

Foulois, Fort Sam Houston at the front lines developing aerial photography, reconnaissance

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Aerial photography can trace its early history to 1858, when French photographer and balloonist Gaspar Felix Tournachon took a photo of the French village of Petit-Becetre from a tethered hot-air balloon 80 meters (approximately 270 feet) above the ground.

As improvements in photographic technology made it easier to take cameras into the skies, pioneers also used kites, rockets and even pigeons to carry their cameras into the sky.

However, the roots of military aerial reconnaissance and photography are planted much closer to home, when Benjamin Foulois sowed the seeds of the idea at Fort Sam Houston in the early 20th Century.

It was no easy task for Foulois to sell the idea or manned aerial reconnaissance to a skeptical U.S. Army leadership, especially to the cavalry arm which considered itself the elite and sole proprietor of reconnaissance.

In typical abrasive Foulois fashion, he wrote that "the airplane would make the cavalry obsolete," in his thesis titled "The Tactical and Strategic Value of Dirigible Balloons and Aerodynamic Flying Machines," while he was a student at Signal Corps School at Fort Leavenworth, Kan., in December 1907.

He also recognized the application of photographic technology, and anticipated the need for air-ground communications through the "wireless telephone."

Foulois wrote that "a modern military aero plane could not only reconnoiter the terri-



Photo courtesy George Eastman House International Museum of Photography and Film, Rochester, N.Y. Photographer James Hare (left) sits aboard the new 1910 Wright "B" aircraft purchased by R.F. Collier, owner of Collier's magazine, who lent the U.S. Army the airplane in March 1911 after the original 1909 Wright Flyer, Signal Corps No. 1 was retired. The Collier plane, together with a Wright factory pilot, Phillip Parmalee (right), arrived in San Antonio in February 1911, and Lt. Benjamin Foulois began to learn to fly the newer type aircraft. During the next several weeks, these two men demonstrated the advantages to be derived from using the airplane for photographic reconnaissance as well as courier duties between military units.

tory in front of an army more thoroughly and in a fraction of time, but could photograph all of its main features and have the finished prints in the hands of the commander in chief in a very short space of time."

Later that month, Foulois was assigned to conduct trials on motorized, lighter-than-air craft. The dirigible service proved short-lived, as the corrosive effects of weather and the hydrogen gas used to lift the ship caused the gasbag to leak with increasing severity. The dirigible was condemned and sold at auction.

After his experience with the dangerous and flimsy Army Dirigible No. 1, he came away unimpressed and became a vocal critic of the dirigible, recommending that they be abandoned. Foulois

was convinced the future of aerial reconnaissance was not in what he described as "ungainly bags of gas." He even recommended to his superiors to stop making them spend the money developing airplanes.

Unfortunately, Foulois' frank assessment didn't sit well with his superiors, and although one of the two candidates selected to be trained as an airplane pilot, he was banished from the program in October 1909 and sent to France as a delegate to the International Congress of Aeronautics.

He returned in November 1909 as the only officer detailed to the Signal Corps' Aeronautical Division. At that time, he had only 54 minutes of training in the Wright Flyer and had not soloed.

Foulois was then assigned to move the flying program to Fort Sam Houston, because of inclement winter weather at College Park, Md. Foulois and eight enlisted men disassembled the Army's one and only airplane, Signal Corps No. 1, and shipped it to Texas in 17 crates. They reassembled it after building a shelter on the Arthur MacArthur Parade Field used for cavalry drills.

Foulois would continue to push the worth of heavier-than-air craft and show their practical advantages. On March 2, 1910, after training himself, Foulois made his first solo at 9:30 a. m. and crashed S.C. No. 1 on its second landing, ultimately achieving an altitude of 100 feet and a speed of 50 mph.

He flew the repaired craft five times on March 12, and

received written instruction by mail from the Wright brothers.

Until 1911, Foulois remained as the Army's sole aviator and innovator. He installed a leather seat belt strap on the S.C. No. 1, and then bolted wheels from a piece of farm machinery on the landing skids to provide the first landing gear.

The Army was still not convinced of the worth of the airplane and that led Foulois to request to have his aircraft participate in exercises planned for the maneuver division formed along the Mexican border in 1911. The Army agreed, but told him not to interfere.

On March 3, 1911, near Fort McIntosh at Laredo, Texas, Foulois and Wright-trained pilot Philip Orin Parmalee demonstrated the use of airplanes in support of ground maneuvers. They made the first official military reconnaissance flight in history, looking for Army troops between Laredo and Eagle Pass, Texas, with a ground exercise in progress.

Then on March 16, one day after being ordered to join Maj. Gen. John J. "Black Jack" Pershing's Punitive Expedition into Mexico, Foulois was in the air making the first reconnaissance over foreign territory, venturing over the border to search for signs of the Mexican revolutionary Pancho Villa.

Soon after that flight, Foulois rented the Wright "B" Flyer privately owned by Robert J. Collier, owner of the Collier's Weekly magazine for a nominal fee of one dollar. Foulois took up a photographer from the magazine for a

AERIAL PHOTOGRAPHY

PHOTO from AB20

few flights, and the photographer took a number of pictures of the terrain and established another first – the beginning of aerial photo reconnaissance and aerial map making.

However, on their second aerial photography mission, Foulois and Parmalee crashed the rented airplane in the Rio Grande River.

At the outset of World War I, the military on both sides of the conflict saw the value of using the airplane for reconnaissance work, but didn't fully appreciate the potential of aerial photography.

Initially, aerial observers, flying in two-seater airplanes with pilots, did aerial reconnaissance by making sketch maps and verbally conveying conditions on the ground. They reported on enemy positions, supplies, and movements; however, some observers tended to exaggerate or misinterpret conditions.

In some cases, their observations were based on looking at the wrong army. From above, identifying one Soldier from another was not easy. One time a German observer indicated that an English unit was running around in great disarray and appeared to be in a state of panic. The English were playing soccer.

Some English observers started using cameras to record enemy positions and found aerial photography easier and more accurate than sketching and observing. The aerial observer became the aerial photographer, and soon all of the nations involved in the conflict were using aerial photography.

One of the early pioneer of aerial photography for wartime reconnaissance and military intelligence was

Friedrich Wilhelm "Fred" Zinn, a volunteer American aviator who flew with French Armee de l'Air Forces in World War I

When the Battle Creek, Mich., native was visiting France in August 1914, he joined the French Foreign Legion shortly after the outbreak of World War I. He served on the Western Front until Feb. 1, 1916, when he was wounded for the second time during a German artillery attack.

Zinn transferred to the French Aéronautique Militaire on Feb. 14, 1916, where he served as gunner and bombardier with Escadrille F-14 from Dec. 12, 1916, until Oct. 21, 1917. Zinn often augmented his bombing duties by taking reconnaissance photographs of enemy lines before returning to base.

Zinn was one of the first aviators who attempted to photograph enemy troop positions from the air to assist commanders on the ground. This had previously been done from manned balloons, but they were vulnerable to enemy fire and had to be kept behind the lines.

By flying directly over enemy positions and taking photographs, Zinn provided French commanders with a far better view of the battlefield, and the techniques he and others developed soon became standard practice for both sides in the trench warfare-style conflict.

He was decorated twice by the French government for bravery for flying low over enemy lines on these reconnaissance missions. Although not formally assigned to the American Lafayette Escadrille, Zinn was recorded as an observer for the Escadrille, presumably while taking aerial photographs.

After the United States entered the war in 1917, Zinn entered the U.S. Army Air Service as a captain and was attached to American General Headquarters at Chaumont until the Armistice on Nov. 11, 1918.

By the time of the Armistice, the Germans and the British were recording the entire front at least twice a day. Both countries possess up-to-date records of their enemy's trench construction. England estimated that its reconnaissance planes took half a million photographs during the war, and Germany calculated that if all of its aerial photographs were arranged side by side, they would cover the country six times.

The war brought major improvements in the quality of cameras; photographs taken at 15,000 feet (4,572 meters) could be blown up to show footprints in the mud.

Cameras specially designed for use in airplanes were being produced, including thermal infra-red detectors. Stability and shutter speed remained a problem, and towards the end of the war, Sherman M. Fairchild developed a camera with the shutter located inside the lens.

This design significantly improved the quality of the images, and became the standard for aerial camera systems over the next 50 years.

Since those early days, aerial photography and reconnaissance has come on a long journey from Foulois and Signal Corps No. 1, to the U-2 and SR-71 spy aircraft used in the 1960s and 1970s, to today's reconnaissance satellites, but it's a journey that took its first steps at Fort Sam Houston.