

The First United States Army Aircraft Accident Report

(September 1908)

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The first U.S. Military aviation mishap involving powered flight occurred before the Army even owned an airplane. The crash was at Fort Myers, Virginia, on 17 September 1908. The occasion was the final flight in the acceptance trials of the first aircraft purchased from the Wright brothers.

Lieutenant Thomas E. Selfridge was flying with Orville Wright. After they had been airborne about 3 or 4 minutes, the aircraft suddenly nosed over and crashed at a steep angle. Lt Selfridge was fatally injured and died several hours later. Orville was seriously injured and hospitalized for 7 weeks.

Thus, the first powered flight of a military man ended in his death, not a very auspicious beginning for military aviation and flying safety.

The Army ordered an investigation to learn the cause of the mishap. The investigation consisted of observing the remains of the crashed aircraft and taking witness statements. The board found a new, longer propeller contacted a rudder guy wire and eventually caused the wire to come out of its socket. This allowed the rudder to fold sideways, and the pilot lost control.

This first mishap investigation was very unsophisticated when compared to our investigations today. But so were the aircraft. The purpose was the same — to find out what happened so it could be prevented from happening again.

And it worked. The Wright brothers designed an improved version of their aircraft with structural changes which ensured the propellers could not hit any guy wires. This marked the beginning of the flight safety program so familiar to us today.

*Reprinted from FLYING SAFETY, NOVEMBER 1993
by Lt Col Jimmie D. Martin (RET)*

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**War Department
Office of The Chief Signal Officer,
Washington Aeronautical Division**

February 19, 1909

The Chief Signal Officer, U. S. Army

Sir:

I have the honor to submit the following detailed report of the accident to the Wright Aeroplane at Ft. Myer, Virginia, on September 17, 1908.

The Aeronautical Board of the Signal Corps composed of Major C. McK. Saltzman, S. C., Captain Chas. S. Wallace, S. C., and Lieut. Frank P. Lahm, S. C., assisted by Lieut. Sweet, of the Navy, and Lieut. Creecy, of the Marine Corps, also Mr. Octave Chanute and Professor Albert Zahm, made a thorough examination on the morning of September 18th, the day after the accident, of the aeroplane and the ground, and carefully examined witnesses of the accident.

The following is their report:

"That the accident which occurred in an unofficial flight made at Ft. Myer, Va., at about 5:18 p. m., on September 17th, 1908, was due to the accidental breaking of a propeller blade and a consequent unavoidable loss of control which resulted in the machine falling to the ground from a height of about seventy-five (75) feet.

The Board finds that First Lieutenant Thomas E. Selfridge, First Field Artillery, (attached to the Signal Corps of War Department orders and assigned to aeronautical duty), accompanied Mr. Wright, by authority, on the aeroplane, for the purpose of officially receiving instruction, and received injuries by the falling of the machine which resulted in his death."

The detailed examination of witnesses referred to in the above paragraph is given herewith.

Sergeant Daley, Battery "D", 3d Field Artillery, was on the artillery guard house porch at the time of the accident and testified that he saw the rear rudder collapse and fall to the front and to the right, then after the machine had advanced about 60 feet, the broken propeller blade fell to the ground. Sergeant Daley gave the impression of being a reliable witness.

Private Allen, Troop "F", 13th Cavalry, was the mounted sentinel

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stationed in front of the lower cemetery gate. He was about 30 yards from where the aeroplane struck the ground. He testified that he heard a loud noise, saw the propeller blade fly, and saw the machine start down, then saw it drop rapidly head first. While the machine was falling, he was occupied trying to get out of the way with his horse. He said the men in the machine tried to talk while falling; that when he went up to the machine after it was on the ground, Mr. Wright's head was hanging down between two wires which crossed on his chest. His right arm was extended under Lieut. Selfridge as though to hold him up. He exclaimed "Oh, my arm!" He said that the front ends of the skids struck the ground first.

Corporal Forrester, Battery "D", 3d Field Artillery, was the noncommissioned officer of the guard on duty around the field. He was mounted and was just in the rear of the aeroplane shed. He heard the propeller snap, then saw nothing until the machine was on the ground. Corporal Forrester and Private Allen demonstrated to the Board the position in which Lieut. Selfridge and Mr. Wright were found.

Private Mincey, Battery "D", 3d Field Artillery, was stationed as a mounted sentinel in front of the south end of Battery "E's" gun shed. He testified that he heard a pop, looked up and saw the machine advance a certain distance, then drop straight down.

Mr. Chanute was 15 feet south of the press tent and 560 feet west of the point where the machine struck, that is on the opposite side of the aeroplane shed. Mr. Chanute testified that the machine was perhaps 60 feet up and circling the field to the left. He went 40 or 50 feet to the south so as not to be behind the tents between himself and the aeroplane shed. When the machine was 300 feet from him, the propeller flaked off or snapped, and the piece fluttered down to the ground; the aeroplane maintained its level for 60 or 100 feet, then oscillated and pitched down with the left side depressed and disappeared from his view behind the bushes. He did not see it strike. When he examined the broken propeller blade, Mr. Chanute testified that the wood was brittle and over seasoned, or kiln dried. A few days later Mr. Chanute informed me that he thought the propeller blade had struck the upper guy wire of the rear rudder and had torn the end of the wire from its attachment to the rudder.

Dr. George A. Spratt, of Dayton, Ohio, a friend of Mr. Wright's, was at the upper end of the field near the starting point at the time of the accident. His written statement of his observations of the accident is attached hereto marked "A".

Sergeant Sweeney, post ordnance sergeant at Ft. Myer, was at the battery guard house at the time of the accident. Mr. Charles Taylor, a mechanic employed by Mr. Wright, was also examined. Their testimony was not particularly pertinent.

On October 31, 1908, I talked with Mr. Wright at the hospital at Ft. Myer and learned from him the following facts:

He said he heard a clicking behind him about the time he crossed the aeroplane shed; He decided to land at once but as there was scarcely time to do it before reaching the cemetery wall, he decided to complete the turn and head toward the upper end of field. He thought he was about 100 feet high at the time the propeller broke and that he descended more or less gradually about 40 feet, then the machine dropped vertically. He shut off the engine almost as soon as the clicking began, then corrected a tendency to turn which the machine seemed to have. All this time the machine was coming down pretty rapidly. He pulled the lever governing the front rudder as hard as possible but the machine still tipped down in front, so he pushed the lever forward and pulled it back again hard, thinking it might have caught or stuck. At the time of our conversation, October 31st, he said he thought that the rear rudder had fallen sideways and the upward pressure of the air on it probably threw the rear of the machine up and the front down and that this accounted for its failure to respond more readily to the front rudder. He stated that at a height of about 60 feet the front end of the machine turned nearly straight down and then it fell. About 15 feet from the ground it again seemed to respond to the front rudder and the front end came up somewhat, so that it struck the ground at an angle of about 45 degrees.

The following is a list of witnesses in addition to those whose testimony is given above:

Mr. Magoon, Superintendent of Arlington Cemetery, was half way between the two gates of the cemetery and just inside the wall.

The following reporters were at the balloon tent:

Mr. Heiss, of the New York World,
Mr. Duganp, of the United Press,
Mr. Smith, of the Baltimore Sun,
Mr. McMahan, of the Washington Herald

The following witnesses were near the new artillery stable, west of the point where the accident occurred:

Mr. Robert F. Crowley, Arlington, Va.
Mr. H. C. Ball, Clarendon, Va

Mr. E E Speer, Ballston, Va.

Mr. R. Tall, Ballston, Va.

I examined most of the witnesses whose testimony is given above, immediately after the accident, on the field I was present when the Aeronautical Board made its examination on the following day, September 18th, and talked at various times with Mr. Wright, Mr. Chanute, Professor Zahm, and others relative to the accident. At the time of the accident I was holding my horse and watching the machine from the upper end of the field near the starting point. When the machine struck, I galloped at once to the spot.

On September 17th, Mr. Wright was almost ready to begin his official trials so he put on a set of new and longer propellers that day for the purpose of tuning up the speed of his machine preparatory to making his official speed trial. These propellers were probably 9 feet in diameter; the ones in use up to that time were probably 8 feet 8 inches in diameter.

Lt. Selfridge was to leave for Saint Joseph, Missouri, for duty in connection with Dirigible No. 1, on September 19th and was very anxious to make a flight before leaving, so Mr. Wright, at my suggestion, had said a few days before that he would take him up at the first opportunity. On September 15th and 16th, high winds prevented his making a flight. On September 17th, the instruments at the aeroplane shed recorded a northeast wind of four miles an hour. At 4:46 p. m. the aeroplane was taken from the shed, moved to the upper end of the field and set on the starting track. Mr. Wright and Lieut. Selfridge took their places in the machine, and it started at 5:14, circling the field to the left as usual. It had been in the air four minutes and 18 seconds, had circled the field 4 1/2 times and had just crossed the aeroplane shed at the lower end of the field when I heard a report then saw a section of the propeller blade flutter to the ground. I judge the machine at the time was at a height of about 150 feet. It appeared to glide down for perhaps 75 feet advancing in the meantime about 200 feet. At this point it seemed to me to stop, turn so as to head up the field toward the hospital, rock like a ship in rough water, then drop straight to the ground the remaining 75 feet. I had measurements taken and located the position where the machine struck, 304 feet from the lower cemetery gate and 462 feet from the northeast corner of the aeroplane shed. The pieces of propeller blade was picked up at a point 200 feet west of where the aeroplane struck. It was 2 1/2 feet long, was a part of the right propeller, and from the marks on it had apparently come in contact with the upper guy wire running to the rear rudder. This wire, when examined afterward, had marks of aluminum

paint on it such as covered the propeller. The left propeller had a large dent, and the broken piece of the right propeller had a smaller dent indicating that the broken piece flew across and struck the other propeller. The upper right had guy wire of the rear rudder was torn out of the metal eye which connected it to the rear rudder. I am of the opinion that due to excessive vibration in the machine, this guy wire and the right hand propeller came in contact. The clicking which Mr. Wright referred to being due to the propeller blade striking the wire lightly several times, then the vibrations increasing, it struck it hard enough to pull it out of its socket and at the same time to break the propeller. The rear rudder then fell to the side and the air striking this from beneath, as the machine started to glide down, gave an upward tendency to the rear of the machine, which increased until the equilibrium was entirely lost. Then the aeroplane pitched forward and fell straight down, the left wings striking before the right. It landed on the front end of the skids, and they as well as the front rudder were crushed. Both Mr. Wright and Lieut. Selfridge were on their seats when the machine struck the ground, held there by wire braces which cross immediately in front of the two seats. It is probable that their feet struck the ground first, and as the machine dropped nearly head first, they were supported by these wire braces across their bodies. When I reached the machine, the mounted sentinels at the lower end of the field were entering at the left hand end between the two main surfaces, which were now standing on their front edges. I found Mr. Wright lying across the wires mentioned above, trying to raise himself, but unable to do so. He was conscious and able to speak, but appeared very badly dazed. He was cut about the head where he had struck the wires, and possibly the ground. Lieut. Selfridge was lying stretched out on the wires, face downward, with his head supported by one of these wires. He died at 8:10 that evening of a fracture of the skull over the eye, which was undoubtedly caused by his head striking one of the wooden supports or possibly one of the wires. He was not conscious at any time. With the assistance of a couple of enlisted men I removed Mr. Wright from the machine and placed him on the ground where he was immediately taken charge of by Army surgeons, among them Major Ireland, who were among the spectators at the time of the accident. Lieut. Selfridge was carried out immediately afterward and similarly cared for. At least two civilian surgeons among the spectators, whose names are not known, assisted in caring for both of them. Within ten minutes they were carried to the post hospital on litters by hospital corps men and were placed on the operating table. Captain Bailey, Medical Corps, U.S. Army, was in charge of the hospital at the time. He was assisted in the operating room by the surgeons mentioned above.

In the meantime the mounted sentinels had been placed around the aeroplane to keep back the crowd, a very difficult matter at that time. Mr. Wright was found to have two or three ribs broken, a cut over the eye, also on the lip, and the left thigh broken between the hip and knee. He was in the hospital at Ft. Myer for six weeks under the care of Major Francis A. Winter, and at the end of that time went to his home at Dayton, Ohio. Lieut. Selfridge was buried with full military honors at Arlington Cemetery on September 25th.

The wings on the right side of the machine were not badly damaged, those on the left side which struck the ground first were crushed and broken. Apparently the front rudder, skids, and left wings received most of the force of the fall. The rear rudder as shown on the accompanying photographs, exhibits "C", "D", and "E" was thrown down on the rear end to the skids and on the main body of the machine probably due to the shock on striking the ground. The gasoline tank was damaged sufficiently to allow the gasoline to leak out. The water cooler of the engine was somewhat twisted; the engine itself was not badly damaged and could probably be very easily put in running order again. I had the aeroplane taken to pieces and removed to the aeroplane shed the evening of the accident. It was afterward shipped to Dayton, Ohio, by Mr. Wright's direction.

Very Respectfully,
(Signed) Frank P. Lahm
1st Lieut. Signal Corps.

"A"

Gentlemen:

The machine was completing the last quarter of the turn when the portion of the blade was thrown off. It was apparently the blade toward the center of the circle being described by the course of the machine, that was broken. The machine completed the circle and was headed toward the starting derrick, the engine running and the flight apparently undisturbed. It proceeded about 200 feet and started to descend assuming a negative angle (i. e. the chord of the surfaces became directed toward the earth).

Its elevation was probably 65 feet when the descent began. At about 25 feet above the ground its angle of incidence became positive (i.e. the chord of the surfaces directed skyward). It did not gain sufficient horizontal velocity by the downward and forward pitch for support. It again took a negative angle of incidence and struck the ground. The forward framing struck first the side to the left of the aviators slightly in advance of the side to the right. The angle at which the surfaces struck seemed to be about 40°.

The stability of the machine considered sideways was disturbed and unsteady. The motor was stopped during the first pitch forward. The course of the descent may be shown diagrammatically, as it appeared to me, by the following dotted lines. The accompanying straight lines show the angle of incidence at the point in the course at which they are placed. The cross indicates the point of accident to the propeller.

*Submitted by,
Geo. A. Spratt*

Copy Appendix No. 1 Accidents - Misc.

PROCEEDINGS OF THE AERONAUTICAL BOARD OF THE SIGNAL CORPS WHICH CONVENED AT FORT MYER AT 10:15 A. M., SEPTEMBER 18 1908, FOR THE PURPOSE OF INVESTIGATING AND REPORTING UPON THE CAUSE OF THE ACCIDENT TO THE WRIGHT AEROPLANE WHICH RESULTED IN THE DEATH OF FIRST LIEUTENANT THOMAS E. SELF-RIDGE, FIRST FIELD ARTILLERY.

Present Major C. McK. Saltzman, Captain Charles S. Wallace and Lieutenant F. P. Lahm.

Absent: Major George O. Squier and Lieutenant Benjamin D. Foulois.

There were also present Lieutenant George G Sweet, U. S. N., and Lieutenant Richard B. Creecy, U.S.M.C., Officers officially detailed for the purpose of observing and reporting upon aeronautical work of the signal corps.

With the exception of Lieutenant Foulois, all members of the Board and Lieutenants Sweet and Creecy were present at the time of the accident;

The Board visited the scene of the accident, questioned witnesses very carefully and examined the machine.

Mr. Octave Chanute and Professor Albert F. Zahm were present by courtesy during the entire investigation and were consulted by the Board.

Mr. Wright's condition was such as to prohibit the Board consulting or questioning him relative to the accident.

After due deliberation, from the evidence obtainable from all available sources, the Board finds ——

That the accident which occurred in an unofficial flight made at Fort Myer, Va., at about 5:18 p.m. on September 17, 1908, was due to the accidental breaking of a propeller blade and a consequent unavoidable loss of control which resulted in the machine falling to the ground from a height of about seventy-five (75) feet.

The Board finds that First Lieutenant Thomas E. Selfridge, First Field Artillery, (attached to the Signal Corps by War Department orders and assigned to aeronautical duty), accompanied Mr. Wright, by authority, on the aeroplane, for the purpose of officially receiving instruction, and received injuries by the falling of the machine which resulted in his death.

*(Signed) C. McK. Saltzman
Major, Signal Corps, U. S. A., President*

*(Signed) Charles S. Wallace
Captain, Signal Corps, U. S. A., Member*

*(Signed) Frank P. Lahm
1st Lieut. Signal Corps, U. S. A., Recorder*

APPROVED:

*(Signed) George O. Squier
Major, Signal Corps, U. S. Army;
Acting Chief Signal Officer*