowd ever present, flying training resumed on the morning of April 30. Though Walter was on the first flight, Arthur joined him on the second and Spencer got his first lesson on the third. On the fourth flight, Walter was again aboard the aircraft, but this time he controlled it from start to finish. It was now just a matter of time before Walter would solo. The opportunity would come sooner than either he or Orville expected.<sup>25</sup>

### Closing the School

On May 5th, Orville received a telegram from his brother telling him to close the camp on Thursday. As a result, he immediately made plans to leave that Saturday. Since Walter would be left in charge of the camp, Orville wanted his prize student to solo before he left. The next day, Walter flew alone for twelve minutes, demonstrating that he had learned his lessons well. He had flown nearly forty times with Orville giving him nearly six hours of flight time. By the end of the day, Walter had completed three additional flights totaling nearly thirty minutes. His initial solo flight, however, gave him the distinguished honor of being the first and only graduate of the nation's first civilian flying school.<sup>26</sup>

A huge crowd witnessed this historic event. The shuttle train to the camp that day carried 970 passengers. Others arrived in cars and buggies. An even larger number of visitors took the West End trolley as far as they could and then walked the rest of the way to the field. Overall, an estimated 3,000 visitors were at the field that day as people rushed to see the final flights before the camp shut down. Orville made his last flight in Montgomery that evening at about 5:00 p.m., circling the field for about seventeen minutes at an altitude of about 800 feet. When he landed he discovered that one of the chains had damaged an enclosing tube, and he sent the device to Montgomery for repair. Disappointingly, the men wheeled the airplane back into the shed, ending flying activities for the day.<sup>27</sup>

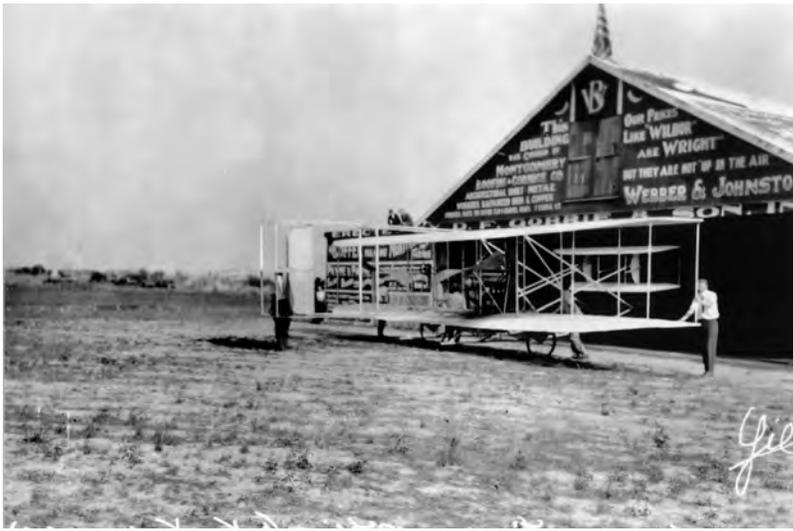
Orville, Arthur, and James left the next day on

the evening train to Dayton. Both students were expected to complete their training back in Ohio at Huffman Prairie. Walter was left in charge of the camp, though his efforts to continue training Arch and Spencer were cut short by an accident that damaged one of the plane's wings. After several repair attempts, Walter decided to order a new wing from the Wright factory in Dayton. The camp stood idle for several days until the new wing arrived. Once the wing was re-attached, flying training quickly resumed under Walter's instruction. Before long, Arch and Spencer had become quite proficient in the art of flying and both were expected to solo in the near future.<sup>28</sup>

Amid rumors of the camp's closure, flights continued for the next few days. Training took place without Charles who had apparently left the city unannounced the previous week. In fact, a later report indicated that he had flown as Orville's passenger in Dayton on May 21. Much of the training at the field during the days that followed was limited by the high winds until finally the breezes became so strong on 25 May that Walter decided to completely ground the aircraft. That night, however, the weather conditions were perfect for flying, setting the stage for a bold, new adventure.<sup>29</sup>

With no breezes stirring, the moon shining brightly, and not a cloud in the sky, Walter and Arch decided to fly the plane at night. The first flight took place at about 10:30 p.m. and others followed at regular intervals throughout the night and into the early morning hours. The initial flights reached altitudes of about 800 feet with Walter in full control of the aircraft. After some pleading, however, Arch actually guided the plane during several later flights. "A dark. Weird, uncertain bulk," the *Advertiser* reported the next day, "glinting now and then in the moonlight as its burnished bars caught the rays, and spouting sparks in mid-air, the aeroplane of the Wright brothers was driven in what is believed to have been the first flight by night ever attempted." The engine's throbbing could be heard distinctly "through the stillness that came after midnight," resounding for miles and heard "even on the outskirts of the city."<sup>30</sup>

AN ESTIMATED 3,000 VISITORS WERE AT THE FIELD THAT DAY AS PEOPLE RUSHED TO SEE THE FINAL FLIGHTS



Orville and his men check over the biplane which was apparently grounded due to high winds. Two of the students in the background have apparently climbed on top of the shed with a gauge to measure wind velocity.

**ORVILLE BELIEVED THAT HIS MONTGOMERY FLIGHTS WOULD BE DETERMINED TO BE ABOUT 2,500 FEET**

**THE SCHOOL WAS ALSO AMONG THE FIRST TO CONDUCT INSTRUCTOR PILOT TRAINING**

These historic flights were followed by another important revelation the next day. On May 26, Orville sent a telegram to his students telling them to recalculate the altitude records he had set in Montgomery. Though he initially thought that he had reached a height of 2,000 feet on May 2, he now believed he had flown much higher. This was based on the altitudes reached during flights at Dayton where he ascended to more than 2,000 feet. However, in Orville's opinion, he was "not as high up as he went on his highest flight in Montgomery." Once the recalculations were made, Orville believed that his Montgomery flights would be determined to be about 2,500 feet, which "would be second to the highest flights made in the country."<sup>31</sup>

While flying the next day, a propeller chain broke and the plane was once again grounded. Though Walter wired Dayton for a replacement, the Wrights instead decided to close the school a little earlier than they had originally planned. Since the camp was scheduled to close the following week anyway, they felt it imprudent "to spend several days in Montgomery, awaiting the repair of the motor chain, when the entire stay here would have been short." As a result, the students disassembled the plane and packed it in crates for shipment to Indianapolis, Indiana, where the Wrights planned to begin the first in a series of exhibition flights that summer. The "Wright aeroplane, like all other birds," the *Advertiser* reported, "would fly northward for the summer."<sup>32</sup>

So the "strange new bird" that had soared over Montgomery for several months would fly there no more. "Aviation days are over," the *Advertiser* reported, "at least until aviation becomes a more familiar pastime." The crowds and cheers were gone and the old shuttle that had regularly carried hundreds of passengers to and from the field stood idle. "The camp on the Washington Ferry Road has a bare look in its desertion," the local newspaper stated. "Except the wooden shed, covered with glaring advertisement, there is nothing to identify the Kohn plantation with the advent of the Wright brothers." The shed was later torn down and all

vestiges of flying activities there disappeared. It would remain that way for over eight years until the events of World War I brought flying activities back to the site which would later become Maxwell Air Force Base.<sup>33</sup>

## Epilogue

For a brief period during the spring of 1910, the Wrights' operated the nation's first and only civilian flying school in Montgomery, Alabama. This was not, however, the first time they had trained pilots. In February 1909, for example, the Wrights taught two civilians and an army officer to fly in France. The next month near Canticle military field in Italy, Wilbur trained Lt. Calderar of the Italian Navy to operate the airplane. Later, in October 1909, Wilbur trained Lts. Frank P. Lahm and Frederic Humphreys to fly at College Park, Maryland. While there he also gave a few lessons to Lt. Benjamin Foulois. Though the Wrights had previously trained pilots, the Montgomery camp was the first time a civilian school had actually been established solely for that purpose.<sup>34</sup>

The school was also among the first to conduct instructor pilot training. "Brookins was trained as a 'left-hand pilot,'" according to one account. "This referred to the arm that operated the all important wing-warping lever." Though pilots normally used the right hand to operate this lever, Orville trained Walter to fly from the passenger seat in the center of the aircraft, which forced him to use his left hand for this purpose. "Orville figured that if he could break Brookins in as a 'left-hand' pilot, Brookins could go on to teach other members of the group to fly in the traditional 'right-hand' way." Thus, the field was not only the home of the nation's first pilot training school, but also the site of the country's first civilian instructor pilot training center as well. Walter was ironically the first and only graduate of both schools.<sup>35</sup>

In addition, Orville initially believed he could teach any person of average intelligence to fly. But he soon discovered that an aviator had to have other qualities as well. Above all, the pilot had to be daring and have "what Americans call 'nerve,' that quality of fearlessness and pluck which most men love to think they possess." They also had to possess the ability to think and act quickly. "The air is no place for the dullard or the slow thinker," one student concluded. "The aviator must be able to think fast.... or be dashed to death." Perhaps this was why Spencer later dropped out of the program and James failed to qualify as a pilot, opting instead to remain with the exhibition team as a mechanic. As it turned out, only three of the five students had the "Wright stuff" to become pilots.<sup>36</sup>

Many also credited the school with conducting the first night flights in history. As late as 1929, Orville still supported this contention though others questioned its validity. Some point to the fact that Wilbur had taken Lieutenant Humphreys up after dark at College Park for 42 minutes in front of a large crowd of people from Baltimore,



Maryland, and Washington, D.C. Maybe Orville was unaware of this flight or simply considered it to be a dusk or late evening event. Others recall Paulhan's flight in Great Britain that began during the daylight hour but continued until after sunset. Those who support the Wright brother's claim argue that this flight was not truly accom-

plished entirely at night. At any rate, the night flights made by Orville's students were unprecedented in terms of the late hour they began and their continuation into the early morning of the next day.<sup>37</sup>

But perhaps the most important development at the school was the radical technological change the Wright's made to their airplane's rudder system. Before taking his first flight in the city, Orville installed a rear, horizontal stabilizer to the airplane that increased its stability and allowed it to reach record-breaking altitudes. In fact, with this new design the airplane was able to reach an altitude of approximately 2,500 feet, which was second only to the 5,000-foot mark reached earlier by Paulhan in California. This innovation also marked the first debut of the only Wright A/B model aircraft that contained both a front and rear stabilizers. Based on the results of flight tests using the rear stabilizer, it was apparent to Orville that front ones were no longer necessary. As a result, the forthcoming Wright B model, which was introduced in June 1910, dropped the front stabilizer altogether. This change in the rudder system was the first significant technological change to the Wright airplane's design since the initial successful flight at Kitty Hawk, North Carolina, in December 1903.<sup>38</sup>

At the same time, the addition of a rear stabilizer demonstrated the need for a stronger and more reliable engine. Many of the plane's engine problems, according to Orville, were related directly to the new rudder system. The additional strain placed on the motor from the apparent increase in drag on the airframe resulted in numerous engine failures. Additionally, the new tail assembly increased the aircraft's stability and allowed it to safely ascend to unprecedented heights requiring a stronger and more reliable motor. As a result, the Wright's developed their first eight-cylinder engine, which appeared on their B model aircraft later that year. The new motor almost doubled the horsepower of the old power plant used in Montgomery.<sup>39</sup>

Finally, the strong winds proved to be a blessing in disguise. Unwilling to waste time waiting for the currents to die down, Orville innovatively decided to use them to simulate flight conditions. With the biplane facing the winds and mounted on the tracks, the students learned how to use the levers to warp the wings and work the elevators. These rudimentary techniques proved beneficial to the students once they were actually in the air and would later lead to full-fledged flight simulation training back in Ohio.<sup>40</sup>

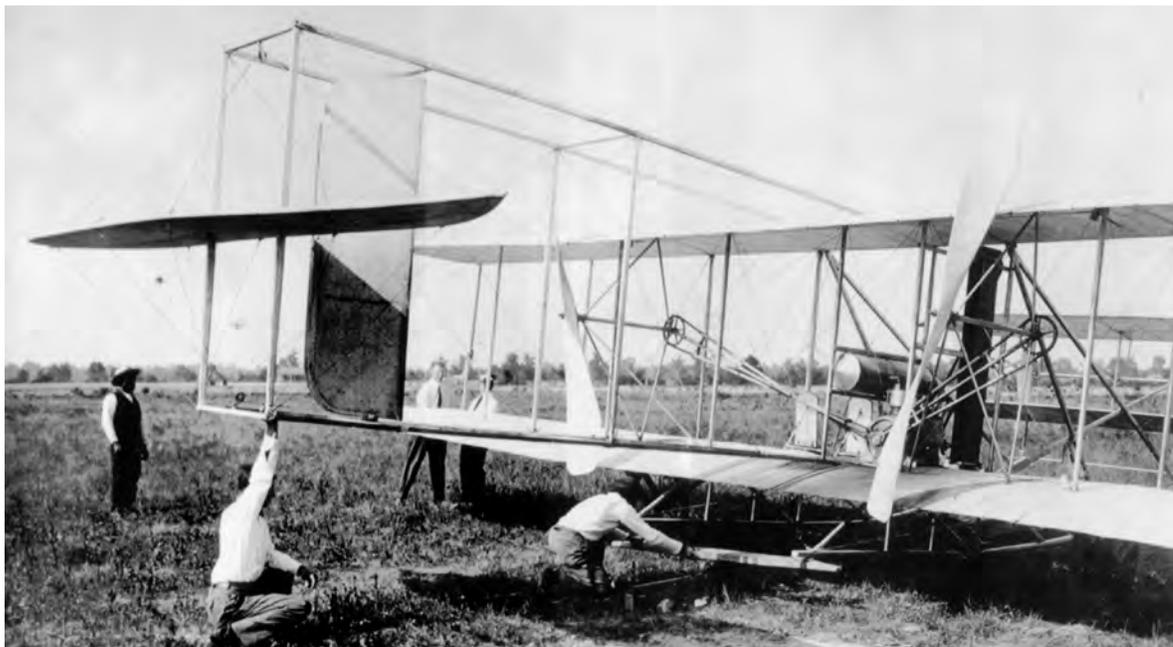
In retrospect, the Wrights' decision to open the nation's first civilian flying school on an old cotton plantation west of Montgomery had a serious impact on the future of aviation. Their efforts to retain a share of the young aviation market unquestionably led to major developments in aviation technology, set a number of aviation records, and made giant leaps in promoting the commercial and military uses of the airplane.<sup>41</sup> ■

(Opposite page, top) Orville Wright, his students, and mechanics make adjustments prior to a flight in 1910.

(Opposite page, middle) Flight school students Walter Brookins (left) and Archibald Hoxey prepare for a flight in 1910. Brookins, the only student to solo in Montgomery, was left in charge following Orville's return to Dayton.

(Opposite page, bottom) Orville (with goggles) and students in 1910.

(Right) The Wright biplane being positioned on the monorail for takeoff. Note the rear stabilizer which was added for the first time prior to its maiden flight in Montgomery. It marked the first and most important change in the flying machine since its initial flight at Kitty Hawk.

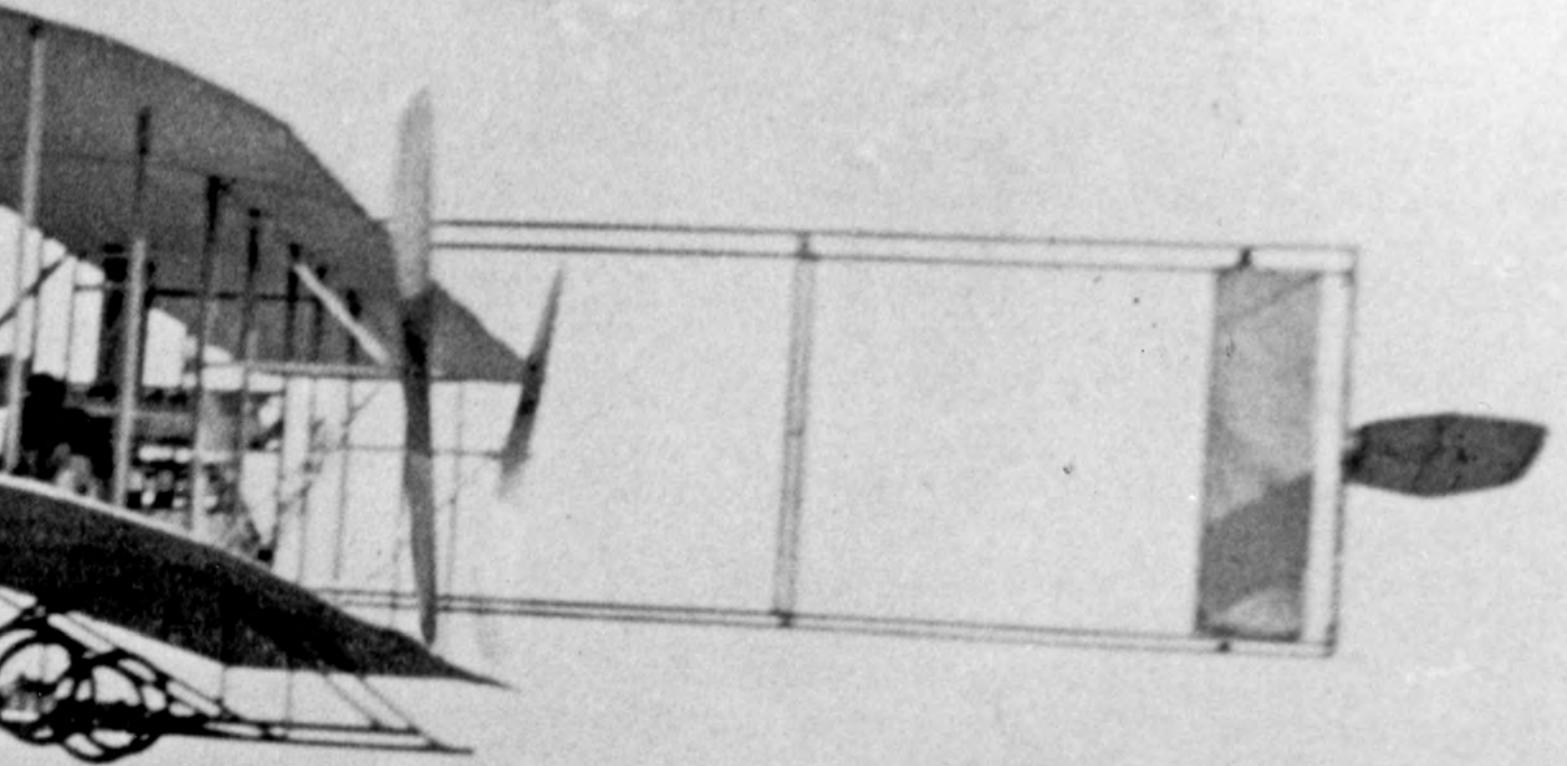


## NOTES

1. William H. Pierce, "Aviation in Montgomery, Alabama," nd, p. 1 (unpublished article on file in the Air University Office of History); *Montgomery Advertiser*, Mar 1, 1910, p.1 (hereinafter referred to as MA); Arthur G. Renstrom, *Wilbur and Orville Wright: A Chronology Commemorating the Hundredth Anniversary of Orville Wright* (Washington D.C.: Government Printing Office, 1975), p. 187 (hereinafter referred to as *Wilbur and Orville Wright*).
2. George N. Dubina, "Flying with Orville Wright," (AU/HO Study No. 62, nd), p.1; Fred S. Ball, *et al.*, *Maxwell Field: Army Air Corps*, 1929 (Montgomery, Ala.: Chamber of Commerce, nd), pp. 7-13 (herein after referred to as *Maxwell Field*).
3. Lee Kreps, "Aviation History—Re-Cap of Events in Montgomery, 1910," (unpublished chronology on file in the AU Office of History, nd), pp. 5-12 (hereinafter referred to as "Aviation History"); MA, Mar 18, 1910, p. 5; Ball, *et al.*, *Maxwell Field*, p. 7; MA, Mar 25, 1910, p. 10.
4. Marvin W. McFarland, *The Papers of Wilbur and Orville Wright* (New York: McGraw-Hill Book Company, Inc., 1953), p. 990 (hereinafter referred to as *Wright Papers*); *The Official Pictorial History of the AAF* (New York: Duel, Sloan, and Pearce, 1947), p. 22 (hereinafter referred to as *Pictorial History*).
5. MA, Mar 26, 1910, p. 3; Dubina, "Flying With Orville Wright," p. 3.
6. MA, Mar 27, 1910, p. 16; MA (Souvenir Edition), 1984, p. 9; McFarland, *Wright Papers*, p. 990.
7. As in note above.
8. McFarland, *Wright Papers*, p. 990; George N. Dubina and Margaret M. Dixon, "Chronology of Maxwell Air Force Base, 1910 –1957" (Maxwell AFB: AU/HO Study No. 1, 1964), pp. 17-18 (hereinafter referred to as "Maxwell Field Chronology").
9. MA, Mar 2, 1910, p. 3.
10. Kreps, "Aviation History," p. 10; MA, Mar 29, 1910, p. 12.
11. As in note above.
12. Dubina and Dixon, "Maxwell Field Chronology," p. 12.
13. MA, Mar 30, 1910, p. 3.
14. MA, Apr 2, 1910, p. 10.
15. MA, Apr 5, 1910, p. 12; Dubina and Dixon, "Maxwell Field Chronology," p. 20.
16. MA, Apr 6, 1910, p. 8; MA, Apr 7, 1910, p. 5; MA, Apr 8, 1910, p. 9.
17. MA, Apr 9, 1910, p. 5.
18. MA, Apr 10, 1910, p. 13.
19. Fred C. Kelly, *The Wright Brothers* (New York: Harcourt, Brace and Company, 1943), p. 274.
20. Dubina, "Flying With Orville Wright," p. 5; MA, Apr 22, 1910, p. 10.
21. As in note above.
22. MA, Apr 23, 1910, p. 7.
23. *Ibid*; Tom D. Crouch, *The Bishop's Boys: A Life of Wilbur and Orville Wright* (New York: Norton, 1989), pp. 436-37 (Hereinafter referred to as *The Bishop's Boys*).
24. MA, Apr 27, 1910, p. 9; MA, Apr 28, 1910, p. 10.
25. MA, May 1, 1910, p. 27.
26. MA, May 6, 1910, p. 7; Kreps, "Aviation History," p. 28.
27. As in note above.
28. MA, May 10, 1910, p. 16; MA, May 11, 1910, p. 7.
29. MA, May 22, 1910, p. 24.
30. *Ibid*; MA, May 26, 1910, p. 5; Renstrom, *Wilbur and Orville Wright*, p. 193.
31. MA, May 26, 1910, pp. 3, 5.
32. *Ibid*; MA, May 27, 1910, pp. 1, 27.
33. Kreps, "Aviation History," p. 35; Pierce, "Aviation in Montgomery," pp. 10-11.
34. As in note above.
35. MA, May 26, 1910, pp. 3, 5; Ball, *et al.*, *Maxwell Field*, p. 13; Dubina and Dixon, "Chronology of Maxwell Field," p. 42; *Dayton Journal*, Oct 23, 1909.
36. MA, Apr 8, 1910, p. 9; Dubina and Dixon, "Maxwell Field Chronology," p. 23; Crouch, *The Bishop Boys*, pp. 427-28.
37. MA, Dec 21, 1948, p. 1 Dubina and Dixon, "Maxwell Field Chronology," p. 42.
38. Pierce, "Aviation in Montgomery," p. 4.
39. MA, Mar 26, 1910, p. 3; MA, Mar 27, 1910, pp. 1, 27; *Pictorial History*, pp. 26, 164.
40. MA, Mar 27, 1910, p. 3; MA, Mar 30, 1910, p. 3; MA, Apr 8, 1910, p. 9; McFarland, *Wright Papers*, pp. 1216-17.
41. Jerome A. Ennels, "A Strange New Bird" (Maxwell AFB, Ala.: AU/HO Study, 1998), p. v.

“Kept Alive by the Postman”:  
The Wright Brothers  
and 1st Lt. Benjamin D.  
Foulois at Fort Sam  
Houston in 1910





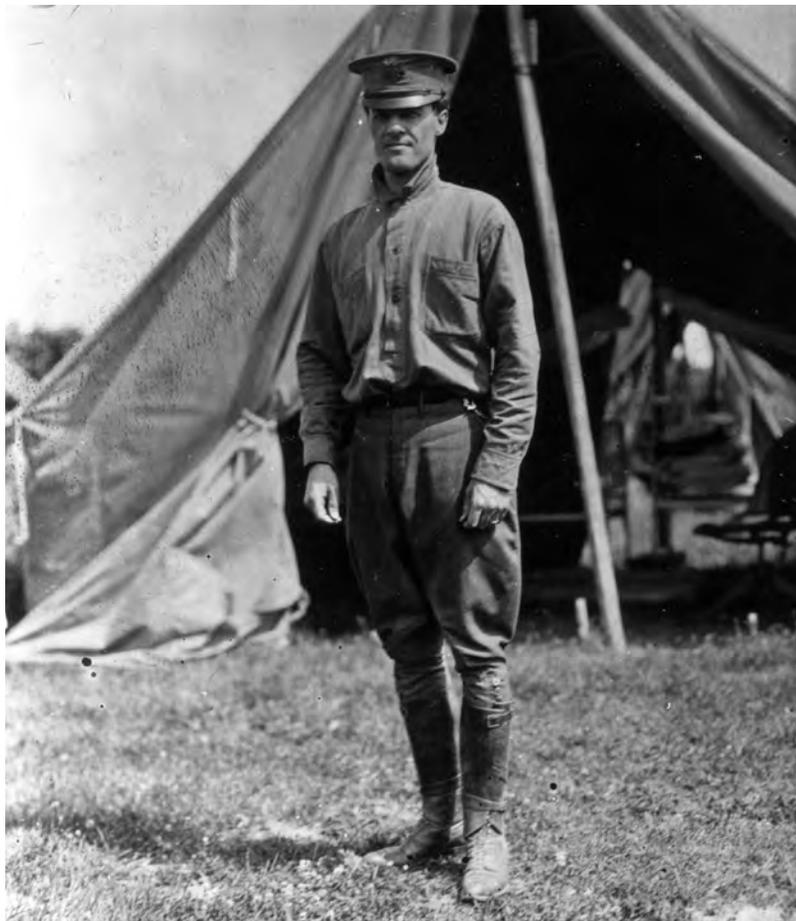
Roger G. Miller

(Overleaf) 1st Lt. Benjamin D. Foulois and Philip Parmalee land the Collier-Wright Model B. (Photo courtesy of Vernon L. Burge Collection, Airman Memorial Museum, Wash., D.C.)

(Below) 2d Lt. Foulois, c. 1906, was a former enlisted man who earned a commission while stationed in the Philippine Islands.

**W**ilbur and Orville Wright were not physically at Fort Sam Houston in 1910, of course. But if the Wrights were absent in body from that venerable army post located on the outskirts of San Antonio, Texas, they were certainly present in spirit as 1st Lt. Benjamin D. Foulois experimented with the U.S. Army's first airplane. And thereby hangs a tale, for Benny Foulois always claimed that he was a "mail-order pilot" who had learned to fly through his correspondence with the Wright brothers. His 1968 autobiography, *From the Wright Brothers to the Astronauts*, suggests a continuous stream of letters between south central Texas and Dayton, Ohio:

*Much of my time at San Antonio's storied Fort Sam Houston that spring was spent writing to Orville Wright, asking him how to execute basic maneuvers, how to avoid basic disasters—in short, how to fly an airplane.<sup>1</sup>.... The advice [I received] on sev-*



*eral occasions probably saved my life and the airplane as well. I profited by their mistakes and incorporated their design improvements on old No. 1. Thus, I was the first, and only, pilot in history to learn to fly by mail. From some of the near misses I had, I guess I was the first person who was literally kept alive by the postman.<sup>2</sup>*

Like most memoirs, however, Foulois's autobiography is not always as reliable as historians would wish, and the question of how much he really learned by letter from the Wrights is thus worth examination. Further, beyond that immediate question, the saga of the U.S. Army's first flyer and his experiences with "Old No. 1" at San Antonio is a dramatic one and makes the episode of special interest in its own right.

It is clear that U.S. Army leaders were never as backward about accepting aviation as many aviation historians have traditionally claimed. Some army leaders, in fact, had maintained a long interest in the military application of lighter-than-air and heavier-than-air craft. Military men at the turn of the last century, however, tended to be practical individuals held to strict accountability for how they spent the public's money. Accordingly, any involvement in flying had to be preceded by evidence that an aerial vehicle really worked and that it had some military utility. In this regard, then, perhaps one of the more important developments in early aviation history was the flight of an unmanned, steam-powered "aerodrome" on May 6, 1896, by a team working for Professor Samuel P. Langley, Secretary of the Smithsonian Institution. His success convinced Langley that the problem of heavier-than-air flight had been solved and suggested to others—including some in the War Department—that, if the problem was not solved, the solution was at least within reach. Thus, when the professor offered to build a full-sized aerodrome on the eve of the Spanish-American War, the War Department welcomed his overture. Beginning in late 1898, the U.S. Army's Board of Ordnance and Fortification made \$50,000 available for the project.<sup>3</sup>

Unfortunately, subsequent events foreshadowed future military experience with the procurement of far-too-many aviation systems. Langley insisted on working in secret, thus, inspection and oversight were inadequate. The professor misspent most of the funds on the design and construction of a 60-foot houseboat, 15-ton turntable, and 85-foot catapult for launching the aerodrome. During construction, the aircraft underwent frequent, time-

*Roger G. Miller is a historian with the Air Force History Support Office at Bolling AFB, Washington, D.C. He has had previous assignments at Lowry AFB, Colorado, Randolph AFB, Texas, and Sembach AB, Federal Republic of Germany, during his career as a civilian with the Air Force. He is currently writing a history of air logistics from the Mexican border to the Persian Gulf. His articles have appeared in Air Power History, The Indiana Magazine of History, Military Affairs, Prologue, and The Air Force Journal of Logistics. Dr. Miller's book, To Save a City: The Berlin Airlift, 1948–1949, was recently published by Texas A&M University Press.*



Lt. Foulois and Orville Wright during the airplane tests at Ft. Myer, Virginia, in 1908. Orville wrote Wilbur that he liked Foulois "very much."

## A WAVE OF INTEREST IN AVIATION WAS SWEEPING ACROSS THE UNITED STATES AND EUROPE

consuming, and expensive modifications that delayed completion. And a subcontractor, Stephen M. Balzer, failed to deliver a satisfactory engine on schedule, forcing Langley to place motor development in the hands of his talented assistant, Charles Manley. The result of all of this was predictable: Langley failed to meet the contract delivery date, and what future generations would call "cost overruns" led him to dip into Smithsonian funds to complete the project. The denouement came in late 1903, when the aerodrome, showing no affinity for flight, crashed twice.<sup>4</sup>

Ultimately, not only did the U.S. Army fail to receive practical benefits from its investment, it suffered severe criticism. Alienated by Langley's insistence on secrecy, the press pilloried the professor for his impractical scheme, while congressmen denounced the War Department for wasting public funds. Further, when word spread that the Army had money to spend, an assortment of inventors, visionaries, and crackpots besieged the service, seeking a share of the largesse. Chastened Army leaders backed away from aviation as quickly as they could. All things considered, when two obscure bicycle manufacturers from Dayton, Ohio, rather clumsily approached the War Department in 1905 with a proposal to deliver a flyable airplane, it seems unsurprising that they received little encouragement.<sup>5</sup>

Meanwhile, a wave of interest in aviation was sweeping across the United States and Europe, inspired by the activities of Wilbur and Orville Wright, news of which was disseminated by that ubiquitous aviation enthusiast and experimenter, Octave Chanute. Organized in October 1905, the Aero Club of America advertised aviation developments widely, sponsored prizes, and inspired inventors to greater efforts. Approval of the Wright brothers's patent for their system of control in May 1906 and formal recognition of their success by the Aero Club helped reduce skepticism about their flights. In Europe, the Wrights's work inspired extraordinary activity that led to the first public flight of an airplane by Alberto Santos-Dumont in the fall of 1906. By the end of that year, then, it was apparent to many, including some important U.S. Army officers, that the world was on the threshold of practical heavier-than-air flight.<sup>6</sup>

In early 1907, members of the Aero Club interested President Theodore Roosevelt in the work of the Wright brothers. Ordered to investigate, Secretary of War William Howard Taft passed the responsibility to the Board of Ordnance and Fortification for action. Correspondence with the brothers opened in May 1907, and negotiations followed. In November, Wilbur met with Brig. Gens. William Crozier of the Ordnance Department and James Allen of the Signal Corps, and on December 5, he appeared before the Board of Ordnance and Fortification. The result was Specification No. 486, setting requirements for a military aircraft and requesting proposals. The Army accepted the Wright's bid, and trials began at Fort Myer, Virginia, in late 1908. A crash on September 17 seriously injured Orville, killed his passenger, Lt. Thomas E. Selfridge, and put a halt to the tests. Despite that setback, however, by late 1909 the brothers had met the contract requirements and were ready to train two army officers as "operators"—they were not yet called "pilots."<sup>7</sup>

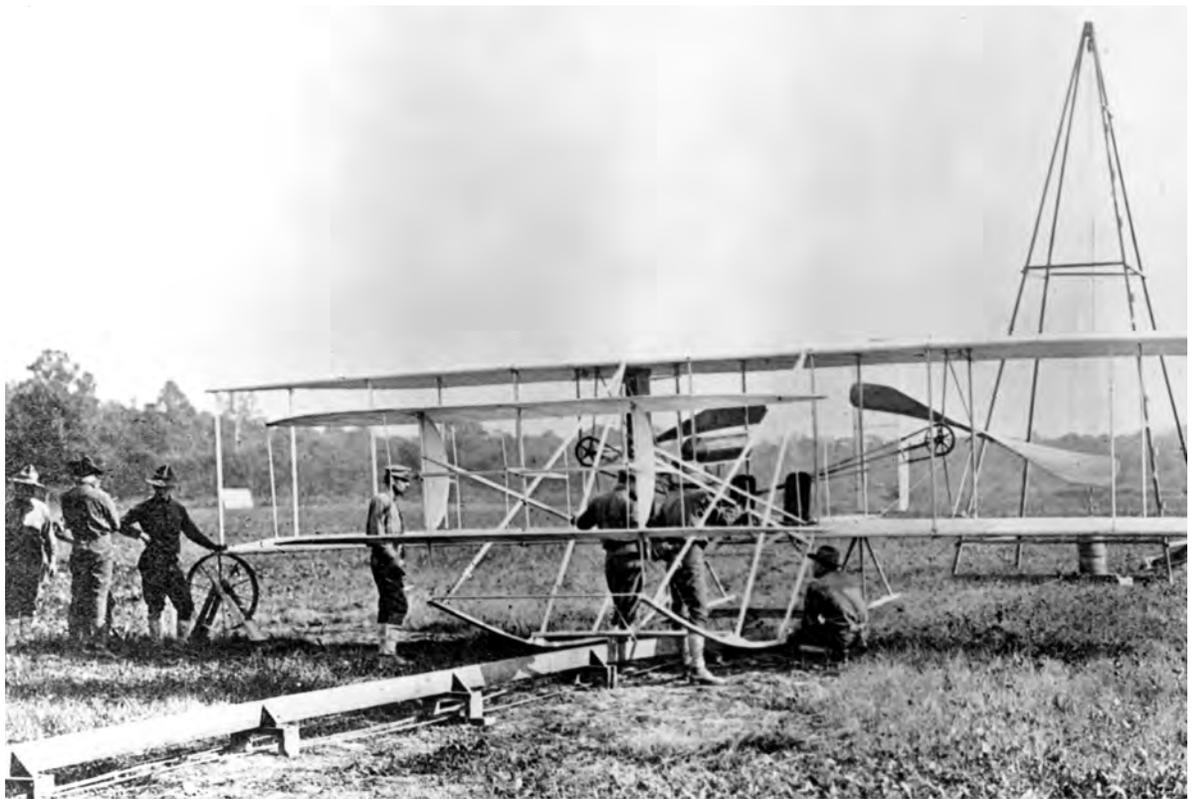
The U.S. Army selected Lts. Foulois and Frank D. Lahm to receive instruction, but then sent Foulois to Europe to attend the International Congress of Aeronautics, replacing him with 2d Lt. Frederic E. Humphreys. Instruction began at College Park, Maryland, on October 8, 1909, and both officers had soloed by the end of the month. In the meantime, Foulois returned from France and began training, but Humphreys and Lahm, flying together, crashed on November 5. The accident necessitated major repairs to the aircraft—which required a new cylinder, piston, magneto, and lower wing—and ended Army flying for the year.<sup>8</sup>

In the meantime, Army leaders recognized that the winter weather at College Park was unsuitable for flying and ordered the airplane and its aviation detachment to Fort Sam Houston, where better conditions could be found. However, the U.S. Army—which up to this point had acted in a generally commendable manner—now attempted to "shoot itself in the foot." Orders returned Lahm and Humphreys to their respective branches of the service and placed the Army's only airplane—now

Signal Corps No. 1 in its original configuration as purchased from the Wright brothers. This photograph was taken at College Park, Maryland, in October 1909.

**FOULOIS WAS A TOUGH, HARD-NOSED, PRACTICAL-MINDED, FORMER ENLISTED MAN**

**FOULOIS PESTERED ORVILLE WITH SO MANY QUESTIONS THAT WRIGHT FINALLY PUT THE LIEUTENANT TO WORK ON THE AIRPLANE**



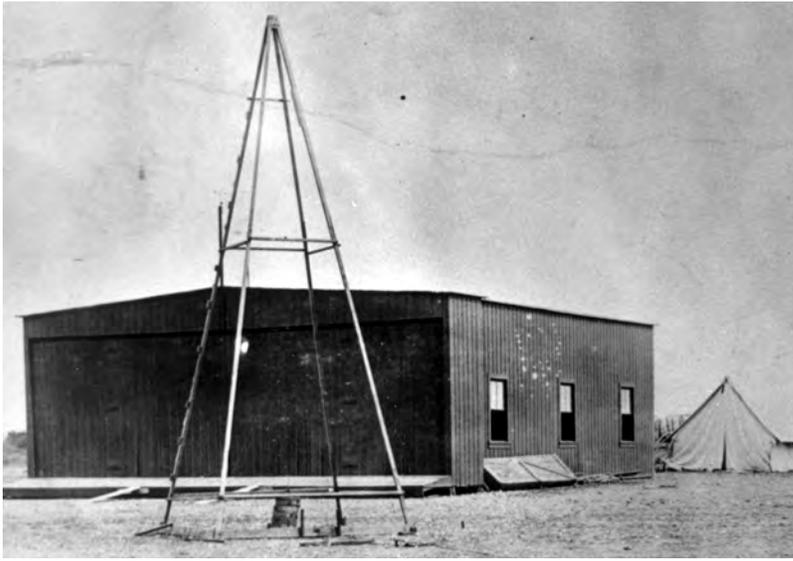
designated Signal Corps (S.C.) No. 1—in the hands of its least experienced operator. Benny Foulois had about fifty-four minutes of instruction from Wilbur and two hours as a passenger with Humphreys, but had yet to solo.<sup>9</sup> Surprisingly, this thoughtless decision failed to derail the Army's aviation program, primarily because of the background, talent, and character of the officer now in charge of S.C. No. 1.

Benjamin Delahauf Foulois was a tough, hard-nosed, practical-minded, former enlisted man whose ability to work with his hands and interest in technical subjects led him first into the Signal Corps and then into aviation. Son of an immigrant who became a successful Connecticut plumber, Foulois had apprenticed with his father until the adventure called. He enlisted during the Spanish-American War, made the Army a career, and earned a field promotion to lieutenant while in the Philippines. He became interested in aviation in 1907, while studying at the Signal Corps school at Fort Leavenworth, Kansas, where he wrote his thesis on "The Tactical and Strategical Value of Dirigible Balloons and Aerodynamical Flying Machines." Appointed a member of the aeronautical board that conducted the lighter-than-air and heavier-than-air trials at Fort Myer in 1908, Foulois was one of three officers taught to fly the Army's first dirigible. But the Wright aircraft attracted him like a magnet. Foulois pestered Orville with so many questions that Wright finally put the lieutenant to work on the airplane.<sup>10</sup> Orville was impressed with the officer "whom I like very much," he wrote Wilbur. "He is a little fellow, only weighing 130 lbs."<sup>11</sup> A reporter of the time noted Foulois's wide military experience, describ-

ing him as "an all-around man [who] can ride, blow up a redoubt, pass a brigade over a river on pontoons, swim, charge at the head of an infantry company, and is now learning to fly at from forty to fifty miles an hour."<sup>12</sup> And still another newsman assured readers that Foulois "has a cool, clear gray eye, is quick and active and his reputation is for coolness and daring under all circumstances."<sup>13</sup> Beyond the hyperbole, Benny Foulois was a mechanically adept officer who combined courage, energy, and initiative with formidable ambition. He eventually became commander of the U.S. Army Air Corps in 1931 as a major general.<sup>14</sup>

Foulois first took S.C. No. 1 to Chicago, where it was the featured attraction at the fifth annual Electrical Show from January 15 to 29, 1910. The lieutenant and his men hung the aircraft from the ceiling of the coliseum, rigged it with a radio so that messages could be exchanged with a station on the ground, and added an electric motor to turn the propellers. It was the hit of the show.<sup>15</sup> Foulois wrote his first letter to the Wright brothers—addressed to "My Dear Friends"—while in Chicago. The machine was scheduled to be sent to San Antonio on January 31, he told the brothers, "where I hope we will be left alone long enough for me to learn how to properly handle it."<sup>16</sup> And Foulois added that he had been summoned to testify in the Wright's court case against French flyer Louis Paulhan: "As regards all of your suits against infringement," he assured them, "I am thoroughly prejudiced in your favor, and will be glad to do what I can, legitimately, to assist you in defending your rights."<sup>17</sup>

S.C. No. 1 and part of the Army's aviation detachment reached San Antonio on February 3,



The shed or "hangar" and the launching derrick for Signal Corps No. 1 at Fort Sam Houston, Texas.

**HE BEGAN HIS SOLO FLYING CAREER IN SPECTACULAR FASHION WITH FOUR FLIGHTS, SPENDING TWENTY-ONE MINUTES IN THE AIR DURING THE LONGEST**

**"WE WERE ASTONISHED TO SEE YOU DO SO WELL WITHOUT ANY PREVIOUS EXPERIENCE IN FLYING ALONE ESPECIALLY WITHOUT EXPERIENCE IN LANDING"**

1910. Foulois arrived two days later, followed by the remainder of the men on the 10th. The detachment included Sgts. Stephen J. Idzorek and Herbert Marcus; Cpls. Vernon Burge and Glen R. Madole; Pvts. William C. Abolin, R. W. Brown, and Felix Cooke; and a civilian mechanic, Oliver G. Simmons. Foulois selected a site for the aircraft shed on February 5, and a local construction company completed the structure on February 23. Over the next three days, Foulois and his men assembled the aircraft, moved it into the hangar, and set up the launching tower and track. Signal Corps No. 1 had not been overhauled since its acceptance by the government, Foulois reported to Chief Signal Officer General Allen on March 1. The machine needed considerable repairs, and he appended to his report a requisition for parts to be purchased from the Wrights.<sup>18</sup>

But Foulois did not wait for a reply. On March 2, he began his solo flying career in spectacular fashion with four flights, spending twenty-one minutes in the air during the longest. He damaged the aircraft on the last flight, however, and did not return to the air until March 12, when he made five flights, one of which lasted over forty minutes. Two days later, he followed with a single flight twenty-two minutes and twenty-five seconds long.<sup>19</sup>

On the next day, March 15, Foulois reported to the Wright bothers. "If you have been reading the newspaper articles about my work here in Texas," the lieutenant began modestly, "you have probably arrived at the conclusion that I am not a very apt pupil, but perhaps your experience with inaccurate newspaper articles has been sufficiently great to allow some room for doubt in what you read."<sup>20</sup> His letter went on to detail the accident that had ended the last flight on March 2 and the repairs required. Foulois acknowledged that he had introduced too much "up" in the "horizontal rudder" and landed on the back of the skids. It was a soft landing, he recounted, but he had broken two wooden uprights next to the engine, the front and rear strainers on the lower center plane, and the sup-

ports underneath the engine. An inspection revealed that when the aircraft hit, the solder joints on the wires bracing the center section had failed under the sudden stress, allowing the structure to break. By March 10, Foulois and his crew had replaced the broken parts and rewired the center section, making certain that the solder joints were solid. In addition to this incident, Foulois also reported a continuous problem with the short chain that connected the engine and right-hand propeller. Six rollers were missing and a seventh had broken during the flight on March 14.<sup>21</sup> Despite the accident and the concern over the power chain, however, the lieutenant's letter exuded confidence: "I hope that this will clear up any apprehension on your part as to my work with the machine, as I do not want you to think that all of your valuable time was wasted in teaching me how to handle the machine."<sup>22</sup>

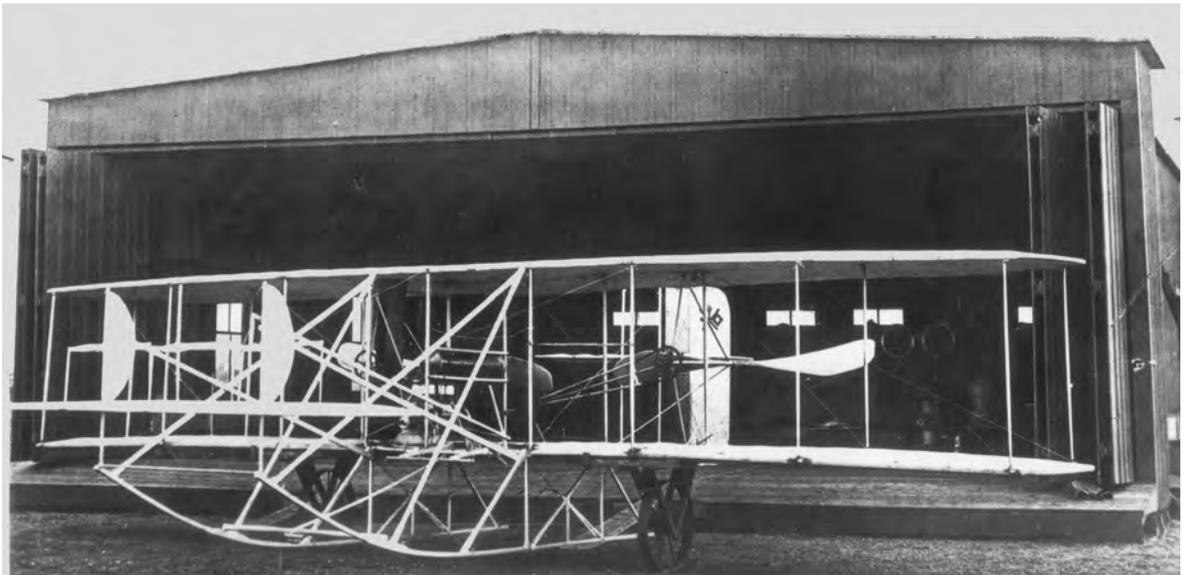
The Wrights answered on March 24. "Accept our congratulations on your successful flights," the letter began. "We were astonished to see you do so well without any previous experience in flying alone especially without experience in landing."<sup>23</sup> The brothers went on to outline some basic instructions on setting the aircraft down. If the engine quits when high in the air, Foulois must point the machine downward: The words "*Do it Immediately!*" are underlined in the letter. Velocity was the key to control. They cautioned Foulois to maintain plenty of speed until within one foot of the ground. As Foulois neared the ground, the brothers explained, he should fly parallel to it, allowing the decreasing forward movement to settle the aircraft gently. The lieutenant must make certain that the aircraft moved over the ground in line with the skids, keep the wings level, and not allow it to rise as the aircraft will want to do. "With a little practice," the letter summarized, "you will get on to the trick of skimming across the last forty or fifty feet before touching and then the landings will be very easy."<sup>24</sup>

The Wrights also provided technical advice concerning the chain, which, they admonished, must not be allowed to become tight at any point. The broken rollers were such a serious concern that the writer even abandoned the plural personal pronouns that characterized their letters and resorted to the first person singular: "I am rather surprised at the number of broken rollers you report."<sup>25</sup> These, the writer admonished, must be replaced immediately and the chain should never be used with broken rollers located adjacent to each other. The Wright brothers ended by encouraging further correspondence:

*It will please us very much to receive information regarding any troubles you may have with either the construction or the operation of the machine you have. We may sometime be able to furnish information which will save you time and trouble. In any event we are always pleased to hear from you and hope you will [have] the best of success.<sup>26</sup>*

Signal Corps No. 1 in front of its hangar at Fort Sam Houston in 1910. The first modifications have already been made. The top elevator in the front has been removed and the fixed stabilizer added to the rear in front of the rudder.

## THE U.S. ARMY RECOGNIZED THE AIRCRAFT'S PRIMARY DEFICIENCY AS A PRACTICAL MILITARY MACHINE



High winds grounded S.C. No. 1 over the next few days. During that period, Foulois discovered that a loose connection in the oil pipe was preventing proper lubrication of the engine cylinders. Taking advantage of the poor flying conditions, he and his crew removed the motor and gave it a thorough overhaul. On April 14, Foulois again flew over the lower post and accomplished several figure eights. Gusting winds, however, scrubbed two attempts to take a passenger up.<sup>27</sup>

On April 16, Foulois reported to the Wright brothers that he had experienced his first major trouble on the previous day. While in flight, he had heard a “sharp report” different from normal engine detonations. He immediately cut the engine and landed. The mechanics found that the exhaust valve on the No. 4 cylinder had separated from the stem, punching a hole in the piston head and cracking the cylinder. He was shipping the valve and stem to Dayton, he wrote, and also would send the piston and cylinder if the Wrights wanted to examine them.<sup>28</sup>

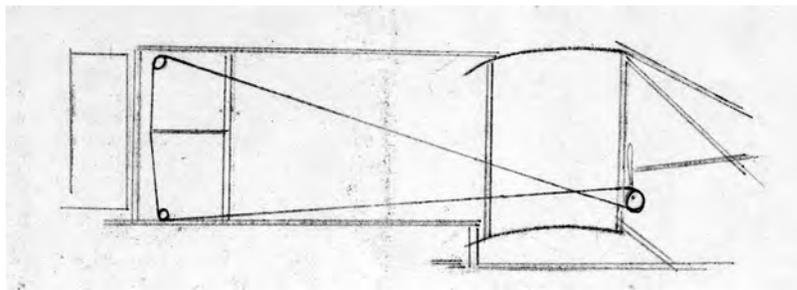
The body of the April 16 letter, however, addressed another topic. The U.S. Army had barely accepted S.C. No. 1, when it recognized the aircraft's primary deficiency as a practical military machine: the airplane lacked wheels. On December 11, 1909, the Chief Signal Officer, General Allen, had written the Wrights that “wheels for starting in addition to the skids for landing will increase efficiency...” and asked that the brothers submit a proposal for these improvements.<sup>29</sup> The Wrights responded that their new 1910 machines would have any combination of wheels and skids that the customer desired and that they would be happy to retrofit the government aircraft. The army seems to have done nothing more about the matter for the time being, but during the rainy, gusty weather that grounded S.C. No. 1 for much of early April, Foulois and Oliver Simmons, the civilian mechanic, drew blueprints for a landing gear. The design called for a tricycle gear consisting of one pair of 18-inch diameter wheels

mounted on each skid with clamps under the wing at the point the aircraft balanced, and a single, 14-inch diameter wheel attached to the center of the crossbar near the front of the aircraft. Foulois asked the Wrights to comment on the design. No reply to this letter appears in either the Wright or Foulois Papers.<sup>30</sup>

Replacement parts for the engine finally reached San Antonio on April 23, and on April 26 Foulois returned to the air with two short flights. During the last of three flights on the following day, April 27, he took one of the detachment's enlisted men up as a passenger. The one-minute flight, however, ended with a rough landing and damage to the skids that took two days to repair. On May 5, Foulois and his men began building a new rear “horizontal plane” for experimental work, installing the new surface on S.C. No. 1 on May 11. On the following day, Foulois accomplished a three-minute-forty-five-second flight made with both front horizontal rudders in their original positions and the new curved plane in the rear. Foulois reported that the machine in its new configuration appeared to be faster, but the continuous misfiring of the engine hampered his tests. The mechanics found that cylinders No. 2 and No. 3 were cracked from the spark plug to the exhaust valve and that No. 3 also had a crack in the water jacket. Replacement parts from the Wright factory soon arrived, and the men had completed repairs by May 23.<sup>31</sup>

Two days later, Foulois wrote the Wrights about a serious anomaly that he had not experienced previously. During his most recent flights, the machine refused to generate as much lift as it had at College Park. It failed to climb properly, and when flying low, the “machine has a tendency to sink to [the] ground.”<sup>32</sup> Foulois had to manipulate the front control excessively to maintain altitude. The engine was still putting out the same power as before, he reported, but he was getting the same performance with one operator at Fort Sam Houston as had been attained with an operator

## FOULOIS AND OLIVER SIMMONS, THE CIVILIAN MECHANIC, DREW BLUEPRINTS FOR A LANDING GEAR



Sketch sent by the Wright brothers to Foulois of a modified control system for Signal Corps No. 1 allowing the rear-mounted stabilizer to become an elevator moved in conjunction with the front elevator.

**THE WAR DEPARTMENT REMINDED FOULOIS THAT HE WAS A SIGNAL CORPS OFFICER ON DETACHED DUTY "AND THAT FLYING AN EXPERIMENTAL MACHINE— SINCE IT COULD NOT BE FLOWN VERY OFTEN—WAS 'IN ADDITION TO YOUR OTHER DUTIES.' "**

and a passenger at College Park. During the April 27 flight mentioned above, he and the smallest enlisted man in the detachment—their combined weight was just 260 pounds—could barely stay in the air. It was a constant fight to keep the aircraft flying in a straight line, Foulois complained, and when they tried a long, gentle turn, the aircraft slipped off sideways and hit the ground, damaging the skids and propellers. Further, this problem affected other airplanes as well. In late April, Wright rival Glenn Curtiss and pilots Charles K. Hamilton and Charles Willard arrived in San Antonio with two eight-cylinder machines that Foulois estimated produced 60 h.p. and one four-cylinder machine of 40 h.p. The more powerful aircraft performed satisfactorily, Foulois observed, but the four-cylinder machine was unable to make a circular flight.<sup>33</sup> Foulois concluded that the difference in density, pressure, and humidity of the air in the atmosphere at San Antonio accounted for the problems with performance, and he grumbled at length about local conditions:

*Since I started to work here March 1, there have been but twenty good flying days in three months! And I have made some flights in winds up to 14 miles per hour. This month has been very bad, having but 2 good days since May 1. From data obtained from the weather bureau at San Antonio, it appears that they have strong winds almost the entire year, particularly through the spring and summer months. The air is always hot and dry, and the temperature gets up to 107 F. in the summer, so you can see that this is not much of a country for flying machine[s] at the present stage of the art.<sup>34</sup>*

The Wrights responded, and it is clear that the brother who wrote was puzzled by Foulois's report. The Wrights had flown at higher altitudes than San Antonio and in higher temperatures, he told the lieutenant, and had little difficulty with lift. However, there was a condition under which the "air is full of upward trends and down trends." Perhaps, he suggested, Foulois may be getting into down trends, and if so, keeping the nose of the aircraft up to compensate would have the effect of causing the machine to sink faster. Perhaps the solution was mechanical. He suggested that "the 'horizontal plane' may have too much negative angle" and recommended that Foulois lower its rear edge about one inch. Additionally, he explained that he and his brother were now operating the front and rear "horizontal rudders" of

their aircraft together and appended a sketch showing how Foulois could modify his control system. It should be noted that even before this advice arrived, Foulois was still able to coax satisfactory performance out of S.C. No. 1. On May 30, he attained a maximum speed of 45.38 m.p.h. over a quarter-mile course.<sup>35</sup>

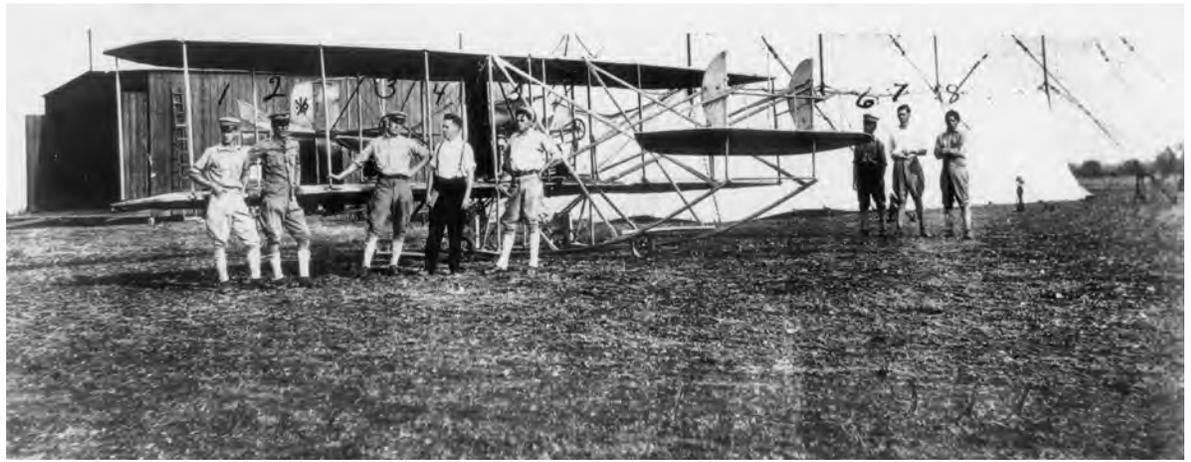
Then, in the middle of these adventures, the War Department reminded Lieutenant Foulois that he was a Signal Corps officer on detached duty "and that flying an experimental machine—since it could not be flown very often—was 'in addition to your other duties.'"<sup>36</sup> Consequently, on June 15, Foulois led his detachment to the Army training area near Leon Springs, west of San Antonio, where they spent the next month installing an "electric buzzer annunciator system" at the target range "so that the range personnel would not have to use semaphore flags to signal scores back and forth."<sup>37</sup> He left Simmons and Madole behind to manufacture the landing gear for S.C. No. 1. On July 16, after a month of digging ditches and stringing wire, Foulois and his men returned to Fort Sam Houston, and four days later he resumed his aviation activities, accomplishing three successful flights, the longest one of three minutes and fifty seconds. Foulois and his men spent the next two weeks modifying the skids and frames and installing the wheels. These were ground tested by August 9, and by the 16th, the detachment had mounted new propellers that they had constructed. The first flight with wheels took place on August 18, the aircraft taking off in 111 feet and landing in 125 feet. The steel springs proved too weak to support the weight of the aircraft during landing, however, so the mechanics mounted stronger ones, and on August 22, Foulois made two successful flights.<sup>38</sup> He was immensely pleased with the new landing gear: "In both flights the starting and landing was accomplished without the slightest difficulty," he recorded in S.C. No. 1's logbook.<sup>39</sup> And he reported to General Allen that:

*The addition of wheels to the machine not only does away with the use of the monorail, tower, and weights, but also means a larger saving in the wear and tear on the skids incident to rough landings. Since the wheels have been in use, I have made landings in the roughe [sic] parts of the field without doing the slightest damage to the machine.<sup>40</sup>*

Foulois and his crew were not much behind the Wright brothers, who had made their first experimental flights with a wheeled machine on July 21.<sup>41</sup>

Despite his successes, however, the problem with lift that Foulois had reported in May continued to plague S.C. No. 1. On August 25, he made three aborted flights of thirty seconds each. Two days later, the thoroughly frustrated lieutenant complained that the atmosphere made it difficult to make the aircraft climb. The absence of lift was significant, and in the air the aircraft flew with a

Signal Corps No. 1 at Fort Sam Houston in the late summer of 1910. The tricycle landing gear designed by Foulois and his crew is just visible.



## FOULOIS SENT ORVILLE A LIST OF QUESTIONS

## ORVILLE FAILED TO REPLY

pronounced tilt to the rear. The engine was not the problem. The propeller was turning at 1,452 rpm, only two less than its maximum performance.<sup>42</sup> “In all flights,” Foulois wrote in the flight log (accepting the Wrights’s explanation and terminology), “there seemed to be a downward trend to the air, as the machine seemed to be drawn down when passing over depressions.”<sup>43</sup> This problem continued for the next few days, compounded by a period of gusty winds. Then, on September 8, a phenomenon known in the Southwest as a “dust devil” caused what might have been a major crash had the lieutenant not kept his head:

*In this flight the machine refused to respond quickly to its later[al] controls due to atmospheric conditions. The flight terminated very quickly, as a sudden whirlwind struck the machine, tossing it vertically in the air about 30 ft. and tipping it sideways, at an angle of about 45 degrees. In order to prevent the machine from tipping completely over it was necessary to descend at a very steep angle to gain the necessary lifting effect on the wingtips. There was not sufficient space between the machine and the ground to fully recover the balance of the machine before one wingtip struck the ground damaging the skids and one lower wingtip.*<sup>44</sup>

The aviation detachment repaired the machine, but high winds and rain kept it on the ground until September 29, when Foulois accomplished one short flight of twenty-five seconds. On the following day, he made the last flight of the year, lasting one minute and ten seconds.<sup>45</sup>

In October, Foulois attended the international aviation gathering at Belmont Park, New York, where several of the new Wright Model “B” aircraft were entered in the competition. Foulois was especially impressed by Wright flyers Ralph Johnstone and Arch Hoxey, who, performing in high winds that grounded other competitors, broke the world altitude record. With the Model “B” flyer, Foulois found, the Wrights had discarded the front elevators. He and Orville discussed how to modify S.C. No. 1 to make it as stable as the newer aircraft.<sup>46</sup>

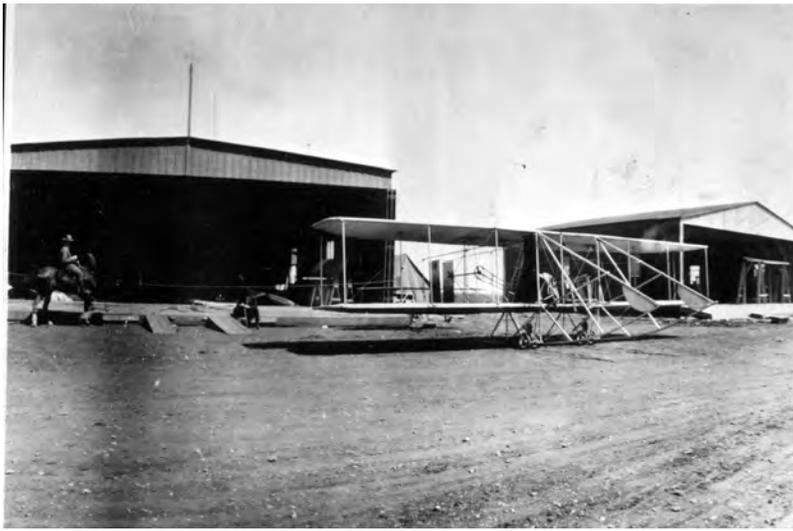
Following his return to San Antonio, Foulois sent Orville a list of questions on November 8 ask-

ing for information about the theoretical nature of flight and the practical movements of the control levers. “I have had numerous theories of my own on the theoretical operation of the planes, but since talking with you at Belmont Park, I found that I was off the track on a great many things. And I do want to be put right.”<sup>47</sup> Orville failed to reply, and on December 23, Foulois sent the same list of questions to Wilbur. The older brother wrote back on December 27, but did not respond to the theoretical questions that the lieutenant had posed. Instead, he returned to the problem with the engine chains that the officer had reported in March, telling Foulois that the Wright Company was now using 5/8 inch diameter rollers on the engine chains in place of the 9/16 inch diameter on the older chains. This more robust roller had eliminated the breakage. Wilbur further advised Foulois to boil the engine chains in “thick cup grease,” with a little graphite and tallow added, and reminded him to inspect the chains frequently and keep them well oiled.<sup>48</sup>

With flying ended for the year, the aviation detachment devoted its efforts to renovating and remodeling the battered and worn machine. Among these changes, the men installed the new Wright Model “B” control system, removing the front “horizontal rudder” completely. Foulois first flew the modified S.C. No. 1 on February 6, 1911, making two flights—one of twelve minutes and the other of thirteen minutes, nine seconds—without incident. He reached an altitude of 900 feet on the second flight. The lieutenant followed this performance two days later with another pair of flights, one of eight minutes, thirty-five seconds, the other of thirteen minutes, fifty seconds. During the second flight, however, a piston jammed in a cylinder while the aircraft was directly over the only suitable field for landing within range. Foulois cut the engine and spiraled tightly onto the field, which was about 100 feet wide with trees and buildings on three sides.<sup>49</sup> This safe emergency landing ended flying as a period of cold, blustery weather grounded the aircraft.

In the meantime, a major change was in the offing. Despite the best efforts of the aviation detachment at Fort Sam Houston, S.C. No 1 was worn

## WILBUR ... WROTE BACK ... BUT DID NOT RESPOND TO THE THEORETICAL QUESTIONS THAT THE LIEUTENANT HAD POSED



Signal Corps No. 1 in its final configuration, with three front braces on each skid, rather than the original two. The elevators have been removed entirely from the front of the aircraft, which no longer sports the tricycle landing gear.

**IT WAS IMPORTANT FOR THE WRIGHTS TO HELP FOULOIS SUCCEED...IF THE FIRST ARMY AIRPLANE WAS A PRACTICAL SUCCESS, THEY HAD THE OPPORTUNITY TO SELL MANY MORE**

out, and the government had yet to make funds available for the purchase of new machines. However, aviation enthusiast Robert F. Collier, owner of *Collier's Weekly* magazine and sponsor of the Collier Trophy, had purchased a 1910 Wright Model "B" for his personal use. Pending Congressional action, the U.S. Army leased the Collier machine for the nominal fee of one dollar and sent it to Fort Sam Houston.<sup>50</sup>

On February 10, Wilbur wrote Foulois that he had heard that the lieutenant and his detachment might be sent to the Mexican border. "Inasmuch as you have never been given decent facilities for practice under reasonable conditions," he opined, "I think it would be rather cheeky for those in command to send you on such a difficult job on short notice."<sup>51</sup> At any rate, he reported that Collier had asked the Wrights to allow Wright Company flyer Philip O. Parmalee to accompany the new Model "B" to San Antonio. Wilbur had agreed, especially since the Model "B" had a different control system, and Foulois would need instruction. Although a civilian, Parmalee would act under Foulois's orders. "You will find him a first class mechanic, a remarkably good operator, and a most lovable man," Wilbur assured the lieutenant. "We regard him as the best all around man we have ever had. He has good judgement as to what is safe and what is unsafe, and is easy to work with. You will like him very much."<sup>52</sup>

Foulois thanked Wilbur for his thoughtfulness on February 15. He also reported that his flights with the remodeled S.C. No. 1 had shown a remarkable improvement in control, enabling him to fly higher and in stronger winds than before, and proudly claimed that despite the engine failure, he had made a perfect landing. "The newspaper men made a lot of fuss over it," he told Wilbur, "as they had never seen a machine cut circles like it."<sup>53</sup> The engine lost power and jammed, he noted, because the cylinders were not getting oil. The aviation detachment had switched from Vacuum, Mobiloil Oil "A", which had been highly satisfactory, to Vacuum, Mobiloil Oil "B", which thickened in cold weather and flowed poorly.<sup>54</sup>

On February 18, Phillip Parmalee arrived, followed three days later by the Collier-Wright. On February 23, Parmalee took Foulois up in the new airplane. He also gave a ride to the civilian mechanic, Simmons, and, on the following day, the enlisted crew of S.C. No. 1 received flights as well, a fitting reward for months of arduous effort. On February 27, 1911, the Signal Corps aviation detachment left Fort Sam Houston for Fort McIntosh on the Mexican border to begin operational tests of the Collier-Wright during field maneuvers. Benny Foulois's year of experience at Fort Sam Houston thus ended. Counting the four in February 1911, Foulois recorded 66 flights in S.C. No. 1, totaling some 10 hours, 25 minutes, and 54 seconds in the air. Aviation activity would resume at the post at the end of April, with the arrival of the next generation of army aircraft, S.C. No. 2, a Curtiss IV Model D, and S.C. No. 3, a Wright Model B.<sup>55</sup>

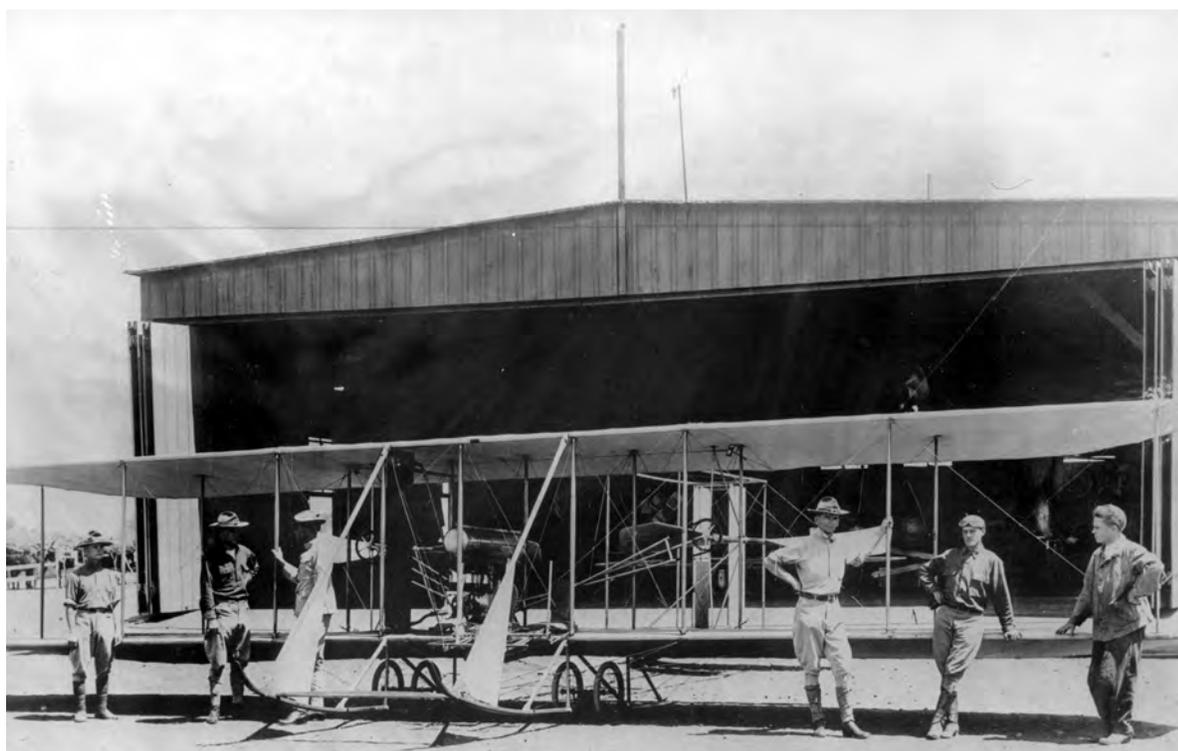
Foulois's autobiography suggests an extensive correspondence with the Wrights, and, logically, extended, detailed communications should exist. It would have been natural for Foulois to seek the Wright brothers's advice at every stage of his experimentation with S.C. No. 1. They had invented practical flight and were the most experienced, knowledgeable aviators in the world. More to the point, they had designed, built, and flown S.C. No. 1 and, thus, knew the machine better than anyone. Likewise, it was logical for the Wrights to provide the lieutenant with every degree of assistance possible. The brothers and the lieutenant had established an association while at Fort Myers, although the degree of that relationship can be overstated. Foulois did begin his first two letters with the salutation "My dear friends," but used more formal salutations in subsequent correspondence. But, beyond bonds of friendship, it was important for the Wrights to help Foulois succeed. If the first Army airplane was a practical success, they had the opportunity to sell many more. If Foulois's experiments were unsuccessful, however, they stood to lose heavily in what was one of the potentially most lucrative markets available. Had Foulois destroyed S.C. No. 1 during his experiments and killed himself in the process, the impact on the progress of military aviation in the United States during its embryonic stage can only be imagined.

Despite logic, however, the Wilbur and Orville Wright papers in the Library of Congress contain only nine letters from Foulois to the Wrights during the period—six in 1910, two in 1911, and one in 1912—and six letters from the brothers to the lieutenant—three in 1910, two in 1911, and one in 1912.<sup>56</sup> Of these, only seven from Foulois and three from the brothers actually discuss the operation of S.C. No. 1. Based on the extant correspondence, it must be concluded that Foulois overstated the level of communication between him and the Wrights during 1910.

And there were reasons that correspondence during that period should be limited. By 1910, the

The U.S. Army leased a Wright Model B from publisher Robert Collier in early 1911. Note the standard Wright wheels compared with those on Signal Corps No. 1 shown previously.

**DESPITE THE SEVERE DEMANDS ON THEIR TIME, HOWEVER, THE WRIGHT BROTHERS DO APPEAR TO HAVE DONE THEIR BEST FOR FOULOIS**



Wrights were international stars, lionized around the world. The demands on their time were enormous. They were also extremely busy trying to profit from their invention. In January, the Wright Company broke ground in Dayton for a new manufacturing facility, which began operation in November. Meanwhile, the brothers established a flying field in Montgomery, Alabama, and from March 24 through May 7, trained pilots for an aerial demonstration team, thus joining what Wilbur termed “the mountebank game.” The team staged its first exhibition in June and capped the year in October by competing in the aerial competition at Belmont Park. Problems also erupted overseas, and Orville spent November and December in France and Germany dealing with the companies licensed to produce Wright aircraft. Perhaps most important, the brothers, and especially Wilbur, were heavily involved in litigation with the Herring-Curtiss Company, aviators Louis Paulhan and Claude Grahame-White, and six aircraft companies in France. In biographer Tom Crouch’s words, “The patent suits absolutely consumed Wilbur and Orville’s time and energy during the period 1910–12.”<sup>57</sup>

Despite the severe demands on their time, however, the Wright brothers do appear to have done their best for Foulois, and one should not minimize the significance of their letters, limited as they were in number. The information on landing techniques and maintenance in the letter of March 24 was especially valuable to a neophyte, and the subsequent letters contained additional useful information. Further, the Wright brothers continued to dispense their knowledge even after Foulois left Fort Sam Houston. The two letters from Wilbur on December 2, 1911, and January 25, 1912, were

sent to Foulois just before he reported to Fort Riley, Kansas, to fly the Wright Model “C,” and both included considerable information on handling the new aircraft.<sup>58</sup>

It is noteworthy that the Wrights failed to respond to many of Foulois’s questions about the theories of operating the airplane and, in some cases, those regarding mechanical improvements to its structure. In the former case, given their willingness to correspond with others about the theoretical nature of flight, one suspects that they were simply too busy. By the time Foulois’s letter of November 8 reached Dayton, Orville was on his way to Europe, and Wilbur was deeply involved in the patent case against Curtiss. In the case of mechanical improvements, it may be that at times Foulois was treading on trade secrets. Most notably, the Wrights failed to answer Foulois’s request for comments on his design for a wheeled undercarriage. Since the brothers probably expected to sell their own design to the Army, they may not have viewed advising Foulois on his efforts to mount a landing gear on S.C. No. 1 as in their best financial interest.<sup>59</sup>

The letters between the Wright brothers and Foulois, along with other primary documentation from 1910, raise other questions. For one, according to Foulois’s autobiography, during the long flight of March 14 he was nearly thrown from the aircraft when it hit a sharp downdraft. Recognizing the need for more safety, he obtained a leather strap from the saddlery shop and tied himself into the seat during later flights. Based upon this experience, Foulois claimed credit for inventing the seat belt.<sup>60</sup> This development, however, appears to have gone completely unrecorded at the time. Neither S.C. No. 1’s flight log nor his monthly

Foulois and Wright pilot Philip Parmalee aboard the Collier-Wright Model B.



**HE MAY NOT HAVE WANTED HIGHER AUTHORITIES TO KNOW THAT HE WAS OPERATING OUTSIDE REGULATIONS**

Located on the parade ground, this marker commemorates Foulois's first flights at Fort Sam Houston on March 2, 1910. (Photo courtesy of Megan Chamberlin.)



**FOULLOIS CLAIMED CREDIT FOR INVENTING THE SEAT BELT**

report to General Allen mention the incident, and Foulois's March 15 letter to the brothers asserted

that no serious incidents occurred during the flight. A handwritten note in the log book entry for March 14 mentions a seat belt, but it is clear from the handwriting that Foulois added it later, perhaps many years later. It is thus inconclusive. On the other hand, it seems almost certain that Foulois was using some device to keep himself in the aircraft. It is unlikely that he could have remained in the seat and in control of the airplane during the September 8 accident when the dust devil threw it into an extreme position. Under the Wright system, the operator perched in the open on a seat positioned on the leading edge of the lower wing with both hands on the control sticks. He had no way to keep himself in the seat, and if he attempted to cling to the control sticks, he lost control over the craft. It seems logical to conclude, then, that Foulois's story told later is true, but why it fails to appear in the records of the time is curious. One possible answer is that Foulois, who had been sent to Fort Sam Houston with almost no operational funds, had arranged for material and supply support informally with various shops on Fort Sam Houston. He may not have wanted higher authorities to know that he was operating outside regulations.<sup>61</sup>

Another conundrum also pops out of the primary documents. Foulois's autobiography never mentions the problem of "lift" that looms so large in the lieutenant's correspondence with the Wrights. However, little in the advice from the

**DID THE  
POSTMAN  
REALLY  
SAVE  
FOULOIS'S  
LIFE?...HE  
DID RECEIVE  
USEFUL  
ADVICE  
FROM THE  
WRIGHTS.  
...PERHAPS  
THE MOST  
IMPORTANT  
ASSISTANCE  
FROM THE  
BROTHERS  
WAS PSY-  
CHOLOGICAL**

Wrights about flying techniques and the actions that Foulois took at the time appears to have addressed the question of lift directly. The autobiography, instead, goes into detailed complaint about the “bucking” habits of S.C. No. 1, which suggests that the aircraft with its twin “horizontal rudders” located in front of the wings was too sensitive and subject to overcontrol by the operator, a condition with which the Wrights were extremely familiar. The changes that Foulois documented at the time—mounting a “horizontal plane” on the rear of the aircraft in addition to “horizontal rudders” on the front, then eliminating the front “horizontal rudders” entirely and replacing them with a rear “horizontal rudder”—are measures that would address the problem of overcontrol, even though Foulois’s contemporary letters and records fail to document such a condition.<sup>62</sup>

Finally, did the postman really save Foulois’s life? One must conclude that if the lieutenant was not the first mail-order pilot, as his memoirs claim, he did receive useful advice from the Wrights. But, perhaps the most important assistance from the brothers was psychological. Their letters contain

sufficient praise and encouragement from the fathers of manned, powered flight to help give the lieutenant the confidence he needed during his dangerous efforts to develop a practical flying machine for the U.S. Army. He really was not alone at Fort Sam Houston, even though the Wright brothers were far away. It seems logical to contend that having the brothers looking over his shoulder—figuratively speaking—played a significant role in the lieutenant’s success. Foulois, may have overstated the extent of his correspondence with the Wrights many years later, but the letters he received from the Wilbur and Orville were an important factor in his successful experiments with the army’s first aircraft.

As for the machine, it had done its job and flew no more after February 8, 1911. The U.S. Army returned the aircraft to the Wright factory where it was restored to its original configuration and then donated it to the Smithsonian Institution in Washington, D.C. Signal Corps No. 1 now hangs on display in the National Air and Space Museum’s gallery of early flight, permanently flown by a life-like mannequin of its primary operator, Benjamin D. Foulois. ■

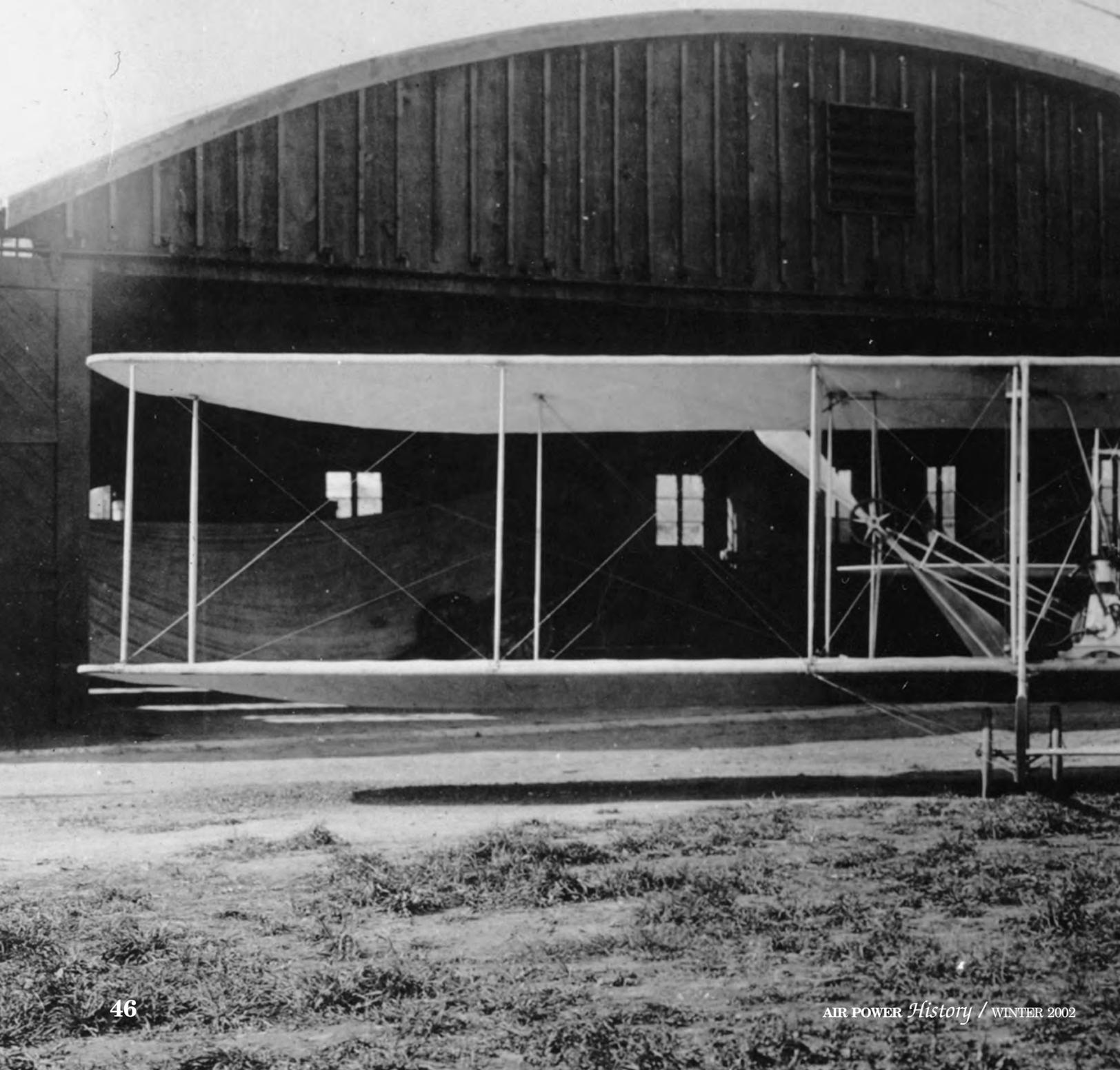
#### NOTES

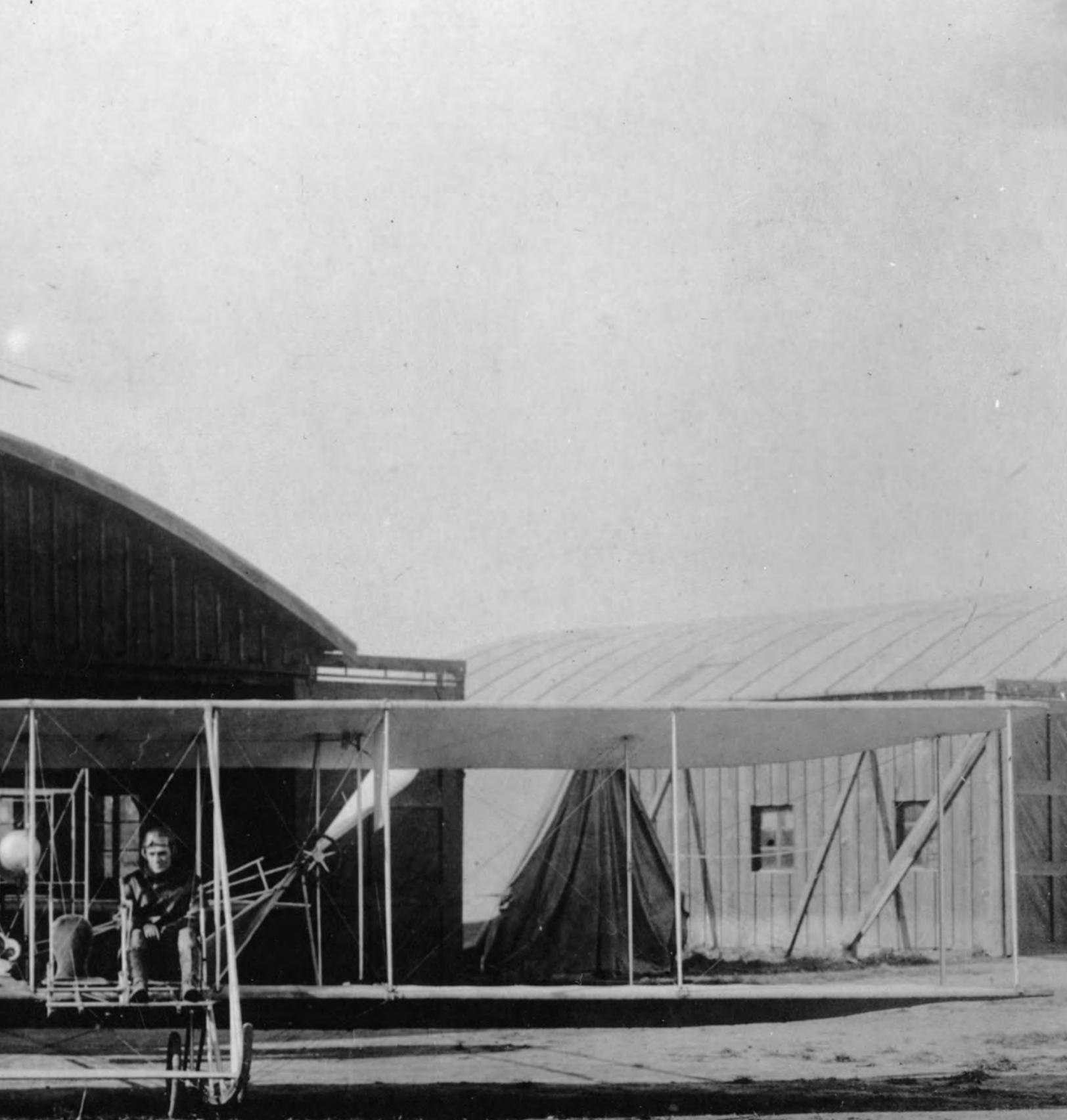
1. Benjamin D. Foulois, with Col. C. V. Glines, *From the Wright Brothers to the Astronauts: The Memoirs of Major General Benjamin D. Foulois* (New York: McGraw-Hill Book Company, 1968), p. 2.
2. *Ibid.*, p. 75.
3. Tom D. Crouch, *A Dream of Wings: Americans and the Airplane, 1875-1905* (Washington, D.C.: Smithsonian Institution Press, 1989), pp. 46-67, 127-56, 255-93; J. Gordon Vaeth, *Langley: Man of Science and Flight* (New York: The Ronald Press Co., 1966), pp. 44-48, 256-58; Wayne Biddle, *Barons of the Sky* (New York: Simon & Schuster, 1991), pp. 32-33.
4. Crouch, *A Dream of Wings*, pp. 255-93; Vaeth, *Langley*, pp. 66-97, *passim*; Biddle, *Barons of the Sky*, pp. 32-33; Tom D. Crouch, *The Bishop’s Boys: A Life of Wilbur and Orville Wright* (New York: W.W. Norton & Co., 1989), pp. 261-63.
5. Crouch, *A Dream of Wings*, pp. 291-93; Vaeth, *Langley*, p. 97; Stephen F. Tillman, *Man Unafraid: The Miracle of Military Aviation* (Washington, D.C.: Army Times Publishing Company 1958), p. 9.
6. See especially Crouch, *The Bishop’s Boys*, pp. 242-52, 316-26.
7. Juliette Hennessy, *The United States Army Air Arm, April 1861 to April 1917*, new imprint (Washington, D.C.: Office of Air Force History, 1985), pp. 25-34, *passim*. In 1907, the army agreed to Alexander Graham Bell’s request that Lieutenant Selfridge, who had shown considerable interest in aeronautics, join his Aerial Experiment Association at Beinn Breagh, Nova Scotia. Selfridge designed the first AEA airplane, known as *Red Wing*, in early 1908, but returned to the Signal Corps before it flew in March. Orville Wright distrusted Selfridge because of his association with Bell and rival Glenn Curtiss, but asked him to fly because he was a member of the aeronautical board that supervised the heavier-than-air tests. Selfridge was the first military man killed in an airplane accident. Crouch, *The Bishop’s Boys*, pp. 351, 372-76.

8. Telegram, Big. Gen. James Allen, Chief Signal Officer, to Wright brothers, Nov 6, 1909; Telegram, Allen to Wright brothers, Dec 6, 1909; Ltr, Wright brothers to Allen, Dec 6, 1909; Ltr, Wright brothers to Allen, Dec 13, 1909; Ltr, Wright brothers to Allen, Dec 29, 1909, all in Box 8, General Correspondence, The Papers of Wilbur and Orville Wright, Library of Congress (LC), hereafter cited as Wright Papers. The Wrights forwarded the replacement parts quickly, charging the government only \$5.80, the cost of shipping them express.
9. Foulois, *From the Wright Brothers to the Astronauts*, p. 70.
10. Crouch, *The Bishop’s Boys*, p. 373.
11. Ltr, Orville to Wilbur Wright, Aug 23, 1908, in Marvin W. McFarland, Ed., *The Papers of Wilbur and Orville Wright, Volume Two: 1906-1948* (McGraw-Hill Book Company, Ltd., 1953), p. 915.
12. Clipping, “Foulois is First U.S. Air Captain,” Scrapbook, 1909, Foulois Papers, LC, hereafter cited as Foulois Papers.
13. Clipping, “Feed Pipe Breaks: Aeroplane Drops, Wrecking Rudder,” *The Daily Express* (San Antonio), Mar 5, 1910, File AV DY 2-E, Box 25, Foulois Papers.
14. The best source on Foulois’s later career is John F. Shiner, *Foulois and the U.S. Army Air Corps, 1931-1935* (Washington, D.C.: Office of Air Force History, 1983).
15. Foulois, *From the Wright Brothers to the Astronauts*, pp. 70-73.
16. Handwritten ltr, Foulois to Wright brothers, Jan 30, 1910, Box 24, General Correspondence, Wright Papers.
17. *Ibid.* The Wrights filed an injunction against Paulhan on January 4, 1910, restraining him from performing exhibitions in the United States. A ruling on February 17 required him to post a bond of \$25,000 (later reduced to \$6,000) if he wished to continue flying pending resolution of the case. Paulhan, who had already earned some \$20,000, returned to France instead. Crouch, *The Bishop’s Boys*, pp. 413-14.
18. “Log Book of Old No. 1” Box 25, Subject File, Foulois Papers; Clipping, “Foulois is on Ground,” *The Daily*

- Express* (San Antonio), Feb 8, 1910, File AV DY 2-E; Rpt, Foulois to Chief Signal Officer, March 1, 1910, File AF DT 2-C, all in Box 25, Foulois Papers; Hennessy, *The United States Army Air Arm*, p. 39. The shed cost the U.S. Army \$1,450.
19. "Log Book of Old No. 1," Box 25, Subject File, Foulois Papers.
  20. Ltr, Foulois to Wright Brothers, Mar 15, 1910, Box 24, General Correspondence, Wright Papers.
  21. *Ibid.*
  22. *Ibid.*
  23. Ltr, Wright Brothers to Foulois, Mar 24, 1910, *ibid.*
  24. *Ibid.*
  25. *Ibid.*
  26. *Ibid.*
  27. "Log Book of Old No. 1," Box 25, Subject File, Foulois Papers.
  28. Ltr, Foulois to Wright brothers, Apr 16, 1910, Box 24, General Correspondence, Wright Papers.
  29. Ltr, Allen to Wright brothers, Dec 11, 1909, Box 8, General Correspondence, *ibid.*
  30. Ltr, Wright brothers to Allen, Dec 22, 1909, *ibid.*; Ltr, Foulois to Wright Brothers, Apr 16, 1910, Box 24, General Correspondence, Wright papers; "Log Book of Old No. 1," Box 25, Subject File, Foulois Papers.
  31. "Log Book of Old No. 1," Box 25, Subject File, Foulois Papers.
  32. Ltr, Foulois to Wright brothers, May 25, 1910, Box 24, General Correspondence, Wright Papers.
  33. *Ibid.*
  34. *Ibid.*
  35. Ltr, Wright brothers to Foulois, May 31, 1910, *ibid.*; "Log Book of Old No. 1," Box 25, Subject File, Foulois Papers. The Wright brothers had extensive experience with "thermals," rising currents of warm air formed by the difference in temperature between different surfaces of the ground. Thermals provide "lift," enabling birds, balloons, and gliders to soar, often for hours. Outside the thermal, areas of cooler air provide "sink" that causes flying objects to descend rapidly. Dave Thornburg, *Old Buzzard's Soaring Book* (Albuquerque, N.M.: Pony X Press, 1993), pp. 1-8.
  36. Foulois, *From the Wright Brothers to the Astronauts*, p. 75.
  37. *Ibid.*, p. 76.
  38. "Log Book of Old No. 1," Box 25, Subject File, Foulois Papers.
  39. *Ibid.*
  40. Rpt, Foulois to Chief Signal Officer, Sep 1, 1910, File AF DT 2-C, *ibid.*
  41. Crouch, *The Bishop's Boys*, p. 428.
  42. "Log Book of Old No. 1," Box 25, Subject File, Foulois Papers.
  43. *Ibid.*
  44. *Ibid.* Dust devils are, in effect, small areas of swirling air shaped much like tornados that act as feeder columns delivering hot area to thermals above them. The general shape is that of a mushroom and its stem. Thornburg, *Old Buzzard's Soaring Book*, p. 8.
  45. "Log Book of Old No. 1," Box 25, Subject File, Foulois Papers.
  46. Foulois, *From the Wright Brothers to the Astronauts*, pp. 77-78.
  47. Ltr, Foulois to Orville Wright, Nov 8, 1910, Box 24, General Correspondence, Wright Papers. The questions were detached from the letter and not found.
  48. Ltr, Foulois to Wilbur Wright, Dec 23, 1910; Ltr, Wilbur Wright to Foulois, Dec 27, 1910, both in *ibid.* The middle portion of Foulois's letter with most of his questions is missing. The question that survives states that Orville had told Foulois while at Belmont that the machine should be trussed straight from tip to tip. Foulois asks for clarification. Did Orville's statement refer to the rear edge of the main plane?
  49. "Log Book of Old No. 1"; Rpt, Foulois to Chief Signal Officer, Mar 1, 1911, File AF DT 2-C, both in Box 25, Foulois Papers. Foulois wrote that modifications included placing the vertical rudder in the rear of the aircraft and giving the machine one elevator in the front and one in the rear. He appears to have added this information to the log book many years later, possibly as an explanation to C. V. Glines, who was helping write his autobiography, and it does not fit the available evidence. It is clear from the contemporary correspondence discussed above that the aircraft was in the configuration with fore-and-aft elevators much earlier than December. Following the Belmont meet and the discussions with Orville, Foulois would be more likely to have removed the rudders and elevators from the front of S.C. No. 1 completely, and a photograph of S.C. No. 1 shows the airplane in this configuration. It seems a logical deduction that Foulois's memory failed him and that the four 1911 flights were made without any control surfaces forward of the wings.
  50. Foulois, *From the Wright Brothers to the Astronauts*, p. 82; Hennessy, *The United States Army Air Arm*, p. 40. Congress made its first appropriation for Army aeronautics on March 3, 1911, providing \$125,00 for fiscal year 1912. The U.S. Army purchased five aircraft with this money, two Wrights, two Curtiss, and one Burgess-Wright.
  51. Ltr, Wilbur Wright to Foulois, Feb 10, 1911, Box 24, General Correspondence, Wright Papers.
  52. *Ibid.* Against their better judgement, the Wright Brothers entered the exhibition business in early 1910, and Parmalee was one of several young daredevils, including Walter Brookins, Frank Coffyn, Ralph Johnstone, J. Clifford Turpin, Howard Gill, and Leonard Bonney, recruited for the team. Orville taught these men to fly. Parmalee was killed in a crash in 1912. Crouch, *The Bishop's Boys*, pp. 427-28.
  53. Ltr, Foulois to Wilbur Wright, Feb 15, 1911, Box 24, General Correspondence, Wright Papers.
  54. *Ibid.*
  55. Rpt, Foulois to Chief Signal Officer, Mar 1, 1911, File AF DT 2-C, Box 25, Foulois Papers; Hennessy, *The United States Army Air Arm*, p. 42.
  56. Efforts to locate additional correspondence between the Wright Brothers and Foulois in other collections of Wright Papers proved unsuccessful. Much of Foulois's correspondence prior to 1917 is missing from the Benjamin D. Foulois Papers in the Library of Congress. A note added by Foulois to the "Log Book of Old No. 1" years after the log book was compiled states that his correspondence with the Wright Brothers was lost during World War I.
  57. Crouch, *The Bishop's Boys*, p. 417.
  58. Ltr, Wilbur Wright to Foulois, Dec 2, 1911; Ltr, Wilbur Wright to Foulois, Jan 25, 1912, both in Box 24, General Correspondence, Wright Papers.
  59. According to Hennessy, the tricycle landing gear mounted on S.C. No. 1 proved unsatisfactory, and the army replaced it with the standard gear developed by the Wrights. Hennessy, *The United States Army Air Arm*, p. 7. No photograph of the aircraft with the standard Wright gear has been found, however, and Foulois's letters to the Wrights, his reports to the Chief Signal Officer, and the "Log Book of Old No. 1" fail to record such a change.
  60. Foulois, *From the Wright Brothers to the Astronauts*, pp. 73-74.
  61. Dr. Ed Raines from the U.S. Army's Center for Military History, suggested this possibility. For information on supply and maintenance support, see Roger G. Miller, "Signal Corps No. 1: Purchasing and Supporting the Army's First Airplane," *Air Power History* (Fall, 1994), pp. 14-21.
  62. Foulois, *From the Wright Brothers to the Astronauts*, pp. 76-77.

From Infant Technology to Obsolescence:  
The Wright Brothers' Airplane  
in the U.S. Army Signal  
Corps, 1905-1915





A. Timothy Warnock

(Overleaf) Lt. Henry H. Arnold in Wright B Airplane, College Park, Md. 1911.

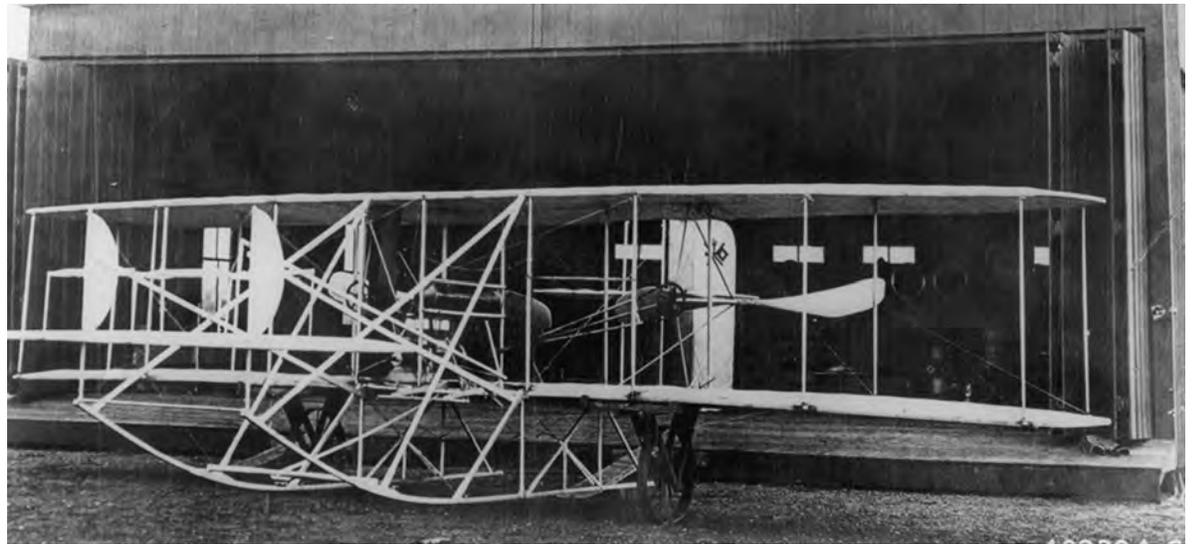
## WILBUR AND ORVILLE WRIGHT SPENT THE SUMMER OF 1907 IN EUROPE

On December 17, 1903, Wilbur and Orville Wright successfully flew for the first time a powered and controlled, heavier-than-air machine—an airplane. Over the next two years, the brothers would refine their design and, unlike all other would-be airplane inventors, fly the aircraft under complete, although tenuous, control in all three axes—roll, pitch, and yaw.<sup>1</sup> Recognizing its potential as a military instrument, they decided to offer the machine first to the U.S. Army once they felt confident of its capabilities.<sup>2</sup> In January 1905, Wilbur Wright consulted with his congressman, Robert M. Nevin, and on his advice wrote a letter briefly describing the machine. Nevin had intended to give the letter to Secretary of War William H. Taft, but it was mistakenly forwarded directly to the U.S. Army Board of Ordnance and Fortification. The board viewed the letter as just another appeal for money to build some theoretical flying machine and stated that as soon as the Wrights could demonstrate a practical machine, it would be willing to hear their proposal.<sup>3</sup> In October, the brothers wrote another letter, this time directly to Secretary Taft, who forwarded it to the Board of Ordnance and Fortification. Receiving a second rejection almost identical to the first, the Wrights requested the performance that the board would expect of a flying machine. The board answered that it would have to see such a machine in operation, effectively closing for the next eighteen months the U.S. government as a market, since the Wrights interpreted the response as a lack of interest.<sup>4</sup>

Fortunately, the Wright flyer came to the attention of President Theodore Roosevelt, who directed Taft to look into the matter. On May 11, 1907, the Board of Ordnance and Fortification wrote the Wrights, enclosing correspondence with Congressman Herbert Parsons and asking the Wrights to get in touch.<sup>5</sup> In several letters to the board in May and June, the Wright brothers offered for \$100,000 a flying machine capable of carrying two people over a distance of 200 kilometers at a speed of fifty kilometers per hour. When they could not guarantee exclusive sale at that price, the board, which did not have the money anyway, dropped the matter until October.<sup>6</sup>

Wilbur and Orville Wright spent the summer of 1907 in Europe laying the groundwork for a European Wright Company to manufacture and sell their flying machines.<sup>7</sup> While in France, they became acquainted with U.S. Army Lt. Frank P. Lahm. Detailed to the Cavalry School at Samur, France, he was recuperating from typhoid at a rest home in St. Germain, when his father visited him, bringing along Wilbur and Orville. This visit initiated a close and lasting friendship between Lieutenant Lahm and the Wrights.<sup>8</sup> Shortly afterwards, the lieutenant received orders assigning him to the Aeronautical Section of the U.S. Army Signal Corps. In October, he wrote to the Chief Signal Officer, Brig. Gen. James Allen, urging him to reconsider acquisition of the Wright flying machine. He argued that the flyer had considerable military value and being an American invention should be first purchased by the U.S. Army. He

The Army's first airplane at Fort Myer, 1909.



## THEY BECAME ACQUAINTED WITH U.S. ARMY LT. FRANK P. LAHM

*Dr. A. Timothy Warnock is presently the Chief, Organizational History Branch, Air Force Historical Research Agency, Maxwell AFB, Alabama. He has been an Air Force historian with the Agency since 1980. He earned his Ph.D. from the University of Georgia, Athens, Georgia, in 1972. He has served on the faculties of Georgia Southern College, Statesboro, Georgia (1968-1971); University of Georgia (1971-1972); Auburn University Branch, Maxwell AFB (1973-1976); and the Air War College, Maxwell AFB (1972-1980). Dr. Warnock is the author of Air Force Combat Medals, Streamers, and Campaigns and has written several pamphlets and articles on various aspects of U.S. Air Force history. Most recently, he edited The USAF in Korea: A Chronology, 1950-1953 and Short of War: Major USAF Contingency Operations.*

(Near right) Wilbur Wright, 1908.

(Far right) Orville Wright.

**ON FEBRUARY 10, 1908, [THEY] IMMEDIATELY BEGAN TO BUILD A MACHINE THAT WAS A MODIFIED VERSION OF THE 1905 FLYER TO MEET THE ARMY'S REQUIREMENTS**



**LIEUTENANT LAHM WAS THERE, HAVING BEEN DETAILED TO ASSIST IN THE TRIALS**

pointed out that the Wright brothers did not expect payment of any sort until they fulfilled a mutually agreed upon program of purchase.<sup>9</sup> Subsequently, the Board of Ordnance and Fortification invited the Wrights to meet with Army officials. Just before Thanksgiving, Wilbur made a presentation to General Allen and representatives of the Ordnance Department. He then attended the December board meeting, where he explained the capabilities of the Wright flyer and offered it to the Army for \$25,000.<sup>10</sup>

Based on this meeting, the Signal Corps wrote a proposed specification. The Wrights commented on it in a December 18 letter to General Allen, and on December 23 the Signal Corps issued Specification No. 486, seeking bids for a heavier-than-air flying machine. The specification began with guidance on proposal submission. The first requirement stated that the flyer must be easily taken apart, transported by an Army wagon, then reassembled within an hour. The requirements establishing flight capabilities were obviously based on the Wrights' contribution. The machine had to carry two people, up to 350 pounds combined weight, and sufficient fuel for a 125 mile flight. Speed was set at forty miles per hour with a bonus for each additional mile per hour and a penalty for lesser speed. During trials, the machine would undergo an endurance test flight of at least an hour. It had to be able to land safely on an unprepared field and to descend safely in case of motor failure while in flight. It had to be simple enough in construction and operation to permit an intelligent man to become proficient in its use within a reasonable time. The successful bidder would have to train two individuals in handling and operating the machine. Finally, to discourage ill-considered bids, each bidder had to provide a certified check equaling 10 percent of the bid. Delivery and trials were to be made at Fort Myer, Virginia, just outside of Washington, D.C.<sup>11</sup>

The Wright brothers submitted their bid, along with the required bond, after receiving assurances from the Signal Corps that in case of failure to meet the specifications, only that part of the bond covering damage done to the government by such failure would be forfeit.<sup>12</sup> They signed a formal contract on February 10, 1908, and immediately began to build a machine that was a modified version of the 1905 flyer to meet the Army's requirements. (They also built a second plane that Wilbur took to France.) In the spring, they returned to Kitty Hawk, North Carolina, for the first time since December 1903, to test the new machine and sharpen their rusty flying skills. There, on May 14, 1908, Wilbur carried the first passenger, an employee named Charles Furnas, on a flight.<sup>13</sup>

Meantime, Orville traveled to Washington to inspect the drill field at Fort Myer. He found the small area barely adequate for flying. But Lieutenant Lahm was there, having been detailed to assist in the trials, that included selection of the first Army dirigible. Lahm assured Orville that he would have eight or ten soldiers as ground crew. Orville went on to Dayton to work on the Army airplane.<sup>14</sup> He delivered it to Fort Myer on August 20, to meet the contracted time of delivery. Since Wilbur was in France demonstrating a second machine, Orville was responsible for completing the Army trials successfully. He began flying on September 3, and quickly set several world endurance records. On the 9th, Orville carried up Lieutenant Lahm, the first U.S. soldier to fly as a passenger in an airplane, on a flight of almost six and a half minutes. Three days later, Orville gave Maj. George O. Squier, acting Chief Signal Officer, a flight lasting over nine minutes.<sup>15</sup>

Tragedy struck with the third Army passenger, Lt. Thomas E. Selfridge, whom Orville carried aloft for a final preliminary flight on September 17. The lieutenant had been working with Dr. Alexander Graham Bell's Aerial Experiment Association and

Wright plane at Fort Myer,  
September 5, 1908.



**THE PILOT  
LOST  
CONTROL OF  
THE FLYER,  
AND IT  
CRASHED,  
KILLING  
SELFIDGE  
AND  
SERIOUSLY  
INJURING  
ORVILLE**

helped design an airplane that he piloted for a short distance in May 1908. Thus, he was the most technically experienced Army officer concerning airplanes. But, Orville was suspicious of Selfridge, fearing that he might carry proprietary information back to the association. Orville and Selfridge had been in the air less than four minutes when a crack in a blade of one of the propellers caused it to foul a rudder control wire. The pilot lost control of the flyer, and it crashed, killing Selfridge and seriously injuring Orville, who would spend some three months in the Fort Myer Hospital. Fortunately, the Army investigation found no inherent problem in the airplane design or construction and extended to the summer of 1909 the Wright brothers' contract to complete the trials.<sup>16</sup>

On June 20, 1909, Wilbur and Orville Wright arrived in Washington to resume the government trials. Nine days later at Fort Myer, Orville made the first flight in the 1909 Wright flyer, which was very similar to the 1908 model, with a few slight improvements in structure and controls. The official trials began on July 27, when Orville flew, with Lieutenant Lahm as a passenger, on a one hour and twelve minute flight to meet the requirement for endurance carrying two people. Three days later, Lt. Benjamin D. Foulois was the passenger, official observer, and navigator for the speed and cross country tests—the final acceptance test. He had laid out the ten-mile course to begin from the center of the Fort Myer parade ground, fly south against the prevailing wind over Arlington Cemetery for five miles to Shuter's Hill near Alexandria, Virginia, come around a tethered balloon on the hill, and return to Fort Myer. Orville Wright gave the lieutenant a little lesson on flight planning, because the flight path was over woods and ravines with practically no good landing spot in case of engine failure. Orville told Foulois that if the engine failed, he would try to land in the thickest clump of trees. The flight to Shuter's Hill went quickly and smoothly, but the airplane encountered a down draft on the return flight, bringing it

within about 25 feet of the tree-tops. Foulois feared that Orville might have to pick a clump of trees, but the airplane regained its altitude to land successfully at Fort Myer. Flying at an average speed of 42.5 miles per hour, the Wright machine earned its inventors a \$5,000 bonus over the \$25,000 price.<sup>17</sup> On August 2, the Board of Officers, including Major Squier, Maj. Charles M. Saltzman, Captain Chandler, Navy Lt. George C. Sweet, Lieutenants Lahm, Foulois, and Frederic E. Humphreys, certified that the Wright airplane had met all specifications in the trial flights and accepted it on behalf of the War Department.<sup>18</sup> The Army Wright Flyer was the first airplane purchased by any nation for military purposes.<sup>19</sup>

Having completed the trials successfully, the Wrights required a better location than the Fort Myer drill field to conduct the training of two Army officers, as required by the contract. Lahm surveyed the surrounding area from a balloon and conducted on-site inspections of likely fields, settling on one at College Park, Maryland. The Signal Corps selected for instruction Lieutenants Lahm and Humphreys, since Foulois, much to his disgust, was ordered to attend the International Congress of Aeronautics in France. Wilbur Wright began instruction on October 8, and after about three hours of dual flight both officers soloed on October 26.<sup>20</sup> Foulois, returning in late October, made three flights with Wilbur before Humphreys took over the instruction. Foulois received just over three hours of dual instruction but did not solo at College Park. In fact, he never controlled the airplane on take-off or landing.<sup>21</sup>

Foulois developed great respect for the Wright brothers, noting that like himself, they were "Honor Graduates of the University of Hard Knocks," who believed in practical experience as the best teacher. He never lost this respect, citing many years later the influence that the Wright brothers had on him and on the development of aviation. At College Park, Foulois learned the basics of maintaining and operating the Wright

**FOULOIS  
DEVELOPED  
GREAT  
RESPECT  
FOR THE  
WRIGHT  
BROTHERS  
...THEY  
WERE  
"HONOR  
GRADUATES  
OF THE  
UNIVERSITY  
OF HARD  
KNOCKS"**



Orville Wright, Lt. F. P. Lahm, and Lt. B. D. Foulois at Fort Myer, Jul 27, 1909.

**LIEUTENANT  
FOULOIS  
ENCOUNTERED  
SEVERAL  
PROBLEMS  
IN FLYING  
THE WRIGHT  
AIRPLANE**

**TO KEEP THE  
AIRPLANE IN  
THE AIR,  
FOULOIS  
DUG INTO HIS  
OWN POCKET  
TO THE TUNE  
OF \$300 TO  
BUY  
ESSENTIAL  
SUPPLIES  
AND  
EQUIPMENT**

Flyer and its associated equipment, such as the launching device.<sup>22</sup> That initial experience would stand him in good stead in the coming months.

Now that the Army had two completely trained aviators, it promptly assigned them to other duties, leaving Foulois as the sole aviator in the Signal Corps' Aeronautical Division. At the end of November 1909, one partially trained pilot, eight enlisted mechanics, one civilian mechanic, and a damaged airplane constituted the U.S. Army's entire air force. General Allen arranged with the Wrights to repair the engine and deliver a new lower right wing without cost.<sup>23</sup> He decided to send his motley crew and the airplane to Fort Sam Houston, Texas, where the weather was more favorable to winter flying. The Chief Signal Officer personally instructed Foulois to take plenty of spare parts and to teach himself how to fly. After stopping by Chicago to exhibit the Wright flyer at the Electrical Trade Exposition, Foulois and his "Combat Air Force," as he called the mechanics, finally arrived at Fort Sam Houston in February 1910. There, he continued his flying lessons on his own, frequently corresponding with the Wrights for instructions on the operation, maintenance, and modification of the airplane.<sup>24</sup>

Lieutenant Foulois encountered several problems in flying the Wright airplane. It tended to "buck" in the gusty wind, threatening to throw the pilot from his seat to the ground. Foulois, recalling Wilbur Wright's advice to put the nose of the airplane down and stick to the ship, managed to control it but had a leather strap made to hold him in the airplane. Thus, he could claim to have conceived and used the first safety belt in an airplane. He also altered the forward elevators on the advice of the Wright brothers, moving one of the two to the rear of the airplane. This helped but did not totally solve the "bucking" problem. Another problem derived from the requirement to lay a 60-foot rail oriented into the wind for take-offs. Each time the wind changed, the crew had to move the rail. Obviously, a set of wheels in place of the skids would eliminate this problem and perhaps make for safer landings as well. In April, Foulois sent proposed blueprints of wheels to the Wrights, who made only one suggestion—the use of rubber

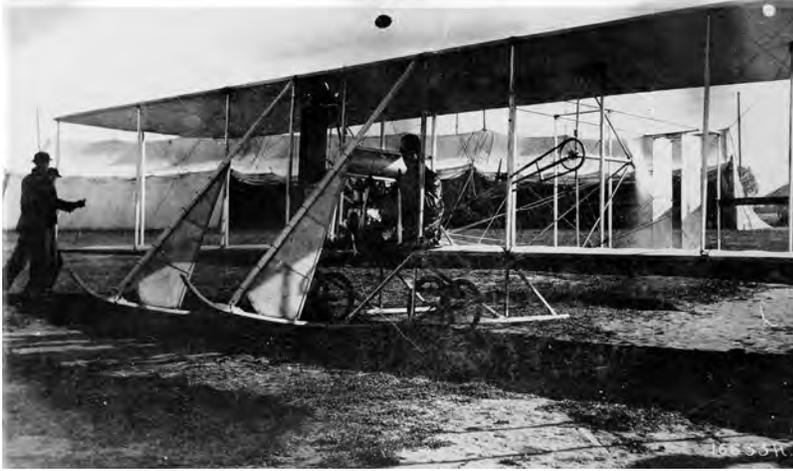
bands to absorb the landing shock. Working through July and into August, the small group of mechanics devised wheels for the machine, and the pilot made service tests on the ground initially, then in the air. The wheels did away with the drudgery of launching the airplane from the rail.<sup>25</sup>

A third problem was the lack of money to maintain the Wright flyer, which required repair after virtually every flight. The Signal Corps had scrounged up the money to buy the airplane but provided Foulois with only \$150 to operate it in 1910. Congress made no annual appropriation for aeronautical activities, in spite of pleas from both official and private individuals and organizations. Consequently, to keep the airplane in the air, Foulois dug into his own pocket to the tune of \$300 to buy essential supplies and equipment. On September 8, 1910, Foulois totally wrecked the airplane, forcing him to suspend flying operations for the year. He and his crew rebuilt it substantially to resemble the new Wright B machines. He flew the remodeled airplane only a few times in the first two months of 1911.<sup>26</sup>

While Foulois tried to keep the U.S. Army in the air, the Wright brothers turned their attention to setting up and running a business. Orville became deeply involved in the production and sale of airplanes. The first product was the Wright Model B.<sup>27</sup> Foulois was very impressed with this airplane, which had a slightly different control system, wheels, the horizontal stabilizer in the rear, and a more powerful engine. He would comment that the Wright B was the steadiest small airplane that he had ever seen.<sup>28</sup>

When early in 1911 Robert F. Collier, the magazine publisher, offered the Army the loan of a new Wright B, it accepted. On February 21, the airplane arrived at Fort Sam Houston, accompanied by a Wright instructor pilot, Phillip O. Parmelee. On the 22d, he began to train Foulois to fly the Wright B. The only flight instrument was a piece of tape less than a foot long attached to the front crossbar of the landing assembly. The position of the tape in flight indicated if the pilot were climbing, gliding, turning, skidding, or stalling. Foulois strapped a pocket aneroid barometer and a pocket box compass to his leg for navigation purposes. Five days later, the air detachment moved to Fort McIntosh at Laredo, Texas, to demonstrate the use of an airplane working with ground troops. On March 3, the two men set an unofficial cross-country record of 106 miles flying from Laredo to Eagle Pass. Two days later, they started the return flight, following the Rio Grande. Mr. Parmelee inadvertently stopped the engine, and the airplane crashed. Fished from the river, it was returned to Fort Sam Houston for repairs. By March 17, Foulois and Parmelee had it back in the air, but at the end of the month the Wrights recalled Parmelee, ending the flights in the Collier Wright B. On June 21, the Signal Corps returned it to its owner.<sup>29</sup>

On March 3, 1911, Congress finally made its first appropriation to purchase airplanes.<sup>30</sup> But the



(Top) Wright Type B – Army # 3, North Island, Calif. 1913.

(Above) Wright B at San Diego, 1913.

**OF ALL TYPES OF AIRPLANES BEING FLOWN AT THAT TIME, THE WRIGHT WAS MOST DIFFICULT TO CONTROL**

paltry amount, \$125,000, concerned the Signal Corps leadership, who noted the increasing sophistication of European aircraft in comparison to American airplanes. In December 1911, Captain Chandler informed the Wrights that the Signal Corps was considering buying airplanes from the French. In his reply, Orville pointed out that if the American government should put the money into aviation that the French government had, the American aviation industry could produce more and better airplanes, as well. He also stated that as far as he could tell, the French airplanes exceeded the American machines only in speed.<sup>31</sup> Orville's reply, even with its merits on the point of national resources committed to aviation, reflected an increasingly rigid attitude toward U.S. Army aviators' criticism of the Wright airplanes.

With the appropriated money, the Signal Corps bought three Wright B airplanes for \$5,000 each.<sup>32</sup> At the suggestion of the Wright brothers, the War Department donated the original Army flyer, Signal Corps (S.C.) Airplane No. 1, to the Smithsonian Institution on October 20, 1911. Meantime, the Signal Corps began receiving its new airplanes, accepting a Wright B flyer designated as S.C. No. 3 on April 27th. The Wrights sent an instructor, Frank T. Coffyn, to Fort Sam Houston along with the new airplane. He found that Foulois was somewhat "ground shy," leveling out the airplane too high on landing. Under Coffyn's tutelage,

Foulois soon overcame his tendency for hard landings.<sup>33</sup>

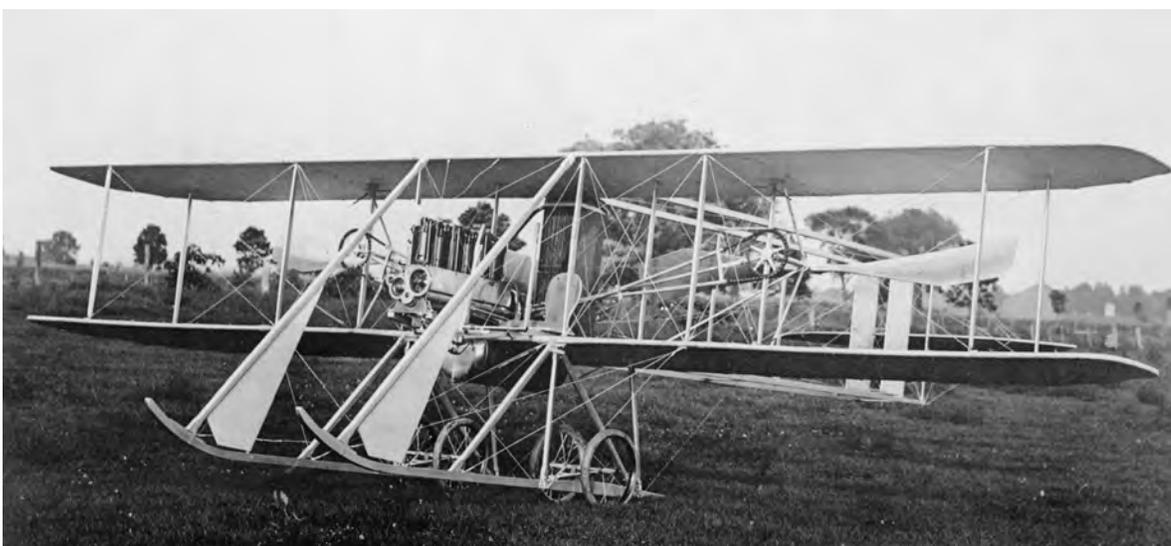
Naturally, the Wrights were deeply involved in training pilots to fly the machines they sold. Orville personally trained or oversaw the training on Huffman Prairie, Dayton, Ohio, of at least 115 individuals, including U.S. Army pioneer aviators Henry H. "Hap" Arnold, and Thomas DeWitt Milling.<sup>34</sup> In early May 1911, Lieutenants Milling and Arnold reported to the Wright factory, where Orville warmly greeted them. Students first learned on the factory floor the construction and maintenance of the airplane, including the assembly and operation of the motor. To provide them practice in using the warping lever, the Wrights had mounted an old airplane on a sawhorse. This contraption allowed a student to produce a movement similar to that experienced in the air.<sup>35</sup> On May 2, Milling received his first flight as a passenger. A few days later he began lessons, completing fifteen dual flights for two hours and one minute before making his first solo. Orville Wright witnessed the solo flight and personally flew with Lt. Milling, who in 1956 stated, "I have always felt that it was the instruction I received from Orville Wright that carried me through my flying career without being killed."<sup>36</sup> Between May 3 and 13, Lieutenant Arnold completed his flight training in twenty-nine flights totaling 3 hours and 48 minutes of flying time. This was about average for learning to fly the Wright airplane, even though Arnold found the control system hard to master.<sup>37</sup>

Of all types of airplanes being flown at that time, the Wright was most difficult to control. A pair of hand levers controlled wing warping, rudder, and elevator. The pilot's natural tendency when entering a stall would be to pull back on the elevator lever, but the Wright system required him to push forward to regain flying speed.<sup>38</sup> In addition to the difficult control system, the foot throttle on the Wright B airplane required the pilot to push to power down the engine.<sup>39</sup> Following flight training, Milling and Arnold were assigned to the Signal Corps Aviation School at College Park. They arrived on June 15, 1911, the day before Foulois delivered S.C. No. 3 from San Antonio, Texas. The Signal Corps received its third Wright airplane, S.C. No. 4, on June 19 at College Park. It was ready to fly by July 1.<sup>40</sup> But, in a short while, the Army pilots were having problems with the underpowered Wright engine. When a pilot throttled down the engine to land, it continued to pump gas. This excess gas spilled into a metal pan and would frequently catch fire when the pilot released the foot throttle to obtain power to taxi. On November 6, 1911, and again on January 10, 1912, Lieutenant Arnold wrote to the Wrights concerning the gradual decrease in No. 4's engine power. Lesser power created problems in climbing and in carrying a full military load of two passengers and equipment. Captain Chandler in a letter dated January 12, 1912, also complained about the slow climbing rate. Orville Wright replied that he could not understand the problem, noting that no other

(Right above)Wright C landing at San Diego, 1913.

(Right below) Wright Model "D" quarter view on ground at Simms Station near Dayton Ohio, 1912.

**THE ARMY DECIDED TO SEND WRIGHT B FLYER, S.C. NO. 7, TO THE PHILIPPINES, ... LAHM ... WAS DETAILED TO TEMPORARY DUTY FOR AVIATION**



**THE ARMY RELEASED THE NEW SPECIFICATIONS AND SOON PURCHASED TWO SCOUTS FROM THE WRIGHT COMPANY**

Wright airplanes seemed to have difficulty with engine power.<sup>41</sup>

The Army decided to send Wright B flyer, S.C. No. 7, to the Philippines, shipping it on December 11. Lieutenant Lahm with the 7th Cavalry in the Philippines, was detailed to temporary duty for aviation. With the help of two experienced enlisted mechanics, he assembled the airplane at Fort William McKinley and on March 21, 1912, made his first flight. He trained Lt. Moss L. Love and Cpl. Vernon Burge, one of the enlisted mechanics, to fly before the rainy season ended flying for 1912. Corporal Burge became the first enlisted man to receive a rating as pilot. Lahm began the next season's flying lessons on March 10, 1913, using the same Wright flyer to train three new students. On August 28, one of new pilots, Lt. Herbert A. Dargue was flying the airplane equipped with pontoons. When the engine failed, he landed the airplane on Manila Bay and arranged for a boat to tow it back to the beach hangar. However, a squall came up and dashed the airplane against the rocky shore, damaging it beyond repair.<sup>42</sup>

Back in the states, Captain Chandler consulted with Army aviators at College Park and with

Orville Wright. In September 1911, he submitted to the Chief Signal Officer specifications for two new types of airplanes, a "Speed Scout" for long range, strategic reconnaissance and a "Scout" to carry more weight for tactical reconnaissance. Early in 1912, the Army released the new specifications and soon purchased two Scouts from the Wright Company.<sup>43</sup> On May 18, the Army received its first Scout airplane, S.C. No. 10, at College Park. The Wright brothers frequently visited the Signal Corps Aviation School. On May 17, 1911, Orville visited College Park to confer with the Wright pilot, A. L. Welsh, concerning the acceptance tests for S.C. No. 10. On June 11, Mr. Welsh flew the last test with Lt. Leighton W. Hazelhurst, Jr., as a passenger. Welsh crashed the machine, killing himself and Lieutenant Hazelhurst. The Signal Corps concluded that the pilot ended a dive so suddenly that the load on the wing caused a structural collapse. By July 22, the Wright Company had replaced the machine with another Model C, to which the Army transferred the number 10. The Signal Corps accepted a second Wright C, S.C. No. 11, at College Park on October 3.<sup>44</sup>

As the Signal Corps expanded its inventory of

WRIGHT AIRPLANES IN THE U.S. ARMY*							
S.C. #	Model	Date Delivered	Date Accepted	Location	Disposition	Date	Remarks
n/a	n/a	Aug. 20, 1908	n/a	Fort Myer, VA	Destroyed in crash	Sep. 17, 1908	Lt. Thomas E. Selfridge killed; Orville Wright injured
1	A	Jun. 20, 1909	Aug. 2, 1909	Fort Myer, VA	Transferred to Smithsonian Institution	Oct. 20, 1911	Wright brothers restored to original configuration
n/a	B	Feb. 21, 1911	n/a	Fort Sam Houston, TX	Returned to owner	Jun. 21, 1911	Robert F. Collier loaned his Wright B to U.S. Army Signal Corps
3	B	Apr. 20, 1911	Apr. 27, 1911	Fort Sam Houston, TX	Discontinued/Condemned	Feb. 16, 1914/ Apr. 3, 1914	At San Diego Aviation School, CA
4	B	Jun. 19, 1911	Jul. 1, 1911	College Park, MD	Destroyed in crash	Sep. 28, 1912	Lt. Lewis C. Rockwell & Corp. Frank S. Scott killed
7	B	Dec. 11, 1911	Mar. 21, 1912	Fort William McKinley, Philippines	Destroyed in squall	Aug. 28, 1913	Dashed on shore of Manila Bay while being towed because of forced landing
10	C	May 18, 1912	n/a	College Park, MD	Destroyed in crash during acceptance trials	Jun. 11, 1912	Wright pilot A. L. Welsh and passenger Lt. Leighton W. Hazelhurst killed; S.C. # reassigned
10	C	By Jul. 22, 1912	By Oct. 26, 1912	College Park, MD	Destroyed in crash in San Diego Bay	Feb. 9, 1914	Pilot Lt. Henry B. Post killed
11	C	Unknown	Oct. 3, 1912	College Park, MD	Destroyed in crash at Texas City, TX	Jul. 8, 1913	Pilot Lt. Loren H. Call killed
12	C	By May 5, 1913	Unknown	Texas City, TX	Destroyed in crash in Manila Bay	Nov. 14, 1913	Transferred to Philippines on October 2, 1913; pilot Lt. C. Perry Rich killed
13	C	May 16, 1913	Unknown	Fort William McKinley, Philippines	Destroyed in crash; salvaged to repair #12	Sep. 11, 1913	Pilot Lt. Frank P. Lahm unhurt
14	C	Oct. 26, 1912	Unknown	College Park, MD	Destroyed in crash at North Island, San Diego	Nov. 24, 1913	Pilot Lt. Eric L. Ellington and student Lt. Hugh M. Kelly killed
16	C	Unknown	Nov. 22, 1912	College Park, MD	Discontinued/ Condemned	Feb. 16, 1914/ Jun. 5, 1914	At San Diego Aviation School, CA
19	D	c. Aug. 1912	May 3, 1913	College Park, MD	Dropped from inventory	Jun. 2, 1914	At San Diego, CA
20	D	c. Aug. 1912	Jun. 6, 1913	College Park, MD	Dropped from inventory	Jun. 2, 1914	At San Diego, CA
39	F	Jun. 29, 1914	Mar. 10, 1915	San Diego, CA	Dropped from inventory	Jun. 13, 1915	Lt. Herbert A. Dargue only pilot to fly

\* Juliette A. Hennessy, *The United States Army Air Arm: April 1861-April 1917* (Washington: Office of Air Force History, New Imprint of 1958 Edition, 1985), pp. 28, 33, 34, 40, 42, 47, 62, 71, 73, 74, 79, 80-81, 99, 102, 117 and Ernest L. Jones, *Chronology of Military Aeronautics (1793-1948)*, unpublished, 168, 650 in USAF Collection, AFHRA, Maxwell AFB, Ala. (hereafter cited as Jones *Chronology*), Sep. 17, 1908; Jul. 27, 1909; Aug. 2, 1909; Apr. 27, 1911; Jul. 22, 1912, Sep. 4, 21, & 28, 1912; Oct. 26, 1912; Nov. 22, 1912; Mar. 5, 1913; Nov. 14 & 24, 1913; Feb. 9 & 24, 1914; Jun. 29, 1914 entries.

**THE NUMBER OF CRASHES AND NEAR-CRASHES IN THE WRIGHTS INCREASED NOTICEABLY**

**LIEUTENANT ARNOLD ...NARROWLY ESCAPED CRASHING S.C. NO. 10**

airplanes, the number of crashes and near-crashes in the Wrights increased noticeably. On September 28, 1912, Lt. Lewis C. Rockwell, with Corporal Frank S. Scott as passenger, took up S.C. No. 4, only to crash it from an altitude of about 25 feet while in a glide, killing both men. Rockwell apparently applied power to pull out of the glide, but either the elevator failed or the airplane stalled. Orville Wright thought that most likely the pilot glided down at too great an angle, although he admitted that the Wright airplanes would dive uncontrollably if the airspeed became too low.<sup>45</sup> Milling later noted, “the difference between high speed and stalling was only about 8 miles [per hour]. Consequently, if the motor should stop, one had to be very alert in reaction to effect a landing without stalling the machine.”<sup>46</sup> In November, Lieutenant Arnold while flying artillery support at Fort Riley, Kansas, with an artillery officer as a passenger, narrowly escaped crashing S.C. No. 10. As Arnold descended to land, a whirlwind stalled his airplane, causing it to fall into a dive. He instinctively pulled on the controls, instead of pushing as required by the Wright system, to gain airspeed and control. Arnold barely managed to land safely. Badly frightened, he requested relief from flying duties and would not return to aviation until May 1916.<sup>47</sup> The Signal Corps accepted another Wright C, S.C. No. 16, on November 22, 1912.<sup>48</sup>

Shortly afterwards, the Army introduced a more stringent performance test for military aircraft. The Wright D had great difficulty in meeting the test, apparently because of structural defects and an under-powered engine.<sup>49</sup> In March 1913, Arnold noted in a personal letter to Orville that the Signal Corps needed to purchase the light

scout airplane (Model D), even though it was difficult to fly. Orville would only concede in his reply that it had to be landed at high speed but argued that it was stronger and safer than previous models.<sup>50</sup> The Wright Company delivered the two Wright Ds to College Park as early as August 1912. Testing began at College Park, and when in November 1912 the Signal Corps established its winter aviation school at Augusta, Georgia, the airplanes were shipped there for final testing. On February 6, Mr. Oscar Brindley, the Wright Company pilot, wrecked one of the airplanes on its final test—landing in a ploughed field. Since the Army would not accept it, the Wright Company rebuilt it. Finally, on May 3, 1913, the Signal Corps accepted its first Wright D Speed Scout as S.C. No. 19. On June 6, it accepted the second D Model, S.C. No. 20, but neither airplane was flown extensively. In February 1914, No. 19 was at San Diego, California, in dismantled condition. Apparently, No. 20 also ended up at San Diego. On June 2, the Signal Corps dropped both Wright Ds from the inventory.<sup>51</sup>

Meantime, in the Philippines, Wright C Scout, S.C. No. 13, had arrived at Fort McKinley on May 16, 1913. Lieutenant Lahm successfully made several flights from Fort McKinley and from the Manila Bay beach at Pasay. Then, in September he tried taking off from Manila Bay with pontoons but crashed into the water immediately after becoming airborne, damaging the airplane beyond repair. Fortunately, Lahm was unhurt. A replacement Wright C Scout, S.C. No. 12, arrived on October 2. The Wright Company had originally delivered this airplane to Texas City, Texas, in May. The aviators used parts from No. 13 to make No. 12 flyable by October 8. Lahm trained two stu-



Wright Model D, 1912-1913.

**IN JUNE 1913, THE SIGNAL CORPS SENT SEVERAL CURTISS AND WRIGHT AIRPLANES AND PILOTS TO ... NORTH ISLAND ... TO COMPARE THE STRONG POINTS OF EACH.**

dents to fly the Wright C. On November 14, a third student, Lt. C. Perry Rich of the Philippine Scouts, made a solo flight over Navy ships in Manila Bay. During his return to the beach, the airplane went into a deep dive and crashed in the water. The engine broke loose, hitting Rich in the skull and killing him immediately. This accident ended the use of Wright flyers in the Philippines.<sup>52</sup>

Back in the states, in June 1913, the Signal Corps sent several Curtiss and Wright airplanes and pilots to its recently established Aviation School at North Island near San Diego, California. The mix of aircraft types led pilots to compare the strong points of each. The pilots usually found features to admire in each, but the Curtiss control system was strongly favored over the Wright. The former with a single column, a shoulder yoke, and a foot throttle that the pilot pressed for more engine power encouraged instinctive motions of control. In August, several pilots, including Foulois and Arnold, pushed for a universal standard airplane control system. Orville Wright opposed the adoption of any system similar to the Curtiss one, apparently because of patent concerns.<sup>53</sup> Gradually, the Wright Company was alienating Army aviators with a seemingly cavalier treatment of complaints about the Wright airplanes.

In addition to those deaths already noted, Lt. Loren H. Call died at Texas City, Texas, on July 1913, while flying Wright Flyer C, S.C. No. 11 to complete requirements for his Military Aviator rating. During a banked turn, the wings broke, and the airplane fell to the ground from 200 or more feet.<sup>54</sup> In early November 1913, another Wright C, S.C. No. 14, arrived at the school from Texas City, although it had originally been delivered the previous year to College Park. On November 24, Lt. Eric L. Ellington and his student Lt. Hugh M. Kelly died when, on the landing approach, the airplane crashed headlong into the ground at North Island.<sup>55</sup> Lt. Ellington's death convinced Orville Wright's chief engineer, Grover Loening, that the Model C suffered a major design defect. But Orville insisted that the fault lay with the pilots. In a December 5, 1913 letter to Lt. Col. Samuel Reber, Chief, Aviation Section, Signal Corps, Wright claimed that virtually all the Model C accidents could be laid to stalling the airplane. He asserted that by paying careful attention to the

airplane's speed and angle of incidence (also known as angle of attack), the pilot could avoid a stall.<sup>56</sup> On February 9, 1914, No. 10 crashed in San Diego Bay, failing to recover from a dive and killing the pilot, Lt. Henry B. Post. The accident board concluded that the pilot was not at fault, but could fix no mechanical or structural cause.<sup>57</sup>

Meantime, in the battle of patent infringement, the Wright Company, in January 1914, charged that seven Burgess Company and Curtiss airplanes that the Signal Corps had purchased infringed the Wright patents. The Wright Company sought a lien on the machines for the royalties due, but the Secretary of War pointed out that the contracts excluded the government from suits for patent infringement, making the manufacturer alone responsible.<sup>58</sup> Orville Wright had no success at all with this approach and may well have contributed further to the ill-feelings that the Signal Corps had toward the Wright airplanes.

On February 16, 1914, the Chief Signal Officer ordered that the Wright airplanes still in service should not be flown again until an investigation had been completed. The panel of pilots making the investigation recommended that henceforth only tractor type\* machines be flown. It generally condemned all pusher-type airplanes. In a crash, the Wright airplane, being a pusher, was more likely to result in the death of the pilot and passenger. The engine usually fell forward onto the pilot and passenger, crushing them with its weight and momentum. Between September 1908 and February 1914, twelve Army officers, one enlisted man, and a civilian died in airplane accidents. Ten of these died in crashes of Wright machines. The Wright C, already obsolete when the U.S. Army purchased it, was slow, unstable, and difficult to control with the cumbersome dual stick system. It was tail-heavy with the center of gravity too far to the rear. The elevator was likely to fail in a dive as flight speed increased. The investigating panel considered the Wright C as dynamically unsuited for flying. Subsequently, on February 16, the Signal Corps condemned the remaining Wright airplanes.<sup>59</sup>

Still, in 1915, the U.S. Army accepted one more Wright, the Model F, a pusher type with an armored fuselage. The Signal Corps had ordered the airplane to be powered by a foreign manufactured engine in March 1913. But, the Wright Company had trouble in obtaining the Daimler engine, thus delaying its initial flight and delivery until June 29, 1914. The Wright F did not pass its trials to be accepted by the Army until March 10, 1915. Operating from North Island, San Diego, California, Lieutenant Dargue flew the airplane, S.C. No. 39, seven times between May 27 and June 4. The Army dropped it from the inventory on June 13.<sup>60</sup>

\* The propeller pulls the airplane through the air, while the engine is mounted in front of the cockpit. In contrast, the pusher machine has the engine mounted in the rear, and the propeller pushes the airplane through the air.

**IN 1915, THE U.S. ARMY ACCEPTED ONE MORE WRIGHT**



Wright Model F "Tin Cow" #39 of S.C. 90 Austro Daimler. It failed in competition of February 1914.

## THE WRIGHT COMPANY HAD FAILED TO KEEP CURRENT IN AVIATION TECHNOLOGY

Several factors led to the demise of the association between the Army and Orville Wright. A concern for safety in flying was an important aspect. The Signal Corps' loss of confidence in the Wright Company was another. Most importantly, as observed by the U.S. Army Inspector General in a 1914 report on the 1st Aero Squadron and the Signal Corps Aviation School at San Diego, the Wright Company had failed to keep current in aviation technology.<sup>61</sup> It left to others the development and perfection of hydro-airplanes, use of tractor propulsion, the initial adoption of wheels in place of skids, the use of a closed-in cockpit and fuselage, a simpler control system, and an advanced engine with carburetor. The reasons for this neglect in advancing technology rests to a large extent in the

Wrights' overriding efforts to seek the recognition, fame, and financial rewards of their invention.<sup>62</sup>

Following the successful delivery of the first U.S. Army airplane in 1909, the Wright brothers had turned their attention to setting up and running a business. While Orville dealt with the production of new airplanes, Wilbur focused on resolving business and legal issues.<sup>63</sup> He worked extremely hard in the patent legal battles and on May 2, 1912, returned home exhausted from a lengthy trip and ill with what was eventually diagnosed as typhoid. He died on May 30.<sup>64</sup> After his older brother's death, Orville struggled for two years with running the Wright Company but soon realized his aversion for the job.<sup>65</sup> Winning the Wright patent suit against Curtiss in January 1914, he soon turned his attention to divesting himself of the airplane manufacturing business. Obtaining full control of the Wright Company, Orville sold it in October 1915 for a small fortune. Severing all ties with Orville Wright within a year of the sale, the Wright Company eventually became a major manufacturer of aircraft engines.<sup>66</sup>

Orville felt that he had accomplished the major goals that he and Wilbur had first set in 1905. He did not have the temperament, at least in the absence of his brother, to continue pursuit of innovations in flight. He basically spent the rest of his life as a national hero and the elder statesman of aviation. The Army's official connection with the Wrights ended with the selling of the Wright Company. But Orville continued to maintain many of the personal friendships he had established in his dealings with U.S. Army Signal Corps officers. ■

## NOTES

1. Richard P. Hallion, ed., *The Wright Brothers: Heirs of Prometheus* (Washington: National Air and Space Museum, 1978), p. xii; Wilbur and Orville Wright, "The Wright Brothers' Aeroplane," from *Century Magazine*, September 1908 excerpted in *The Published Writings of Wilbur and Orville Wright*, Peter L. Jakab and Rick Young, eds. (Washington: Smithsonian Institution Press, 2000), pp. 25-26.
2. Tom D. Crouch, *The Bishop's Boys: A Life of Wilbur and Orville Wright* (New York: W. W. Norton & Company, 1989), pp. 291-92; Juliette A. Hennessy, *The United States Army Air Arm: April 1861-April 1917* (Washington: Office of Air Force History, New Imprint of 1958 Ed., 1985), p. 25; Orville Wright, "Interview by Fred C. Kelly," in Jakab and Young, p. 262.
3. Crouch, p. 292; Hennessy, p. 25; Fred C. Kelly, ed., "Reply to Congressman Nevin from the Board of Ordnance and Fortification, signed by Maj. Gen. G. L. Gillespie," *Miracle at Kitty Hawk: The Letters of Wilbur and Orville Wright* (New York: Farrar, Straus and Young, 1951), pp. 136-37.
4. Hennessy, 25; Crouch, p. 304; Interview, July 1915, with Orville Wright by Fred C. Kelly, "Flying Machines and the War," in Jakab and Young, p. 215; "Wilbur and Orville Wright to the Secretary of War, Dayton, Oct. 9, 1905," in Marvin W. McFarland, ed., *The Papers of Wilbur and Orville Wright, Volume One: 1899-1905* (New York: McGraw-Hill Book Company, Inc., 1953) pp. 514-15.
5. Hennessy, pp. 25-26; Crouch, pp. 331-32; "Letter to

- Wilbur and Orville Wright from Lawson W. Fuller, Recorder of the Board," May 11, 1907, copy in Board of Ordnance and Fortification, *Letters and Proceedings*, 167.1-1, USAF Collection, AFHRA, Maxwell AFB, Ala. (hereafter cited as *Board Letters and Proceedings*).
6. Ltrs, May 17, 1907 from Wrights to Board; May 22, 1907 from Board to Wrights; May 31, 1907 from Wrights to Board; Jun. 8, 1907 from Board to Wrights; Jun. 15, 1907 from Wrights to Board; Jul. 16, 1907 from Board to Wrights; Oct. 5, 1907 from Board to Wrights, copies in *Board Letters and Proceedings*; Hennessy, p. 26; Crouch, p. 332.
  7. Crouch, pp. 333-41.
  8. Kelly, "Orville Wright to Wilbur, Paris, September 21, 1907," p. 235; Frank P. Lahm, "Early Flying Experiences," *The Air Power Historian*, Jan. 1955 (hereafter cited as Lahm Experiences), p. 3.
  9. Ltr., Oct. 24, 1907 from Lt. Frank P. Lahm to the Chief Signal Officer, copy from Brig. Gen. F. P. Lahm, Sep. 7, 1951 to Albert F. Simpson, Research Studies Institute, in 168.651-6, 1950, USAF Collection, AFHRA, Maxwell AFB, Ala.; Generals Benjamin D. Foulois, Frank P. Lahm, and T. DeWitt Milling, Round Table Discussion, moderated by Gen. Carl Spaatz, Jun. 29, 1954, transcript K239.0512-767 in USAF Collection, AFHRA, Maxwell AFB, Ala. (hereafter cited as Spaatz Round Table), p. 3; Crouch, p. 341.
  10. Report from Brig. Gen. James Allen to Board of Ordnance & Fortification, copy in *Board Letters and*

- Proceedings*; Proceedings of the Ordnance and Fortification Board, Meeting of Dec. 5, 1907, reported in *Board Letters and Proceedings*; Hennessy, p. 26; Crouch, pp. 346-47.
11. "Wilbur and Orville Wright to General James Allen, Dayton, December 18, 1907," in Marvin W. McFarland, ed., *The Papers of Wilbur and Orville Wright, Volume Two: 1906-1948* (New York: McGraw-Hill Book Company, Inc., 1953), p. 843; Spaatz Round Table, p. 3; Hennessy, pp. 26, 225; Hallion, pp. 116-17.
  12. Letters, Jan. 3, 1908, from Board to Wright Brothers enclosing specifications; Jan. 9, 1908, from Orville Wright to Major Fuller, Secretary of Board, seeking clarification on bond; Memo, Jan. 13, 1908, from Office of Chief Signal Officer to Recorder, Board, stating bond parameters; Letter, Jan. 15, 1908, from Board to Wright Brothers relaying information on bond, copies in *Board Letters and Proceedings*; "Wilbur and Orville Wright to General James Allen, Dayton, Jan. 27, 1908," in McFarland, *Volume II*, p. 856.
  13. Hennessy, p. 28; Crouch, pp. 354-59; Ernest L. Jones, *Chronology of Military Aeronautics (1793-1948)*, unpublished, 168.6501 in USAF Collection, AFHRA, Maxwell AFB, Ala. (hereafter cited as *Jones Chronology*), Feb. 10, 1908 and May 6-14 entries.
  14. Crouch, p. 361; Kelly, "Orville Wright to Wilbur, Dayton, Ohio, Jun. 3, 1908," pp. 268-69.
  15. Spaatz Round Table, p. 4; Hennessy, pp. 28, 33; Crouch, p. 374.
  16. Orville Wright, "My Narrowest Escape in the Air" in Jakab and Young, pp. 49-51; Hennessy, 33; Crouch, pp. 353, 375-78; *Jones Chronology*, Sep. 17, 1908 entry; "Wilbur Wright to Octave Chanute, Dayton, Jun. 6, 1909," in McFarland, *Volume II*, pp. 953-54.
  17. Benjamin D. Foulois, "Early Flying Experiences: Why Write a Book, Part I?" *The Air Power Historian*, Apr. 1955 (hereafter cited as Foulois, Part I), pp. 24-25; Maj. Gen. Benjamin D. Foulois, Oral History Interview by Alfred Goldberg, n.d., transcript K239.0512-766 in USAF Collection, AFHRA, Maxwell AFB, Ala. (hereafter cited as Foulois OHI), pp. 13-14; Spaatz Round Table, 26-27; Proceedings of the Board of Officers Convened . . . for the Purpose of Observing Trials of Aeronautical Devices, Etc., Aug. 2, 1909, copy in *Board Letters and Proceedings*; Hennessy, pp. 33-34; Crouch, pp. 397-99.
  18. Hennessy, p. 34; *Jones Chronology*, Aug. 2, 1909.
  19. T. DeWitt Milling, "Early Flying Experiences," *The Air Power Historian*, Jan. 1956, p. 93.
  20. Spaatz Round Table, p. 5; Hennessy, p. 34; Crouch, p. 408.
  21. Hennessy, p. 37; Rebecca Hancock Cameron, *Training to Fly: Military Flight Training, 1907-1945* (Washington, DC: Air Force History and Museums Program, 1999), pp. 22-25; Foulois, Part I, p. 27.
  22. Foulois, Part I, pp. 23-24; Foulois OHI, pp. 64-65.
  23. Foulois, Part I, p. 27; *Jones Chronology*, Dec. 22, 1909 entry.
  24. Hennessy, p. 39; Crouch, p. 446; Foulois, Part I, pp. 27-28, 31; Foulois OHI, pp. 16, 19; Spaatz Round Table, pp. 29-31.
  25. Hennessy, p. 39; Foulois, Part I, pp. 30, 33-34; Foulois OHI, pp. 17-18; Spaatz Round Table, pp. 61-63; *Jones Chronology*, Jul. 20, 1910 entry.
  26. Hennessy, p. 40; Foulois, Part I, pp. 26, 33; Foulois OHI, p. 18; "Airplane Remodelled (sic)," *Jones Chronology*, Jul. 20, 1910 added entry.
  27. Crouch, pp. 424, 447, 435; Hennessy, p. 42.
  28. Hennessy, p. 40, Foulois, Part I, pp. 34-35; Spaatz Round Table, pp. 64-65.
  29. Benjamin D. Foulois, "Early Flying Experiences: Why Write a Book, Part II?" *The Air Power Historian*, Jul. 1955, pp. 50-52; Spaatz Round Table, pp. 65-68; Hennessy, pp. 40, 42.
  30. Hennessy, p. 40.
  31. Cameron, p. 28; "Orville Wright to Captain Charles DeF. Chandler, Dec. 29, 1911," in McFarland, *Volume II*, pp. 1031-32.
  32. Hennessy, p. 42; *Jones Chronology*, Mar. 3, 1911 entry.
  33. Hennessy, p. 42; Cameron, p. 29; *Jones Chronology*, Jul. 27, 1909, Apr. 27, 1911, and Feb. 24, 1914 entries.
  34. Crouch, pp. 435-36; *Jones Chronology*, April 27 and Aug. 22, 1911 entries.
  35. Milling, pp. 92, 94-95; Crouch, pp. 436-437; Cameron, pp. 30-32.
  36. Milling, p. 96.
  37. Crouch, p. 437.
  38. Milling, p. 95; Crouch, p. 436; Hennessy, p. 93; *Jones Chronology*, Apr. 11, 1911 added entry.
  39. Hennessy, pp. 47, 50, 53.
  40. Hennessy, pp. 47; Cameron, p. 44; Milling, p. 96; *Jones Chronology*, Jul. 27, 1909, Apr. 11, 1911, and Feb. 24, 1914 entries.
  41. *Jones Chronology*, Mar. 10, 1913 entry and Mar. 28, 1913 added entry.
  42. Hennessy, pp. 79-80; Lahm Experiences, pp. 7-8; *Jones Chronology*, Jul. 27, 1909 and Feb. 24, 1914 entries.
  43. Hennessy, p. 58; *Jones Chronology*, Feb. 8, 1912 entry.
  44. Hennessy, pp. 54, 62; Milling, p. 98-99; *Jones Chronology*, Jul. 22, 1912; Sep. 4, 1912; and Feb. 24, 1914 entries.
  45. Hennessy, p. 71; *Jones Chronology*, Sep. 28, 1912 entry.
  46. Milling, p. 97.
  47. Hennessy, p. 72; Milling, p. 100.
  48. Hennessy, p. 73; *Jones Chronology*, Sep. 21, 1912 entry.
  49. *Jones Chronology*, Nov. 28, 1911 entry.
  50. "Orville Wright to Lieutenant Henry H. Arnold, Dayton, Jan. 30, 1913," in McFarland, *Volume II*, pp. 1057-1058; *Jones Chronology*, Nov. 18, 1912 added entry.
  51. Hennessy, p. 74; *Jones Chronology*, Sep. 21, 1912 and Feb. 24, 1914 entries.
  52. Hennessy, pp. 80-81, 84; Lahm Experiences, p. 8; *Jones Chronology*, Jul. 27, 1909, Nov. 14, 1913, and Feb. 24, 1914 entries.
  53. Hennessy, pp. 88, 92-93; Crouch, p. 457; *Jones Chronology*, Feb. 5-27, 1914 entry.
  54. Hennessy, p. 79; *Jones Chronology*, Jul. 27, 1909 and Feb. 24, 1914 entries.
  55. Hennessy, p. 99; *Jones Chronology*, Oct. 26, 1912 and Nov. 24, 1913 entries.
  56. Crouch, p. 458; *Jones Chronology*, Nov. 24, 1913 added entry.
  57. Hennessy, p. 102; *Jones Chronology*, Feb. 9, 1914 entry.
  58. Hennessy, p. 104.
  59. "Colonel Dargue's Observations," and "Behind the Times," in *Jones Chronology*, Feb. 9, 1914 and Feb. 24, 1914 entries; Hennessy, pp. 102-103, 232; Crouch, pp. 457, 464.
  60. Hennessy, p. 117; *Jones Chronology*, Jun. 29, 1914 entry.
  61. *Jones Chronology*, Feb. 5-27, 1914 entry.
  62. Marvin W. McFarland, "Wilbur and Orville Wright: Seventy-Five Years After," in Richard P. Hallion, ed., *The Wright Brothers: Heirs of Prometheus* (Washington: Smithsonian Institution Press, 1978), p. 27; Herbert A. Johnson, "The Wrights and the U.S. Aviation Patent Wars, 1907-1918," paper presented at the International Flight Symposium, Oct. 22-25, 2001, North Carolina State University, Raleigh, NC, pp. 11, 13-14; Hennessy, p. 93.
  63. Crouch, pp. 424, 447.
  64. *Ibid.*, pp. 447-49.
  65. *Ibid.*, pp. 464-65.
  66. Crouch, pp. 465-67; Jakab and Young, pp. 193-94; Johnson, pp. 16-18.

**Science and Technology; The Making of the Air Force Research Laboratory.** By Robert W. Duffner. Maxwell AFB, Ala.: Air University Press, 2000. Tables. Illustrations. Photographs. Notes. Appendices. Glossary. Index. Pp. xix, 307. ISBN: 1-58566-085-X

Air Force laboratories were under a lot of pressure in 1996. The Cold War's end de-emphasized new acquisitions. Plans were in place for reducing lab personnel—35 percent between 1994 and 2001. A 1995 report called for reductions of management and redundancy throughout the lab system and consolidation of all labs into one for all of the Department of Defense (DoD). The combined annual research and development (R&D) budget for labs within DoD, the Department of Energy, and NASA was \$15 billion—out of the total government R&D budget of \$70 billion. Seven years of reductions still had not eliminated stovepipes and duplication of even R&D efforts, not to mention staff. "Vision 21," DoD's long range plan for making labs more effective by 2005, identified 86 military labs, including 19 in the Air Force (only four formally separate USAF labs existed) that should be studied under the consolidation mandate. Implementation was to begin by 2000, with completion by 2005.

For more than a decade, under three administrations, the Air Force and DoD consistently tried to consolidate, rationalize, and shrink the number of labs, people and associated expenses. It was a period of consistent downsizing of dollars and defense, especially so in the aftermath of Desert Storm and the Cold War. Study after study said that the system was wasteful and duplicative, and every report said that money was going to be tighter. But in 1996, the Air Force still had four (or 19) labs instead of one, even as military and civilian workforces shrank. So the decision crept up channel and down channel, and on schedule the labs became one—but one with satellite locations, enough of them in fact that, "Indeed, most employees retained their positions and locations, and no organizations physically moved."

What was the bottom line then? Did this consolidation save any money? Were jobs done away with, or did outsourcing hide them? What was the payroll in 2000? Was the workforce smaller? How many layers of management disappeared? How much grade creep was there? How many new senior executives replaced GM-15s? Unfortunately, the story ends in 1997, with the beginning of the single lab, so the book contains nothing on how well the consolidation worked and what savings may have taken place.

This is unquestionably the work of an official historian. It lacks only the volumes of photocopied supporting documents, but otherwise it is ready for storage in the great government archive. It has the disclaimer

that opinions are the author's own; and it has the chronology, list of acronyms, and obligatory appendices with germane documents. Also, illustrations are from government documents. Sources are primarily official documents, oral history interviews with the principals, and an occasional semi-official source such as the local base newspaper. The author also uses the web for additional government sources and publications of various government elements such as the Air Force History office. The tale is a house history of a non-controversial series of events. There is no bibliography or any notes on sources. Nonetheless, this well-written history demonstrates what a ponderous, almost tedious, process of change the military has developed in the half century since the Pentagon was built, under budget in only eight months.

John H. Barnhill, Ph.D., Tinker AFB, Oklahoma

**A Dance with Death: Soviet Airwomen in World War II.** By Anne Noggle. Introduction by Christine A. White. College Station: Texas A&M Press, 1994 [2d ed., 2001]. Maps. Photographs. Pp. xiv, 318. \$24.95 Paperback ISBN: 1-58544-177-5.

In *A Dance with Death: Soviet Airwomen in World War II*, author Anne Noggle, who served as an American Women Airforce Service Pilot in World War II, has compiled interviews of Soviet airwomen who served on the bloody Eastern Front during "The Great Patriotic War." A retired U.S. Air Force captain, Noggle has previously written *For God, Country, and the Thrill of It: Women Airforce Service Pilots in World War II*.

The Soviet Army Air Force allowed women to fly combat missions during World War II and produced the world's first women combat fliers. Noggle made three trips to Moscow to interview some of these women and captured their war experiences. While not a history, the author has captured the personal accounts of these women and organized them by the units in which they served: the 46th Guards Bomber Regiment, the 125th Guards Bomber Regiment, the 586th Fighter Regiment, and women who flew with male regiments.

The first person accounts offer a rare glimpse into the dangers these women faced and the lives they led at the front. Women with the 46th Guards Bomber Regiment flew the PO-2, a wood-and-fabric biplane that cruised at 60 mph. Designed in 1927 as a trainer, the Soviet Army Air Force often used it as a night bomber. Many Soviet airwomen flew it over heavily defended targets and suffered accordingly. They were not even issued parachutes until 1943.

The majority of accounts include photographs of the fliers as they appeared dur-

ing the war years. A portrait section at the rear of the book captures the women as they appeared in 1990-1992. For anyone interested in the women in combat debate, *A Dance with Death* is a must read.

David F. Crosby, writer, Ninth Air Force History Office, Shaw AFB, South Carolina

**Combat: The Great American Warplanes.** By Jim Wilson. New York: Hearst Books, 2001. Diagrams. Photographs. Bibliography. Index. Pp. 192. ISBN 1-58816-064-5

Mr. Wilson is the science editor of *Popular Mechanics* and directs the magazine's coverage of aviation, aerospace, and military news. Past assignments have sent him to the demilitarized zone in Korea, the flight decks of aircraft carriers, and the cockpits of various Air Force fighters. On the dust cover of this book, he is pictured in a CH-46 Sea Knight helicopter.

*Combat* is a descriptive book, which gives short histories (from two to five pages long) of forty different aircraft. The text, which contains no technical jargon, can be easily understood by readers who have no prior knowledge of aviation history. The author divides the book into nine chapters. The first chapter gives a short history of fighter development. Chapters two through eight speak to different types of aircraft: bombers, fighters, attack aircraft, reconnaissance and electronic-warfare planes, cargo, transport and tanker aircraft, helicopters, and naval aircraft. Each chapter starts with an overview of the particular class of aircraft being featured. The last chapter addresses experimental aircraft and aircraft of the future.

In each chapter, the author wanted to show the development of a certain type of aircraft from its inception to the present. For example, he started the chapter on fighters by describing the SPAD XIII and finished, nine aircraft later, with the F-117 Night-hawk. Each aircraft chosen for inclusion in this book represents a technological jump from one generation to the next, such as the U-2 being superseded by the SR-71. The author realizes that he probably has not chosen the same aircraft some other author may have chosen, but he has made every effort to make his book as comprehensive as possible. The book contains 147 photographs and 18 cut-away diagrams that make the text more interesting for any reader.

In a window, that the author calls "In PM's Words," he reprints part of an article that was run in the October 1944 issue of *Popular Mechanics* entitled "Secrets of Super-Speed." This excerpt talks about the effects of aerodynamic designing and how it significantly reduces drag in the P-51D Mustang.

The information throughout this book

appears to be accurate. For example, I once asked my father, who worked as an aeronautical engineer for Chance Vought Aircraft during World War II, why the F4U Corsair had gull-shaped wings. I had heard the usual stories that it was to accommodate an extra-large propeller, to shorten the length of the landing gear, and to provide extra protection to the pilot if he had to ditch the plane at sea. Dad said the wings were gull-shaped to reduce drag and nothing more. So did the author. Both were correct.

This book does not advance any new ideas or hypotheses. The text is well written, easily understood, and does not contain technical terms or slang expressions that can lose the general reader. Although not a scholarly book, it is an excellent primer to the field of aviation.

William A. Nardo, Docent, National Air and Space Museum



**Veterans Benefits: A Guide to State Programs.** By R. E. Armstrong and Terry P. Rizzuti. Westport, Ct.: Greenwood Press, 2001. Appendix. Index. Pp. xii, 329. \$59.95 ISBN: 0-313-31905-7.

The co-authors of *Veterans Benefits* have compiled a very useful reference guide for veterans and their advocates. Both are disabled Vietnam combat veterans and, as they

state in the preface, their goal was to help fellow veterans and their families become aware of benefits they have earned through military service.

This book is a compendium of each state's veterans benefits, containing a relatively detailed description of each benefit the state provides. The benefits listed range from minor (free fishing license for disabled veterans) to major (exemption from all property taxes for totally disabled veterans). In addition to state programs providing education benefits and job counseling, there are state programs that pay monetary benefits to disabled veterans. (For example, New York pays \$500.00 annually to blinded wartime veterans). States have civil service preference, state veterans nursing homes, and state veterans cemeteries. The book also contains a good summary of federal benefits for veterans as well.

*Veterans Benefits* provides web sites for each state veterans agency. For those wishing to navigate quickly among these sites, the National Association of State Directors of Veterans Affairs site, [www.nasdva.org](http://www.nasdva.org), has all the links. This organization also holds excellent bi-annual conferences where the directors discuss their programs.

The book summarizes not only state benefit programs, but also the representation services they provide. That is, many state veterans agencies actually represent veterans and their families in claims before the U.S. Department of Veterans Affairs (VA). Their assistance can be valuable in

informing claimants of all the benefits they may be entitled to and serving as their advocate in gathering evidence and presenting it to the VA. In my experience, it is usually better for a claimant to get representation from a knowledgeable representative than to try to "go it alone." This is because some VA benefits claims can be complex, often involving several VA regulations and technical, medical, or legal issues.

One area not covered by this book bears mentioning: county veterans service agencies. In some states (such as Indiana) the state agency does not provide representation, but the counties do. Often the state agency provides regular training for the county representatives. These representatives have their own outstanding education organization: the National Association of County Veterans Service Officers.

The authors observe, in the preface, that some states provide their veterans significant benefits, while others do not. They suggest that veterans who read about a benefit they believe their state should offer should join with veterans organizations to lobby their state governments. This is a valid suggestion, and this book will greatly assist veterans in such endeavors.

Having worked in veterans matters for many years, I have often thought we need to do more, so that veterans and their families are aware of their benefits and how to access them. This book is an excellent reference tool and assists greatly in that worthy goal. I would highly recommend it to anyone

## THE BATTLE OF BRITAIN

*Air Defence of Great Britain, Vol. II*

T C G James

Edited and with an Introduction by Sebastian Cox, *Head of the Air Historical Branch of the Ministry of Defence*

Foreword by Air Chief Marshal Sir Peter Squire

*'there can be nothing but praise for such a majestic, seminal history as this one.'* *Air Pictorial*

This volume offers the reader access to the RAF's detailed contemporary day-by-day account of the Battle.

456 pages illus 2000

0 7146 5123 0 cloth \$62.50/£45.00 0 7146 8149 0 paper \$26.50/£18.50

*Royal Air Force Official Histories*

## COURAGE AND AIR WARFARE

*The Allied Aircrew Experience in the Second World War*

Mark K Wells, *Deputy Head of the United States Airforce Academy's Department of History*

Winner-Society for Military History Distinguished Book of the Year 1997

*'Courage and Air Warfare is well written and well researched. It is relevant especially to those who would aspire to the command of flying units. Give it a very high place on your reading list.'*

*Dr David Mets, Maxwell AFB, Alabama, Airpower Journal*

256 pages illus 1995 repr. 1997, 2000

0 7146 4618 0 cloth \$59.50/£42.50 0 7146 4148 0 paper \$24.50/£17.50

## Frank Cass Publishers

**North American Orders:** ISBS, 5824 NE Hassalo Street, Portland, OR 97213 3644, USA Tel: 800 944 6190 Fax: 503 280 8832

**UK/RoW Orders:** Crown House, 47 Chase Side, Southgate, London N14 5BP Tel +44 (0)20 8920 2100 Fax: +44 (0)20 8447 8548

**Website:** [www.frankcass.com](http://www.frankcass.com)

## AIR POWER HISTORY

*Turning Points from Kitty Hawk to Kosovo*

Peter Gray, *Director of Defence Studies for the Royal Air Force* and Sebastian Cox, *Head of the Air Historical Branch of the Ministry of Defence* (Eds)

Contributors from academia and the services examine the theory and practice of air power from its earliest inception.

288 pages 2002

0 7146 5291 1 cloth \$64.50/£45.00 0 7146 8257 8 paper \$26.50/£18.50

## STRATEGIC AIR POWER AND THE GULF WAR

John Andreas Olsen, *Royal Norwegian Air Force Academy*

Olsen provides a comprehensive examination of the origins, evolution and implementation of 'Operation Desert Storm' using official military and political documentation, interviews with US Air Force officers and Iraqis with experience of the inner workings of the Iraqi regime.

256 pages 2003

0 7146 5193 1 cloth \$62.50/£45.00 0 7146 8195 4 paper \$26.50/£18.50

whose job involves helping veterans, and for public libraries as well.

*Bill Russo, Attorney-Advisor, U.S. Dept of Veterans Affairs*  
(The views expressed are those of the reviewer and should not be considered views of the VA).



**Birds from Hell.** By Wilbur H. Morrison. Central Point, Ore.: Hellgate press, 2001. Photographs. Bibliography. Pp. 274. \$34.95 ISBN: 1-55571-550-8

Mr. Morrison is well qualified to write about B-29 operations in World War II. As a bombardier-navigator, he served with what would become Twentieth Air Force from mid-1943 until after V-J Day. He underwent early B-29 training; participated in India, China, and Marianas operations; and served in both line crew and squadron/group staff positions. Much has been written on B-29 development and the aircraft's conventional and nuclear bombing of Japanese targets, but the author provides the operational crew perspective. He has written several other books (most notably, 1979's *Point of No*

*Return: The Story of the 20th Air Force*) using as primary sources interviews with many of the important players such as Gens. Curtis LeMay, Haywood Hansell, and John Montgomery.

The story starts with the almost desperate efforts to forge a combat-ready weapon system in the face of aircraft and training-hour shortages, immature engines, hundreds of ongoing engineering changes, and political and operational needs to get the aircraft into action. Morrison describes the long flights to India and China where XXth Bomber Command commenced operations, fighting logistics and geography almost as much as they fought the Japanese. He provides a crewman's view of not only operations, but also the environment in which XXth lived—his recollections of bases, local towns, and "tourist" sites in India and China add depth to the story.

Early B-29 operations achieved relatively little: not enough aircraft, inexperienced crews, almost insurmountable logistics, and weather thwarted the best efforts that could be put forth. But the Marianas were soon in U.S. hands, and a remarkable building program transformed them into the world's busiest airfields. Early XXIst Bomber Command bombing results were not much

better than those of the XXth, but General LeMay's revised tactics soon changed that. The former XXth organization soon moved to the Marianas as well and shut down the China operation. By early 1945, strategic bombardment advocates finally had the tools and capability to prove their theories, and Japan felt the wrath of the mightiest air force in history to that time.

That is the good news. The bad news is that this is not really a history, but rather an historical novel. It is to the B-29's war what Michael Shaara's *The Killer Angels* is to the Battle of Gettysburg. There is not a single footnote for any fact presented. The book is written in a conversational style with quotation marks; no one can remember exact conversations 45-55 years in the past, especially during a leave on the streets of Calcutta! This is not necessarily all bad, so long as readers understand they are reading a story created around actual events. The book also suffers from a number of errors, both typos and facts, such as, the author's description of one pilot's experiences with the Soviets and their B-26s (no B-26s were supplied to the USSR). The jacket bio even notes Morrison's 500 combat missions—hours, maybe, but not missions. Such errors tend to put into question other undocumented material.



**FIRST HAND ACCURACY. . . WW II AIR WAR/PRISONER OF WAR HISTORICAL CD.**

*"... I have never heard something as moving as your CD." -Dave Brouchoud*

**Air War Memorial CD drama: Air Combat, stark P.O.W. action, original & authentic music, rare recordings, liberation, and more. - A nine track production:**



**Tracks:**

1. Salute to Air Force Pioneers
2. Air Combat
3. Missing in Action
4. Music Behind The Barbed Wire
5. Forced March
6. Boxcar To The Unknown
7. Gypsy Fire Dance
8. Liberation
9. Deliverance

**One hour soundtrack of sold out historical novel, *Petals of Fire*, honoring WW II Flyers, Prisoners of War, and Missing in Action.**

**Yours for only \$14.50 (includes shipping)**

**Order by Phone: (541) 677-7443 or mail checks to Dr. Herb Alf, P.O. Box 1273, Roseburg, OR 97470**

Created by WebMediaExpress

All in all, however, this is still a book worth reading if one wants to understand what the war was like for the crews of the B-29s. There is not much new from his previous book, but it does add a personal dimension to the heroic efforts of the Twentieth Air Force.

*Col. Scott A. Willey, USAF (Ret.), Docent, NASM's Garber Facility*



**The Korean War** (3 Volume Set). By the Korea Institute of Military History, introduction to Bison Books edition by Allan R. Millett. Lincoln: University of Nebraska Press, 2000-2001. Maps. Notes. Photographs. Bibliography. Pp. lii, 2569. \$95.00 Paperback ISBN: 0-8032-7802-0

This is the combat history of the army of the Republic of Korea during the Korean War. Other forces—the United States, the United Nations, the North Koreans, the Chinese, the air forces and navies—are peripheral. The project's three volumes break out as follows: Volume 1, a quick gloss of Korea's history under Japan, the division of the peninsula, and the war from the

northern invasion through the UN's reaching of the Yalu River and the Chinese crossing into Korea. Volume 2, the multiple Chinese offensives during the dismal six or seven months (October 1950 to June 1951) when the ROK army seemed about to crumble, then stabilized and began to push back. Volume 3, stalemate to truce and status quo ante, the time when the ROK made its army into an effective fighting force with adequate size, skill, and weaponry to maintain the stalemate for half a century thereafter.

These volumes are not to be read straight through as one would a novel or a popular history. This is pure official history—and military history to boot. The narrative is strong on unit movement and adequate on equipment information. However, it provides only the minimum essential diplomatic history and even less social or economic history. There is little in the way of biographical profiles or personal war experiences. However, the near absence of elements that would add to the esthetic of the reading experience does not diminish the fact that this three-volume history is important and even interesting in its own way. It is important first, because it is the only history written in English from the South Korean perspective. Second, it synthesizes and then builds on the first full Korean

language history (thirteen volumes) and also incorporates recently declassified, and thus newly available, documents from the various combatants. It also relies heavily on the version of the war history produced by North Korea. It is a significant addition to the relatively small library on the war most Americans have either forgotten or want to forget.

There is a lot of material within the nearly 2,600 pages of text. That is almost 900 pages per year in a set that took three years to put together, about the same amount of time as the event it chronicles. The books spend much space on the day-to-day conflict, both on the front lines and behind them, but do pause occasionally to give meaning through analysis. And the authors have to counter the misinterpretations, as they define them, of the northern histories. They also explain the shortcomings of the ROK armies early on, naming names and laying blame where appropriate. This starts with the ROK's lack of training, inferior equipment, and insufficient support from the U.S.—which was trying to get out of the country. This aspect is especially damning when compared to the heavy Russian and Chinese backing that North Korea received.

## Celebrating 50 Years of Air and Space Power Publishing

Currently seeking manuscripts on Aerospace Doctrine,  
Strategy, History, and Biographies  
of Pioneer Airmen

AIR UNIVERSITY PRESS  
131 West Shumacher Avenue  
Maxwell AFB AL 36112-6615

For catalog or information, call  
334-953-2773/6136 DSN 493-2773/6136  
Fax 334-953-6862 Fax DSN 493-6862

<http://aupress.maxwell.af.mil>



There is a tendency when reading works of this sort to get bogged down in the seemingly endless inventory of skirmishes and pointless battles. A major asset of the Bison Books edition is the addition of introductions to each volume. Alan Millett is a military historian of distinction, and his introductions are insightful, helping to flesh out the context, to bring better light on the significance of events, and to balance the work's focus on the ground forces.

Oddly for a work of this magnitude, there is no index. The deficiency is painful, but the chronologies, chapter headings, and subheadings compensate somewhat. The maps are small and sometimes lack legends. Photos are black and white, small, and hard to see. Occasional typos and the strange word arrangement and choice serve to remind the reader that this is a translation. Even with these flaws, however, the set is still formidable. Priced at under \$100, it is a steal, or close to it, and is definitely a strong addition to the Korean War library.

*John H. Barnhill, Ph.D., Tinker AFB, Oklahoma*



**I Always Wanted to Fly: America's Cold War Airmen.** By Wolfgang W. E. Samuel. Jackson: University Press of Mississippi, 2001. Maps. Tables. Illustrations. Photographs. Glossary. Bibliography. Index. Pp. xix, 363. \$30.00 ISBN:1-57806-399-X

On a beautiful spring morning in 1940 when he was six years old, Wolfgang Samuel looked up from his sandbox and saw a Junkers Ju 52 fly overhead. Ever since that day, he always wanted to fly. In 1951, he immigrated to the United States; in 1960, he received his commission as a second lieutenant in the United States Air Force. Following flight training, Samuel was assigned to a reconnaissance wing at Forbes Air Force Base near Topeka, Kansas. Mr. Samuel served his country for twenty-five years before retiring with the rank of colonel.

Col. Samuel always had a deep respect for those aviators who flew the Berlin Airlift and who flew over the Soviet Union on reconnaissance missions. He realized that no one ever put their personal stories to paper. To rectify that, he collected information in the form of interviews, tapes, and letters from 29 aviators and put their stories— in their own words—into the book. The book

is dedicated "To the flyers who gave their lives during the Cold War from 1945 to 1991 in the service of their country. In memory of the friends I served with who did not return from their last flights."

The story is divided into four parts: the Berlin Airlift, 1948; Korea, 1950; Strategic Reconnaissance; and Vietnam, 1965. In each part, Col. Samuel recounts the stories of the men who flew those missions. For example, in the chapter entitled "The Last Flight of 3-4290," Col. Samuel talks about crew E-96 flying their RB-47H out of Yokota AB on an overflight of the Soviet Union, near the North Korean border in 1965. The aircraft was attacked by several MiG-17s near the end of their mission, and the crew had to fight for their lives.

The book is descriptive in nature. At the beginning of each part, Col. Samuel gives an outline history of, for example, the Berlin Airlift or the Vietnam War, to put the aviators' stories into historical perspective. However, the author lets the flyers tell their own stories, editing only for clarity. This technique gives the reader a stronger feeling of being there with the flyers. As I read the book, I could not help feeling both pride and admiration in these countrymen who allowed me to go to school in a free country.

## Lancaster Index to Defence & International Security Literature

*Air Power History* (along with its predecessor *Aerospace Historian*) is one of nearly 350 publications indexed and abstracted in the bibliographic database *Lancaster Index to Defence & International Security Literature*. This information is produced by Military Policy Research Ltd., of Oxford, England, and can be found at [www.mpr.co.uk](http://www.mpr.co.uk). It contained over 90,000 citations and abstracts as of the end of May 2002, and is increasing at the rate of around 10,000 per year.

The *Lancaster Index* database is primarily designed for information professionals in the defense and security sector, and can appear somewhat daunting to the casual visitor. A look at the User Guide, downloadable from the site, is recommended. Free access, using the global index, scans the whole database, but returns literature citations that exclude the volume, issue, and page references. Researchers who need these references for serious research purposes will need to take out a paid subscription. Individual rates range from \$9.95 for a 24-hour pass to \$99.95 for a 365-day pass.

**Military Policy Research Ltd.**

---

Smithsonian Institution Press Ad-- Full Page

See Zip Disk (MAC format)

In many cases, the author includes maps indicating a mission's flight path. This, thankfully, negates the need to pull out one's own world atlas. The text was very well written and edited, making it easy for the non-flying civilian to understand.

When Col. Samuel interviewed the aviators, he always asked, "What made you want to be a pilot?" Inevitably, the answer was, "I always wanted to fly."

*William A. Nardo, Docent, National Air and Space Museum*



**Voices from the Rear: Vietnam, 1969-1970.** By George M. Watson, Jr., Xlibris Corporation, 2001. Photographs. Glossary. Pp. 322. \$29.69. ISBN 0-7388-6314-9

The vast majority of the 4.4 million soldiers who went to Vietnam never served in combat or came under enemy small arms fire. For every infantryman on the ground, there were 10-12 support troops located in the rear to sustain combat operations. This large contingent of soldiers—often derisively

referred to as REMFs (Rear Echelon Mother F\*\*\*\*\*)—is the focus of Watson's penetrating analysis.

Watson served with the 101st Airborne Division and accurately portrays the daily routine that non-combatant soldiers encountered in their day-to-day jobs. Unlike some Vietnam vets who inflated what they did in the war (see B. G. Burkett's *Stolen Valor*), Watson draws exclusively upon his and his comrades' experiences to articulate an overlooked side of the war. What makes this story especially believable and valuable is that the author deals with reality and does not fall into the trap of resorting to hyperbole to falsely convey a "war hero" image of rear-echelon troops. Watson excellently presents a truthful and even-handed account, telling it like it was without embellishing the story with exaggerated claims that rear-area soldiers were typically heroic warriors constantly facing the danger of enemy attack.

Watson does not diminish the value, role, and lasting contributions that rear-area troops made to support the war effort. Every war has fighting and support units, and each group is essential to success or failure. Who ends up in which unit most often depends on

an imprecise combination of choice, changing circumstances, and plain luck. If you could type, chances were good you would be assigned as a company clerk. REMFs worked long and hard hours to provide a diversity of essential services to all soldiers to allow them to perform their duties with a minimum of "Mickey Mouse" interruptions. Although they had an important mission to perform, REMFs were more often than not the unappreciated cogs that kept the wheels turning in a huge and unwieldy bureaucratic machine. These unsung individuals processed and updated personnel records; ensured on-time pay and mail; accurately substantiated awards and decorations; and maintained medical records, vehicles, helicopters, communication equipment clothing, and roads and buildings.

For the most part, these duties were performed in the relative safety of the rear. Within an environment laced with the boredom of a daily fixed routine, soldiers were insulated from the fighting as they experienced the comforts of wooden barracks, refrigerators stocked with beer, clean beds, and three hot meals a day. They usually had leisure time each day when off duty—a luxu-



# AIR POWER

*New books from Texas A&M*

## AMERICAN MILITARY AVIATION

*The Indispensable Arm*

CHARLES J. GROSS

In this detailed history, Gross traces American military air power from the Wright brothers' triumph over gravity through the war in Kosovo. He explains the roles of politics, economics, and technology in shaping air power in the U.S. armed forces and assesses the impact of military aviation on warfare. "... must reading for novice and expert alike."

—Gen. Charles A. Horner, USAF (Ret.). \$35.00

## RED WINGS OVER THE YALU

*China, the Soviet Union, and the Air War in Korea*

XIAOMING ZHANG

The Korean War was a pivotal event in China's modern military history, constituting an important experience for the newly formed People's Liberation Army Air Force (PLAAF). Here, Zhang fills the gaps in the history of this conflict, offering considerable materials on the training of Chinese aviators, on Soviet and Chinese air operations in Korea, and on diplomatic exchanges over Soviet military assistance to China. \$39.95

## TEXAS A&M UNIVERSITY PRESS

College Station, Texas  
Orders: 800-826-8911  
Fax: 888-617-2421  
[www.tamu.edu/upress](http://www.tamu.edu/upress)

Illustration courtesy U.S. Navy

ry the grunt in the field did not have. In fact, one strength of this book is Watson's keen awareness of the differences between life in the rear and in the field. He detaches himself from the creature comforts he and others experienced and provides a realistic sense of perspective and recognition of the unfairness of the division of labor among soldiers. He offers hardcore insight when he writes: "Those grunts had it much worse. Trekking through that jungle area in deluges and penetrating dampness was sheer misery. Imagine having to bed down in those conditions and trying to keep a weapon dry and living for weeks on C-rations. Besides the rotten weather, enemy ambushes, mines, and booby traps made life wretched. Those bush-humping grunts... deserved a lot more honor than they got when they returned to the states."

Although infantrymen endured extreme hardships, rear-area personnel also faced danger from rocket and mortar attacks as well as occasional exchanges of small arms fire when enemy forces probed camp perimeters. The fundamental difference was that rear attacks were less frequent than enemy engagements in the field. Of the nearly 31,000 American soldiers who died in combat, most met their death in the field. Another 7,000 soldiers died from non-combat incidents (accidents, disease, drowning, etc.), and most of these occurred in the rear.

Watson also credits rear echelon soldiers on another level. While thousands of draftees avoided active duty by flooding National Guard and Reserve units, enrolling in graduate school, or going to Canada, Watson and his enlisted contemporaries made other tough choices. He easily could have slipped across the border but instead elected to serve, even though he strongly opposed the politics of the war. A Catholic, brought up with a strong work ethic, he believed deep down he had an obligation to serve—a difficult decision to make in the midst of the protest culture of the time. Thousands of others like Watson made similar decisions and ended up in Vietnam.

Most soldiers who spent a year of their life in Vietnam performed their jobs to the best of their abilities, whether assigned to the rear or to the field. Having served there as a rifle platoon leader with the 101st Airborne Division, I can attest that grunts and REMFs worked together in a somewhat strange, symbiotic relationship to complete a common mission in an unpopular war. Both groups of soldiers depended on each other more than they realized. George Watson is to be commended for exploring this relationship in a well-written and engaging book. For those interested in knowing more about the life and work of the non-combatant soldier in Vietnam, this book is definitely worth reading.

*Robert W. Duffner, Air Force Research Laboratory/Phillips Research Site History Office, Kirtland AFB NM*



Available from  
**WWW.XLIBRIS.COM**  
**WWW.BN.COM**  
**WWW.AMAZON.COM**

# Voices from the Rear

**Vietnam 1969-1970**



"If you ever served in the Army, even in peacetime, George Watson's *Voices From the Rear*, will bring back memories. If you have never worn the uniform, you will nevertheless enjoy this glimpse of mind-numbing routine, punctuated by terrifying moments, and the attempts of soldiers to escape the boredom and cope with the terror." *Bernard C. Nalty*

# Books Received

Archer, Christon I. *et al.*, *World History of Warfare*. Lincoln: University of Nebraska Press, 2002. Maps. Illustrations. Index. Pp. xii, 626. \$29.95 ISBN: 0-8032-4423-1

Bell, Dana, ed. *The Smithsonian National Air and Space Museum Directory of Airplanes: Their Design and Manufacturers*. London: Greenhill Books, 2002 and Mechanicsburg, Pa.: Stackpole Books, 2002. Photographs, Pp. 382. \$49.95 ISBN: 1-85367-490-7

Black, Jeremy. *America as a Military Power: From the American Revolution to the Civil War*. Westport, Ct. and London: Praeger, 2002. Notes. Index. Pp. x, 231. \$26.95 Paperback ISBN: 0-275-97706-4

Boyne, Walter J. *The Two O'Clock War: The 1973 Yom Kippur Conflict and the Airlift that Saved Israel*. New York: Thomas Dunne Books, 2002. Photographs. Notes. Appendix. Bibliography. Index. Pp. xvi, 334, \$25.95 ISBN: 0-312-27303-7

Buell, Thomas B. *Naval Leadership in Korea: The First Six Months*. [The U.S. Navy and the Korean War] Washington, D.C.: Naval Historical Center, 2002. Photographs. Pp. ix, 50. Paperback. ISBN: 0-16-051080-5

Connolly, Owen. *On War and Leadership: The Words of Commanders from Frederick the Great to Norman Schwarzkopf*. Princeton, N.J.: Princeton University Press, 2002. Notes. Bibliography. Index. Pp. viii, 347. \$29.95 ISBN: 0-691-03186-X

Cox, Sebastian and Peter Gray, eds. *Air Power History: Turning Points from Kitty Hawk to Kosovo*. London and Portland, Ore.: Frank Cass, 2002. Notes. Index. Pp. xix, 362. \$26.50 Paperback ISBN: 0-7146-8257-8

Dorr, Robert F. *Air Force One*. St. Paul, Minn.: MBI Publishing Co., 2002. Photographs. Index. Pp. 150. \$29.95 ISBN: 9-7603-1055-6

Ewing, Steve. *Reaper Leader: The Life of Jimmy Flatley*. Annapolis, Md.: Naval Institute Press, 2002. Maps. Photographs. Notes. Appendices. Bibliography. Index. Pp. xix, 384. \$36.95 ISBN: 1-55750-205-6

Fleitz, Frederick H., Jr., *Peacekeeping Fiascos of the 1990s: Causes, Solutions, and U.S. Interests*. Westport, Ct. and London: Praeger, 2002. Maps. Tables. Illustrations. Photographs. Notes. Appendices. Glossary. Bibliography. Index. Pp. xx, 224. \$39.95 ISBN: 0-275-97367-0

Gross, Charles J. *American Military Aviation: The Indispensable Arm*. College Station; Texas A&M University Press, 2002. Photographs. Illustrations. Notes. Bibliography. Index. Pp. xv, 375. \$35.00 ISBN: 1-58544-215-1

Hinman, Elwood P. "Skip," IV. *The Politics of Coercion: Toward a Theory of Coercive Airpower for Post-Cold War Conflict*. [CADRE Paper No. 24] Maxwell AFB, Ala.: Air University Press, 2002

Hoyt, Edwin P. *Backwater War: The Allied Campaign in Italy, 1943-1945*. Westport, Ct. and London: Praeger, 2002. Photographs. Notes. Appendices. Bibliography. Index. Pp. ix, 224. \$27.95 ISBN: 0-275-97478-2

Lawson, Ted W. *Thirty Seconds over Tokyo*. Washington, D.C.: Brassey's, 2002 [Brassey's Aviation classics; originally published in 1943] Photographs. Pp. 221. \$24.95 ISBN: 1-57488-508-1

## PROSPECTIVE REVIEWERS

Anyone who believes he or she is qualified to substantively assess one of the new books listed above is invited to apply for a gratis copy of the book. The prospective reviewer should contact:

Col. Scott A. Willey, USAF (Ret.)  
3704 Brices Ford Ct.  
Fairfax, VA 22033  
Tel. (703) 620-4139  
e-mail: [scottville@aol.com](mailto:scottville@aol.com)

Luff, David. *Amy Johnson: Enigma in the Sky*. Shrewsbury, UK: Airlife Publishing, 2002. Photographs. Bibliography. Index. Pp.368. \$24.95 ISBN: 1-84037-319-9

Mahnken, Thomas C. *Uncovering Ways of War: U.S. Intelligence and Foreign Military Innovation, 1918-1941*. Ithaca, N.Y. and London: Cornell University Press, 2002. Photographs. Notes. Index. Pp, ix, 190. ISBN: 0-8014-3986-8

Renstrom, Arthur G., comp. *Wilbur & Orville Wright: A Bibliography Commemorating the One-Hundredth Anniversary of the First Powered Flight, December 17, 1903*. Washington, D.C.: NASA History Office, 2002. [NASA SP-2002-4527; Monographs in Aerospace History, No. 27] Photographs. Index. Pp. 144. Paperback.

Schmitt, Vernon R. *Controlled Bombs and Guided Missiles of the World War II and Cold War Eras: An Inside Story of Research and Development Programs*. Warrendale, Pa.: Society of Automotive Engineers, Inc., 2002. Tables. Photographs. Illustrations. Notes. Appendices. Index. Pp. x, 127. ISBN: 0-7680-0913-8

Taillon, J. Paul de B. *Hijacking and Hostages: Government Responses to Terrorism*. [Praeger Studies in Diplomacy and Strategic Thought] Westport, Ct. and London: Praeger, 2002. Notes. Bibliography. Index. Pp. viii, 233. \$64.95 ISBN: 0-275-97468-5

Xiaoming Zhang. *Red Wings over the Yalu: China, the Soviet Union, and the Air War in Korea*. College Station: Texas A&M University Press, 2002. Maps. Tables. Diagrams. Illustrations. Photographs. Notes. Appendices. Bibliography. Index. Pp. xii, 300. \$30.95 ISBN: 1-58544-201-1

## History of Rocketry and Astronautics

Donald C. Elder and Christophe Rothmund, Editors



AAS History Series, Volume 23

IAA History Symposia, Volume 15



## HISTORY OF ROCKETRY AND ASTRONAUTICS BOOK SERIES

### *American Astronautical Society History Series*

For a complete listing of these excellent volumes on the history of rocketry and astronautics, including brief descriptions of each volume, tables of contents of most of the volumes and ordering information, please visit the following pages in the book sections of our Web Site:

1. [http://www.univelt.com/Aasweb.html#AAS\\_HISTORY\\_SERIES](http://www.univelt.com/Aasweb.html#AAS_HISTORY_SERIES)
2. [http://www.univelt.com/Aasweb.html#IAA\\_PROCEEDINGS\\_HISTORY\\_ASTRONAUTICS\\_SYMPOSIA](http://www.univelt.com/Aasweb.html#IAA_PROCEEDINGS_HISTORY_ASTRONAUTICS_SYMPOSIA)
3. <http://www.univelt.com/htmlHS/noniaaahs.htm>

If you would like for us to send you more information, then please contact us as follows:

**Univelt, Inc., P.O. Box 28130,  
San Diego, CA 92198, USA  
Tel.: (760) 746-4005; Fax.: (760) 746-3139  
E-mail: 76121.1532@compuserve.com**

**Web Site: <http://www.univelt.com>**

# Coming Up



Compiled by George Cully

## 2002

### December 10-12

The Association of the U.S. Army will host its annual **Space and Missile Defense Symposium and Exhibition** at the Judson F. Williams Convention Center in El Paso, Texas. This year's theme is "Integrated Air and Missile Defense in a Transforming World." Contact:

Association of the United States Army  
2425 Wilson Blvd.  
Arlington, VA 22201  
(703) 841-4300  
website: <http://www.ausa.org>

## 2003

### January 2-5

The **American Historical Society** will hold its annual convention in Chicago, Illinois. Contact:

American Historical Association  
400 A St., SE  
Washington, D.C. 20003  
website: <http://www.theaha.org>

### January 6-9

The **American Institute of Aeronautics and Astronautics** will host its 41st Aerospace Sciences Meeting and Exhibit in Reno, Nevada. The meeting will include sessions on aeronautical and space history. Contact:

AIAA  
1801 Alexander Bell Dr., Ste. 500  
Reston, VA 20191-4344  
(703) 264-7551  
website: <http://www.aiaa.org>

### January 21

The **Military Classics Seminar** meets for dinner-discussion at the Ft. Myer, Virginia, Officers' Club. This month's selection is Paul Aussaresses, *The Battle of the Casbah: Terrorism and Counter-Terrorism in Algeria, 1955-1957*. Enigma, 2001. Speaker: Dr. Bruce Vandervort, editor, *Journal of Military History*. Contact:

Ms. Sandra Doyle  
Naval Historical Center  
805 Kidder Breese Street, SE  
Washington Navy Yard, D.C. 20374-5060  
(202) 433-9785  
e-mail: [sandy.doyle@navy.mil](mailto:sandy.doyle@navy.mil)

### February 12-15

The **Southwest/Texas Popular Culture Association/American Culture Association** will host its annual conference, "Atomic Culture in the Nuclear Age," at the Albuquerque Hilton in Albuquerque, New Mexico. Contact:

Scott C. Zeman  
Humanities Department  
New Mexico Tech  
801 Leroy Place

Socorro, NM  
(505) 835-5628, Fax -5544  
e-mail: [szeman@nmt.edu](mailto:szeman@nmt.edu)  
website: [www.nmt.edu/~szeman](http://www.nmt.edu/~szeman)

### February 15

The **University of Calgary's Society for Military and Strategic Studies** will host its "5th Annual Society for Military and Strategic Studies Student Conference" at the University of Calgary in Calgary, Alberta, Canada. Contact:

Jean-Pierre Marchant  
1104 McKimmie Library Tower  
2500 University Drive NW  
Calgary, Alberta, T2N 1N4 Canada  
(403) 210-3888, Fax 282-0594  
e-mail: [smss@ucalgary.ca](mailto:smss@ucalgary.ca)  
website:  
<http://members.shaw.ca/keepinga/smss/index.html>

### February 18

The **Military Classics Seminar** meets for dinner-discussion at the Ft. Myer, Virginia, Officers' Club. This month's selection is Ernest R. May, *Strange Victory: Hitler's Conquest of France*. Hill and Wang, 2000; Marc Bloch, *Strange Defeat: A Statement of Evidence Written in 1940*. Trans. by G. Hopkins. Norton, 1968, ed. Speaker: Dr. Jennie Kiesling, U.S. Military Academy. Contact:

Ms. Sandra Doyle  
Naval Historical Center  
805 Kidder Breese Street, SE  
Washington Navy Yard, D.C. 20374-5060  
(202) 433-9785  
e-mail: [sandy.doyle@navy.mil](mailto:sandy.doyle@navy.mil)

### February 28-March 3

An **International Aviation Photography Symposium** will be held in Dayton, Ohio. For details and entry particulars, contact:

Jay Miller e-mail: [aerofax@sbcglobal.net](mailto:aerofax@sbcglobal.net)

### March 6

This year's **Missouri Valley History Conference** will be held on the campus of the University of Nebraska at Omaha. Contact:

Professor Tom Buchanan  
Missouri Valley History Conference  
History Department, 287 Ash Hall  
University of Nebraska at Omaha  
Omaha, NE 68182  
e-mail: [mvhc@unomaha.edu](mailto:mvhc@unomaha.edu)

### March 6-8

The **21st Annual Mephistos Conference** is a graduate student conference on the History, Philosophy, and Sociology of Science, Technology and Medicine. This year's conference will be held at the University of Wisconsin-Madison. Contact:

website: <http://athena.english.vt.edu/cgi-bin/netforum/ishlist/a/14-13.3.1>

### March 14-15

The **Society for History in the Federal Government** will hold its annual meeting at the Robert C. Byrd Center for Legislative Studies on the campus of Shepherd College in Shepherdstown, West Virginia. The theme for this conference will be "Federal Records and the Cause of History." Contact:

Dr. Roger D. Launius  
Division of Space History  
Smithsonian Institution  
P.O. Box 37012  
NASM Room 3560, MRC 311  
Washington, D.C. 20013-7102

(202) 633-2428 Fax: (202) 784-2947  
e-mail: launiusr@nasm.si.edu  
website: <http://www.shfg.org/index.htm>

#### March 18

The **Military Classics Seminar** meets for dinner-discussion at the Ft. Myer, Virginia, Officers' Club. This month's selection is Steven Runciman, *History of the Crusades*, 3 volumes: 1. *The First Crusade*; 2. *The Kingdom of Jerusalem*; 3. *The Kingdom of Acre and Later Crusades*. Cambridge, 1951-1954. Speaker: Dr. Kelly DeVries, Loyola College. Contact:

Ms. Sandra Doyle  
Naval Historical Center  
805 Kidder Breese Street, SE  
Washington Navy Yard, D.C. 20374-5060  
(202) 433-9785  
e-mail: [sandy.doyle@navy.mil](mailto:sandy.doyle@navy.mil)

#### March 25-26

The **American Astronautical Society** will host its "41<sup>st</sup> Annual Goddard Memorial Symposium" at the Greenbelt Marriott Hotel in Greenbelt, Maryland. Contact:

American Astronautical Society  
6352 Rolling Mill Place, Suite #102  
Springfield, VA 22152-2354  
(703) 866-0020, Fax (703) 866-3526  
e-mail: [info@astronautical.org](mailto:info@astronautical.org)  
website: <http://www.astronautical.org>

#### March 28-29

The **2003 Hagley Fellows Conference** will be held at the University of Delaware. Conference themes embrace the History of Technology, Business, and Science. This year's theme is "Reinventing the Factory." Contact:

Gabriella M. Petrick  
Department of History  
236 Munroe Hall  
University of Delaware  
Newark, DE 19716  
(302) 286-6227  
e-mail: [gpetrick@udel.edu](mailto:gpetrick@udel.edu)

#### March 28-29

The Graduate Students of **Virginia Tech's Center for Science and Technology Studies** will hold a workshop, "Technologies/Moralities: The Ethical Grammar of Technological Systems." The workshop will be held in Blacksburg, Virginia. Contact:

Technologies/Moralities Workshop  
c/o Benjamin Cohen  
131 Lane Hall (0227)  
Virginia Tech  
Blacksburg, VA 24061  
e-mail: [sts\\_grad2003@vt.edu](mailto:sts_grad2003@vt.edu)  
website: <http://www.cis.vt.edu/sts/NEmain.htm>

#### April 2-3

The **U.S. Naval Institute** will present its 129th Annual Meeting and 13th Annapolis Seminar on the grounds of the Naval Academy in Annapolis, Maryland. Contact:

U.S. Naval Institute  
291 Wood Road  
Annapolis, MD 21402  
(410) 268-6110  
website: <http://www.usni.org>

#### April 7-27

The Newport News/Williamsburg International Airport will be the site for the **Aviation World's Fair 2003**, featuring displays, special programs, a trade show and an air show. Contact:

Aviation World's Fair, Inc.  
902-A Bland Blvd.  
Newport News, VA 23602  
(757) 369-2620, Fax -2628  
website: <http://www.awf2003.com>

#### April 15

The **Military Classics Seminar** meets for dinner-discussion at the Ft. Myer, Virginia, Officers' Club. This month's selection is Thomas C. Hone, Norman Friedman, and Mark Mandeles, *American and British Aircraft Carrier Development, 1919-1941*. Naval Institute Press, 1999. Speaker: Captain Jan van Tol, USN. Contact:

Ms. Sandra Doyle  
Naval Historical Center  
805 Kidder Breese Street, SE  
Washington Navy Yard, D.C. 20374-5060  
(202) 433-9785  
e-mail: [sandy.doyle@navy.mil](mailto:sandy.doyle@navy.mil)

#### April 24-26

The **Economic & Business Historical Society** will hold its 28th annual conference in Memphis, Tennessee. Contact:

John P. Rossi  
Penn State Erie - Behrend College  
School of Humanities & Social Sciences  
Station Road  
Erie, PA 16563-1501  
(814) 898-6441, Fax -6032  
e-mail: [jpr2@psu.edu](mailto:jpr2@psu.edu)  
website: <http://www.ebhsoc.org>

#### May

**Air Power 2003**. Kickoff event for Air Force celebration of the 100th anniversary of powered flight. Many USAF aircraft will be on display at Wright-Patterson AFB, Ohio. Other activities at the Aeronautical Systems Center, Air Force Research Laboratory, and the Air Force Museum. Contact:

Tana R. Hamilton  
ASC Public Affairs  
(937) 255-1729  
e-mail: [Tana.Hamilton@wpafb.af.mil](mailto:Tana.Hamilton@wpafb.af.mil)

#### May 1-4

The **Society for Military History** will hold its annual meeting in Knoxville, Tennessee. This year's theme is "The Military and Society during Domestic Crises." Contact:

Dr. Kurt Piehler  
SMH 2003 Committee  
Center for the Study of War and Society  
220 Hoskins Library  
University of Tennessee at Knoxville  
Knoxville, TN 37996-0411  
(865) 974-7094  
e-mail: [gpiehler@itk.edu](mailto:gpiehler@itk.edu)

#### If you wish to have your event listed, contact:

George W. Cully  
230 Sycamore Creek Drive  
Spingboro, OH 45066-1342  
(513) 748-4737  
e-mail: [71022.1100@compuserve.com](mailto:71022.1100@compuserve.com)



# USAF Centennial of Flight Office

## Calendar of Events

[www.centennialofflight.af.mil](http://www.centennialofflight.af.mil)

Event	Start Date	End Date	Location
National Kickoff	12/17/02		Washington, DC; National Air and Space Museum
Rose Bowl Parade	1/1/03		Pasadena, California
USAF Museums Events	All Year		Dayton, Ohio; USAF Museum
Aviation Art Exhibit	2/20/03		Washington, DC; Union Station
Rockefeller Center	3/3/03	3/20/03	Rockefeller Center, New York
Operation Homecoming	March 2003		San Antonio, TX; Randolph AFB
EAA Fun & Sun	4/6/03	4/12/03	Lakeland, FL
Festival of Flight	5/16/03	5/26/03	Fayetteville, NC
Pope AFB / Ft. Bragg	5/24/03	5/25/03	Fayetteville, NC; Pope AFB
Open House and Air Show			
NASCAR Coca-Cola 600	5/26/03		Charlotte, NC; Lowe's Motor Speedway
Gathering of Eagles	May 2003		TBA
Wright-Patterson Air Power Event	5/10/03	5/11/03	Dayton, Ohio; WPAFB
Joint Service Open House	5/16/03	5/18/03	Landover, MD; Andrews AFB
Inventing Flight	8/3/03	8/20/03	Dayton, Ohio; Deeds Point
Dayton Air Show and Expo	8/17/03	8/20/03	Dayton, Ohio
EAA AirVenture	7/29/03	8/4/03	Oshkosh, Wisconsin
Global Air Chiefs Conference	9/13/03	9/19/03	Washington, DC; Marriott Wardman Park Hotel
Centennial Air Show	9/18/03		Landover, MD; Andrews AFB
First Flight Celebration	12/13/03	12/17/03	Kill Devil Hills, NC; Wright Brothers National Memorial National Park

### Contact:

Capt. Shawn P. Dell, USAF  
 Centennial of Flight Office (HQ USAF/CVAH)  
 205 South Whiting St.  
 Alexandria, VA 22304  
 (703) 617-0995 FAX (703) 617-0783  
 DSN 767-XXXX



The readers of *Air Power History* know their airplanes. Once again, readers correctly identified last issue's "What Is It?" flying machine. Thirty-three readers sent in postcards with the right answer. Only one reader flunked.

The photo in our last issue depicted the Republic XF-84H, a turboprop-powered version of the F-84 Thunderstreak. In 1950, the Air Force ordered two experimental XF-84H airplanes to test-fly supersonic propellers. For a brief period, they were designated XF-106s.

The XF-84H was powered by a huge, 5,850-horsepower Allison coupled turboprop engine. The initial design used a scimitar-shaped propeller that reportedly emitted 900 supersonic booms per minute.

The plane first flew on July 22, 1955. Documents from the era describe it as the fastest propeller aircraft in the world.

Although the XF-84H made a contribution to scientific knowledge, it never had much chance of appearing in large numbers on the flight line. Maintainers who worked around the aircraft said that the noise and vibrations made them ill. Turboprop power never really emerged as a serious alternative to the pure jet engine in mass-produced combat airplanes.

For many years, an XF-84H was on display, mounted on a pole at Meadows Field, Bakersfield, California. It has now been restored by the Air Force Museum in Dayton, Ohio and is on display. Perhaps a reader can confirm that the other aircraft of the two XF-84Hs was scrapped.

Our "History Mystery" winner is Robert Wyatt of Windsor Locks, Connecticut. Thanks to all readers who joined in our "name the plane" exercise.

## This Issue's Mystery Plane

Again, we challenge our ever-astute readers. See if you can identify this month's "mystery" aircraft. But remember please, postcards only. The rules, once more:

1. Submit your entry on a postcard. Mail the postcard to Robert F. Dorr, 3411 Valewood Drive, Oakton VA 22124.

2. Correctly name the aircraft shown here. Also include your address and telephone number, including area code. If you have access to e-mail, include your electronic screen name.

3. A winner will be chosen at random from the postcards with the correct answer. The winner will receive an aviation book by this journal's technical editor.

This feature needs your help. In that attic or basement, you have a photo of a rare or little-known aircraft. Does anyone have color slides? Send your pictures or slides for possible

use as "History Mystery" puzzlers. We will return them.



I continue to be very impressed with your journal, *Air Power History*. Having recently persuaded my institution's library that they needed to subscribe, I was very pleased to open the Fall 2002 issue [Vol. 49, No. 3, pp. 18-33] and find a particularly excellent and relevant article, Dr. Edgar Raines' piece, "Disaster off Casablanca: Air Observation Posts in Operation Torch and the Role of Failure in Institutional Innovation."

*William D. O'Neil, CNA*

*Editor's Note: Several readers called to congratulate us on the contents of the articles and book reviews. This is a plea for you to write letters and e-mails. Thank you.*

## American Combat Airman Hall of Fame

In 1997, Lloyd P. Nolen, founder of the Confederate (now Commemorative) Air Force, established the CAF American Combat Airmen Hall of Fame. On October 4, 2002, seven World War II veterans and one combat unit were inducted into the Hall at the Midland Center, Midland, Texas:

Lt. Col. John F. Bolt, USMC (Ret.)  
 Brig. Gen. Frank L. Gailer, USAF (Ret.)  
 MCPO Glenn H. Lane, USN (Ret.)  
 Lt. Col. Don S. Lopez, USAF (Ret.)  
 1st Lt. James F. Luma, RCAF/USAAF (Ret.)  
 Brig. Gen. Robert L. Scott, USAF (Ret.)  
 Brig. Gen. William W. Spruance, USAF (Ret.)  
 U.S. Navy Squadron VF-15

For additional information, contact:

Ms. Tina Corbett  
 CAF Headquarters  
 PO Box 6200  
 Midland International Airport  
 Midland, TX 79711  
 (915) 563-1000  
 e-mail: publicrelations@CAFHQ.ORG

# Notices

## CALL FOR PAPERS - KOREA

Event: 50th Anniversary Commemoration of the Korean War  
 Sponsors: ROK Ministry of National Defense (MND) – U.S. Forces Korea History Office  
 Place: Seoul, Korea – National War Memorial Museum Conference Facilities  
 Dates: June 25-27, 2003  
 Subject: The U.S. and ROK Military during the Korean War, 1950-1953

The sponsors are planning an academic conference at the end of June 2003 to commemorate the 50th Anniversary of the Korean War. American and Korean scholars are invited to present professional papers concerning aspects the military history of the Korean War.

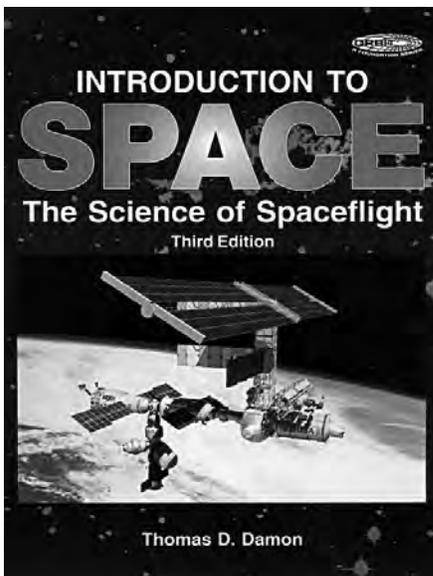
Submission dates:

1. Please submit paper proposal, abstract, and curricula vita by January 15, 2003. Send to:

Dr. Richard G. Davis  
 Command Historian USFK  
 PSC 303 Box 45  
 APO, AP, 96204-0045  
 e-mail: davisrg@usfk.korea.army.mil

2. Submit publication draft of paper by May 15, 2003, so that papers can be translated, edited and published for distribution at the conference.

Note to U.S. Government/DoD Historians: The USFK History Office will pay all TDY travel, per diem, and normal costs for round-trip travel to Yongsan/Seoul Korea for presenters.



**INTRODUCTION TO SPACE:**  
**The Science of Spaceflight, 3rd Ed.**  
 by **Thomas D. Damon**  
 3rd. Ed. 2001 326 pp.  
 Cloth \$57.50  
 Paper \$49.50

*"Tom Damon provides for you, the reader, a lucid understanding of the science and technology of entering space, what we are finding, and some of*

*our plans for the future. Enjoy it! It's an extraordinary treatment of an exciting subject, an outstanding introduction to mankind's greatest, open-ended adventure"*—

Edward G. Gibson, Astronaut, Skylab 4

**Krieger Publishing Company**  
 P.O. Box 9542 • Melbourne, FL 32902-9542  
**Call 800-724-0025**

E-mail: [info@krieger-publishing.com](mailto:info@krieger-publishing.com)  
 Fax: 321-951-3671

## CALL FOR PAPERS - OAH

Deadline: January 15, 2003

The 2004 Organization of American Historians convention will be held March 25-28th in Boston, Massachusetts. The program will be organized around the theme of American Revolutions. That choice is informed both by the location of the meeting in Boston, the epicenter of the movement for American independence; and by its occurrence on the fiftieth anniversary of the Supreme Court's decision in *Brown v. Board of Education of Topeka*.

The use of the plural Revolutions in the conference theme is intentional. The OAH expects the program to explore a wide variety of political, social, cultural, intellectual, economic, diplomatic, military, technological, and environmental transformations in American history—as well as movements that sought and failed to bring about such transformations. We also expect the program to examine counterrevolutions and anti-radical backlash and to include sessions and papers that emphasize continuity, challenging the revolutionary character of particular moments, movements, or trends in American history.

Finally, we welcome sessions that explore the relationship of the United States to various sorts of revolutions in the rest of the world, as well as those that examine revolutions in the interpretation of American history. Contact information:

OAH Annual Meeting  
112 North Bryan Avenue  
Bloomington, IN 47408-4199  
Phone: 812-855-9853  
Fax: 812-855-0696  
e-mail: meetings@oah.org  
website: www.oah.org/meetings/2004/

This announcement was submitted via the H-Net Announcements Website. Find it at:

www.h-net.msu.edu/announce/show.cgi?ID=131098

### Bryce Poe II

My name is Bryce Poe III, son of Gen. Bryce Poe II, USAF (Ret.), former commander of Air Force Logistics Command at Wright-Patterson AFB, Ohio. My family and I are looking for interesting, lost, and untold stories involving our father. My father was in the middle of writing a book just before he passed away in November 2000. We would like to have additional stories to complete his book. If

you feel you have an experience or encounter that would be useful to us, no matter the length, we would love to hear from you. You may contact us at:

The Poe Family  
579 Belle Meade Farm Drive  
Loveland, Ohio 45140  
(513) 383-3005

## Reunions

The **Pilot Class 43-D Association** reunion will be held May 7-11, 2003, at the Red Lion, Colorado Springs. Contact: Col. Jack Patton  
4530 Winewood Village DR.  
Colorado Springs, CO 80917  
(719) 637-3097

or

Frank Dutko  
(850) 932-3467  
e-mail: duke43d@hotmail.com

The **USS Atule (SS 403)** reunion will be held May 18-21, 2003. Contact: John R. Rupertus  
Cbcruses@aol.com  
(410) 360-2852

The **Officer Candidate School (OCS) Classes 63A, 63B, 63C, 63D** reunion will be held May 24-26, 2003, in San Antonio, Texas. Contact: Col. Bob Karre USAF (Ret.)  
(210) 945-2113 FAX (210) 945-2112  
e-mail: Icarus@texas.net

The **Recon Rendezvous 2003** reunion will be held September 3-6, 2003, in Fairborn, Ohio. Co-sponsored by the USAF Museum and 55th SRW Association, all USAF units that flew or supported reconnaissance during the Cold War are invited. Contact:

John H. Kovacs  
564 Satrell Dr.  
Fairborn, OH 45532  
e-mail: Jla2c3k@aol.com

or

Bill Ernst  
410 Greenbriar Ct.  
Bellevue, NE 68005  
e-mail: BillErnst@aol.com

## Air Power History

List of Referees,  
Dec. 2001-Dec. 2002

David G. Allen  
William H. Bartsch  
Donald R. Baucom  
August Blume  
George Bradley  
Rebecca Cameron  
David R. Chenoweth  
John Cloe  
James Corum  
George W. Cully  
Richard G. Davis  
Ron Dick  
Robert F. Dorr  
Stanley Falk  
Paul C. Fritz  
Alan Gropman  
Brian S. Gunderson  
Michael Haas  
R. Cargill Hall  
Richard P. Hallion  
Grant T. Hammond  
Paddy Harbison  
Von Hardesty  
William Head  
I. B. Holley  
Perry Jamieson  
Priscilla D. Jones  
John Kreis  
William M. Leary  
Donald S. Lopez  
Mark Mandeles  
Thomas Manning  
Edward Marolda  
Clay McCutchen  
Charles Melson  
Roger G. Miller  
Daniel R. Mortensen  
Bernard C. Nalty  
Jeff Rudd  
David N. Spires  
Rick W. Sturdevant  
Wayne W. Thompson  
Earl H. Tilford, Jr.  
Philip A. True  
George M. Watson  
Kenneth P. Werrell  
Herman S. Wolk  
William T. Y'Blood  
James Young

---

## NOTES FROM THE PRESIDENT OF THE AIR FORCE HISTORICAL FOUNDATION

As the Air Force Historical Foundation approaches its fiftieth anniversary in 2003, I am pleased to report the Foundation continues to fulfil its mission of preserving, perpetuating, and publishing the history and traditions of the United States Air Force, its predecessor organizations, and the airmen of both genders and all races, whose lives and dreams were devoted to flight.

The annual Foundation meeting was held at Andrews Air Force Base on October 16, 2002. The highlights of the meeting follow:

1. Aronhalt, Stringer & Company completed their annual audit for FY 2001 (June 1, 2001-May 31, 2002) and determined the Foundation's financial operations conform to generally accepted accounting principles.

2. The Foundation's annual budget fluctuates significantly from year to year. While expenses are generally stable, income can fluctuate dramatically. For example, the Foundation enjoyed revenue over expenses of \$10,000 in FY 2001. However, income from important sources in FY 2001 will not reoccur in FY 2002. The Foundation expects reduced interest and dividends from its mutual fund and other financial instruments, plus cancellation of the Air Force's annual purchase of our book, *A Few Great Captains*. The reductions are expected to be counterbalanced by other foundation activities, as discussed below.

3. Participants discussed symposium possibilities for 2003 — the centennial of flight year. One major possibility is that the symposium will be jointly sponsored by the Foundation and the RAF Historical Society, covering air power history from the early twentieth century through Desert Storm. A final decision will be made in the spring.

4. The members agreed that trustees over the age of 75 should be designated "Trustee Emeriti." They will, however, be encouraged and expected to continue to participate fully in Foundation activities.

5. A trustee committee led by Lt. Gen. Earl Brown, USAF (Ret.), including Maj. Gen. Charles Link, USAF (Ret.), and CMSAF Sam Parish, USAF (Ret.) will develop a slate of nominees for the next Foundation president. President of the foundation since 1996, General Smith agreed to remain in office until the next annual meeting.

6. Colonel Marston reported that the Foundation's illustrated history, *The Air Force*, is now in bookstores. It makes an excellent holiday gift and it is hoped air power enthusiasts will place it on their wish list. The Foundation's book on Air Force technology, entitled *Chasing the Silver Bullet: USAF Weapons Development from Vietnam to Desert Storm*, will be in bookstores in the spring. It will provide useful insights into the decision-making processes that have resulted in the USAF being the most capable air force in the world.

7. Annual and lifetime membership fees have not changed in more than ten years, while the cost of doing business has risen steadily. The trustees voted that, effective January 1, 2003, lifetime membership will be \$750 and will include a complimentary copy of *The Air Force*. Annual individual membership will be \$45 per year. The annual institutional membership will be \$55 per year. The \$35 membership fee for two years for enlisted members, junior officers and students will remain as it is today.

8. *Air Power History* and its predecessor magazines have been published continuously since 1953. It remains the primary means of preserving, perpetuating, and publishing the history and traditions of American aviation. The trustees presented a special vote of appreciation to Jack Neufeld, editor; Dr. Richard Wolf, layout and typesetting; and Brig. Gen. Brian Gunderson, USAF (Ret.), publisher; and other staff members. Thanks to them, *Air Power History* remains one of the finest air power journals of its kind in America and a benchmark of excellence.

9. General Smith noted that the Foundation's 2002 Combined Federal Campaign is well on its way. Every contribution, large or small, counts. Contributions can be made by check to the Air Force Historical Foundation, 1535 Command Drive, Ste. A-122, Andrews AFB, MD 20762-7002, or by payroll deduction (CFC #2138).

10. For years, the Foundation has depended on four basic activities to foster air power history: *Air Power History* magazine, the book program, biennial symposia, and the awards program. Participants at the annual meeting heard a report on the exploration of new steps that should expand the Foundation's outreach. One is to transform our website, [www.afhistoricalfoundation.com](http://www.afhistoricalfoundation.com) into a modern outreach instrument.

(Continued next column)

## USAF Museum Events

January 16-March 31, 2003  
Century of Flight Aviation Art Exhibit

### 2003 Lecture Series

January 14, 2003

Col. David Eberly, USAF (Ret.)  
"An Airman's Faith: Inside Saddam's Prisons"

February 27, 2003

Lt. Gen. Michael C. Short, USAF (Ret.)  
"Lessons for Airmen from the Kosovo and Afghanistan Experience"

March 19, 2003

Mr. Robert Petersen  
"The Wright Brothers and the Birth of Aviation in Dayton, Ohio"

April 17, 2003

Brig. Gen. Robinson Risner, USAF (Ret.)  
"The Man with the Tired Guardian Angel: My 33 Years of Flying Fighters for Uncle Sam"

May 22, 2003

Dr. William H. Bartsch  
"MacArthur's Pearl Harbor: The Destruction of American Air Power in the Philippines: December 8, 1941"

Contact:  
USAF Museum  
Special Events Division  
(937) 255-8046 ext. 312/490/491/492  
Public Affairs Division  
(937) 255-4704 ext. 330/331/332/333  
website: [www.wpafb.af.mil/museum](http://www.wpafb.af.mil/museum)

---

(Continued from previous column)

The possibility of gifts to the Foundation from members and friends is also being explored.

A personal note. The twenty-first century is challenging the United States Air Force in ways unforeseen just two years ago. As we celebrate the Centennial of Flight in 2003, I encourage all Americans, and especially our Air Force family, to remember: the Air Force is an institution, a calling, and a way of life. America's air power history and heritage is the mortar that binds our Air Force family into one of America's greatest institutions. Renew your membership and encourage others to join the Air Force Historical Foundation at [www.afhistoricalfoundation.com](http://www.afhistoricalfoundation.com). Help us preserve America's air power history and heritage.

---

# THE AIR FORCE

Published by: The Air Force Historical Foundation  
and Hugh Lauter Levin Associates, Inc.

General James P. McCarthy, USAF(Ret)

Editor-in-Chief

Colonel Drue L. DeBerry, USAF(Ret)

Editor

For members of the Air Force Historical Foundation, a very special offer. Purchase this fine volume for only \$60— 20% off the bookstore price of \$75.

For details contact the Foundation's Executive Director, Col. Joseph A. Marston, USAF(Ret) at:

Voice: (301) 981-2139

Fax: (301) 981-3574

E-mail: [afhf@earthlink.net](mailto:afhf@earthlink.net)



Support the  
Air Force Historical Foundation  
through the United Way and  
Combined Federal Campaigns

Corporate and federal employees may make charitable contributions to the **Air Force Historical Foundation** through the United Way and Combined Federal Campaigns (CFC). Each year, these campaigns support local charities by encouraging employees to participate and designate the charities (AFHF # 2138) they wish to support. Employees may make donations by regular payroll deductions or they may submit a check. Donations are anonymous unless otherwise specified. The campaign period runs from September through December of each year.

## Support Air Force History—Designate #2138

The Foundation sincerely appreciates our CFC contributors. *Every* gift makes a difference.

## Maurer Maurer Air Force Historian

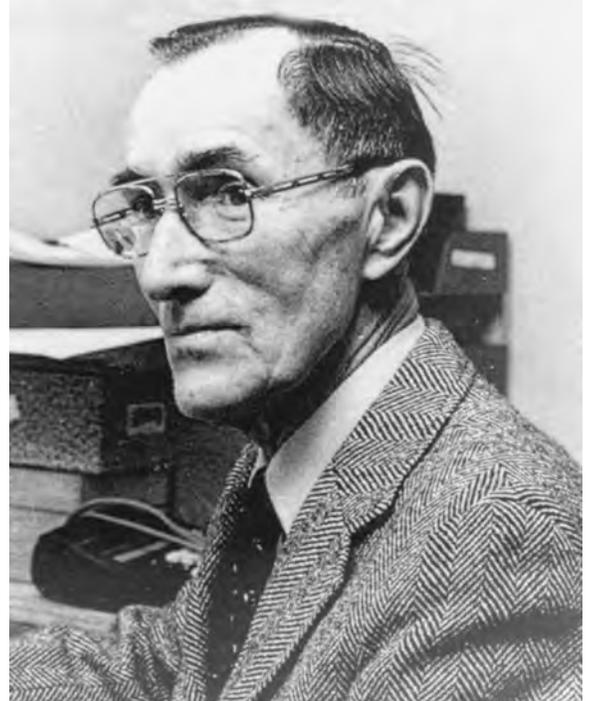
Dr. Maurer Maurer, a longtime historian in the U.S. Air Force History Program died on September 22, 2002. He was eighty-eight.

A native of Ohio, he earned the B.S. degree from Miami University, and the M.A. and Ph.D. degrees from The Ohio State University. His first position as an official historian was with Air Materiel Command, at Wright-Patterson AFB, Ohio, from 1950 to 1955. At the same time he was an adjunct history professor at Wittenberg and Sinclair Colleges.

In 1955, he accepted a position at the USAF Historical Division, Maxwell AFB, Alabama, which was successively redesignated the Historical Research Division (1969), the Albert F. Simpson Historical Research Center (1972), the USAF Historical Research Center (1983), and the Air Force Historical Research Agency (1991). At Maxwell AFB, Dr. Maurer held the academic rank of professor of military history in the Air University. Over the years, until his retirement in 1983, he served as the assistant to the Air Force Historian, director of research, chief of the center, and senior historian.

His publications include seven books and numerous monographs on military aviation history, including the four-volume *The U.S. Air Service in World War I*; *Air Force Combat Units of World War II*; *Combat Squadrons of the Air Force, World War II*; and *Aviation in the U.S. Army Air Arm, 1919-1939*. Pursuing his personal interests, Dr. Maurer wrote several articles on music in Colonial America and after retirement prepared a two-volume history of the Frazer Memorial United Methodist Church.

He is survived by his wife, Julia, a daughter, two grandchildren, and a sister.



## Guidelines for Contributors

We seek quality articles—based on sound scholarship, perceptive analysis, and/or firsthand experience—which are well-written and attractively illustrated. The primary criterion is that the manuscript contributes to knowledge. Articles submitted to *Air Power History* must be original contributions and not be under consideration by any other publication at the same time. If a manuscript is under consideration by another publication, the author should clearly indicate this at the time of submission. Each submission must include an abstract—a statement of the article's theme, its historical context, major subsidiary issues, and research sources. Abstracts should not be longer than one page.

Manuscripts should be submitted in triplicate, double-spaced throughout, and prepared according to the *Chicago Manual of Style* (University of Chicago Press). Use civilian dates and endnotes. Because submissions are evaluated anonymously, the author's name should appear only on the title page. Authors should provide on a separate page brief biographical details, to include institutional or professional affiliation and recent publications, for inclusion in the printed article. Pages, including those containing illustrations, diagrams or tables, should be numbered consecutively. Any figures and tables must be clearly produced ready for photographic reproduction. The source should be given below the table. Endnotes should be numbered consecutively through the article with a raised numeral corresponding to the list of notes placed at the end.

If an article is typed on a computer, the disk should be in IBM-PC compatible format and should accompany the manuscript. Preferred disk size is a 3 1/2-inch floppy, but any disk size can be utilized. Disks should be labelled with the name of the author, title of the article, and the software used. WordPerfect, in any version number, is preferred. Other word processors that can be accommodated are WordStar, Microsoft Word, Word for Windows, and AmiPro. As a last resort, an ASCII text file can be used.

There is no standard length for articles, but 4,500-5,500 words is a general guide.

Manuscripts and editorial correspondence should be sent to Jacob Neufeld, Editor, c/o *Air Power History*, P.O. Box 10328, Rockville, MD 20849-0328, e-mail: [neufeldj@starpower.net](mailto:neufeldj@starpower.net).

