



The Airmen Heritage Series

The Airmen Memorial Museum

BALLOONS ON HIGH



Professor Thaddeus Lowe's balloon gas generators in front of the Capitol, circa 1861-1862. Courtesy of the National Archives.

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U.S. Infantry troops break camp June 30, 1898, for the attack on El Caney, Cuba. Note the balloon Santiago above the tree line. Courtesy of the National Archives.



In the 1780s Benjamin Franklin was the United States' minister to France. At one of the Montgolfier brothers first balloon launchings a cynical observer remarked, "*Of what possible use is it?*" Said Franklin, who foresaw many possibilities for aeronautics, "*Of what use is a newborn babe?*"

THE HISTORY OF EARLY ENLISTED AERONAUTICS

1862 TO 1907

by
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and
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Airmen Memorial Museum

The United States Air Force traces its origins to the establishment of the Aeronautical Division, created on August 1, 1907 by the Chief Signal Officer of the Army. However, the U.S. Army first used "aerial devices" for military purposes during the American Civil War, when it created an unofficial balloon section. An official balloon section was established in 1891. Consequently, enlisted support for U.S. military aviation began with Civil War balloon operations.

Interest in the military applications of ballooning in the United States can be linked to one of our nation's forefathers, Benjamin Franklin. After witnessing the flight of the Montgolfiers (famous balloonists), Franklin predicted that the military would soon find uses for the balloon. But it was not until 1840, during the Second Seminole War, that his prediction almost proved true.

The Seminoles, intimate with the tangled swamps of their Florida homeland, persistently evaded capture by the army sent to force their "removal" to the Indian Territory in the West. Colonel John H. Sherburne wrote to Secretary of War Joel Poinsett suggesting that observation balloons could be lofted at night in order to determine the location of Seminole campfires. Poinsett's reply was indifferent. Nonetheless, Sherburne took this as authorization and contacted Charles Ferson Durant, a scientist and balloonist, remembered by some historians as "America's first professional aeronaut".

After securing Durant's services, Sherburne sought permission from his commanding officer, General W. K. Armistead, to train the army's first balloon corps. But Armistead rejected the idea, and because the Seminoles surrendered three months later, the project was rendered moot.

Five years later, in 1846, the United States went to war with Mexico and again the possible military application of the balloon became a topic of discussion. John C. Wise, a balloonist from Lancaster, Pennsylvania, volunteered his services for an assault against Veracruz. The strategically important Mexican city was protected from land assault by a formidable fortress and shielded from seaborne attack by dangerous reefs. Wise wanted to attack from the air, using a balloon tethered by five miles of cable to conduct an aerial bombardment from an altitude of 5,000 feet. Not one for discretion, Wise widely publicized his proposal. He wrote a newspaper article declaring that, if supplied with a thousand "percussion bombshells", he could take "the castle of Veracruz . . . without the loss of a single life to our army, and at an expense that would be nothing to what it will be to take it by the common mode of attacks". Wise contacted the War Department with his idea, but never received a reply. General Winfield Scott took Veracruz, "by the common mode", apparently

without being apprized of the balloonist's scheme.

During the Civil War, balloons were used by both sides, but mostly by the North, employing a total of nine professional aeronauts. Each aeronaut approached war service in his own way, with James Allen in the lead.

On April 19, 1861, just four days after Abraham Lincoln issued the first call for enlistments, James Allen, a balloonist with four years experience, and his friend, both members of the 1st Rhode Island Regiment, volunteered their services to the federal government as balloonists. They immediately traveled to Washington with a pair of balloons. On June 9, they made the Union Army's first official captive balloon trial ascent. The army was sufficiently impressed and attempted a reconnaissance mission for General Irvin McDowell on the eve of First Manassas. Allen successfully inflated one of his balloons, but a ground crew, without any experience in ballooning, was assigned to tow the inflated craft to Falls Church, Virginia. Lieutenant Henry L. Abbot saw what happened next: "The detail, struggling and shouting, was slowly pulled toward the river in spite of their efforts until the balloon, in one of its stately plunges, struck a telegraph pole. There was a puff of gas, and our work was ended." As was the military career of a disgruntled James Allen, at least until March 1862, when he reentered the service as acting head of the balloon corps.

On June 12, 1861, Major Hartman Bache, Acting Chief of the Topographic Engineers, requested a cost estimate from John Wise to build and operate a small balloon. Wise offered to build a balloon for \$300 and operate it free of charge. Early in July, Wise was hired as a military balloonist and commissioned to construct a large balloon for \$850. Completed on July 21, the Army's first balloon was delivered to the Capital, where it was inflated, then walked by a ground crew up Pennsylvania Avenue to Georgetown, then up

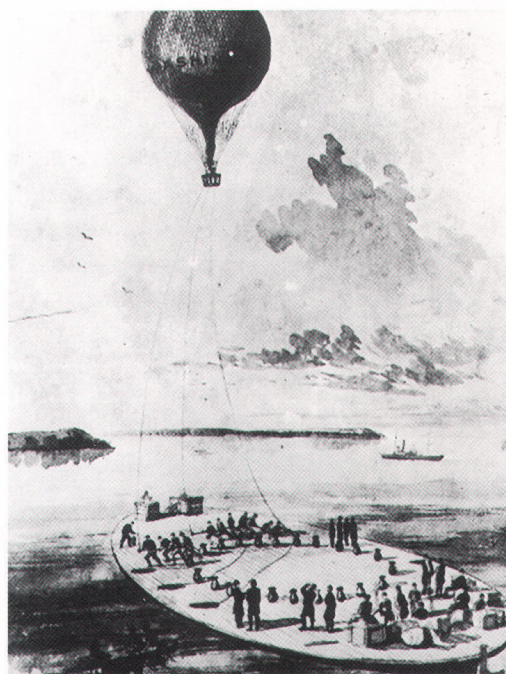
the C&O Canal, across the Potomac, to Fairfax Road. There Albert J. Myer, Chief Signal Officer, tethered it to a wagon for the trip to Manassas, to observe the progress of the battle. Unfortunately, Major Myer, anxious to deliver the balloon to the battle site, ordered the wagon driver to whip the horses, despite the protests of John Wise. As the balloonist feared, the gas bag snagged on overhanging branches, tearing gaping holes in the fabric as Wise attempted to free it.

It was somewhat fortunate that damage rendered the balloon unusable, since the Confederates overran the Union position at First Manassas and probably would have captured the unwieldy craft and its crew. Wise repaired his balloon and made observation ascensions on July 24, at Arlington. On July 26, a crew was towing the balloon to Ball's Crossroads. It hit some telegraph wires, which severed the tow ropes, sending the balloon, in free flight, toward the Confederate lines. Rather than allow the craft to fall into Confederate hands, Union troops were ordered to shoot it down.

During May 1861, John La Mountain offered the army not only his services as a balloonist, but also two balloons and a ready-made portable hydrogen generator. Major General Benjamin F. Butler, headquartered at Fortress Monroe, hired him as a civilian aerial observer on June 5. On July 31, La Mountain rose to 1,400 feet and, commanding a view thirty miles in radius, informed Butler that Confederate strength around Hampton was weaker than originally thought. It was La Mountain, a free-lance civilian, who recorded the first successful and useful balloon reconnaissance mission for the Army.

Another innovation occurred on August 3, when La Mountain's balloon, tied to the transport vessel *Fanny*, was carried out to the middle of the Potomac and completed the Army's first waterborne ascension. Later, the former coal barge *George Washington Parke Custis* would become the first vessel used

specifically for launching balloons and thus the first "aircraft carrier". After numerous productive captive ascents, La Mountain skillfully used the prevailing winds to accomplish a series of untethered reconnaissance missions, beginning on October 4. He ascended from Brigadier General W. B. Franklin's headquarters at Cloud's Mill, Virginia. Knowing that low-altitude prevailing winds would carry him east across Confederate lines, he jettisoned ballast to reach higher altitudes carrying him to westward winds and back to the Union lines. Remarkably his strategy worked, albeit not without incident. True enough, the easterlies carried him over the Confederate lines, and the westerlies returned him to the Union lines, but La Mountain had little control over precisely where he landed. On an October 18th mission, he set down unexpectedly in the middle of Brigadier General Louis Blenker's "German Brigade". They greeted the "ungodly apparition" with a volley of shots that damaged the balloon and nearly finished off La Mountain as well.



The first "aircraft carrier," the *George Washington Parke Custis*. Courtesy of the National Archives.

While La Mountain was enjoying initial success, Thaddeus Lowe, an old rival, entered the balloon service. On November 16, 1861, after his balloon *Saratoga* was torn from its moorings and lost over Confederate lines, La Mountain tried to borrow a balloon from Lowe. The two quarreled, and General George B. McClellan settled the matter by dismissing La Mountain on February 19, 1862. La Mountain had demonstrated the effectiveness



Prof. Lowe, the battle of Seven Pines from the balloon *Intrepid*, 1862.
Courtesy of National Archives.

of balloon-borne observation, but Lowe would become the Civil War's most significant balloonist.

President Lincoln interviewed Lowe on June 11, 1861 and the War Department provided Lowe a sum of \$250 for balloon demonstrations, including, on June 18, the transmission of a telegraph message from aloft. On the 19th, the demonstration was repeated for General McDowell, who assigned Lowe to the Army of the Potomac. After a few ascensions, hampered by adverse winds, the operations yielded an excellent topographical map. Lowe persisted in providing balloon demonstrations, gaining greater support and enough

clout to obtain a second appointment from President Lincoln. Lincoln wrote a note to Union commander Winfield Scott requesting that the general interview Lowe. Eventually the president *personally* escorted Lowe to Scott's headquarters and the general promised to officially establish a balloon corps.

After some wrangling over official status and salary, Lowe was commissioned to build a balloon, the 25,000-cubic-foot *Union*. It went into action on August 29, 1861, over Arlington, Virginia. For the first time in America, a balloon became the target of hostile artillery fire when a Confederate battery opened up on the *Union*. Lowe and his craft escaped unharmed. The aeronaut went on to demonstrate how effectively a balloon could direct artillery fire by telegraph. Despite the success of the demonstration, the army continued to use balloons chiefly for reconnaissance rather than artillery spotting. Lowe found his staunchest supporter in Brigadier General Fitz John Porter, who was enthusiastic enough to personally make approximately one hundred ascents. On September 25, Lowe was authorized to construct *four* additional balloons and "such inflating apparatus as may be necessary for them". Lowe designed a portable generator capable of inflating a balloon in a few hours and by November 10, 1861, four new balloons were finished. In January 1862, two more were added, giving the army a total of seven balloons. These were the nucleus of the balloon corps, the first air arm of the United States military.

One more piece of equipment was added to the embryonic balloon corps, the world's first "aircraft carrier". The aforementioned USS *George Washington Parke Custis*, a Navy coal barge, consigned to the Army in November 1861 and modified to serve as a balloon station, supply vessel, and launching platform.

With equipment in place, Lowe's next task was to staff his new squadron. Rivalries

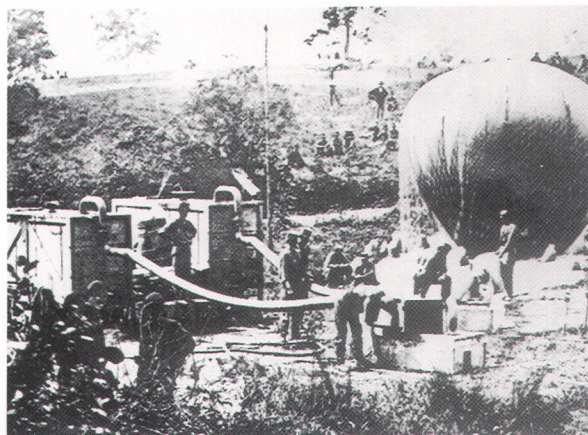
among the nation's leading aeronauts were running high. Lowe would not recruit the two balloonists with the greatest experience, Wise and La Mountain. He did find William Paullin, John R. Dickinson, Ebenezer Seaver (immediately dismissed because he refused to work until he was paid), John Starkweather, John H. Steiner (resigned after a year of service), Ebenezer Locke Mason, Jr. (also dismissed because he would not work before payment), and experienced balloonist James Allen, who brought along his able brother Ezra.

None of the balloonists received military status. They were civilian employees of the Army paid somewhat better than military officers, when they actually received the wages promised them. Lowe, for example, received ten dollars a day, slightly more than the salary of a full colonel. These civilian aeronauts, in turn, employed some civilian assistants, but also availed themselves of enlisted men attached to the balloon corps either permanently or on a temporary basis. These men helped transport and inflate the balloons and then managed the tethered crafts once they were aloft.

The hybrid nature and semi-official status of the balloon corps created numerous difficulties. Although Lowe and the other aeronauts were, in theory, well paid, their supply and transportation support was unreliable. Lowe often paid for provisions, hardware, and teamster services, only to have the Quartermaster Corps refuse to honor his requests for reimbursement. As far as the Army was concerned, the enlisted men assigned to Lowe might just as well have fallen off the face of the earth. One enlisted man, assigned permanently with the balloon corps, faithfully fulfilled his duties, only to be recorded as a deserter. Another balloon corps enlisted man was simply reported missing. In these instances pay was delayed for weeks or months.

The fact that the Army failed to assign Lowe and his balloon corps official status did

not discourage Lowe from styling himself variously and grandiosely "Aeronaut", "Chief Aeronaut", and even "Chief of Aeronautics, Army of the Potomac". The balloon corps was carelessly shuffled from one military jurisdiction to another. The corps was formed under the governance of the Topographic Engineers of the Army, with the Quartermaster irregularly furnishing supplies. After March 31, 1862, the balloon corps became entirely the province of the Quartermaster until May 25, 1862, when it came under the tactical control of Brigadier General Andrew A. Humphreys, Chief Topographic Engineer on General McClellan's staff. On April 7, 1863, control was transferred to the Army Corps of Engineers under the direction of Captain Cyrus B. Comstock, who immediately informed Lowe that his pay was being cut from ten dollars per day to six. After making a protest, Lowe resigned, volunteering to remain in service until the battles in progress were resolved. On May 7, 1863, he left the corps, and command was briefly given to Brigadier General Gouverneur K. Warren. In June, General Joseph Hooker



Inflation of the balloon *Intrepid* during the battle of Fair Oaks. Courtesy of the National Archives.

assigned Chief Signal Officer Colonel Albert J. Myer to take over the "balloon department". Myer, no advocate of aerial observation, protested that he had neither the men nor the appropriation to run the department.

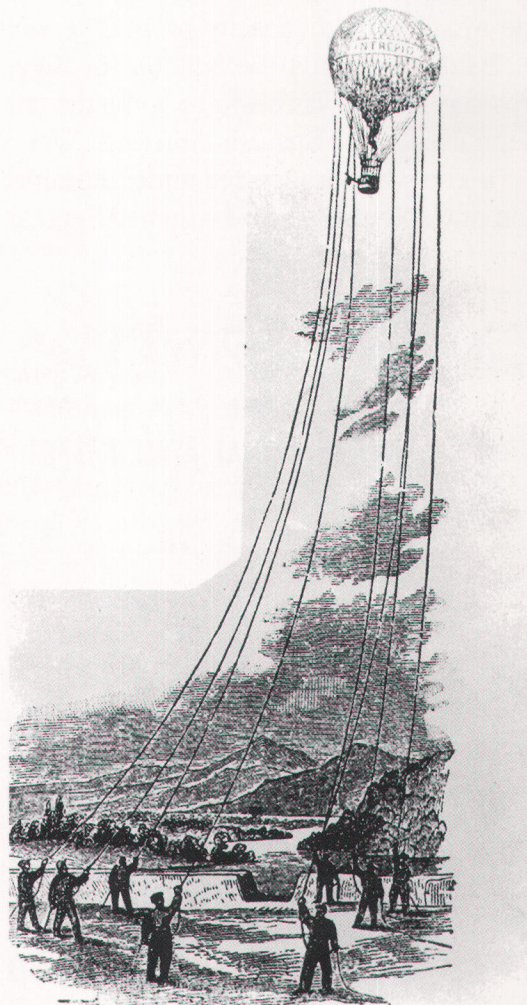
In the meantime, General Daniel Butterfield complained, without any basis, that balloon operations held no value. Other officers strongly disagreed, including George McClellan and Fitz John Porter who were influential men, but both relieved of command by June of 1863. Following Myers's refusal to take over the department, the balloon corps was disbanded.

The U.S. Army neglected aviation from the disbandment of the balloon corps in 1863 until October 1, 1890, when Congress assigned the Signal Corps the duty of collecting and transmitting information for the Army. Chief Signal Officer Brigadier General Adolphus V. Greely decided that observation balloons would be a significant asset in carrying out this assignment and in 1891 requested appropriations to create a balloon corps. The following year, a balloon "section" was formally established within the Signal Corps. It is important to note that this balloon section marked the beginning of the first military aeronautic organization in the United States Army since the Civil War and was perhaps the first fully *official* aeronautic organization in U.S. military history.

In 1891, Greely dispatched Lieutenant William A. Glassford to Europe to study the latest developments in balloon aeronautics. The lieutenant procured a small balloon, christened the *General Myer*. The new balloon was equipped with a telephone for air-to-ground communication. This was perhaps the first American military use of the invention in aeronautics. The balloon was sent to the Signal Corps School at Fort Riley, Kansas, and then to Fort Logan, Colorado. In 1892 Glassford was promoted to captain and created an operational balloon section as part of a Signal

Corps telegraph train. The telegraph train was a wagon train used for communications purposes.

On October 31, 1893, the first Army balloon ascents since the Civil War were made by Capt. R.E. Thompson at Chicago's Columbian Exposition, with the aid of five Signal Corp sergeants. At the exposition officers and Signal Corps enlisted men received practical



Ascension of the balloon *Intrepid*, 1862. Courtesy of the National Archives.

balloon instruction during several hundred ascents of the *General Myer*. It was inflated with hydrogen compressed in tubes. Telephone communications were maintained between the ground and the balloon. At the close of the exposition, the balloon was sent to Fort Riley.

After heavy use in 1897, the *General Myer* was destroyed in a severe windstorm. Sergeant William Ivy Baldwin, a professional aeronaut, who, in civilian life, had earned a reputation as a stunt balloonist and parachutist under the alias of Ivy Baldwin, enlisted at the insistence of Captain William A. Glassford. Glassford directed Sergeant Baldwin to build a new balloon. During the previous year Baldwin and his wife had completed a balloon, made of silk with a capacity of 14,000 cubic feet. Baldwin readied the balloon for Signal Corps service. It was destined to be the only balloon used in the Spanish-American War.

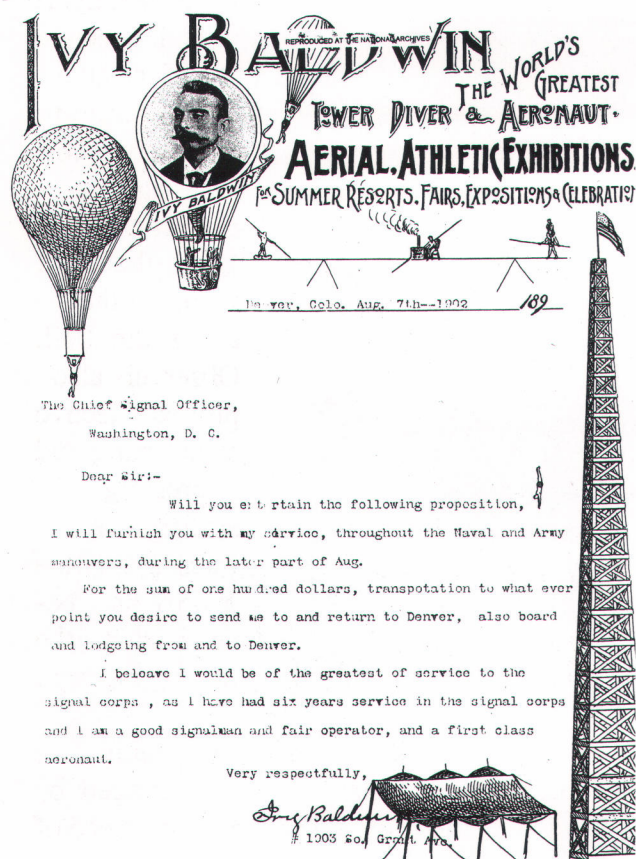
The work progressed under the supervision of Captain Glassford who had Sergeant

Baldwin's silk balloon, a balloon wagon with cable drum, cables and accessories; four tube wagons and accessories; one service wagon; a gas generating apparatus, a compressor and 180 steel tubes. The cable was braided with strands, two of which were insulated wires. They formed a telephone circuit, enabling the observers in the air to talk directly with ground personnel. Two Signal Corps personnel of the balloon section made ascensions at Fort Logan with telephone cable.

A balloon house was constructed with a \$10,000 appropriation for construction and experiments, which, "it is hoped may meet the approval of the secretary of war and of congress". The Fort Logan balloon house was eventually completed in 1897.

A short time before the Spanish-American War in 1897, General A.W. Greely, built the first U.S. "balloon park" for balloon inflation and practice ascents at Fort Logan. The formation of a balloon train used normal Army wagons except for a specially constructed captive balloon wagon. Sergeant Ivy Baldwin built several balloons at the park. The training of Baldwin's men prepared them for success at the siege of Santiago, Cuba, although Baldwin received most of the credit for the unit's accomplishments.

When the United States declared war on Spain on April 25, 1898, Lieutenant Colonel Joseph E. Maxfield of the Signal Corps was ordered to transport Ivy's balloon to New York City. On May 31, Maxfield was directed to transport it from New York to Tampa, Florida, where he was told to prepare for immediate embarkation to Santiago, Cuba. Maxfield was assigned a command of twenty-four enlisted men detailed from the Signal Corps and from two infantry units. Three officers were assigned to the balloon detachment, one of whom, Walter S. Volkmar, was given a field commission and rose in rank from sergeant to second lieutenant. In the confusion and congestion that reigned in the war-fevered



William Ivy Baldwin's artful letterhead, August 7, 1902. Courtesy of the National Archives.

Tampa railroad yards, Maxfield was given no time to transfer all of his equipment to the Cuba-bound boat, nor to arm his new unit.

The ill-equipped and unarmed balloon train arrived in Santiago on June 22, but disembarkation was delayed until June 28. Logistical problems prevented the balloonists from going ashore with their cumbersome hydrogen generator and the even more burdensome stock of iron filings and hydrogen-producing sulfuric acid.

They had to use pre-filled hydrogen cylinders, meaning the balloon could be inflated only once in the field. The balloon reached headquarters on June 29 and was unpacked. The tropical heat had softened the varnish coating on the fabric envelope. Now stuck together and partially disintegrated, the torn fabric was sewn and patched. The hasty repairs were imperfect at best.

Equipped with an unsafe balloon Lieutenant Colonel Maxfield relied on one great asset in Sergeant Ivy Baldwin. On June 30, Baldwin and Maxfield made the first ascension. Pleased with the results, Maxfield took Lieutenant Colonel George M. Derby aloft. He then assigned Lieutenant W. S. Volkmar to make a third ascent with a Cuban general named Castillo. The ascensions

confirmed the presence of the Spanish fleet in Manila harbor. Enthusiastically positive reports were made to U.S. expedition commander General William R. Shafter. Even more impressive were the observations made on July 1, during the critical Battle of San Juan Hill. An initial captive ascent was made at some distance from the battle. Colonel Derby ordered the balloon to move within 650 yards of the Spanish trenches. From this position,

balloon observers were able to discover a trail that relieved congestion and enabled the troops to advance rapidly. It also allowed the American and Cuban forces to deploy two columns against the Spanish, one along the main road, another along the trail. Observers also proved effective in directing and redirecting artillery fire.

Indeed, some historians believe that the

use of the balloon was a determining factor in the victory.

That valuable information came at a high cost. The balloon, badly damaged by enemy fire, was beyond repair. Convinced of the value of balloon observation, the army organized a second balloon company, equipped with two balloons. However, it was not ready before the war ended.

Despite the success of balloon recon-



First ascension at Fort Logan, Colorado of Sergeant Baldwin's war-balloon *Santiago*, circa 1897. Courtesy of the National Archives.



The balloon *Santiago* at the San Juan ford during the attack on San Juan Hill, July 1, 1898.
Courtesy of the National Archives.

naissance in the Spanish-American War and General Greely's lobby for appropriations to create a full-scale aeronautical program, little was done after the war to develop a program. In 1900, Congress appropriated \$18,500 for a balloon house, plus administration and instruction buildings at Fort Myer, Virginia. Two years later, a balloon detachment consisting of a dozen enlisted men (later expanded to twenty-two) was organized at Fort Myer under the command of Lieutenant A. T. Clifton. Equipment was modest: a German-built kite balloon, three French-built silk balloons, and five small cotton signal balloons. When the detachment was ordered to participate in joint Army-Navy maneuvers in 1903, it was found that the equipment was badly deteriorated and required repairs by a civilian consultant. In preparation for the maneuvers, a Sergeant Bledsoe, Lieutenant Clifton, and Major Samuel Reber went to Frankfort, New York, to supervise the construction of additional captive hydrogen balloons. Despite these additions, the balloon detachment did very little ballooning until 1906, when the Signal Corps was able to obtain sufficient

compressed hydrogen for regular operations. In August of 1906, balloon instruction was expanded from Fort Myer, Virginia, to Fort Leavenworth, Kansas, but the training was limited to mostly classroom theory because of chronic equipment shortages.

In 1906 a complete modern captive balloon, 7,750 cubic feet, was ordered and delivered before summer. In 1907 the Signal Corps purchased a complete military captive balloon, 300 cubic meters capacity, and an ordinary spherical balloon, with a capacity of 2,200 cubic meters. The Army used the balloon for instruction of both officers and enlisted men.

Finally, on August 1, 1907 the Aeronautical Division was organized. The creation of this unit would later be acknowledged as the birth of today's Air Force.



Enlisted men in front of the balloon house, Fort Omaha, Nebraska with Dirigible No. 1, circa 1909. Courtesy of the National Archives.

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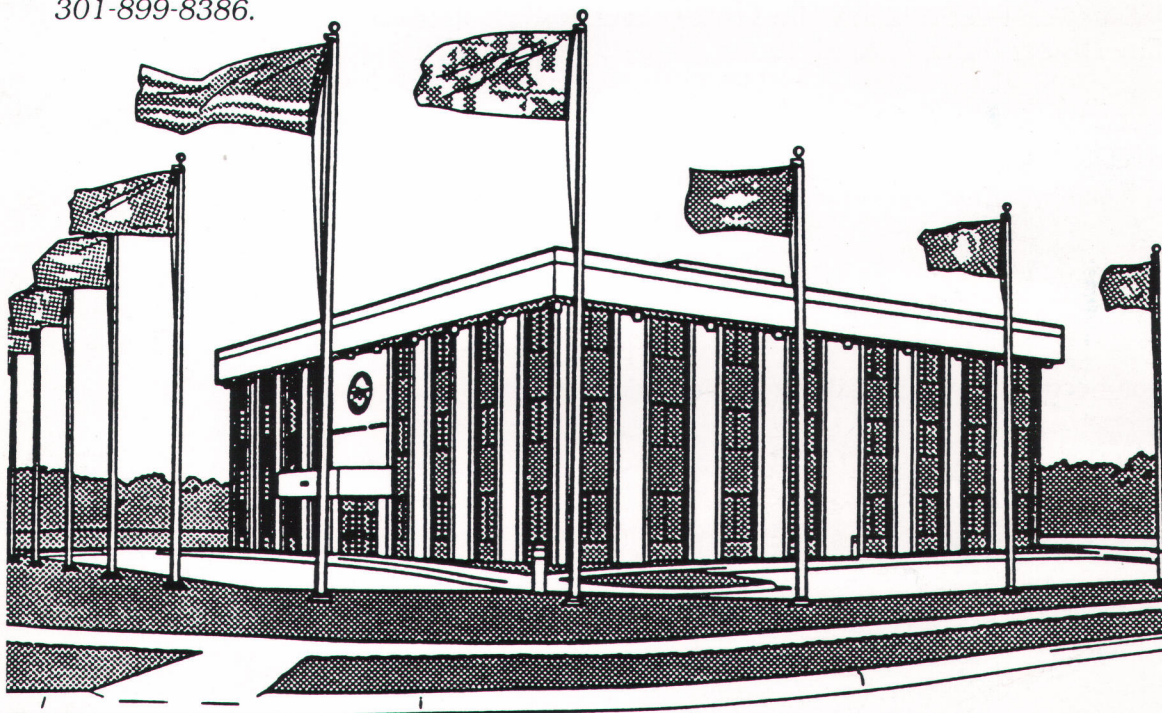


AIRMEN MEMORIAL MUSEUM

Founded in 1986, the Airmen Memorial Museum stands as a tribute to enlisted airmen who have served in the U.S. Air Force, the Army Air Corps and the U.S. Army Air Forces.

Located in the Airmen Memorial Building just eight miles from Washington, D.C., this museum is a maturing showcase of accomplishments. It is also designed to function as a research and reference center that documents and preserves the contributions of the men and women who have served honorably but, until now, without a memorial or museum they could call their own.

The museum is open 8 a.m. until 5 p.m. weekdays and during specially-scheduled events. For more information about the museum and its research project, contact the Airmen Memorial Museum, toll-free, at 1-800-638-0594 or 301-899-8386.



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