

UNITED STATES ARMY  
AVIATION DIGEST

20<sup>th</sup>  
Anniversary  
of  
ARMY  
AVIATION

THE ARMY  
AVIATION STORY

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JUNE 1962



# The Army Aviation Story

Richard K. Tierney

PART I

**T**WENTY YEARS ago this month America was mobilizing for an all-out war effort against the Axis. At Fort Sill, Okla., the Artillery School was a scene of intense activity. But, in odd contrast to the surrounding hustle and bustle, a small group of Army officers and enlisted men patiently marked time as they participated in limited flight and maintenance training programs.

These men were waiting for a decision on the results of a test—a test which led to the birth of Army Aviation. They had evaluated the concept of using light aircraft organic to the Field Artillery to spot targets. After-action reports had been submitted, and for two months the men had been waiting—and hoping they had convinced the War Department that the Artillery needed its own

light aircraft to quickly and effectively detect targets hidden to ground observers.

The group was rewarded for its efforts and patience when the War Department approved organic aviation for the Field Artillery on 6 June 1942. This date is now officially recognized as the birthday of Army Aviation.

Why 6 June 1942? Certainly the United States Army was as-



sociated with aviation and aerial observation much earlier. A review of this early history bears out the major role the U. S. Army played in the development of aviation and aerial observation. But it also reveals why Army Aviation—that is, the concept of aviation in support of the ground battle—had to wait until 1942 to be born.

### THE BALLOONISTS

Another war-torn June 6th also is important in the history of Army Aviation. It was on that date in 1861 that Professor Thaddeus S. C. Lowe arrived in Washington, D. C., to demonstrate a wartime use for balloons. An accomplished balloonist, Lowe was destined to direct the Army's first air arm. He had come to the Nation's Capital to convince government officials that captive balloons could be used as observation platforms and perhaps even direct artillery fire on enemy forces.

Lowe's ideas were not entirely new. Throughout history Army commanders have had observers climbing trees and mountains in an effort to reconnoiter the enemy. Even as Lowe was demonstrating his ideas in Washington, Federal and Confederate troops alike were building observation and signal platforms on the tops of houses and mountains and in trees. In many cases permanent towers were constructed to enable observers to keep an eye on the enemy.

Lowe had several contemporaries, notably John Wise, John La Mountain, and James Allen, who came to Washington for the same purpose with similar ideas. Allen actually was the first balloonist to work with the Army during the Civil War. He also was the first to arrive in Washington (19 April) after the outbreak of hostilities, and on 9

June made his first balloon ascension while associated with the Army.

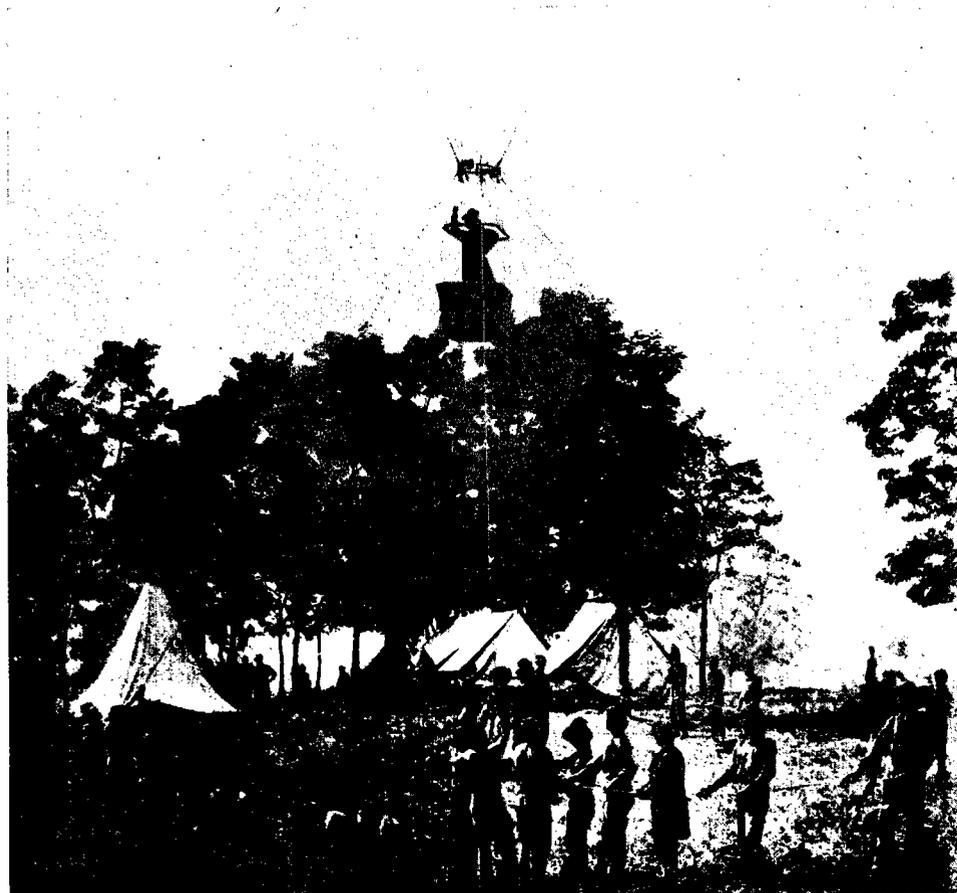
The balloons used by the aeronauts varied in size, holding usually from 10,000 to 25,000 cubic feet of hydrogen. Balloon envelopes were generally made of silk, covered by varnish or other nonporous substance to prevent the hydrogen from escaping. The balloons usually carried a basket large enough to accommodate two people.

All four balloonists worked in an official capacity with the Army, but retained their civilian status and operated independently of one another (although Allen was later employed by Lowe). Wise and Allen met with only limited success. La Mountain was more successful,

but it was Professor Lowe who got the best results from the use of balloons at the front. He sent the first telegraph message from a balloon on 18 June 1861 and successfully directed the first artillery fire from a balloon on 24 September. Primarily due to his efforts the Army's first air arm, the Balloon Corps of the Army of the Potomac, was organized in September 1861. Lowe was the first man to be placed in charge of the Balloon Corps, which remained in existence until June 1863.

### THADDEUS S. C. LOWE

Professor Lowe had brought his balloon, the "Enterprise," with him to Washington. On 11 June 1861 he was invited to the White House where he dis-



cussed his plans with President Lincoln. The President was receptive and promised that serious consideration would be given to the employment of balloons by the Army.

One week later Lowe conducted his first demonstration for the War Department. Accompanied by a telegraph official and an operator, Lowe ascended in the "Enterprise" to an altitude of 500 feet. Aboard was a telegraph instrument (key) attached to a line which ran to the White House via the Alexandria, Va., telegraph office and the War Department. During this ascension Lowe sent the first message transmitted by wire from an air vehicle:

*Balloon Enterprise,  
June 18, 1861*

**TO THE PRESIDENT OF THE  
UNITED STATES**

Sir:

*This point of observation commands an area nearly 50 miles in diameter. The city, with its girdle of encampments, presents a superb scene. I have pleasure in sending you this first dispatch ever telegraphed from an aerial station, and in acknowledging indebtedness for your encouragement for the opportunity of demonstrating the availability of the science of aeronautics in the military service of the country.*

*T. S. C. Lowe*

The experiment was impressive and the next day Professor Lowe was called upon for a repeat performance on the White House lawn for the President and members of his cabinet.

Meanwhile Confederate troop movements in northern Virginia were beginning to menace the security of the District of Columbia. Reports indicated that 20,000 Confederate troops were massing in the vicinity of Ma-

nassas and Fairfax Court House. Since the exact positions of the Confederates were unknown, the Army asked Professor Lowe to take his balloon to Falls Church and determine the location of the enemy. Despite delays in obtaining gas and troops to help move the balloon, Professor Lowe finally got the balloon inflated and moving through the Washington streets. The following report was carried in the *Washington Star*:

Professor Lowe's mammoth balloon was inflated yesterday, and carried through our streets and those of Georgetown. Although the car was near the ground, the monster loomed up above the tallest houses. It was carried across the Alexandria Aqueduct, and in the afternoon was seen riding majestically, high above the Virginia hills, in the vicinity of Fort Corcoran. Many of our citizens were out to take a peep at it; and many wise remarks were hazarded about the probability of the Confederates sending a rifle shot through it and letting the observer down. The reconnoitering will be done by a military officer, who can communicate with those below by a "paper express," that is, the message is weighted with a bullet and run down the cord by being attached to a string.

On 22 June Professor Lowe ascended near Manassas and Fairfax Court House, but reported nothing of importance. The next day he made several ascensions in the Falls Church area, but high winds hampered the operation; again nothing of importance was learned.

Federal plans called for an offensive to be launched across the Potomac River in July, and it appears that extensive use of Lowe's balloon was planned. At any rate Lowe inflated his balloon at the Washington gas works and had it towed to the Falls Church area. There, much to his astonishment, he was

overrun by fleeing Federal troops and terrified spectators who had been routed at Bull Run. Lowe hurriedly returned with his balloon to Fort Corcoran, across the Potomac River from Georgetown.

Meanwhile the Federal troops and the civilians who had traveled to Manassas to witness the "defeat" of the outnumbered Confederates were streaming back into Washington. Their stories of the disaster at Bull Run soon had rumors flying, and Washington officials were expecting the Confederates momentarily to invade the Capital. Lowe relieved their anxiety, however, and squashed the rumors by making several ascents and reporting the movements of the Confederates, who were not following up the victory or endangering Washington. Lowe's efforts not only relaxed a tense situation, but also spared unnecessary, hurried deployment of troops to defend the Capital.

On 2 August 1861 Lowe's observation program received a boost when he received authorization to obtain a new 25,000 cubic foot capacity balloon. This balloon, delivered on 21 August and christened the "Union," was used extensively from 29 August until 1 October in the Washington area. It was from this balloon that the Confederates were discovered building earthworks around Washington.

The deployment of Confederate troops within range of Union guns presented Lowe the opportunity to adjust artillery fire from his balloon. Available records indicate that he first directed artillery fire from a balloon on 24 September 1861 from the Fort Corcoran area. He telegraphed his observations to an artillery officer located over 3 miles away. Range and deflec-

tion corrections also were signaled to a ground observer by flag. Excellent results were obtained and this practice was used extensively in the Peninsula Campaign.

### THE ARMY'S FIRST AIR ARM

The Balloon Corps was added to the Army of the Potomac on 25 September 1861 when instructions from the Secretary of War directed Lowe to construct four additional balloons. Lowe was designated Chief Aeronaut and placed in charge of the new service.

By January 1862, Lowe's balloon operations had expanded considerably. He had seven balloons, and at least four aeronauts were observing along the Potomac. When the Confederates withdrew from the Washington area, the aeronauts were ordered to accompany and support the Army in new campaigns. Thus, balloon operations spread during 1862 and often met with great success in various campaigns, ranging from the Mississippi River, to Old Point Comfort, Va., and south to Mobile, Ala.

However, things were not always rosy for the aeronauts. Frequently balloon operations proved unsatisfactory, and friction grew between Lowe's group and Army commanders. One incident marked the beginning of the end of Lowe's association with the Army and the Balloon Corps. In May 1863 Lowe witnessed the defeat of General "Fighting" Joe Hooker's army by General Robert E. Lee at Chancellorsville. From the vantage point of his balloon, Lowe issued reports on Confederate movements. But it appears the reports were either ignored or could not be used to advantage. At any rate, it seems Lowe became disgusted and shortly after

### Balloons Over Old Point

We learned from a gentleman late last night, whose information is entirely reliable, that two balloons were sent up from Fortress Monroe yesterday. They were attached to the Fort by a rope. What the object of these ascensions was we can of course only conjecture. They were undoubtedly reconnoitering and examining our formidable batteries scattered all around them, and were probably endeavoring to get a bird's eye view of a few of those dreadful masked batteries which everywhere cause the Federalists so much alarm.

PETERSBURG EXPRESS

From "A Century Ago in The Enquirer," *The Columbus Ledger-Enquirer*, June 20, 1961

left the Balloon Corps and returned to exhibition flying.

In June the Army ordered the Balloon Corps to be placed under the jurisdiction of the Signal Corps. But the Signal Corps objected on the grounds that it had neither sufficient funds nor personnel to support the new organization. Consequently, the Balloon Corps was returned to Washington and disbanded later in June 1863.

### THE CONTRIBUTION

The Balloon Corps', and specifically Lowe's, contribution to the concept of Army Aviation cannot be minimized. Here were aerial observers who supported the ground forces just as Army Aviation does today. They provided the ground commander with adjustment of artillery fire; invaluable information concerning troop concentrations and movement, both before and during engagements; and maps and sketches of enemy positions and gun emplacements. Army commanders often counted heavily on this information in the preparation of both strategical and tactical operations. In fact, Union commanders enjoyed enough success with their balloon opera-

tions to attract the attention of Germany's Count Ferdinand von Zeppelin, who came to the United States to observe firsthand the work of the Balloon Corps.

The Confederates also were aware of the effectiveness of the North's Balloon Corps. Confederate Brig Gen E. P. Alexander was quoted as saying, "Even if the observers never saw anything, they would be worth all they cost for the annoyance and delays they caused us in trying to keep our movements out of sight." Eighty years later German officers echoed the same thoughts when speaking of the Army's "Grasshoppers" in World War II.

The balloons did prove bothersome to the South. The Confederates took great pains to camouflage their positions and enforce blackouts. They mounted dummy guns to give the impression of numerous troop concentrations and to deceive the Federals.

The Confederates also thought enough of balloons to employ them for observation purposes. The most successful Confederate aeronaut was Captain John Ran-

dolph Bryan, who made several ascensions in the Yorktown, Va., area. Other notable Confederate aeronauts include Richard Wells and Charles Cevor, who both operated primarily in the Deep South. The South's balloon activities never reached the proportions of the North's and after May 1862 faded from the scene.

Recognizing the significance of Lowe's contribution to the evolution of the Army Aviation concept, the Army has named its primary fixed wing training installation, Lowe Army Airfield (Fort Rucker, Ala.), in his honor.

But the organization of the Balloon Corps of the Army of the Potomac cannot be considered as the birth of Army Aviation. While the concept was readily accepted by Army commanders, too often the available equipment could not do a dependable, satisfactory job.

Poor equipment, unfavorable weather, and a shortage of trained personnel to maintain and handle the balloons proved disastrous to Lowe as well as his independent contemporaries. For example, Wise's services as a military balloonist came to an end when his balloon was being hauled to Ball's Cross Roads to observe the enemy. A breeze came up and blew the balloon into some telegraph wires. The handling guys were severed, the balloon escaped and had to be shot down.

Allen experienced similar troubles. One of his balloons blew up while being inflated and the other was destroyed when the wind blew it into a telegraph pole. This ended Allen's service until he later went to work for Lowe.

La Mountain's balloon, the "Saratoga," was lost when it broke its moorings and disappeared beyond Confederate lines. His only other balloon, the "At-

lantic," had been used extensively and was in bad condition.

La Mountain sought to continue his operations by requesting that the Army assign him one of the balloons under Lowe's command. But this only widened an already serious controversy between the two aeronauts. La Mountain lost the dispute and his operations ended on 19 February 1862.

The internal organization of the Balloon Corps was itself a handicap. Tactical command was under a corps or division commander, who directed operations through a civilian aeronaut charged with command of military personnel handling the balloon. Administration was shuffled from the Topographical Engineers to the Quartermaster Corps to the Corps of Engineers. These circumstances made it most difficult to obtain supplies, personnel or finances.

Another handicap was the fact that the employment of balloons in combat was new to Army commanders. Many times commanders obtained excellent results. But in other cases, they found they could not depend on the Balloon Corps. Often they requested a balloon for observation only to learn it was not available, having been torn and destroyed by tree limbs or telegraph wires, or that inadequate supplies of hydrogen prevented its inflation.

Charges have been made that Army commanders sometimes failed to utilize the Balloon Corps properly. But it must be remembered that the Balloon Corps was new and many commanders simply were not aware of its potential. Also Army commanders were fighting a bloody war and did not always have ample time to experiment on the battlefield.

Still, Lowe and his aeronauts,

despite their disgust and disbandment, were immensely successful. They had proved to many Army commanders that aerial observation could be invaluable in support of the ground commander.

The Balloon Corps was disbanded, but Army commanders did not forget the value of aerial observation. The Cavalry covered ground too swiftly for balloon operations during the Indian Wars, but the concept remained alive in the minds of Army officers and was soon to be resurrected in the Spanish-American War.

### BALLOON CORPS RE-ESTABLISHED

The growth of the Signal Corps and the foresight of such officers as Brig Gen Adolphus W. Greely and Brig Gen James Allen led to the re-establishment of balloon operations, and the incorporation of the dirigible and the airplane within the U. S. Army.

General Greely was Chief Signal Officer from 3 March 1887 until his promotion and transfer, 9 February 1906. He was replaced by General Allen, who carried on the aeronautic policies of his former chief.

A balloon section created in 1892 by General Greely was the beginning of the first all-military aeronautic organization in the U. S. Army.

Signal Corps plans in 1892 called for a balloon section as part of each telegraph train. A balloon secured by Lt William A. Glassford from the French firm of Lachambre was the first obtained for these plans. The balloon was named "General Myer" in honor of the first chief of the Signal Corps. The "General Myer" was used extensively over the next few years until destroyed by high winds.

Despite early enthusiasm, the

## THE ARMY AVIATION STORY



*The Army's "Santiago" during the attack at San Juan Hill, Cuba on 1 July 1898.*

years leading up to the Spanish-American War were lean for Signal Corps balloonists. At the outbreak of the war the Army had only one available balloon, a well worn relic of the Civil War, and no trained personnel to operate it.

Lt Col Joseph E. Maxfield, charged with the organization of two balloon companies, was dismayed to find that his only balloon, when inflated, had the somewhat uneven appearance of a "misshapen pumpkin." The only "modern" feature aboard the basket was a telephone, which replaced the telegraph used in Professor Lowe's day.

This odd shaped balloon—destined to be christened the "Santiago" and to participate in the battle of San Juan Hill—was moved to New York to watch for an anticipated invasion of Manhattan by the Spanish.

Realizing such a bold attack would never materialize, General Greely suggested the balloon be used in Cuba. Despite numerous transportation snarls, the balloon finally arrived in Cuba on 28 June 1898.

Heavy rains and intense heat caused the varnished silk envelope to stick together, and the underbrush had torn it in numerous places. Hurriedly patched with surgical adhesive tape, three ascents were made in the balloon on the afternoon of the 30th. The third aerial reconnaissance was made at the request of the commanding general, Maj Gen William Shafter. The observations provided the Army with valuable information on roads to the front and the location of the Spanish fleet in Santiago harbor.

On the morning of July 1st the Army prepared to launch an attack on San Juan Hill to

destroy the heavily garrisoned blockhouse, the last remaining obstacle on the road to Santiago. Colonel Maxfield was ordered to have his balloon keep pace with the lead units of the Army.

The balloon was sent aloft. According to Colonel Maxfield's observations, it presented a most tempting target as a wagon bore it along with the advancing troops.

A volunteer from New York, Pvt Charles Johnson Post reported:

We heard yells and cheers from the rear of our columns. An observation balloon came into sight high above the jungle. A four-man ground crew held its trail rope and kept the balloon under control. Signal Corps men followed with coils of the rope, which they payed out or took in according to the directions from the basket of the balloon above. Two heads peered over the rim of the basket and occasionally a little note would flutter down. The trail rope led directly down into the Aguadores road; it was a beautiful range marker for the Spanish artillery and infantry, and they promptly used it as such.

Lt Col John D. Miley, Maj Gen William Shafter's aide-de-camp, wrote:

Winding its way among the troops the balloon was soon within a few hundred yards of the Aguadores River. The enemy's musketry fire was already becoming quite spirited, but when the balloon reached this point it was opened upon by a heavy fire from field-guns and musketry fire also increased. The third shell or shrapnel fired at the balloon struck it, and the next one tore it so badly that it at once descended. Time enough, however, was afforded Colonel Derby to discover a road leading from the main road to the left and crossing the Aguadores River four or five hundred yards farther down the stream. This was a most opportune discovery as the main road was congested with troops and the fire so heavy as to tend to demoralize the men.

The "Santiago," too badly damaged to be used again, may

have been responsible for heavy casualties from Spanish artillery fire. But it also seems to have been one of the determining factors in the capture of San Juan Hill. General Greely remarked, "This action enabled the deployment of our troops over two roads, and by doubling the force may possibly have been the determining factor in the gallant capture of San Juan Hill."

Army officers like General Greely knew the value of aerial observation—and they knew the inadequacies of available equipment. After the Spanish-American War they watched with envy the increasingly successful use of military dirigible balloons by European powers, and eagerly anticipated the development of a heavier than air flying machine.

The Army organized a balloon detachment in May 1902 at Fort Myer, where the Signal Corps balloon equipment had been stored for two years. Since the equipment had deteriorated beyond use, a new balloon was purchased for maneuvers in Connecticut, and met with limited success after numerous logistical obstacles were overcome.

The Army's balloon activity remained fairly stagnant until the spring of 1907 when the Signal Corps purchased a new balloon—Signal Corps Balloon No. 9 (the ninth balloon obtained since the Civil War). Another larger balloon which had been ordered in 1906 was accepted on 4 June 1907 and became Signal Corps Balloon No. 10.

#### BALLOONS IN WORLD WAR I

Under the guidance of General Allen, a balloon house and hydrogen plant was established at Fort Omaha in 1908. How-

ever, ballooning in the U. S. Army retrogressed over the next several years. When the United States entered World War I the Army had only three serviceable free balloons and two captive balloons on hand.

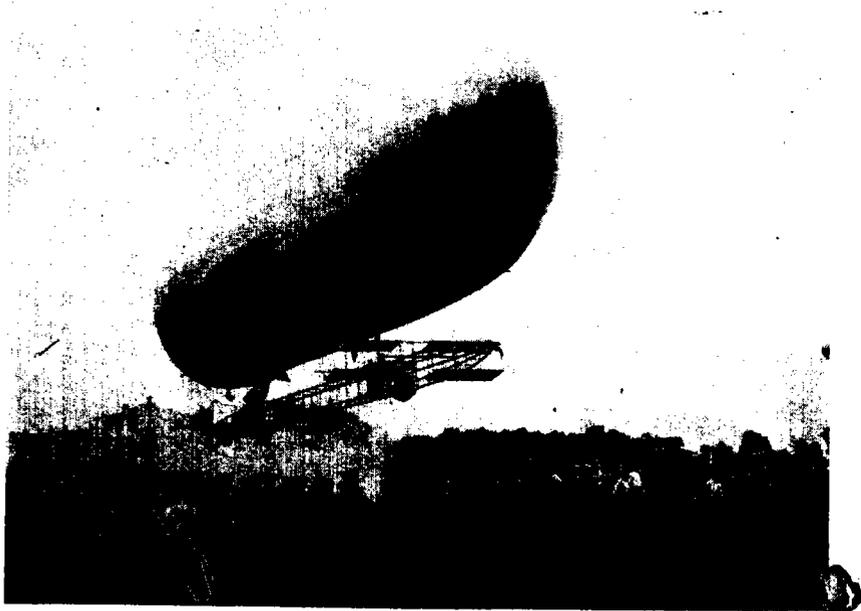
The training program at Fort Omaha was immediately stepped up and newly organized balloon companies were sent to field artillery firing centers and new schools at San Antonio, Texas, Fort Sill, Okla., Arcadia, Calif., and Lee Hall, Va. Balloon observers received further training at the American School, Camp Souge, France, and at French schools and artillery centers.

By 15 April 1918 the Army had two balloon companies operating against the enemy. By Armistice Day the Army had trained 89 balloon companies and 751 balloon officers in America. Thirty-three companies and 117 officers were sent overseas to join the 2 balloon companies organized in France. In

all, the Army's balloon operations in France totaled 446 officers and 6,365 enlisted men. Of the 265 balloons sent to France, 77 participated in action. The Army employed 252 balloon observers within 23 companies. It lost 48 balloons; official German losses were set at 73.

A captain in the Air Service wrote that observation balloonists noted any changes within 5 miles back of German lines and reported their findings to ground stations and other balloons by telephone. During actual fighting they watched for new enemy batteries to open up and the appearance of hostile aircraft, which often forced the observers to make parachute jumps. The balloons would ascend as high as 4,500 feet and remain in the air for hours from 2½ to 4½ miles from enemy lines. The balloonists could see about 8 miles in all directions. At the start of battle a large number of balloons would be sent up. Specific duties divided among

*U. S. Army Dirigible Balloon No. 1 hovers before embarking on a trial flight in the summer of 1908 at Fort Myer, Va. The crew ran back and forth to make the craft rise or descend.*



them included: recording heavy artillery fire, shot by shot, observing demolition behind enemy lines, and watching for reinforcements or traps, the shifting of enemy positions, the assembly of supplies by the enemy, and the forward movement of enemy troops.

In all, the Army's balloon operations in World War I accounted for 1,642 ascensions; 3,111 hours in the air; 316 artillery adjustments; 12,018 shell bursts reported; and numerous other types of intelligence recorded.

After the armistice, numerous lighter-than-air projects were cancelled, and by the summer of 1920, the Army's authorized balloon strength was cut to 29 companies. With the introduction of the fighter plane during the war, the balloon became exceedingly vulnerable and quickly faded from the scene as useful implement of war.

But, as proved along the Potomac and at San Juan Hill, aerial observation provided invaluable support to the ground commander, both as a source of intelligence and as a means of directing artillery fire. The balloon companies and the airplane operations of World War I convinced many Army officers that aerial observation in support of the ground commanders was essential. This concept would grow among ground commanders, and 24 years later it would blossom into our present concept of Army Aviation.

#### THE AIRSHIPS

Before the Spanish-American War, General Greeley began trying to obtain funds for the development of a dirigible, but his pleas went unheeded.

It fell to his successor, General Allen, to find the way. In November 1907, he obtained \$5,000 from the War Depart-

ment Board of Ordnance and Fortification to procure an experimental nonrigid dirigible balloon for the Signal Corps.

A contract was awarded to the lowest bidder, Thomas Scott Baldwin. His quotation was \$6,750.

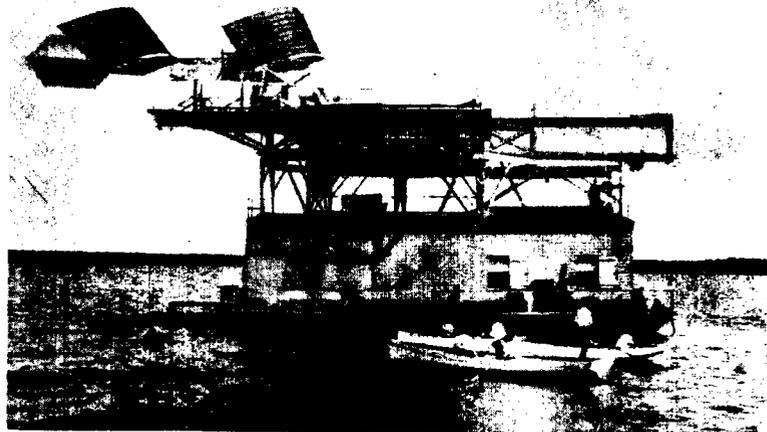
By 18 August 1908 an airship propelled by a gasoline engine had been built and successfully completed a series of performance trials. Baldwin then taught Lieutenants Frank P. Lahm, Thomas E. Selfridge, and Benjamin D. Foulois to fly the dirigible. On the 22d the airship was

officially accepted and became U. S. Army Dirigible Balloon No. 1. This airship made several demonstration flights around the United States, but was not used after 1909. In 1912 it was condemned and sold.

The Army did not acquire another airship until 1919 when another nonrigid airship was procured.

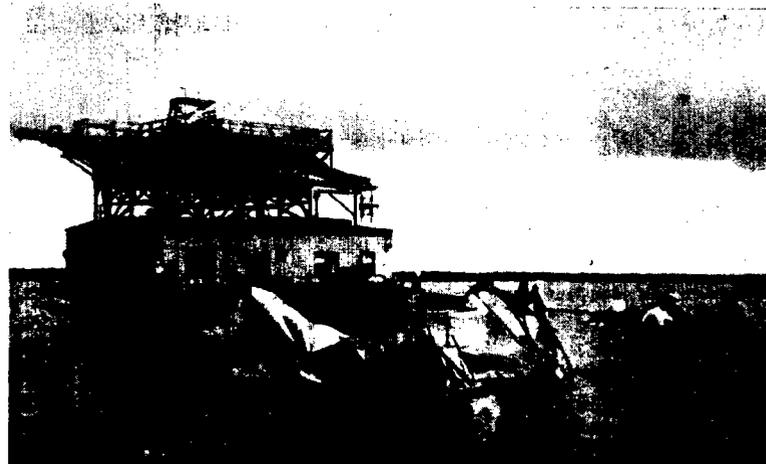
Airships were not used by the Army in France during World War I, but by the summer of 1920 the Army had seven nonrigid airships. However the airship, like the balloon, was

#### HIGH HOPES



*The crash of the Langley flying machine into the Potomac River on 7 October 1903, was a bitter disappointment for the Army.*

OOPS!



National Air Museum, Smithsonian Institution photos.

## Advertisement and Specification For a Heavier-Than-Air Flying Machine

This specification covers the construction of a flying machine supported entirely by the dynamic reaction of the atmosphere and having no gas bag.

It is desirable that the flying machine should be designed so that it may be quickly and easily assembled and taken apart and packed for construction in army wagons. It should be capable of being assembled and put in operating condition in about one hour.

The flying machine must be designed to carry two persons having a combined weight of about 350 pounds, also sufficient fuel for about 125 miles.

The flying machine should be designed to have a speed of at least 40 miles per hour in still air.

Before acceptance a trial endurance flight will be required of at least one hour during which time the flying machine must remain continuously in the air without landing. During this flight it must be steered in all directions without difficulty and at all times under perfect control and equilibrium.

It should be sufficiently simple in its construction and operation to permit an intelligent man to become proficient in its use within a reasonable length of time.

The price quoted in proposals must be understood to include the instruction of two men in the handling and operation of this flying machine. No extra charge for this service will be allowed.

SIGNAL OFFICE

Washington D. C., December 23, 1907.

Figure 1

nudged from the scene by the airplane.

### THE FLYING MACHINE

Shortly after the turn of the century Congress appropriated \$25,000 for the War Department to "build a flying machine for war purposes." General Greely turned to an old friend, Professor Samuel P. Langley, director of the Smithsonian Institution, for assistance. Dr. Langley had been experimenting in aerodynamics since 1885. In 1896 he built a steam driven model airplane that flew three-fourths of a mile along the Potomac River. He agreed to build a full-sized test machine for \$50,000.

On 7 October 1903, Dr. Langley's "Aerodrome A," as he called his flying machine, was launched from a houseboat in the Potomac River. However, the test was unsuccessful and the "Aerodrome" crashed into the river. Eight weeks later a second attempt to fly the "Aerodrome" also failed.

Reasons given for the failures were that the center of gravity was off, and that the engine was not powerful enough.

These failures resulted in severe attacks on both Congress and the Army for "squandering money on such an impossible invention." Consequently the

project was cancelled.

Meanwhile Wilbur and Orville Wright's aerodynamic experiments reached a successful climax on 17 December 1903 when they made their first airplane flight at Kitty Hawk, N. C. However the Army, recalling the abuse it had absorbed over the Langley failure, remained skeptical about the Wrights' success and did not state performance requirements for an airplane until 1907. Consequently the job—and honor—of introducing airplanes to the Army fell to General Allen.

### THE AERONAUTICAL DIVISION

In the history of Army Aviation, 1907 was an important year. As noted, a contract was awarded to build U. S. Army Dirigible No. 1; an Aeronautical Division in the office of the Chief Signal Officer was established on 1 August; and the United States became the first country to contract for a military airplane when the Signal Corps called for bids (see fig. 1) in December 1907.

The Aeronautical Division, responsible for all matters pertaining to military ballooning, air machines and all related subjects, was first headed by Capt Charles deForest Chandler.

On 1 February 1908, the Army received 41 bids for a military airplane. Only three bidders met the requirements outlined in the specifications:

Mr. J. F. Scott, Chicago, \$1,000, 185 days.

Mr. A. M. Herring, New York City, \$20,000, 180 days.

Wright Brothers, Dayton, Ohio, \$25,000, 200 days.

All three bids were accepted but only the Wright Brothers' airplane was ever delivered and accepted.

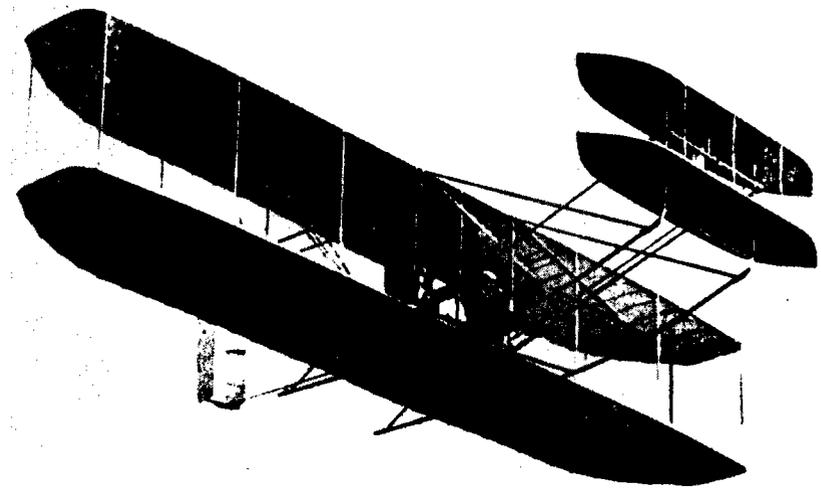
On 20 August 1908, the

Wrights brought their plane, a modified version of their 1905 airplane, to Fort Myer, Va., for testing.

It was a pusher type, with the motor and prop located behind the pilot and passenger. On 3 September the first flight, lasting 1 minute and 11 seconds, was made. This flight, the first of an airplane on a military installation in America, was followed by a series of test flights that were highlighted on the afternoon of 9 September when Orville remained aloft for 1 hour, 2 minutes, and 15 seconds.

Just as success seemed imminent, tragedy struck at Fort Myer. On 17 September 1908, Orville invited Lt Thomas E. Selfridge, an official Army observer at the trials, to ride as a passenger on a test flight. On the fourth turn of the field one of the props struck a brace wire attached to the rudder. An eyewitness account reported in the *Washington Post* stated: "The spectators saw a fragment of something fly from the machine and describe an arc in the air.

"That's a piece of one of the propellers' shouted one of the officers. 'I wonder what will happen to —! My God, they're falling!'" The airplane, twisting and turning, fell 150 feet



*Orville Wright makes a pass over Fort Myer, Va., during a trial flight in September 1908.*

and hit with tremendous force.

Lieutenant Selfridge died a few hours later in a hospital, the first man to give his life in heavier-than-air powered flight. Only a few months before, Lieutenant Selfridge had become the first Army officer to make a solo flight in a powered airplane, when on 19 May 1908, he flew Alexander Graham Bell's airplane, the "White Wing." Selfridge's death was a blow to the Signal Corps Aeronautical Division. He had been considered by many "the most widely informed expert on dynamics of the air and mechanical flight."

Orville remained in the hospital several weeks. Upon his release he and his brother continued their work. They returned to Fort Myer on 20 June 1909 with an improved version of their 1908 plane.

After a series of practice flights, the Wrights announced that they were ready for the official trials. On 27 July Orville made the first test flight, carrying Lt Frank P. Lahm as passenger. Lt Benjamin D. Foulois flew with Orville on the final test flight on 30 July. The tests were successful and the Army accepted the airplane on 2 August.

*Lt Thomas E. Selfridge is pulled from the wreck of the Wright airplane, which proved fatal to the brilliant young Army officer. Orville Wright has been removed and is in the group at the far right. Orville survived the crash which occurred on 17 September 1908 at Fort Myer, Va.*

U. S. Air Force photos



*Lt Thomas E. Selfridge*

It became U. S. Army Aeroplane No. 1.

As part of the contract, the Wrights trained Lt Frederic E. Humphreys and Lieutenant Lahm to fly the airplane. Instruction began on 8 October and on 26 October the students soloed. Lieutenant Humphreys soloed first and became the first Army Aviator. (See inside back cover.)

Lieutenant Foulois reported to College Park, Md., on 20 October and received some instruction from Wilbur Wright, Humphreys, and Lahm.

Navy Lieutenant George C. Sweet's visit to observe the operations at College Park on 3 November resulted in two firsts. Lieutenant Sweet became the first Navy officer to fly in a heavier-than-air machine and the first passenger carried by Lieutenant Lahm.

In November, Humphreys and Lahm returned to duty in their respective basic branches, the Engineers and Cavalry. Lieutenant Foulois, who had moved the Army's only airplane to Fort Sam Houston, Texas, for the winter, received flying instructions from the Wrights by mail. The Wrights sent an instructor to help Lieutenant Foulois master the art of landing.

The Army struggled along with one pilot and one plane until 1911 when Congress appropriated \$125,000 for Army Aviation. General Allen received \$25,000 immediately and ordered five planes. The first to be delivered was a Curtiss pusher, which became the Army's second plane.

Three Army lieutenants, Paul W. Beck, G. E. M. Kelly, and John C. Walker, Jr., were trained as pilots by Glenn Curtiss. They joined Lieutenant Foulois at Fort Sam Houston in April 1911. A month later, on

10 May 1911, Lieutenant Kelly was killed in a crash and became the first flight training fatality.

In the summer of 1911 the Army had five airplanes, three small balloons, and six officers who held airplane pilot certificates. Having no prescribed test for pilot qualifications, the Army adopted the rules of the Federation Aeronautique Internationale as administered by the Aero Club of America.

By November 1912, the Army had 12 pilots, 39 enlisted men, and 12 airplanes, including hydroplanes. One hydroplane was the Army's first aircraft with the propeller in the front. The pusher plane, which had accounted for most of the fatalities, was condemned by the Signal Corps in 1914.

The Army first used airplanes for observation and adjustment of field artillery fire in November 1912. At the request of the Field Artillery Board, two aircraft were sent to Fort Riley, Kan., for a series of experiments. Portions of a letter from Second Lieutenant H. H. Arnold to the Commanding Officer, Signal Corps Aviation School, Washington, D.C., tell the story. It was written at Fort Riley, Kansas, and dated 6 November 1912:

The first test in connection with artillery took place on the 4th of November; both machines took part in the test. There was no firing by the battery, the flying was done for the purpose of testing out different kinds of signals. There was a wireless station put up in the immediate vicinity of the battery and No. 10, (one of the aircraft) with Lt Arnold, pilot, Lt Bradley, operator, sent messages down to the battery. No. 11, with Lt Milling, pilot, Lt Sands, observer, was equipped with a smoke signal device made at this place. No. 11 sent signals from this device and also dropped cards. The smoke signal device, although improvised, showed that such a device could be

used to signal from the aeroplane to the battery. However, on account of the manner in which it was constructed, the dot and dash system of signals could not be used. A system of dots alone had to be used.

On the 5th of November, the aeroplane was used for the first time with the battery actually firing at a target. The target was about 3200 yards from the battery. It was a dark day, a dark target and a dark background for the target. In spite of this, the target was picked up by the aeroplane very easily.

No. 10, equipped with wireless, went up first, sending back by wireless, location of target and afterwards the position of the shots with reference to the target. . . .

These observations put the guns on the target after about four volleys, then this machine returned to the ground and No. 11 went up equipped with the smoke signal and sufficient cards for sending back data. The observer relocated the target and plotted position for the target and the battery on the cards. Then plotted the position of each salvo fired with reference to the target, range and deflection being changed in each case by the data received from the aeroplane.

It was found by using the wireless that aeroplanes could be started out in rear of the battery, salvo being fired just before they reached the battery. Return could be made by the machine as soon as they saw where the shots struck, the message sent back by wireless from the machine while it was making its circle, in order to get to its place to come up in rear of the battery for the second shot. When the machine used the card system, it was found necessary for the machine to make a figure 8 with the point of the crossing directly over the battery, the machine coming up from the rear, the battery firing just before the machine reached the battery. After observing where the shots struck, the machine turned, making a circle so as to come over the battery.

While the machine was making this turn, the observer plotted the position of the hits on the card with reference to the target and dropped it as he passed over the battery.

Then the machine made a second turn, in order to get to its place to come up from the rear to observe the second firing.

needed. They believed that the combat effort of airpower should be entirely concentrated on gaining complete air superiority and destroying targets beyond reach of the ground forces by strategic bombing. Air and ground forces need not even be in visual contact. Cooperation between air and ground forces was visualized only during air operations in the immediate rear areas of the enemy front.

Heated and sometimes passionate disputes resulted over the employment and control of airpower. As America focused its attention on these unfortunate controversies, another concept was developing within the framework of the Army—the concept of Army Aviation.

#### ARTILLERY BARRAGE

In addition to those in the Air Service, others also felt they had a stake in aviation. The Chief of Field Artillery was aware of the support that balloons and airplanes had provided in World War I. He instigated a thorough study on the Artillery's experiences in combat with aerial observation. He stated that air observation was vital to the effective employment of artillery.

During World War I aerial artillery observation was provided by an observation squadron assigned at corps level. When a mission was requested, corps would dispatch an aircraft which reported by radio to the artillery unit calling for support. When the mission was over, the pilot returned to corps to await another assignment.

The Chief of Field Artillery denounced this system and stressed that artillery commanders did not know the observer and never saw him. This was considered a critical point since Artillery felt that "the point of fall of the artillery shell is an inextricable element of com-

mand. The artilleryman cannot do his job if he surrenders this element of command to some stranger who is not responsible to him, who he never sees, and therefore who he cannot trust."

Disagreement between Artillery and the Air Corps grew before World War II. The Air Corps was rapidly developing its concepts of strategic air war and its entire ground support program was weakened.

In relationship to Artillery, the Air Corps felt that merely to furnish an airplane and pilot to carry an expert observer would be to relegate the Air Corps status to more of a service than a combat arm.

Meanwhile, as the 1930s drew to a close Artillery officers fired an increasing barrage of demands for more effective aerial direction of artillery fire. When these demands were not satisfied by standard Air Corps observation squadrons, Artillery officers began advocating the use of light aircraft organic to the units which they served.

In the summer of 1940, 1st Lt James McChord Watson, III, called the Piper Aircraft Corporation and discussed the Artillery's position on the use of light aircraft to adjust fire. Lieutenant Watson informed Piper that the Army was to conduct maneuvers at Camp Beauregard, La., (in Aug 1940) and asked for light aircraft to observe artillery fire. This marked the Army's first contact with Piper.

Mr. Tom Case of Piper flew a J-4 Cub from New Orleans to Camp Beauregard on 12 August 1940. In Piper's first demonstrations for the Army, Mr. Case operated the Cub from a dirt road and flew Lieutenant Watson and others as observers. They had no communication with the ground except by dropping messages or streamers. The

only unfavorable part of the demonstrations recalled by Mr. Case was reveille—a loud rendition of "Stars and Stripes" played every morning before daylight.

After the maneuvers Mr. Case returned to the Piper plant at Lock Haven, Pa. Throughout the rest of the year Lieutenant Watson and Mr. Case remained in frequent communication discussing problems and solutions connected with light aircraft and artillery observation.

Interest in light aircraft was mounting throughout the Army. Brig Gen Adna R. Chaffe called Piper Aircraft on 9 February 1941 and discussed the possibility of having light aircraft brought to Fort Knox, Ky., (the Armor School) to evaluate his ideas on directing columns from the air.

General Chaffe felt the light plane could be invaluable to the Army, and was pushing this idea in Washington. He was intensely interested in using light aircraft to control armored columns and to adjust heavy cannon fire from tanks. He felt strongly that all branches of the Army needed organic aviation.

Mr. Case flew a radioless J-3 (Number N-32750, a civilian version of the L-4) to Fort Knox on 10 February and conducted evaluation flights through the 15th. General Chaffe and members of his staff did considerable work with Mr. Case.

#### PRESSURE IN WASHINGTON

On 18 February 1941, Mr. William T. Piper, Sr., president of Piper Aircraft, wrote the Secretary of War a detailed letter pointing out the great potential of light aircraft in support of the ground forces.

Meanwhile Mr. John E. P. Morgan was directing the campaign in Washington to secure light aviation for the ground forces. Primarily he represented

Piper, Aeronca, and Taylorcraft. Shortly after Mr. Piper had written the Secretary of War, Mr. Morgan received a letter from Mr. Robert A. Lovett, Special Assistant to the Secretary of War. Mr. Lovett stated that the War Department had received numerous letters similar to Mr. Piper's and that a study of the matter was in progress.

Mr. Morgan pressed the War Department for an expression of policy on the employment of light aircraft, stressing that this was necessary before industry could consolidate its efforts and provide the most efficient cooperation. Consequently Maj Benjamin W. Chidlaw was made an official consultant to industry.

Brig Gen Horace Whittaker, Commanding General of the 45th Infantry Division, also expressed an interest in the light airplane. At his request, Mr. Case flew to Camp Bowie, Texas, in the same J-3 he used at Knox. He was joined by Mr. Piper and from 17-23 March they conferred with General Whittaker and conducted numerous demonstration flights.

During this period General Whittaker and Lt Gen Walter Krueger witnessed and discussed the use of light aircraft by the Army. General Whittaker also began corresponding on the subject with the Chief of Field

Artillery, Major General Robert M. Danford, a dedicated advocate of making light aviation organic to the Field Artillery. In a few months General Danford was to play a key role in the birth of Army Aviation.

On 19 April 1941, following the events at Camp Bowie, the Piper Aircraft Corporation had a radio installed in Mr. Case's J-3. A standard communications radio of that day, it operated on a frequency of 3105 kc. The radio was not designed for the J-3, but did allow two-way voice communication which General Chaffe used when Mr. Case returned to Fort Knox on 23 April to continue evaluation of the aircraft.

Meanwhile, Piper Aircraft was contacting Army commanders in other sections of the United States in efforts to demonstrate the J-3. Mr. Henry S. Wann (now Lt Col, TC) was in Portland, Oreg., in April 1941 in his capacity as district sales manager for Piper Aircraft in the western states. Informed of Piper's activities he was told to call on the military installations in his area.

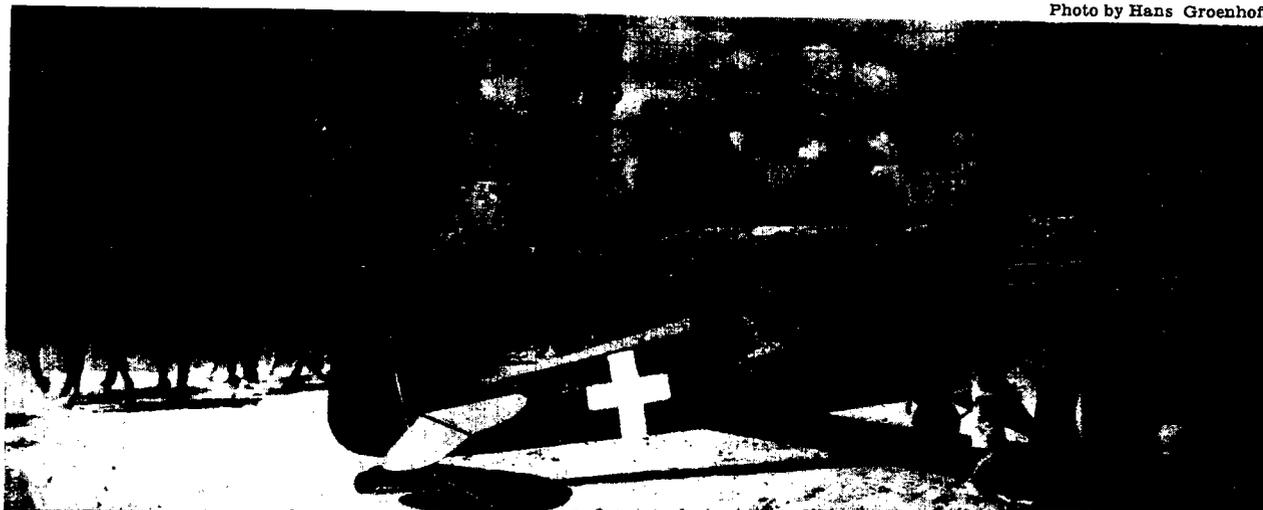
Mr. Wann telephoned Fort Lewis, Wash., to arrange for a visit. Knowing nothing about military organizations or titles, he talked with nearly everyone from the military police sergeant on duty to the post

sergeant-major. Finally he was connected with a lieutenant colonel who expressed interest in Mr. Wann's mission. He told the Piper representative that he knew light aircraft had a great deal of potential, especially for artillery fire adjustment from the air, but said that it would serve no purpose to come to Fort Lewis at that time. He added that he had a private license, and was especially well aware of the light airplane's uses. He told Mr. Wann his name—Eisenhower. The future president of the United States met Mr. Wann later in the year at the Louisiana Maneuvers, where he recalled their conversation and reasserted his interest and belief in the potential value of the light airplane.

May 1941 was a memorable month in the history of Army Aviation. Major William W. Ford, a field artilleryman, aviation enthusiast, and sportsman pilot had been working intensively to bring organic aviation into the Field Artillery. He wrote an explosive article outlining his concept of aviation in the Field Artillery. The article was sent to General Danford who was most impressed. It appeared in the FIELD ARTILLERY JOURNAL in May 1941. Major Ford was destined to direct field tests of the concept of

*Fill 'er up! A "Grasshopper" stops at a filling station for gas during Army maneuvers in 1941. Notice expression of cavalryman behind left wing.*

Photo by Hans Groenhoff



Artillery Aviation and to become the first director of the Department of Air Training at Fort Sill, Okla.

Also in May, Mr. Case took J-3 No. N-32750 to Fort Sill for Army exercises and stayed from the 1st through the 4th. Mr. Case flew Army officers on numerous missions to observe troops and artillery fire. He returned to Fort Sill on 7 May and additional evaluation was conducted until the 9th. Mr. Case then returned to Camp Bowie where he joined Mr. Piper, who had arrived with three more pilots and additional J-3s (all equipped with radios). From the 9th through the 25th a concentrated effort was made to have the J-3s live with the Army. Field maintenance was provided by Captain Watson and other services were provided at a civilian airfield. In one instance—on 20 May—the J-3s provided column control for 6½ hours on a troop movement from Berkley, Texas, to Camp Bowie. They landed on the road to refuel—occasionally at a filling station.

Cavalry officers at Fort Riley witnessed demonstrations of the J-3 from 12-14 June and became interested enough to give the light airplanes a more extensive trial later.

On 18 June, Mr. Wann, Mr. Case, and two other Piper employees, James Maurice Helbert and Jules Parmentier took four J-3s to Manchester, Tenn., where they competed against Army Air Force 0-49s and 0-47s in Tennessee Army maneuvers which were already under way. The big advantage of the Cub was the ease with which one man could handle it, and the ease with which it could be pulled under a tree and camouflaged.

### TENNESSEE MANEUVERS

The Second Army maneuvers

held from 2-28 June 1941 in eastern Tennessee resulted in recommendations to the War Department that light airplanes be made a regular component of the Artillery.

During the maneuvers observers in the Cubs directed artillery fire on the Jake's Mountain Range. Twelve aircraft participated—8 from Piper and 2 each from Aeronca and Taylorcraft. The light aircraft operated from a clearing on the side of a mountain. This area measured 298 paces long and was completely surrounded by trees.

Observers corrected fire from 155mm guns while flying behind the batteries at 1,000 feet. Staff artillery officers expressed amazement at the excellent visibility from the aircraft, their slow flying speed, and the fact that almost any person could fly these planes without extensive training.

In addition to artillery fire direction, the light planes served in other tactical missions. They were incorporated with regular Air Corps observation squadrons serving both the "Red" and "Blue" armies. They proved highly practical for scouting advanced enemy positions, carrying messages, transporting commanders and staff officers, etc. Altogether the pilots landed on 102 different fields, roads, pastures, and other such areas to demonstrate the unique landing capabilities of light aircraft. In fact, an impromptu landing was necessary to stop the maneuvers.

One of the Cubs was chosen to signal the tank divisions that the maneuver was over. The Cub zoomed over various tank units dropping flares to signal the end of the maneuvers. When one tank group apparently didn't understand the signal, the Cub pilot landed in a field and caught up to the moving tanks by fast

taxiing down the road. The tankers got the word.

Four J-3s were sent back to Fort Riley on 1 July so the cavalry could continue its trials. The aircraft remained through the 8th, directing cavalry operations from the air. The Piper representatives lived in the field with the cavalry and carried one mechanic with them. Following these trials official reports on the employment of the light aircraft were sent to Washington.

### DESERT MANEUVERS

On 11 July 1941, Piper, Taylorcraft, and Aeronca sent light airplanes to Fort Bliss, Texas, to participate in Army maneuvers. This event is especially notable. During these maneuvers the small airplanes used by the Army were tagged with the nickname "Grasshopper."

The incident occurred on 15 July, the day the maneuvers began. During the morning Mr. Wann was told to proceed from Biggs Field (where the civilian pilots were based) to Headquarters, 1st Cavalry Brigade. He was to deliver a message to the Brigade Commander, Maj Gen Innis P. Swift, and then remain with the general until another pilot and plane relieved him later in the day.

Mr. Wann took off and flew to the area where the brigade was operating. Finding the brigade was not difficult since the troopers, all mounted, stood out plainly in the brown desert. The area was strictly "boondocks," consisting of desert, sand, clumps of grass, cactus.

After some preliminary reconnoitering and a couple of low passes, Mr. Wann landed in an area that was least cluttered by grass clumps. On landing he bounced a bit on the rough ground, then taxied up to the CP.

Mr. Wann delivered the message and informed the general that he had been instructed to remain with him for use as he desired.

General Swift seemed quite impressed and remarked, "You looked just like a damn grasshopper when you landed that thing out there in those boon-docks and bounced around."

The general invited Mr. Wann to lunch, which was interrupted when a trooper rode up, saluted, and handed the general a radio message just received from Fort Bliss. It informed General Swift that an airplane had just been dispatched to him for his use. It had taken the message 45 minutes longer to arrive than the Cub.

After lunch Mr. Wann flew the general's aide to Biggs Field on an errand. While at the field, the control officer received a message saying "SEND GRASSHOPPER" and signed "SWIFT." No one knew what it meant until Wann explained it. The general used the light airplane continually during the rest of the maneuver, and the nickname stuck.

In all, 12 light planes participated in the maneuver, which was concluded on 26 July. Aeronca and Taylorcraft each sent two aircraft and Piper provided the rest. The civilians who demonstrated the light aircraft formed the famous Grasshopper Squadron (see fig. 3).

The light plane's participation in the operation was considered a complete success and the Army requested permission to purchase 20 such planes. The request was disapproved by the War Department. However, Lt Col Dwight D. Eisenhower, at the suggestion of Mr. Lovett arranged to have the aviators and planes placed on a per diem rental and expense basis. Pre-

## GRASSHOPPER SQUADRON

### *Piper Aircraft Corporation*

W. T. Piper, Sr.	David Cogswell
T. I. Case	Gordon Curtis
Thomas Piper	James Diegel
Howard Piper	Robert Heath
T. H. Miller	J. M. Helbert
Norman Hockenberry	C. R. Holladay
Henry Kubick	J. W. Miller
W. D. Strohmeier	Henry S. Wann
T. V. Weld	David Kress*
Forest Nearing*	Jules Parmentier
Robert Bowes	H. Sheldon Chadwick

### *Aeronca Aircraft Corporation*

Maurice C. Frye	James Kukla
James Rosing	John Gall*

### *Taylorcraft Aviation*

James Ludwig	Adair Miller
Paul Yates	Ray Carlson*
Phillip Gow*	Frank Parmelee*

### *Continental Engine Company*

Chauncey Chantree*	Percy Hubbel*
--------------------	---------------

\* Ground engineers; the others were flying salesmen. John E. P. Morgan also was a member of this group. From Washington, he acted in the capacity of a director or observer.

Figure 3

viously, members of the Grasshopper Squadron paid their own way.

Following the maneuvers at Fort Bliss, Mr. Case flew to Camp Bowie where, on 30 and 31 July, he briefed General Whitaker and Captain Watson on the happenings in Texas. On 3 August he flew to Beauregard, La., where the Grasshopper Squadron would participate in the Louisiana Maneuvers. This operation would establish in most artillerymen's minds the urgent need for light aviation organic to their branch.

### LOUISIANA MANEUVERS

General Danford, already enthused about the performance of the light aircraft in Army maneuvers, visited the British Artillery School at Larkhill in the

summer of 1941. British experiments with light aircraft further impressed General Danford and upon returning to the United States he obtained permission to evaluate the planes in the Louisiana Maneuvers.

Grasshopper Squadron pilots flew 12 light planes from 12-14 hours a day in the Third Army portion of the maneuvers which ran from 11-30 August at Beauregard, La. They continued operating in the same area during the combined Second and Third Army maneuvers from 1-30 September. (Members of the Grasshopper Squadron supported the First Army from 6 October to 1 November and again from 3-30 November in the Carolinas. Interstate and Rearwin aircraft companies also



Often it was necessary for members of the Grasshopper Squadron to sleep out in the open during Army maneuvers of 1940-41. Here Jules Parmentier (left) and James Sprague Diegel, both Piper employees, get up with the sun and prepare for another day of flying during the Louisiana Maneuvers of 1941. The aircraft is a J-3, the forerunner of the L-4. Note cots and mosquito bars under the wings.

president took off, flew and landed the J-3.

Later in the maneuvers Colonel Eisenhower returned and asked Mr. Helbert to take him up so he could observe the maneuvers from the air. He was particularly interested in watching a cavalry-tank skirmish. Thereafter, Colonel Eisenhower and his staff used the light aircraft constantly. The Grasshopper Squadron flew numerous general officers during the exercise, including General George Patton who had his own plane at the maneuvers and directed armored columns from the air.

The Louisiana Maneuvers indicated that Army Air Force observation units provided by

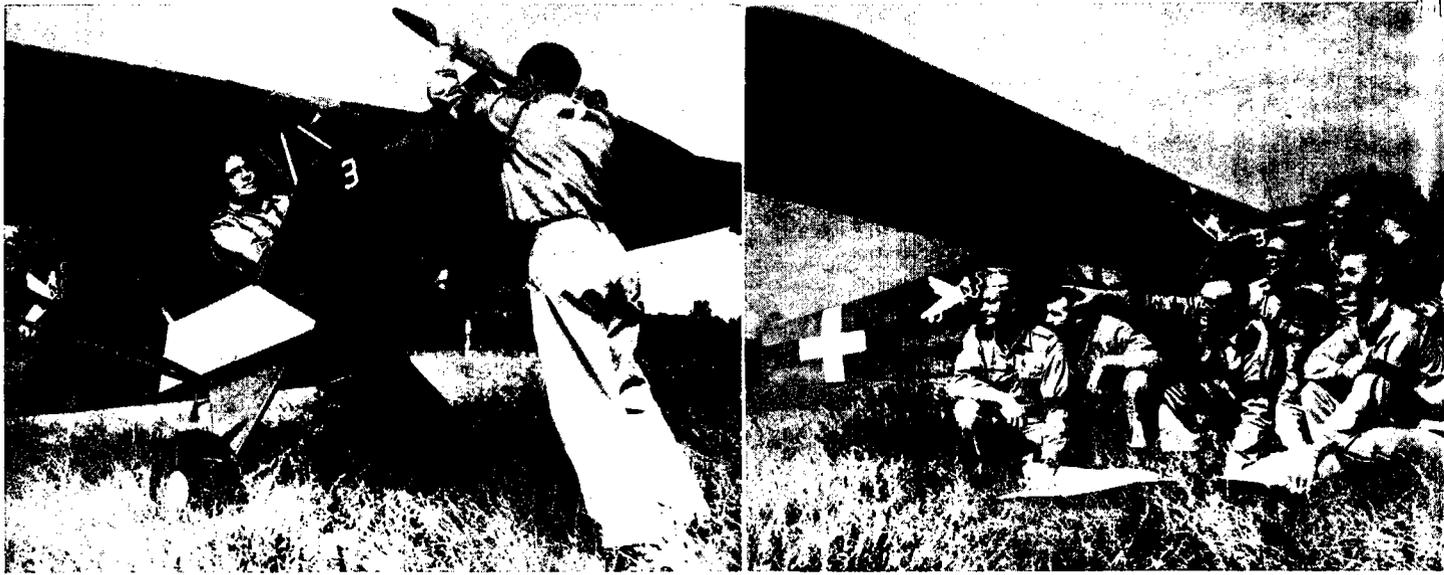
sent planes to these maneuvers.)

Colonel Eisenhower as Chief of Staff, Third Army continued to show the same enthusiasm over light aviation as he had in Fort Lewis. Mr. J. M. Helbert, a Piper member of the Grasshopper Squadron became Colonel Eisenhower's courier pilot during the maneuvers. Mr. Helbert recalls first seeing Colonel Eisenhower at the maneuvers on a 1,000-inch range being used as a landing strip. Mr. Helbert had just flown in when Colonel Eisenhower and Lt Col Sam Davis, Chief of Third Army Air Corps, stopped to look over the planes.

A week later at about 1700 hours Mr. Helbert had returned from a mission and was tying down his Cub on a football field from which he was operating. Colonel Eisenhower approached him and said that he had been doing paperwork all day, and if possible would like to fly for awhile. When asked if he could fly, Colonel Eisenhower said that he had about 600 hours. The two went flying and the future

J. M. Helbert (left) and Tom Case, members of the Grasshopper Squadron, preplan prior to taking Lt Col Dwight D. Eisenhower on a mission during the Louisiana Maneuvers of 1941. Note "grasshopper" band on Case's arm.





*Mr. W. T. Piper, Sr., took an active part in demonstrating the J-3 to the Army. At left he is preparing for a flight during the Louisiana Maneuvers of 1941. At right he briefs other Piper members of the Grasshopper Squadron. They are, left to right, John E. P. Morgan, J. M. Helbert, Piper, T. H. Miller (with glasses), David Kress (below Miller), Henry Wann (upper right), and Tom Case.*

the Air Support Commands did not provide adequate support. However, the Grasshopper Squadron proved beyond doubt the worth of light aircraft organic to the units they serve. This was substantiated by General Danford's much quoted statement made on 8 October: "The only uniformly satisfactory report of air observation during the recent maneuvers comes

from those artillery units where . . . light commercial planes operated by civilian pilots were used."

Following a visit to Fort Sill and a discussion of organic aviation with Major Ford, General Danford again recommended to the War Department that light aircraft manned by Artillery officers be made organic to division and corps artillery units.

The division and corps commanders unanimously endorsed this recommendation.

Premature, the recommendation was disapproved. Maj Gen Leslie J. McNair, Chief of Staff at GHQ, felt that a fair trial must be given the new system of Air Support Commands—and generally favored the massing of support elements.

Finally the Office of the Chief

*Members of the Grasshopper Squadron take a break during the Louisiana Maneuvers of 1941. They are, left to right, James Diegel, T. H. Miller, Tom Case, Jules Parmentier, Maurice Frye, Dave Kress, and Norman Hockenberry. All are from Piper except Frye who represented Aeronca. The group is standing in front of an Aeronca YO-58.*



of Staff ordered a test of General Danford's proposal—with a corps artillery brigade and an infantry division. Pearl Harbor postponed the test, but on 25 February 1942 the 2d Infantry Division and the 13th Field Artillery Brigade were named as the test units. Major Ford, now Lieutenant Colonel, was placed in charge at the suggestion of General Danford, and the test was ordered to proceed at Fort Sill, Okla. General Danford happily announced the news at Fort Sill as he addressed a group of students in a theater.

**THE CLASS BEFORE ONE**

First Lieutenant Robert R. Williams, now Brigadier General, Commandant of the U. S. Army Aviation School, and Second Lieutenant Delbert L. Bristol (now Colonel) joined Colonel Ford at Fort Sill to help set up the program. Both held civilian pilot licenses and had been working with the aerial observation program for a year.

Also Maj Gordon J. Wolf, a reservist who had been corresponding with Colonel Ford, was recalled to duty. He helped select personnel for the test group, and organize the Air Training Detachment under which they would function.

Colonel Ford and the three officers mentioned above worked out the full program with the assistance of Brig Gen Jesmond D. Balmer, Commandant of the Artillery School.

The Army Air Forces loaned Colonel Ford's group 24 YO-59s, (standard J-3s painted olive drab). In all, 9 pilot instructors, 14 officers, and 21 enlisted student pilots, all having CAA licenses, joined Colonel Ford for the tests. (See fig. 4, right.)

The Field Artillery was charged with responsibility for first echelon maintenance of the aircraft used during the test. The

Air Corps was to perform second and third echelon maintenance, but the Field Artillery was required to furnish the Air Corps all necessary historical data re-

lating to the airplane and engine. However, in reality the test group did all of its own maintenance and only depended on the Air Corps for supplies.

Figure 4

**Special Orders No. 12**

HEADQUARTERS  
Field Artillery School  
Fort Sill, Oklahoma

January 15, 1942

SPECIAL ORDERS:  
NO 12:

EXTRACT

10. Under authority granted by paragraph 6, letter OCFA dated December 23, 1941, subject "Air Observation", the persons below are, each with his own consent, designated as pilots for the purpose of flying light observation aircraft operated by the Field Artillery. The military personnel, though participating regularly and frequently in aerial flights, are not entitled to flying pay.

Pilot Instructors

- Lt Col WILLIAM W. FORD, 0-12667, F.A.
- Mr. RICHARD H. ALLEY
- Mr. LLOYD M. DAMRON
- Mr. EDWARD DRAPELA
- Mr. JOE L. MESSINA
- Mr. THOMAS F. PIPER
- Mr. ALANSON RAWDON
- Mr. T. F. SHIRMACHER
- Mr. H. S. WANN
- Mr. STANFORD J. STELLE

- Director of Air Tng
- Chief Flt Instr
- Supt of Maint

Student Pilots

- |                              |          |      |
|------------------------------|----------|------|
| Major GORDON J. WOLF         | 0-225015 | F.A. |
| Captain ROBERT M. LEICH      | 0-258194 | F.A. |
| 1st Lt F. H. COUNE, JR.      | 0-338555 | F.A. |
| 1st Lt EDWIN FREDERIC HOUSER | 0-330734 | F.A. |
| 1st Lt PAGET W. THORNTON     | 0-326311 | F.A. |
| 1st Lt ROBERT R. WILLIAMS    | 0-22962  | F.A. |
| 2nd Lt LLOYD M. BORNSTEIN    | 0-423354 | F.A. |
| 2nd Lt DELBERT L. BRISTOL    | 0-386551 | F.A. |
| 2nd Lt MARION J. FORTNER     | 0-415317 | F.A. |
| 2nd Lt STEVE E. HATCH        | 0-416401 | F.A. |
| 2nd Lt BERT LAMERLE JACO     | 0-300098 | F.A. |
| 2nd Lt CHARLES W. LEFEVER    | 0-409406 | F.A. |
| 2nd Lt ROBERT RUSH           | 0-318541 | F.A. |
| 2nd Lt BRYCE WILSON          | 0-364893 | F.A. |

- Sergeant ALWIN R. HACKBARTH, 20653487, Btry C, 121st F.A., Camp Livingston, La.
- Sergeant JAMES W. HILL, JR., 34026570, Hq 1st Bn, 179th F.A., Camp Blanding, Fla.
- Sergeant JOSEPH E. McDONALD, 20817060, Serv Btry, 2nd Bn, 133rd F.A., Camp Bowie, Texas.
- Sergeant JOHN S. SARKO, 20651424, Hq Btry, 120th F.A., Camp Livingston, La.
- Sergeant JACK K. SVITZER, 20316559, Hq Btry, 1st Bn, 109th F.A., Indiantown Gap Military Reservation, Pa.
- Corporal ROBERT M. FORD, 38050577, Hq Btry, 2nd Bn, 133rd F.A., Camp Bowie, Texas.
- Corporal THOMAS M. SKELLY, 20314874, Hq Btry, 1st Bn, 108th F.A., Indiantown Gap Military Reservation, Pa.
- Corporal ROBERT E. SFAULDING, 20326468, Hq Btry, 1st Bn, 190th F.A., Camp Shelby, Miss.
- Corporal ROBERT W. DONOVAN, 37021811, F.A.S. Det (White), Fort Sill, Okla.
- Pvt 1cl CHARLES D. HOFFMAN, 37022621, Btry E, 125th F.A., Camp Claiborne, La.
- Pvt 1cl WAYNE D. VAN HUSS, 36023418, Hq Btry, 54th F.A. Bn, 12th Tng Regt., F.A.R.T.C., Camp Roberts, Calif.
- Private JOHN J. ADKINS, 37119374, Btry E, 32nd Bn, 8th Tng Regt., F.A.R.T.C., Fort Sill, Okla.
- Private FRANKLIN LEE CLARK, 33121241, Btry B, 12th Bn, 4th Tng Regt., F.A.R.T.C., Fort Bragg, N. C.
- Private ROLAND J. COUTURE, 31012966, Btry D, 172nd F.A., Camp Blanding, Fla.
- Private RAYMOND A. GEARHARD, 33115470, Btry C, 8th Bn, 3rd Tng Regt., F.A.R.T.C., Fort Bragg, N. C.
- Private WINSTON W. JOHNSON, 34072013, Hq Co., 973rd Tank Destroyer Bn, Camp Shelby, Miss.
- Private ROBERT S. LEE, 32095675, Btry B, 7th Obsn Bn, Fort Bragg, N. C.
- Private CLYDE CLOE LOVE, JR., 35171340, Btry D, 8th Bn, 3d Tng Regt., F.A.R.T.C., Fort Bragg, N. C.
- Private WILLIAM RANDOLPH MATHEWS, JR., 6284169, Hq Btry, 2nd Inf Div Art., Fort Sam Houston, Texas.
- Private RICHARD O. PALMER, 14051413, Btry B, 12th Bn, 4th Tng Regt., F.A.R.T.C., Fort Bragg, N. C.
- Private GERALD P. UECKER, 37119360, Btry E, 27th Bn, 7th Tng Regt., F.A.R.T.C., Fort Sill, Okla.

By command of Brigadier General ALLIN:

OFFICIAL: D. L. DUNLAP  
1st Lt, 18th F.A.,  
ASSISTANT SECRETARY.

H. McK. ROPER,  
Lt Col, F.A.,  
EXECUTIVE.

Training began at 0730 on 15 January 1942. The students, often referred to as the Class Before One, were divided into A and B flights. Instruction was broken down into flight and ground training with both of these further divided into stages A, B and C.

Mr. Stanford J. Stelle was in charge of field maintenance instruction for pilots and mechanics. Two practical mechanics, Buck Nearing of Piper and Chet Hammond of Continental, were brought in to help Stelle.

Lieutenant Robert R. Williams, Mr. Dick Alley, Mr. Tony Piper, Mr. Henry Wann, and Mr. Ted Shirmacher set up the flight curriculum and directed short field precision and low aerobatic flight instruction. The training program as outlined above was used by the air training department for the next three years.

A large part of the short field work used by the test group and later at Fort Sill reflected a teaching philosophy developed by Mr. Shirmacher when he was a civilian flight instructor. Basically it amounted to showing the

## Flights A and B of Class Before One

The following personnel, under command of Maj Gordon J. Wolf, trained with the 2d Infantry Division, Fort Sam Houston, Texas:

Maj Gordon J. Wolf	SSgt Alwin R. Hackbarth
Capt Robert M. Leich	SSgt Robert W. Donovan
1st Lt Robert R. Williams	SSgt Robert M. Ford
1st Lt Paget W. Thornton	SSgt William R. Mathews, Jr.
2d Lt Steve E. Hatch	SSgt James Kerr, Jr.
2d Lt Bryce Wilson	Sgt David S. Sweetser
SSgt John S. Sarko	Sgt Walter T. Michalak

The following personnel, under command of Capt Edwin F. Houser, trained with the 13th Field Artillery Brigade, at Fort Bragg, N. C. and Camp Blanding, Fla.

Capt Edwin F. Houser	SSgt James W. Hill, Jr.
1st Lt Felix H. Coune	SSgt Thomas M. Skelly
2d Lt Lloyd M. Bornstein	SSgt Roland J. Couture
2d Lt Charles W. Lefever	Sgt William T. Roulston, Jr.
2d Lt Marion J. Fortner	Sgt Frank C. Baumstark
2d Lt Delbert L. Bristol	Sgt Walter J. Zimmerman
SSgt Joseph E. McDonald	Sgt Ralph E. Hage

Lt Col Ford divided his time between the two test groups.

Figure 5

student the extremes to which he could carry the aircraft and himself. In this way the student learned both his own and the aircraft's limitations.

To implement such a program Mr. Shirmacher devised ex-

treme maneuvers and incorporated them into the curriculum. Perhaps the most extreme maneuver was the power stall approach, which differed from the power approach in that the airplane was flown at a near stall attitude.

The power stall approach was not considered a good approach; in fact, it was considered dangerous. But it fitted into the teaching philosophy and proved to be invaluable in slowing down students who had a tendency to land too fast.

On 28 February 1942 training was completed at Fort Sill and the civilian instructors returned to their homes while the Class Before One students split into two groups (see fig. 5) to continue the tests. Flight B reported to Fort Sam Houston, Texas, to work with the 2d Infantry Division and Flight A proceeded

*A Cub flown by pilot instructor Ted Shirmacher lands around a curve during training of the Class Before One at Fort Sill in 1942.*



to Fort Bragg, N. C., and joined the 13th Field Artillery Brigade on 5 March 1942.

Training at Fort Bragg was interrupted on 24 March 1942 when the 13th Field Artillery Brigade was ordered to move to Camp Blanding, Fla. However, Flight A took advantage of the move and provided troop commanders with current information on the state and progress of their columns. Also, it was realized that the light aircraft could have kept the ground commander well informed of a possible enemy threat over a wide area.

During the exercises pilots in both flights practiced innumerable power stall approaches over bamboo poles, received intensive training in flying S turns, eights on and around pylons, chandelles, lazy eights, stalls, short field procedures, road landings, landings on actual strips, ground handling procedures, adjustment of artillery fire, and field maneuvers.

At the end of April 1942, the tests were over and the group reassembled at Fort Sill to await the outcome. Some of the advantages that were established during the tests included:

- the ability and ease with which field artillery personnel could operate the planes;
- the simplicity of operation and maintenance of the planes;
- the ease with which the planes could be dismantled and loaded on 2½-ton trucks for ground movement;
- the effectiveness of the pilot-mechanic concept of having each pilot fully capable of repairing and servicing his aircraft.

The success of the two test groups was reflected in letters of commendation from Brig Gen John B. Anderson, Commanding General, 2d Infantry Division and from Brig Gen J. A. Crane, 13th Field Artillery Brigade commander.

On 7 May 1942 General Anderson wrote to Major Wolf:

During the period you have been attached to the artillery of the 2d Infantry Division, you and your detachment have been a credit to the Field Artillery . . . . The outstanding work of your detachment in maintenance and a record free of serious accidents are indicative that long hours and total disregard of personal convenience must have been the rule rather than the exception in carrying out your duties.

I especially desire to commend you as the Detachment Commander, and Captain Robert M. Leich as the Engineering Officer for the outstanding performance of duty and for the splendid results obtained while your detachment was under my Command.

On 5 May 1942 General Crane wrote to the commandant of the Field Artillery School:

I cannot adequately express my admiration for the skill and enthusiasm with which all the personnel of the flight performed their work here. Never once did they fail to carry out the often seemingly impossible tasks assigned to them, and their record of eight weeks of continuous operation from roads and small unimproved fields under all conditions of weather and terrain without personal injury of any kind and with only one accident

*Below left to right, are Lt Gen Leslie J. McNair, Chief of Staff, GHQ; Lt Gen Walter Krueger, Commanding General, Third Army; Maj Gen Mark Clark, Chief of Staff, AGF; and Brig Gen Alfred M. Gruenther, Chief of Staff, Third Army, reviewing a 2d Infantry Division parade*

*in April 1942 at Fort Sam Houston, Texas. At right, planes of Flight B pass the reviewing stand with elements of the 2d Infantry.*



that resulted in any damage to material is a glowing tribute to their ability to fly and maintain the airplanes provided them. Their energy, initiative, and cheerful cooperation contributed immeasurably to the successful completion of the test; and if our report on it is approved and air observation is made an organic part of the Field Artillery, the credit will be due to them, and the Field Artillery arm of the Service will owe them a debt of gratitude.

The boards appointed to observe the tests forwarded their reports to the War Department, highly recommending organic aviation for field artillery units. Headquarters, Army Ground Forces also was impressed, but did express concern over the "vulnerability of the light planes." However, AGF also noted that even under unfavorable conditions some missions could be performed, and recommended that the program be implemented without delay. On 6 June 1942 the War Department established organic Army Aviation. At first General McNair was skeptical of the program, but soon became convinced of its worth and "supported it with

*From left to right Maj Gen Mark Clark, and Lt Gens Leslie J. McNair and Walter Krueger inspect a Flight B airplane at Fort Sam Houston, Texas, in April 1942. Maj Gordon J. Wolf (right) looks on.*



*Members of the Class Before One and others who helped bring at*

- \* 1. Bryce Wilson (Bryce)
- \* 2. Joseph E. McDonald (Joe)
- \* 3. Gordon J. Wolf (Gordon)
- \* 4. Marion J. Fortner (Jake)
- \* 5. Alwin R. Hackbarth (Al)
- \* 6. Charles W. Lefever (Chuck)
- \* 7. Robert W. Donovan (Bob)
- \* 8. Felix H. Coune (Felix)
- \* 9. Steve E. Hatch (Steve)
- \* 10. James W. Hill, Jr. (Jimmy)
- \* 11. Paget W. Thornton (Paget)
- \* 12. Thomas M. Skelly (Tom)
- \* 13. John S. Sarko (John)
- \* 14. Lloyd M. Bornstein (Lloyd)
- \* 15. Robert R. Williams (Bob)
- \* 16. Delbert L. Bristol (Bris)
- 17. Forrest H. Nearing
- \* 18. Robert M. Ford (Bob)
- \* 19. Roland J. Couture (Roland)
- 20. Joe L. Messina (Joe)
- \* 21. William R. Mathews (Randy)
- \* 22. Edwin F. Houser (Ed)
- 23. Theodore F. Shirmacher (Ted)
- \* 24. Robert M. Leich (Bob)

all his powers."

The War Department directive called for two pilots and one mechanic for each field artillery battalion; 2 in each divisional field artillery headquarters; and 2 in each field artillery brigade

*The Flight B detachment of the Class Before One is briefed by Maj Gordon J. Wolf (far left) prior to a mission during the tests at Fort Sam Houston, Texas. They are, left to right,*

or group headquarters. This necessitated 10 aircraft in each infantry division which contained four field artillery battalions; six (and eventually eight) in each armored division, which contained three artillery

*Maj Wolf, SSgt William R. Mathews, Jr., SSgt Robert M. Ford, Sgt David S. Sweetser, SSgt Alwin R. Hackbarth, 2d Lt Steve E. Hatch, Capt Robert M. Leich, SSgt James Kerr, Jr., Sgt*





*the birth of Army Aviation and the establishment of the Department of Air Training at Fort Sill, Okla.*

- \*25. William T. Roulston, Jr. (Bill)
- \*26. William W. Ford (Wally)
- 27. Unknown
- \*28. Lawrence E. Rhodes
- 29. Stanford J. Stelle
- 30. Unknown
- \*31. Walter J. Zimmerman
- 32. Henry S. Wann (Henry)
- 33. Unknown
- \*34. James T. Kerr (Butch)
- 35. Chester Hammond
- 36. Unknown

- 37. Unknown
- 38. Unknown
- 39. Unknown
- 40. Unknown
- 41. Unknown
- 42. Unknown
- 43. Unknown
- \*44. Joseph R. Caldwell
- 45. Unknown
- \*46. Frank C. Baumstark
- 47. Unknown
- \*48. Ralph P. Hage

- 49. Unknown
- \*50. David Sweetser
- NOT SHOWN —
- Richard H. Alley
- Lloyd M. Damron
- Edward Drapela
- Thomas F. Piper (Tony)
- Alanson Rawdon

\*Participated in Test—March and April 1942

battalions, and (after September 1943) an artillery headquarters. In the field artillery brigade the number of aircraft varied with the number of battalions incorporated.

Responsibility for equipment maintenance and training was

*Walter T. Michalak, SSgt Robert M. Donovan, SSgt John S. Sarko, 2d Lt Bryce Wilson, 1st Lt P. W. Thornton, Capt Robert R. Williams.*

divided between the AGF and AAF. Procuring aircraft, spare parts, repair materials, and auxiliary flying equipment fell to the AAF along with the responsibility of third echelon maintenance and basic flight training for student pilots. The AGF would provide the tactical

training of the pilots and mechanics. The Department of Air Training, for which plans had already been prepared, officially came into existence on 6 June at Fort Sill to provide this training. Colonel Ford, who was promoted to full colonel on 25 June 1942, was named director.

*Members of Flight A at Fort Bragg, N. C. They are (left to right) Lieutenants "Chuck" Lefever, "Jake" Fortner, and Lloyd Bornstein.*



