



Chapter

3

THE GOLDEN AGE

1919-1939

The 20-year period between the end of World War I and the beginning of World War II has been called the “Golden Age of Aviation.” During this period, there were many exciting and dramatic exploits by daring aviators from many lands. New speed and altitude records were set, broken and reset, over and over again. There were oceans and continents to cross, and each accomplishment led to someone who wanted to do it better and faster. The airplane changed from a slow, wood-framed, fabric-covered biplane to a fast, sleek, all-metal monoplane.



Objectives

Describe the problems associated with the first attempts to cross the Atlantic Ocean.

Discuss the successful crossings of the Atlantic Ocean in 1919.

Recall how the United States cut back on investing in air power after World War I.

Describe the impact that barnstorming had on the development of air power.

Recognize the advantage air power has over ships.

Describe the military’s attempt to fly across the American continent.

Describe the impact that the around-the-world flight had on the development of air power.

Identify what led the Navy to develop the aircraft carrier.

Recall the impact the National Air Races had on the development of air power.

Recall the impact of airmail delivery on the development of commercial aviation.

Discuss the importance of the Air Mail Act of 1925, the Air Commerce Act of 1926, the Air Mail Act of 1934, and the Air Mail Act of 1938.

Recognize the importance Charles Lindbergh’s historic flight had on the development of civil aviation.

Identify the achievements of Amelia Earhart.

Explain the importance of Jimmy Doolittle’s blind takeoff and landing.

Discuss the contributions Dr. Goddard made to the advancement of air and space power.

Discuss the impact of the McNary-Watres Act on the development of commercial aviation.

Identify the standard commercial airliner for in 1938.

Identify the aircraft that flew across the Atlantic with no fatal accidents in 1938.

Discuss the most famous dirigible of all.



The Curtiss JN 4 Jenny (EAA)

Flying the Atlantic

The first natural barrier to be challenged was the Atlantic Ocean, and it was conquered in 1919. The first attempt to cross the Atlantic was made by the United States Navy flying three new Curtiss flying boats. The flight was to be made in four stages: from Rockaway, New York, to Trepassey, Newfoundland; to the Azores; to Lisbon, Portugal; to Plymouth, England.

The *NC-1*, *NC-3* and *NC-4*, commanded by Lieutenant Commander R. Bellinger, Commander J. Towers, and Lieutenant Commander Albert Read, respectively, left Rockaway on May 8, 1919, and all arrived safely at Trepassey. The next stage was the critical one. It was the long flight to the Azores. They had to cross 1,200 miles over water. As a safeguard, naval vessels stretched 50 miles apart along the proposed route. If the planes remained on their course, an emergency landing would find them no more than 25 miles from help.

On May 16, 1919, the three planes took off from Trepassey. Over the Atlantic that night, they occasionally saw each other's lights and checked their courses by radio or by the rockets and searchlights of the destroyers marking the way. The next day, a thick fog settled in. Both Commander Bellinger in the *NC-1* and Commander Towers in the *NC-3* landed on the water to check their navigation.

In waves as much as 12 feet high, Commander Towers was able to land without serious damage to his craft. The plane was off course, southwest of its destination. The crew found that they could not takeoff in the heavy seas, and they were barely able to keep the plane afloat. They finally "taxied" the plane to Horta, Azores, which took 3 days on rough seas. The plane was so badly damaged that it was not able to continue the flight.



The *NC-1* came down after flying 850 miles. It was badly damaged in the landing and began to break up in the water. A steamship rescued the crew. A naval destroyer tried to take the plane in tow, but it sank.

Commander Read, in the *NC-4*, kept to the air and came roaring down into the harbor of Horta, Azores, 15 hours and 18 minutes after leaving Trepassey.

On May 20, 1919, Commander Read and his crew flew on to Ponta Delgada, a 1-hour and 44-minute flight. On May 27, they flew on to Lisbon, Portugal, reaching there in 9 hours and 43 minutes. The total flying time for the Atlantic crossing Newfoundland to Portugal, was 26 hours and 45 minutes.



Sikorsky S-38C Flying Boat. (EAA)

On May 30, the *NC-4* proceeded up the coast with stops at the Mondego River and at Ferrol, Spain. The next morning they landed at Plymouth near the spot where the *Mayflower* had moored 300 years before. The total airline distance from Rockaway was 3,936 miles. The total flying time was 52 hours and 31 minutes. This was the first transatlantic crossing. Amazingly, just 2 weeks later, the first nonstop crossing of the Atlantic was made.

In 1913, the *London Daily Mail* made a standing offer of \$50,000 to the crew of the first airplane that could make a nonstop crossing of the Atlantic, starting from either side, and lasting no longer than 72 hours. Because of the war, no one attempted to win the prize until the spring of 1919. The first team to make the attempt was Harry Hawker, an Austrian war hero, and his navigator, Lieutenant Commander Kenneth McKenzie-Grieve of the Royal Navy. Their attempt ended in failure.



The second pair of hopefuls was Captain John Alcock and Lieutenant Arthur Whitten Brown. While Hawker and McKenzie were leaving Trepassey, John Alcock and Arthur Whitten Brown, with their *Vickers-Vimy* converted bomber, were on a steamship headed for Newfoundland. Brown, who was born in America, was a veteran of the Royal Air Force, as was Captain John Alcock. Both had outstanding war records. They reached St. John's, Newfoundland, on May 24.

This was the day before it became known that Hawker and McKenzie-Grieve had been rescued, and 3 days before the *NC-4* reached Lisbon. It looked as if they still had a chance to win the *London Daily Mail* prize and also be the first to cross the Atlantic, but they were grounded for several days. The first delay was caused by bad weather and the second by needed radio repairs.

They took off at 4:28 p.m. on July 14, 1919, with 856 gallons of gasoline aboard. Their plane weighed 13,500 pounds; and the two 350-horsepower Rolls Royce engines were barely able to lift it over a fence at the end of the runway. With the help of a 30-mph tail wind, the plane was soon headed for Ireland at a speed of 120 mph.

When the aviators were scarcely out of sight of land, they ran into heavy fog. During the first 7 hours, they had only occasional glimpses of sea or sky. Later, the visibility became even worse. Once, at 4,000 feet, the plane went into a spin, and Alcock had difficulty pulling it out in time to prevent a crash.

As they flew on, the weather seemed to get worse. Snow and sleet clogged the radiator, and ice threatened to overload the plane. The radio quit early in the flight. This made it impossible for them to get bearings from ships and navigate as they had planned. When Brown was finally able to determine their position, he was delighted to find out that they were extremely lucky. They were on course and nearing Ireland. Soon they saw the islands of Turbot and Eashal, off the Irish coast. Next, they recognized the masts of the radio station at Clifden. They circled over the station, but no one appeared to see them.

Soon they discovered what appeared to be a meadow suitable for a landing place. It turned out to be a bog. When they landed, the front wheels disappeared and the nose of the plane plowed into the ground. Fortunately, neither Alcock nor Brown was injured, and they managed to get themselves out from the muck without too much difficulty.

It was then 8:40 a.m. on June 15. This was 16 hours and 12 minutes since they had left St. John's. They had traveled 1,880 miles at an average speed of almost 2 miles a minute to make the first nonstop crossing of the Atlantic and win the \$50,000. This accomplishment of 1919 was a remarkable advance over the achievements of 1903.

Investing In Air Power

All of the nations involved in World War I built great aviation industries. During the war, France built 67,982 aircraft, Germany 47,637 and Italy about 20,000. Even the United States built 15,000 airplanes during the 21 months it was involved in the war. The British production had increased from an average of about 20 per month at the beginning of the war, to 3,500 per month when the war ended.

When World War I ended on November 11, 1918, there were over 177,000 aircraft in service in Europe. Despite our slow start, America's front-line strength consisted of 750 combat aircraft and 800 pilots. There were an additional 3,000 training aircraft and a total of about 9,500 men in the Air Service. This changed almost overnight after the war ended.



On November 14, 1918, 3 days after the war ended, the United States Government canceled \$100 million in airplane contracts. Within 3 months, 175,000 factory workers were laid off and aircraft production dropped by 85 percent. The government's surplus warplanes were dumped on the market causing the aviation industries to lose what small market they did have. These industries, which had built up slowly during the war, now closed at an alarming rate. They could not afford to stay open.

Military aviation was cut back by 95 percent. The pilots and other aviation personnel who had taken so long to train were now unemployed. Military airfields were closed. This created a shortage of landing fields for those airplanes that were still flying. In fact, aviation in the United States almost died. If it had not been for two groups of people, the "barnstormers" and the Army aviators led by the outspoken General "Billy" Mitchell, it certainly would have.

The "Barnstormers"



After WWI, the Curtiss *JN 4 Jenny* became available to the general public as Army surplus and was used by many of the early barnstormers. (EAA)

The barnstormers were, for the most part, ex-military aviators who flew war-surplus aircraft such as the Curtiss *JN-4 Jenny*. They flew around the country, circling over a village or small town to attract attention, and landed on a nearby farm. When curious townspeople began to gather to get a good look at the plane, the pilot would offer rides to individuals. They usually charged people \$3.00 to \$5.00 per ride.



The barnstormers also put on flying exhibitions at county fairs, carnivals and anywhere else crowds gathered. Sometimes several of the pilots worked together as a team, calling themselves a “flying circus.”

Those who did not work as part of a large group learned that they could offer the crowds more thrills if they teamed up with a stuntman. “Wing walking” was one of the tricks that always pleased the crowds. While the pilot flew the biplane in a circle, the stunt person would leave the cockpit and walk out on the edge of the lower wing. Then they would climb to the upper wing and walk back toward the cockpit. Some of the wing walkers would give the viewers an extra thrill by standing on their heads.

Besides ex-military aviators, there were a number of women aviators who attracted the public’s attention during this barnstorming period. Less famous than Lindbergh, but a pioneer in her own right, was a female barnstormer named Phoebe Fairgrave Omlie. She not only ran her own “flying circus” but went on to become the first female licensed transport pilot in the United States.

Another stunt pilot was the first licensed black female pilot, Bessie Coleman. Coleman, who had to go to France to get her license, represented the first breakthrough for black women in aviation. She

served as a model for other black women to enter aviation. Unfortunately, Bessie Coleman died doing what she really loved. She died in a crash in Florida at the early age of 27.

When World War I ended, most people in the United States had never seen an airplane. If they thought of airplanes at all, it was probably with fear. Then came the barnstormers with air shows that may not have done away with the fears, but certainly created interest in fliers and flying.

Some say that if it were not for the “barnstormers,” aviation may have died all together in the United States. These colorful daredevils ushered in two decades of people who were to see improvement in aircraft design and achievement by the people who took to the air.



Bessie Coleman, America’s first licensed African-American pilot , flew a Jenny at air shows during the twenties.



Army Air Power Develops

While the “barnstormers” were encouraging interest in aviation among the citizens of the United States, General William “Billy” Mitchell was trying to encourage investment in military aviation. After he returned home from World War I, he was convinced that air power would decide the winner of the next Great War.

General Mitchell thought the airplane could be used to bomb military and industrial targets deep inside an enemy’s homeland. He thought that after the United States achieved air superiority over the enemy, air power could then attack the enemy’s ground troops and supply line. He thought this would be a better form of war because it might save lives.

General Mitchell had seen the bloody battles of World War I firsthand. Thousands of lives were lost when armies dug in deep and slugged it out. Air power, General Mitchell thought, could fly over that battlefield, attack the enemy’s supplies, thus, shorten the war and save lives.

In order to achieve his vision of air power, General Mitchell was a very vocal advocate of an air service separate from, but equal to, the Army and Navy. The first problem he faced was to convince the Army he was right, then he had to convince Congress. He decided that the only way to overcome the indifference toward aviation, both within the Army and the Congress, was to demonstrate the capability of the airplane as a superior military weapon.

Since it was widely agreed that America’s first line of defense was the Navy battleships, Mitchell chose to prove that an airplane could sink a battleship. With a successful test, Mitchell hoped to



Only a few of the WWI aircraft remain. This spectacular SPAD was restored by the San Diego Aerospace Museum and is currently on display.

The SPAD In It’s Finished Form





Mitchell's bombers sinking the *Ostfriesland* battleship.

convince the military and Congress that they needed to shift the foundation of national defense from the battleship to the bomber.

By 1921, Mitchell had created such an uproar that the Navy agreed to allow him to perform his demonstration. Confident that he could not succeed, the Navy provided several captured German ships as targets, including the battleship *Ostfriesland*. The *Ostfriesland* was a huge ship that had been called “unsinkable” by naval experts. Using light bombs, Mitchell’s pilots did little damage to the giant battleship.

The next day the Army fliers returned carrying 1,000-pound bombs, and again the battleship survived. On the afternoon of July 21, 1921, the Army pilots carried 2,000-pound bombs. Eight of these bombs were dropped and 25 minutes later, the “unsinkable” pride of the German Navy slipped beneath the waves.

The lesson to be learned from this demonstration, unfortunately, was lost on the Army generals. Congress, which controlled the purse strings, also rejected Mitchell. So, Mitchell did not get additional money for aircraft. Several Navy admirals, however, did learn the lesson. They could see that the airplane would play a dominant role in future naval warfare. Within 8 months, the Navy had its first aircraft carrier.

Since Mitchell was unable to convince Congress or the Army leaders to invest in air power, he decided to reach Congress through the voters that elected them. To do this, he decided to do some “barnstorming” of his own and planned some spectacular demonstrations of air power.

First thing he did was plan for flight over the American continent. In 1922, he had Lieutenant Oakley Kelly and Lieutenant John Macready of the United States Army Air Service attempt to fly nonstop from San Diego to New York. The first flight had to turn back because of bad weather. The second time, a leaky radiator forced them down at Indianapolis, Indiana, after flying almost three-fourths of the way across the United States.

After these two attempts failed, they decided to reverse their direction and fly from New York to San Diego. They believed the advantage of a light gas tank when crossing the Rocky Mountains would outweigh the advantage of the tail wind they would probably have traveling east.

At 12:30 p.m. on May 2, 1923, they took off from Roosevelt Field, New York on their third attempt. Their plane was a *Fokker T-2* with a 400-horsepower Liberty engine. The heavily loaded plane barely cleared obstacles at the end of the runway.

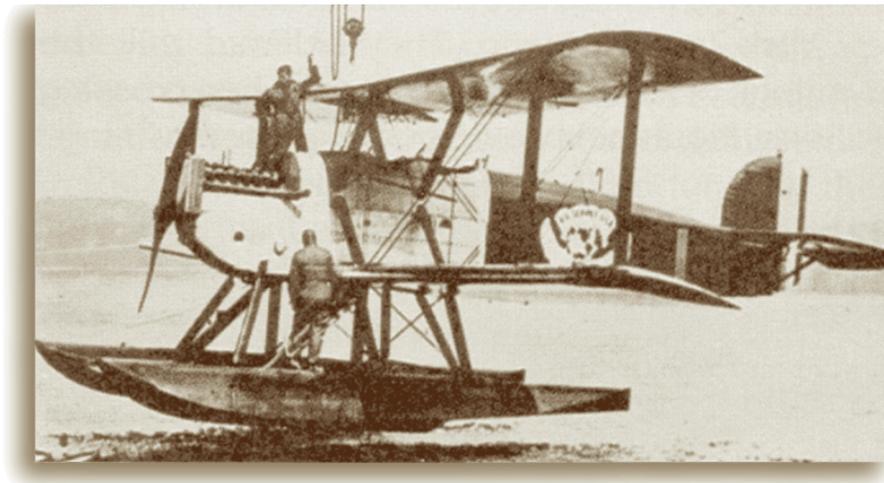


Kelly and Macready flew over Indianapolis after nightfall and entered the mountains near Tucumcari, New Mexico, early the next morning. Fortunately, they had a tailwind most of the way. In spite of their heavy fuel load, they flew much of the way at 100 mph. Shortly after noon on May 3, they landed at San Diego after flying 2,520 miles in 26 hours and 50 minutes.

The most spectacular flight demonstration organized by General Mitchell was the first round-the-world flight. The Army performed this amazing flight in 1924 using aircraft built by Douglas Aircraft. The four airplanes—the *Boston*, *Chicago*,



Many WWI aircraft, such as this *Nieuport 28*, have either been restored or replicated by aviation enthusiasts. To see one flying today is a spectacular sight. (EAA)



The Douglas *DWC/DOS* that flew around the world.

aircraft (the *Chicago* and the *New Orleans*) completed the entire flight. The *Seattle* crashed in Alaska soon after the journey began, and the *Boston* was forced down in the Atlantic between England and Iceland.

A replacement aircraft called the *Boston II* was taken to Nova Scotia, and the crew of the *Boston* flew it on to Seattle. The total distance flown around the world was 26,345 miles, and the actual flying time was 363 hours and 7 minutes.

In August 1923, the Army performed the first refueling of an airplane while in flight. Lieutenants Lowell Smith and J. P. Richter remained airborne for 37 hours and 15 minutes by refueling their aircraft through a 50-foot hose from another airplane. The refueling operation was done 16 times with about 50 gallons of fuel being transferred each time.

Seattle, and *New Orleans*—were named for the cities that sponsored each of them.

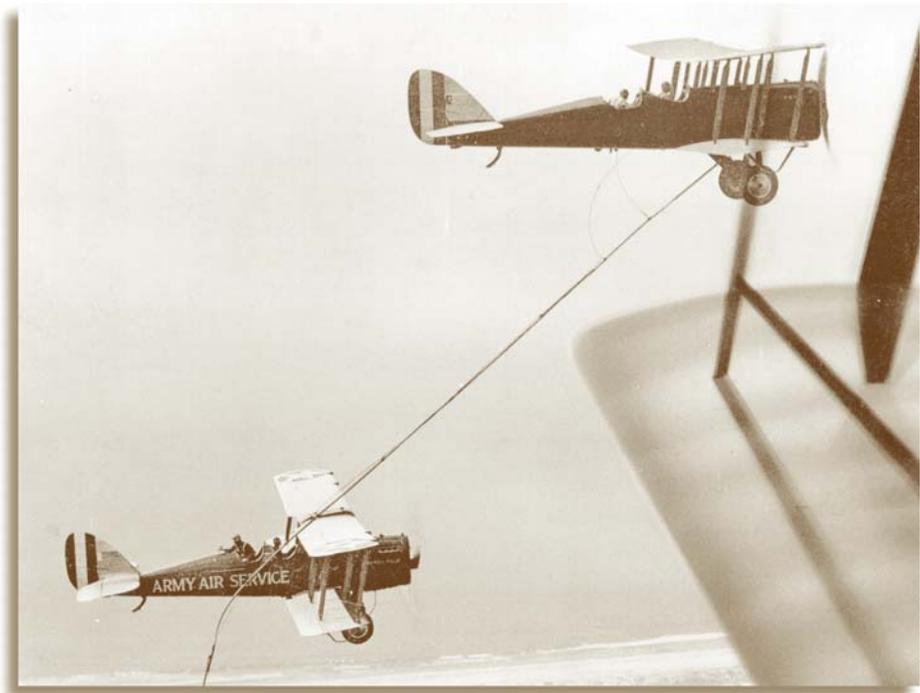
The flight started in Seattle, Washington, and went to Alaska, Japan, China, Indochina, Burma, India, Syria, Austria, France, England, Iceland, Greenland, Labrador, Newfoundland, Nova Scotia and across the entire United States back to Seattle.

The entire flight took 175 days, and only two of the



This feat was repeated again in 1929. This time it was done by two women aviators, Elinor Smith and Bobbi Trout. These two daring women became the first women pilots to refuel a plane in midair.

On June 23, 1924, Army Lieutenant Russell Maughan flew a *Curtiss PW-8* pursuit aircraft from coast-to-coast in a dawn-to-dusk flight. The 2,850-mile trip was completed in 21 hours and 47 minutes at an average speed of 156 mph. Although he had to land five times to refuel, Lt. Maughan left New York at dawn and landed in San Francisco before dark.



Early attempts at air-to-air refueling were quite dangerous.

This flight demonstrated that Army aircraft located anywhere in the United States could be flown to any other location in the country in less than 1 day.

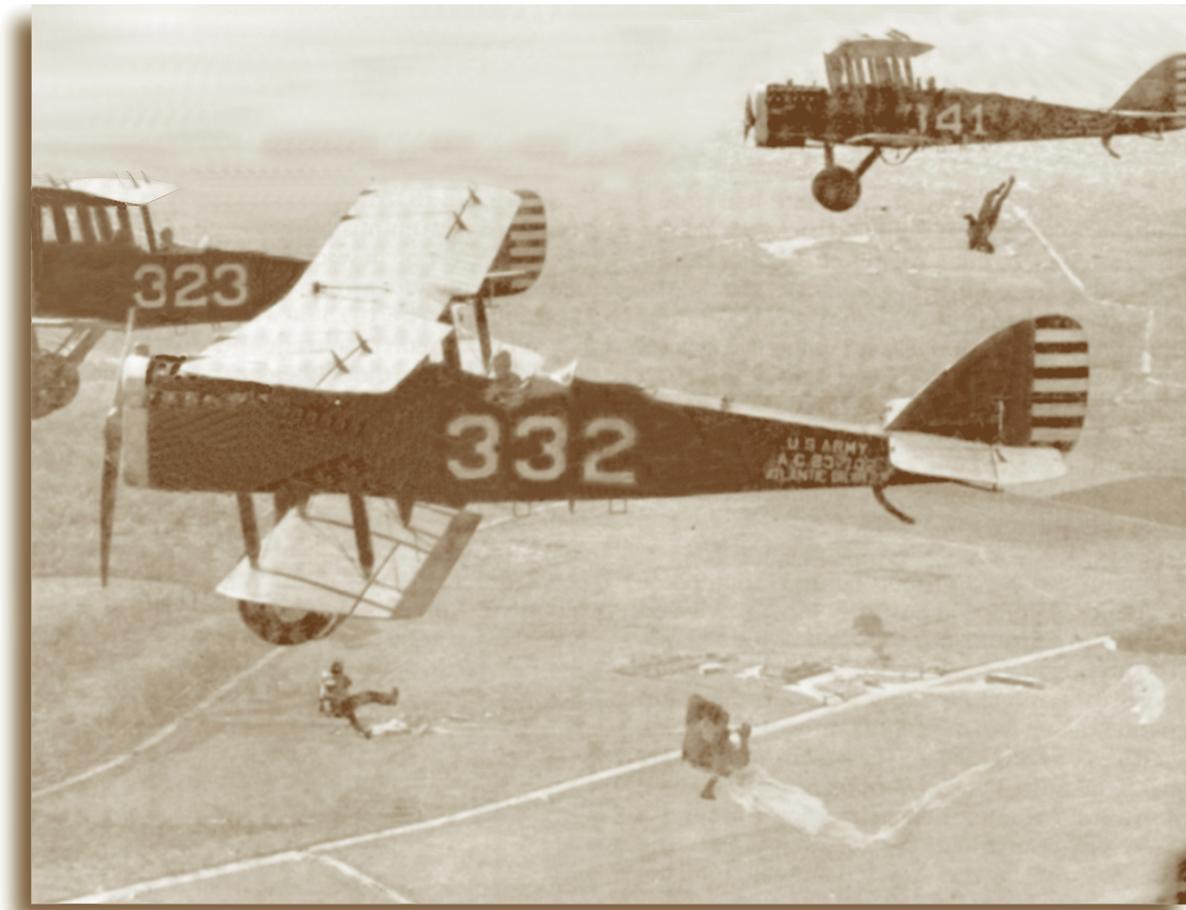
The Army also showed air power's ability to move troops quickly. The first demonstration of using paratroops (troops who use parachutes) was in September of 1929 at Brooks Field in Texas. Sergeant Edwin Nickles and a squad of 17 men jumped from nine *DH-4s* and landed safely on the ground 3,000 feet below. At the same time, three bundles of machine guns and ammunition were dropped from three *Douglas* transports, and within 4 minutes after the jump, the machine guns were in action.

All of General Mitchell's efforts gained wide national and world acclaim, but still did not result in the outcome Mitchell sought, a separate Air Service and more money for military aviation.

Following a world tour of foreign military aviation, Mitchell criticized the defenses of the United States, particularly at the Navy base in Pearl Harbor, Hawaii. He stated that a surprise air attack on Pearl Harbor would destroy the Navy's Pacific Fleet. No one would listen, and he was told to stop his attacks on the Navy.

Less than 15 years later, on December 7, 1941, the Japanese bombed Pearl Harbor. Mitchell's critics saw that he was right about the importance of aviation in the military, but it was a very costly lesson.

General Mitchell's continued criticism of the military hierarchy eventually led to his court-martial and subsequent retirement. However, his court-martial led to some of the things he sought. Air power received more attention. The Army Air Service was changed to the Army Air Corps, and the post of Assistant Secretary of War for Aeronautics was created. This led to additional funds and more emphasis on research and development of military aviation.



Early Parachute Jump Test

National Air Races

Air racing also had an impact on the development of air power. A newspaperman, Ralph Pulitzer, offered a trophy to promote high-speed flight. He did this when he saw that American aircraft were making such a poor showing in the European air races.

The first Pulitzer Trophy Race was held in New York at Mitchell Field on Long Island. On Thanksgiving Day, November 27, 1920, 37 entrants flew four laps around a 29-mile course. The winner was United States Army Captain Corliss Mosley, flying a Verville-Packard aircraft at an average speed of 156.6 mph.

By 1924, the Pulitzer Trophy Race had grown into 10 separate events. Six were limited to civilian aircraft and four restricted to military aircraft. Because the air races had grown so large, the name was changed to the National Air Races.

In 1926, the military withdrew from competition for the Pulitzer Trophy. The Pulitzer Trophy was awarded for the last time at the 1925 National Air Races. It was won by United States Army Lieutenant



The original *Gee Bee Racer* was flown by one of America's great aviation pioneers, James "Jimmy" Doolittle. This replica, built and flown by Delmar Benjamin, puts on a spectacular show at events like the EAA's Annual Fly-In at Oshkosh, Wisconsin. (EAA)

Like the Pulitzer Trophy Race, this was a pylon race, meaning that it was flown around a circuit marked by towers (pylons). The Thompson Trophy was awarded annually until the outbreak of World War II.

In 1931, the Bendix Trophy Race, a transcontinental speed race, was added to the National Air Races. Rather than fly around a closed course, the Bendix Race was flown from the West Coast to Cleveland, Ohio. Jimmy Doolittle was a winner of the Bendix Trophy. Both the Bendix and Thompson Races were resumed after World War II ended, but neither regained the glory of the prewar years.

Another air race, although not a part of the National Air Races, was the Schneider Trophy Race. Jacques Schneider, a French aviation enthusiast, started this race in 1913. Schneider felt that water aircraft were not developing fast enough, so he offered a trophy for an annual race over open water by seaplanes. The 1913 race had four entries and only one finished. The average speed was 45.8 mph.

By 1931, when the Schneider Trophy was retired, the speed had increased to over 340 mph. The Schneider Trophy Races led to the development of seaplanes like the English *Supermarine S.6B* and the Italian *Macchi MC-72*. Both of these aircraft were faster than any land aircraft of the 1930s. In October 1934, the *MC-72* established a world record for seaplanes of 440.68 mph. This speed is still a record for propeller-driven seaplanes and will probably never be beaten.



The Curtiss Army *R3C-2* Racing Biplane



Women's Air Derby

In 1929, the National Air Races were opened to women for the first time. The Women's Air Derby, the first cross-country competition for women, was the major opening event of the 1929 races and signaled the start of women competing in air races. The first race went from Santa Monica, California, to Cleveland, Ohio. Louise Thaden won the race flying a *Travel Air J-5*. Second place went to Gladys O'Donnell, and Amelia Earhart finished third.

In 1930, a pylon race was added for women. Gladys O'Donnell won both the Derby and the pylon race. In 1931, the Bendix Trophy Race was opened to women for the first time, but no woman entered this race until 1933. Amelia Earhart finished fifth in the 1935 Bendix Trophy Race. In 1936, women finished first and second in this formerly male-dominated event. Louise Thaden and Blanche Noyes won the race in a *Beech Staggerwing* while Laura Ingalls finished second in a *Lockheed Orion*.

The only other woman to win the Bendix Trophy Race was Jacqueline Cochran in 1938. She flew a modified *Seversky P-35*. For Jacqueline Cochran, this was just a beginning of a career that would eventually lead to "Jackie" being called the "Greatest Woman Aviator of All Time."



Seversky P-35 like the one flown by Jackie Cochran in the Bendix Trophy air races.

The Women's Air Derby led to the formation of an association of women fliers called the "Ninety-Nines" (named after the 99 original charter members). Amelia Earhart was the first president. This organization, dedicated to the improvement of women's opportunities in aviation, included the leading female pilots from all nations. This organization still exists today.

Air Mail Speeds Up Delivery

While General Billy Mitchell was creating such controversy in military aviation, progress was being made in commercial aviation in the United States. The Post Office Department started air mail service in the United States on May 15, 1918, using aircraft and pilots borrowed from the United States Army. Three months later, the Post Office Department took over the operation completely, hiring its own pilots and buying its own airplanes.



The first air mail route was between Washington DC, and New York City. In 1919, air mail service was extended from New York to Chicago via Cleveland and, in 1920, from Chicago to San Francisco. However, true air mail service on a regular basis did not begin until July 1, 1924.

Many were opposed to the development of an air mail service, especially the railroads. They viewed the government subsidizing mail service as unfair competition. The Post Office Department justified the air mail service as experimental in nature, therefore, requiring federal funds. By 1925, the air mail service had developed to the point that it was no longer considered experimental, and the Post Office was ready to turn it over to private enterprise.

The legislation which made possible the private carrying of mail was the Air Mail Act of 1925, a law which essentially dealt with the economic regulation of the federal air system. This act authorized the Post Office Department to contract for air mail service. Among other provisions in the act was one that allowed the contractor to be paid 80 percent of the air mail profits for carrying it.

This was the incentive needed to get big business into the aviation field and really marked the beginning of commercial aviation in America. This was also a “shot in the arm” for the aviation industries, since the awarding of these air mail contracts created a demand for newer and larger aircraft.

As the air mail contracts were made, and as air mail service spread out across the country, a few commercial passengers were carried by the mail planes. However, it was much more profitable to carry mail than passengers. Except for some foreign-built aircraft, like the *Fokker Tri-motor*, most mail planes were small and could carry only two or three passengers.

The first attempt to standardize and regulate commercial aviation was made on May 20, 1926, when Congress passed the Air Commerce Act. This act established the Aeronautics Branch within the Department of Commerce. It provided for the first federal safety regulation of aviation for both pilots and aircraft. The Aeronautics Branch was authorized to license all planes and pilots, establish and enforce air traffic rules, develop navigational facilities, map airways, furnish flight information, investigate accidents, and provide aviation safety through assistance and guidance to civil aviation.



Ford *Tri-Motor* carried the mail and passengers. (EAA)

The act was significant because it aided in the continuing development of the commercial airlines. At this point in time, civil aviation was regulated in the safety area by the Aeronautics Branch and in the economic area, by the United States Post Office Department. This arrangement lasted for 8 years. It was then changed by a new air mail act.



On June 12, 1934, Congress passed a new air mail act that changed the economic and safety regulation arrangement of commercial air transportation. Commercial air carriers became responsible to three United States Government agencies.

First, the Post Office Department awarded air mail contracts and determined routes and structures. Second, the Aeronautics Branch of the Department of Commerce (renamed the Bureau of Air Commerce) was responsible for operating airways and regulating the licensing of aircraft and pilots. Lastly, the Interstate Commerce Commission's (ICC) Bureau of Air Mail fixed rates of air mail payments to the commercial air carriers.

This act was significant because it separated the air transport companies from the aircraft manufacturers. It also developed a sound and well-organized air transport system through the use of governmental payments for carrying air mail. In addition, a thorough study of commercial aviation was conducted which led to the establishment of the Civil Aeronautics Authority, Civil Aeronautics Board and Civil Aeronautics Administration.

Established air carriers felt threatened by the 1934 Air Mail Act, not only because of the subsidized competition of new independent carriers, but also by the prospect of losing business to the independents.

They appealed to Congress for help, and on June 23, 1938, President Roosevelt signed into law the Civil Aeronautics Act of 1938. This law combined both economic and safety regulations into one independent agency called the Civil Aeronautics Authority (CAA).

The new law did keep competition within bounds and protected the routes of the established carriers. More importantly, it unified the economic and safety regulations of the entire field of aviation, independently of the Department of Commerce and increased government oversight of aviation activities and operations.



Early air transportation took on a new style in the 1930s. Stewardesses, dressed in nurse-like uniforms, were hired to serve passengers.



PIONEERS CONTRIBUTE TO THE DEVELOPMENT OF AIR POWER

Progress in aviation in America was being made, but very slowly. Something was needed that would excite the American people and unite them in support of aviation. Many accomplishments in aviation were made because people offered prizes or money as incentives. These accomplishments included most of the long-range flights, flights over the North and South Poles, and many of the flights leading to speed and altitude records.

By 1927, only one of these prizes was left unclaimed. It was the \$25,000 prize offered in 1919 by Raymond Orteig to the “first aviator to cross the Atlantic nonstop from New York to Paris.” To this point many famous pilots had attempted this crossing, but all had failed.

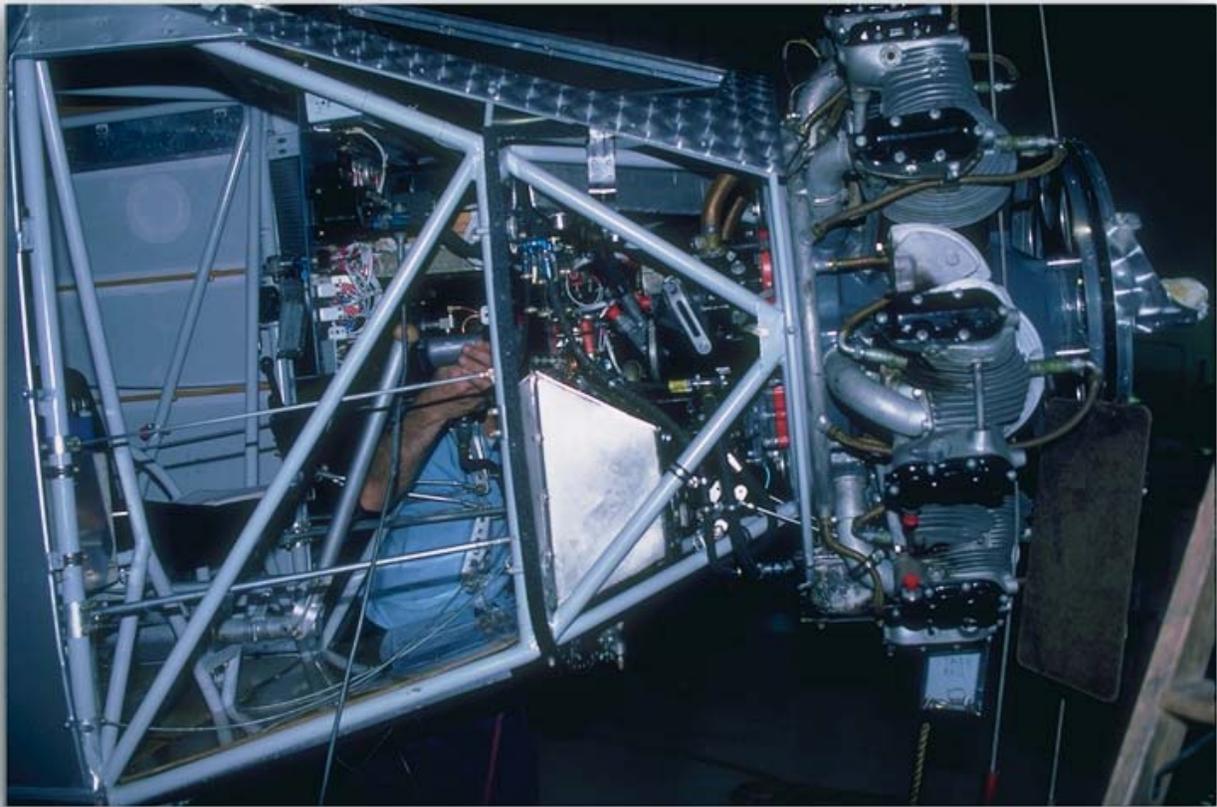
In 1927, a 25-year-old ex-barnstormer, air mail pilot and captain in the Missouri National Guard, Charles A. Lindbergh, approached a group of businessmen in St. Louis seeking sponsorship for an attempt at flying the Atlantic. With the



Charles A. Lindbergh was the first person to fly the Atlantic solo. He convinced the world that air travel was possible and credible.



This is a flying replica of the *Spirit of St. Louis*, Charles A. Lindbergh’s “New York to Paris” airplane. The original NYP aircraft can be seen at the National Air And Space Museum in Washington, D.C. This replica is in the EAA Air Museum in Oshkosh, Wisconsin. (EAA)



The engine compartment of EAA's *Spirit of St. Louis* replica, is revealed with its cowling cover removed. (EAA)

\$13,000 that the sponsors provided and \$2,000 of his own money, Lindbergh asked Ryan Aircraft, Inc., in San Diego, to build him an aircraft to cross the Atlantic. Lindbergh wanted a high-wing monoplane powered by a single 220-horsepower, air-cooled, Wright Whirlwind engine.

Just 60 days after signing the contract, Ryan delivered the aircraft that Lindbergh named the *Spirit of St. Louis*. One month later, on May 20, 1927, Lindbergh took off from Roosevelt Field in New York and headed east. Flying alone through bad weather, with no radio and only a simple compass to guide him, Lindbergh crossed the Atlantic. Thirty-three and one-half hours after takeoff, he landed at Le Bourget Airport in Paris and instantly became a world hero. Never before had so many people throughout the world given so much admiration and affection to a single individual.

The response from the American public was explosive! Here was a symbol the public could identify with and respond to, and Lindbergh was equal to the role.

Following his return to the United States, the nation's new hero became a promoter of civil aviation, traveling to every state in the Union. He, more than any other individual, was responsible for thousands of people entering pilot training and for hundreds of airports being built.

Another individual who would rival the fame of Lindbergh was Amelia Earhart. She earned her pilot's license in 1923, and on June 17, 1928, she became the first woman passenger to fly across the Atlantic. She gained fame as the world's greatest woman flier before her disappearance in 1937.



Amelia Earhart. This Kansas-born flier was the first woman to cross the Atlantic Ocean both as a passenger and as a solo pilot.

In May 1932, she was the first woman to make a solo transatlantic flight. In her *Vega* monoplane, she landed near Londonderry, Ireland, instead of at Paris, her planned destination. The flight took 20 hours and 40 minutes. It promoted women's interests in flight and served as a mark for other women to beat. In August of the same year, she set a new long-distance record for women. She was also active in the women's Air Derby and was the first president of the "Ninety-Nines," the international organization of women pilots.

Earhart would probably have been the most outstanding woman in aviation, but she disappeared at the peak of her aviation career.

On March 17, 1937, Earhart and her crew, Fred Noonan, Paul Mantz and Captain Harry Manning, took off from Oakland, California, in her Lockheed *Electra* for the first leg of an around-the-world flight. Unfortunately, her plane ground-looped in Honolulu

and had to be returned to Lockheed in California for repair. This delayed the flight until June 1, 1937.

This flight was her last. Earhart and Fred Noonan climbed aboard the *Electra* at the municipal airport in Miami, Florida. They were going east to west rather than west to east as originally planned. All went well, but as she approached her scheduled stop at Howland Island in the Pacific, she had trouble getting her bearing (direction). She could not hear the signals being sent to her by the Coast Guard Cutter, *Itasca*. Apparently, the plane went down somewhere in the Pacific, never to be seen or heard from again. Women's aviation lost its greatest advocate.

Aviation Grows

In the 1920s, small companies were formed to build private aircraft for a growing market of pilots. Among the earliest of these was a company called Travel Air Manufacturing Company, which was formed in 1925 in Wichita, Kansas. This company was formed by Lloyd Stearman, Clyde Cessna and Walter Beech. They were to become giants in the manufacture of small aircraft. They built small bi-wing sport planes that were very successful.

Later, Clyde Cessna was convinced that a small private monoplane would be even more successful. His two partners did not agree. So in 1927, Cessna left Travel



The Lockheed *Vega* was flown by such aviation pioneers as Amelia Earhart and Wiley Post.



The great airplane designer, Lloyd Stearman, was the “father” of the classic *Stearman PT-17* trainer. (EAA)

Air Manufacturing Company and started his own company. The Cessna Aircraft Company. Eventually, the other two partners also broke away from Travel Air and formed their own companies. Beech Aircraft Company was started in 1932, and Stearman Aircraft Company started in 1933. All three remained in Wichita, and today, this city is the light aircraft capital of the world.

In 1929, another partnership was formed. The two men were G. C. Taylor and William Piper. Mr. Taylor was building aircraft on a very small scale in Bradford, Pennsylvania. In 1929, the stock market crash bankrupted him,

and Piper, a wealthy oil man, bought the company for \$600.

Piper reorganized the Taylor Aircraft Company, and kept Taylor as President. In 1935, he bought out Taylor’s share of the company and renamed it Piper Aircraft Corporation. Taylor moved to Ohio and started the Taylor Aircraft Company. Both companies would produce fine aircraft, but none more famous than the Piper J-3 *Cub*.

The late 1920s also saw the science of aeronautics (aviation) take its place as a true and recognized science. In 1915, President Woodrow Wilson formed an organization called the National Advisory Committee for Aeronautics (NACA). Its purpose was to “supervise and direct the scientific study of the problems of flight, with a view of their practical solutions.” During the 1920s, this federal agency performed valuable basic research in aeronautics and solved many of the problems that plagued early aircraft.



The *Piper Cub J-3* was a classic pre-war fighter built by the Boeing Company. (EAA)



The Beechcraft *Staggerwing* is considered to be the forerunner of today’s corporate aircraft. (EAA)

In 1926, Daniel Guggenheim, an air-minded New York philanthropist, founded the School of Aeronautics at New York University. He also established a \$2.5 million “Daniel Guggenheim Fund For the Promotion of Aeronautics.” Grants from this fund spread a program of aviation education across the country and provided many colleges and universities with money for private flying clubs. This ensured a supply of trained people in the aeronautical field.



The results were many improvements and changes in the aircraft built during the late 1920s and the 1930s. One advancement resulted in the bi-winged aircraft finally giving way to the more efficient monoplane.

Scientists developed more efficient wing shapes and cowlings (covers) to enclose the engines and retractable landing gear was also developed. Pressurized cabins permitted higher altitude flights and air-cooled radial engines replaced heavier water-cooled ones.

Other refinements included the development of wing flaps to increase lift and allow slower takeoff and landing speeds, and the development of de-icing equipment made all-weather flying safer.

James H. Doolittle, a young Army lieutenant, did a lot of research on aircraft instruments to make flying at night and in bad weather safer. On September 24, 1929, Doolittle made the first successful “blind” takeoff and landing. He took off, flew five miles, made a 180° turn and then came down for a safe landing — all without looking outside the airplane. As a result of this research, instruments for flight and navigation and two-way radios were installed in aircraft.

With the development of an all-metal aircraft by Hugo Junkers, a German aircraft builder, and the stressed-skin principle by another German, Adolph Rohrbach, the airplane began to resemble modern aircraft.



One of the great early general aviation companies was Stinson. They produced this classic SM2A monoplane. (EAA)

as the helicopter would. During the 1920s and 1930s, many autogiros were made, which eventually led to the helicopter design of today.

Progress in rotary-wing aircraft was also made in Spain, France and Germany during the 1930s. Cierva’s earlier work on the autogiro (hinged rotor-blade and autorotation feature) contributed to the first helicopter with complete controllability. It was the *Focke-Achgelis (FA-61)* built in Germany in 1937 by Dr. Heinrich Focke. It had two rotors mounted side by side on outriggers that extended from the fuselage.

The world’s first woman helicopter pilot, Hanna Reitsch, demonstrated the *FA-61* inside the Sportplatz in Berlin in 1938. She “hovered” and performed 360° turns as well as backward, sideward and forward flight.

The Russian-born American, Igor Sikorsky, developed the first practical helicopter. This aircraft, called the *VS-300*, accomplished vertical takeoffs and landings (tethered flight) in September of 1939. It could carry a useful load, perform productive work, and be controlled in flight. Its first free flight was May 13, 1940. (The *VS 300* led to the *R-4*, the first military helicopter in the world which was used in World War II.) From this small 1,150 pound, 50 mph craft, the helicopter has grown to the successful



workhorse we know today. The name of Sikorsky still stands for excellence in helicopters throughout the world.

Commercial Aviation Matures

All of the technology was present in the 1930s to develop “modern” commercial airliners. What was needed was a reason. This was provided by President Herbert Hoover’s new Postmaster General, Walter F. Brown. In 1930, at Brown’s urging, Congress passed the McNary-Watres Act as an amendment to the Air Mail Act of 1925.

Under the Air Mail Act of 1925, airmail carriers were paid according to the weight of the mail carried. The new law changed this so contractors could be paid according to the available cargo space (using a space-mile formula). In addition, a bonus would be paid to operators flying multi-engine aircraft equipped with the latest instruments. This was clearly an incentive for the operators to fly larger aircraft. It was also an attempt to provide aid to the airlines for carrying passengers as well as mail.

The McNary-Watres Act also authorized the postmaster general to extend or combine air mail routes. When Brown entered office, all transcontinental airmail was carried by United Airlines on the northern route (New York-Chicago-San Francisco). Brown opened two additional transcontinental routes. One was called the central route (New York-Kansas City-Los Angeles) and the other was the southern route (Atlanta-Los Angeles). Transcontinental and Western Airlines (TWA) were given the central route, and American Airways had the southern route.

The effect of the McNary-Watres Act on aviation wasn’t long in coming. United Airlines contracted with Boeing Aircraft in Seattle to build a “modern” two-engine aircraft. In February 1933, Boeing brought out the 247, a twin-engine, all-metal, low-wing monoplane. It was constructed with stressed skin and retractable landing gear and could carry 10 passengers and 400 pounds of mail. The *Boeing 247* had a cruising speed of 189 mph and made possible the first “same-day service” between New York and San Francisco.

Transcontinental and Western Airlines (TWA) soon responded by contracting with Douglas Aircraft of Santa Monica, California, (September 1932) to build an airplane better than the *Boeing 247*. In July 1933, Douglas began testing the new aircraft, which they called the *Douglas Commercial One (DC-1)*. Only one *DC-1* was built for test flights and was delivered to TWA in September. When the production aircraft came out in May 1934, it was called the *DC-2*. It had a cruising speed of 192 mph and carried 14 passengers and several thousand pounds of mail. Douglas built and sold about 200 of these *DC-2s*, including many in Europe.



Boeing 247, the first all-metal airliner. (EAA)



While United Airlines was flying its *Boeing 247s* and TWA its *DC-2s*, American Airways was losing money flying foreign-built aircraft. Douglas Aircraft was approached to build an aircraft bigger than its own *DC-2*. Douglas already had more orders for *DC-2s* than it could handle; but American Airways agreed to buy 20 of the new aircraft, with an option for 20 more. Douglas agreed to build it. In December 1935, the first of these new aircraft (called the *DC-3*) was finished. American Airways was



The *DC-3* was developed during the mid thirties and went on to serve in WWII as the *C-47*. It was officially known as the *Skytrain*, but pilots affectionately called her “Gooney Bird.” (EAA)

first to put the *DC-3* into service (June 1936). The *DC-3* was larger than the *DC-2*, carrying 24 passengers or 5,000 pounds of cargo a distance of 1,200 miles.

The *DC-3* soon became the standard commercial airliner for all commercial airlines. It was one of the most successful aircraft ever built. By 1938, *DC-3s* carried 95 percent of all commercial traffic in the United States, and by 1939, they were carrying 90 percent of the commercial traffic worldwide. Between 1935 and 1942, 800 *DC-3s* were built for commercial airlines, and more than 10,000 were built for the Army Air Corps. The Army called it the *C-47*.

Seaplanes Carry the Mail

A discussion about commercial aviation would be incomplete without mentioning the Pan American *Clippers*. In 1927, Pan American Airways was formed to fly the first air mail route between Key West, Florida, and Havana, Cuba. This route was extended from island to island throughout the Caribbean. It was eventually extended into Central America and down the Atlantic coast of South America.

Since most of this route was over water, and because seaplane bases were easier to build in remote areas than airports, Pan American Airways wanted a large advanced seaplane. Igor Sikorsky built a large, four-engine flying boat called the *S-40*. It could fly at 125 mph and carry 40 passengers. Sikorsky also developed a larger flying boat, the *S-42*, which had a range of 3,200 miles. This airplane became known as the Pan American *Clipper* and made the first airline crossing of both the Pacific and Atlantic Oceans.

In 1934, Pan American took delivery of an even larger flying boat called the *Martin 130*. Pan American dubbed it the *China Clipper*. On November 22, 1935, the *China Clipper* took off from California for the first transpacific flight. After stops in Hawaii, Wake Island and Guam, the *Clipper* arrived in the Philippines. By 1937, this route was extended to Hong Kong and Pan American Airways was making one round-trip flight across the Pacific every 7 days.

The ultimate in flying boats was the *Boeing 314*, which was delivered to Pan American in 1938. Six of these *Yankee Clippers* were built. They opened up transatlantic passenger service in 1938. In the 6 1/2 years they were flown, they made 596 Atlantic crossings and carried 42,042 passengers a total of 4,238,867 miles without a fatal accident.



Pan American's *China Clipper*

Meanwhile, What About the Dirigibles?

During the time between World War I and World War II, people saw rigid airships (large balloons) rise to the peak of their success and then completely disappear from the field of aviation.

Following World War I, the Germans were forced to surrender all of their Zeppelins (*dirigibles*) to the Allies. The LZ-126 was brought to the United States and named the *Los Angeles*. It served for 8 years with the United States Navy. Then it was retired and scrapped.

In 1926, the Treaty of Versailles allowed the Germans to construct Zeppelins again and they built three giant rigid airships. These new Zeppelins were the LZ-127 *Graf Zeppelin*, the LZ-129 *Hindenburg* and the LZ-130 *Graf Zeppelin II*.

The *Graf Zeppelin* was very successful. It was launched in 1928, and the following year, it made a successful round-the-world flight. During the 10 years it flew, the *Graf Zeppelin* made 590 flights, including 144 ocean crossings. It flew more than 1,000,000 miles and carried 13,110 passengers. The *Graf Zeppelin* was retired in 1939.

The *Hindenburg* became the most famous of all Zeppelins, not because of its success but because of its failure. The *Hindenburg* was launched in 1936 and made 10 successful round trips between Germany and the United States. On May 6, 1937, as the *Hindenburg* was preparing for landing at Lakehurst, New Jersey, it exploded, crashed to the ground and burned. The *Hindenburg* had left Germany with 36 passengers and 61 crewmembers. Thirty-five crewmembers and passengers died along with one ground crewmember. These were the first fatalities in the history of scheduled airship operations.

The *Graf Zeppelin II* was commissioned in 1938. Before it could go into commercial service, World War II began and it was scrapped during the war.

The United States also had problems with rigid airships. In 1923, the United States Navy built a large airship, the ZR-1 *Shenandoah*. On September 3, 1925, the *Shenandoah* broke up during a storm over Ohio. Fourteen of the 43-man crew were killed.

In 1924, the Goodyear Tire and Rubber Company was granted patent rights by Germany to build



The *Hindenburg* exploded during its landing at Lakehurst, N.J., in 1937. The inset shows the *Hindenburg* during its glory days.

Zeppelins in the United States. They built two airships for the Navy and both met with disaster. In 1931, the *Akron* went into service flying out of Lakehurst, New Jersey. On April 4, 1933, after only 1,200 hours of flying service for the Navy, the *Akron* crashed in a storm off the New Jersey coast. Seventy-three crew men were killed.

The other Navy airship, the *Macon*, was built in 1933. It flew out of Moffet Field, California, and patrolled the Pacific coast.

On February 12, 1935, the *Macon* suffered a structural failure of the upper fin. Gas leakage and structural collapse caused the *Macon* to crash into the sea off the California coast. Two crewmembers were killed.

Investigations by both the Navy and Congress endorsed the continued use of *dirigibles* for the Navy. However, due to the outbreak of World War II, attention was diverted elsewhere and construction was never started.

Military Air Power Developments During the Interwar Years

The developments made in commercial aviation during the 1930s provided the business necessary to maintain a healthy aviation industry in the United States. These same industries were also helping develop military aircraft, although not as much as in the commercial field. Despite what General Billy Mitchell had done to champion the cause of air power, our national policy regarding military aviation was that the airplane was primarily a defensive weapon used to protect our homeland.

Many of our Army Air Corps officers understood the offensive potential of the airplane. It was only because of their efforts that some progress was made in the development of fighters and bombers during the 1930s. A prime example of this was the development of the *B-17*. This bomber gained fame during World War II.

When Douglas Aircraft built the *DC-2* and *DC-3* commercial airliners, the 247 that Boeing had built became obsolete. This was a blessing in disguise for the Boeing Company because it allowed



them to respond to an Army design competition for a new multi-engine bomber for use in coastal patrol.

The term “multi-engine” had always meant two engines, but several Air Corps officers encouraged Boeing to enter the competition with a four-engine aircraft. These officers were all dedicated to Mitchell’s doctrine of air power. They envisioned a large four-engine bomber that could be used not only for defensive coastal patrol, but also for long-range bombing.

On July 28, 1935, the four-engine giant, designated the *Boeing 299*, made

its first flight test. The 299 was flown to Wright Field in Dayton, Ohio, for competition against two competitors, both twin-engine aircraft. Not only did the 299 (Army designation *X1B-17*) win the

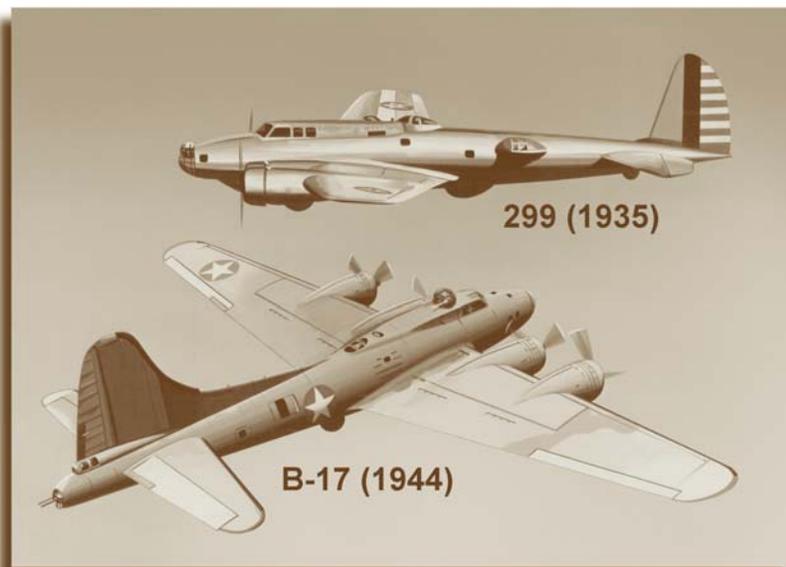


The *Curtiss P-6E Hawk* is a classic example of a military fighter in the early thirties. This aircraft has been totally restored and is on display at the U.S. Air Force Museum, Wright-Patterson Air Force Base, Ohio.

competition, but it could outfly any pursuit (fighter) airplane flying at the time. The Army Air Corps made an initial order for 13 of these *B-17*s and, soon after, they ordered 39 more.

The Army Air Corps now possessed its first long-range bomber, but during its trials, the *X1B-17* proved that we were lacking in fighter aircraft. Contracts were let for the *Seversky P-35* and the *Curtiss P-36*, both “modern,” low-wing monoplanes.

Army Air Corps leaders believed these aircraft to be equal to any fighter in the world. However, as the United States made these small advances in



The evolution of the *Boeing B-17* started with the 299 in 1935. This airplane was considered one of the greatest bombers of all time.

military aviation, other countries of the world were testing their aircraft in combat and developing better aircraft that they would use during World War II.

Meanwhile, the military was woefully behind in producing pilots to fly the new aircraft in the event of war. By the time Germany invaded Austria in 1938 and Czechoslovakia and Poland in 1939, some military planners could see that the Army Air Corps alone would not be able to train enough pilots to engage in combat should the United States enter the European war.



The Possibility of War

The Presidential message given to Congress on January 12, 1939, marked the beginning of Army Air Corps' expansion before World War II. The President called for a buildup of our existing forces, which he described as "utterly inadequate." Within 3 months of this address, the United States Congress would pass a bill authorizing an increase to 3,203 officers from the prior limit of 1,200 officers.

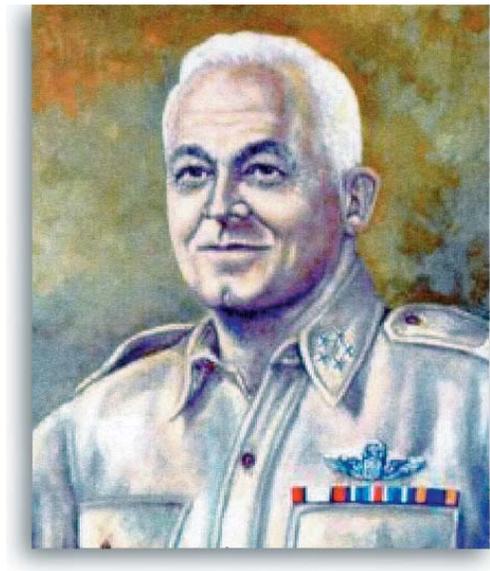
Under the impact of even more threats from abroad, the military planners could foresee that this officer strength would not be enough. Even if Congress were to appropriate money for more men and aircraft, the military establishment would be pressed for time to train pilots to be ready for our possible entry into the war in Europe.

Despite the lack of military training capability, war planners increased pilot training goals. These goals also called for the training of a proportionate number of other types of aircrew members such as bombardiers, navigators and ground technicians. The problem was that the Air Corps had neither the instructors nor the facilities to train men and women in such numbers. It also did not have the experience.

To fix this problem, the Army Air Corps turned to civilian flying schools. The civilian schools also had a limited supply of instructors, aircraft, flying fields, trained maintenance personnel and experienced administrative officials. There were only 23 privately owned flying schools that held an approved rating from the Civil Aeronautics Authority (CAA). The Air Corps still had a problem and needed someone to fix it.

General "Hap" Arnold was such a person. He had sized up the situation early in 1939. He said "to build another Randolph Field (the Air Corps' only pilot training base) to handle 500 pilots a year would take another 5 years." In a statement to the House Military Affairs Committee, and making no secret of his intentions, on January 18, 1939 (4 months before he would call eight private flying school operators to his office), Arnold said:

Our present system is training all our military pilots at our training center at San Antonio. The capacity is somewhere around 550 a year. That is approximately what we are turning out now. That is not sufficient. The output of pilots must be materially increased. If we are to continue our present policy, it means that we have to increase the facilities at San Antonio. I think the War Department decided that is not the proper way to do it. We should buildup a war reserve for pilots. The War Department policy contemplates the utilization of civilian schools for all our dual instruction.



General Harry H. "Hap" Arnold. The first general of the Air Force with a five star rank.
(DoD Media)

Arnold then explained his plan for civilian-operated, Army-supervised flight schools. The Army would give volunteers for the Army Air Corps physical and mental examinations. Those who were



qualified would be sent to designated civilian schools in their immediate area to receive instruction. Regular Army fliers would examine graduates and give them “check rides.” Cadets would then go to Army bases for basic and advanced training. General Arnold also required civilian instructors to get standard training at Randolph Field so all instructors would “speak the same language.”

Congress did not think very much of Arnold’s plan at that time. So Arnold went outside the Army for help. He asked eight World War I pilots and nonmilitary aviators who ran private flying schools to help train combat pilots for the Army, with or without pay. Fortunately for Arnold and the Air Corps, all agreed to his request.

With CAA approval in May 1939, preparations were made for nine of the schools (through eight contractors) to give primary flying training for the Army Air Corps. Although no contracts could be offered until Arnold finally got support in July 1939, the program got started.

Following Arnold’s original blueprint, the Army sent flying cadets to the “contract” schools beginning July 1, 1939. Fifty cadets went to school first, then they went by the thousands. That first blueprint would be revised and refined as experience revealed its many flaws.

Also, the program, which looked so simple on paper, would be full of headaches and near-heartbreaks. In a short time, these “civilian bases” mushroomed throughout the nation doing for the Army Air Corps what it could not do for itself. Produce combat pilots ready to go to war.



The Piper J-3 Cub was used to train thousands of pilots during WWII. The CPTP used this aircraft in large numbers to introduce civilians to aviation. The nickname of the CPTP was the “Putt-Putt Air Force!” (EAA)

was to provide sufficient training to prepare a student for a private-pilot certificate of competence.

The act authorized \$5,675,000 for the program during fiscal years 1939 and 1940, and specified that thereafter, the appropriations should not exceed \$7 million for any one fiscal year. The act was to expire on July 1, 1944. The program called for the training of 11,000 civilian pilots. Considerably fewer were actually trained the first year.

The name of the program was changed to the CAA War Training Service (WTS) in 1942. Training was limited to inactive reserve personnel. The WTS eventually trained 300,000 pilots by 1944.

The CPTPs were setup in educational institutions throughout the country. They offered an extensive program of flight training. Many of these schools were segregated. For African-Americans, the CPTP

Other civilian pilot training programs also served as a source of potential pilots. The Civilian Pilot Training Program (CPTP) was authorized in mid-1939 by the CAA. This program created a great reserve supply of pilots that could be used in a serious national emergency. President Roosevelt signed the Civilian Pilot Training Act of 1939 into law. The act authorized the CAA to conduct a program for training civilian pilots through existing educational institutions and to prescribe pertinent regulations. The objective



The Tuskegee Airmen

marked the beginning of the second era of black aviation progress. It dispelled doubts as to the black man's ability to perform in all areas of aviation. CPTP produced many famous African-American airmen.

One of the segregated schools was West Virginia Institute. Another, the Coffey School of Aeronautics in Chicago, operated by Willa Beatrice Brown, became the hub of African-

American Civil Air Patrol (CAP) activity in 1941. Instructors at Coffey included famous aviators such as Henri Fletcher, Charles Smallwood, and Edward Gibbs who founded Negro Airman International.

The real start of African-American participation in the CPTP, and in the Army Air Corps, came as a result of a chance meeting. On May 9, 1939, Dale White and Chauncy Spencer set out on a 3,000 mile round-trip demonstration cross-country flight to promote African-American aviation to the public, and to urge Congress to allow more opportunities for African-Americans in the field of aviation.

On a stopover in Washington DC, the two men accidentally met Senator Harry Truman. The Senator was unaware that not only were African-Americans excluded from the Air Corps, but also did not figure in the proposed CPTP. This chance meeting led to the intervention of Congress on behalf of African-Americans regarding aviation opportunities.

From it came the activation of the famous 99th Pursuit Squadron, an all black unit, on March 22, 1941, at Tuskegee Sub Depot, Tuskegee, Alabama. This was the first CPTP for African-Americans, and was also the most well-known. The First Lady, Eleanor Roosevelt, did a lot to promote equal opportunity for African-Americans in aviation and worked to help make the Tuskegee program a success.

The Tuskegee program was run by Major James Ellison, base commander, and Charles Alfred "Chief" Anderson, who was the principal flight instructor. A famous airman from Tuskegee was Benjamin O. Davis, Jr., whose father was an Army general. Benjamin O. Davis, Jr., earned the Distinguished Flying Cross and the Silver Star in World War II. He also commanded the all-black 99th Pursuit Squadron in March 1941 and served in combat in North Africa in 1943. He became commander of the 332nd Fighter Group ("Red Tails"), and was the first African-American to be promoted to Brigadier General in the United States Air Force.



The 332nd Fighter Group flew more than 15,000 combat sorties and destroyed 260 enemy aircraft. After his retirement from the United States Air Force, Davis became the Assistant Secretary of Transportation for Environment, Safety and Commerce.



Members of the 332nd Fighter Group, stationed in Italy during WWII.



Top right: Brigadier General Benjamin O. Davis, Sr., August 8, 1944, in France. The first African-American promoted to General Officer in the Army.

Bottom Right: Lieutenant General Benjamin O. Davis, Jr. in his earlier flying days. He was the first African-American to be promoted to General Officer in the United States Air Force.





Key Terms and Concepts

- investments in post-WWI aviation
- Barnstormers
- Army Air Corps
- Billy Mitchell's push for an independent Air Force
- aerial refueling
- first parachute jumps
- air races
- evolution of airmail
- legacy of Amelia Earhart
- technical improvements in aviation in the 20s and 30s
- development of the helicopter
- development of rockets
- McNary-Watres Act
- seaplanes
- re-emergence of the dirigible
- Civil Aeronautics Authority (CAA)
- creation of civilian flying schools prior to WWII
- Civilian Pilot Training Program

? Test Your Knowledge ?

SELECT THE CORRECT ANSWER

1. The **(Pulitzer Trophy Race / Schneider Trophy Race)** began in America when Ralph Pulitzer offered a trophy to promote high-speed flight.
2. The National Air Races were a result of the **(Pulitzer Trophy Race / Thompson Race)**.
3. The **(Bendix Race / Thompson Race)** was a transcontinental speed race.
4. The Woman's Air Derby led the formation of an association of women fliers called the **(Powder Puffs / Ninety-Nines)**.
5. In 1915, **(Woodrow Wilson / Daniel Guggenheim)** formed an organization called the National Advisory Committee for Aeronautics.
6. More efficient wing shapes were developed by **(NACA / School of Aeronautics at New York University)** scientists.
7. **(Dr. Heinrich Focke / Igor Sikorsky)** developed the first practical helicopter.
8. **(Charles Lindbergh/Amelia Earhart)** was the first person to cross the Atlantic Ocean solo.
9. One decline in the use of dirigibles during the 1930s can be traced to **(many disasters / lack of landing sites)**.
10. The **(Treaty of Versailles / Treaty of Paris)** allowed the Germans to build Zeppelins again after their defeat in World War I.



MATCHING

- | | |
|---|------------------------------------|
| 11. <i>First attempt to standardize and regulate commercial aviation.</i> | a. Air Mail Act of 1925 |
| 12. <i>Authorized a thorough study of commercial aviation.</i> | b. Air Commerce Act of 1926 |
| 13. <i>Unified the economic and safety regulations of the entire field of aviation.</i> | c. Air Mail Act of 1934 |
| 14. <i>Allowed the contractor to be paid 80 percent of the air mail revenue.</i> | d. Air Mail Act of 1938 |

TRUE OR FALSE

15. *Three Navy Curtiss flying boats successfully crossed the Atlantic Ocean on May 30, 1919.*
16. *On June 15, 1919, Henry Hawer and Kenneth McKenzie Grieve completed the first nonstop Atlantic crossing.*
17. *The United States built 15,000 airplanes during the 21 months it was involved in World War I.*
18. *At the end of World War I, airplane production dropped by 85 percent.*
19. *Aviation in America might have died down after World War I except for two groups of people — the barnstormers and the Army aviators.*
20. *Barnstormers put on flying exhibitions at county fairs, carnivals and anywhere else crowds gathered.*
21. *The main contribution barnstormers made to aviation was that they publicized aviation.*
22. *After General Mitchell's sinking of the Ostfriesland, both the Army and Congress were impressed with the military power of the airplane over the battleship.*
23. *The first successful transcontinental flight was completed on May 2, 1923, by two Navy fliers.*
24. *The first round-the-world flight was completed on May 30, 1919, by the Boeing aircraft Seattle.*
25. *The Army first tested the feasibility of using paratroops in September 1929.*
26. *Mitchell's verbal attacks on America's defense systems lead to his being relieved of command and reduced in rank to colonel.*
27. *Beginning on May 15, 1918, the Army flew air mail until stopped by the Air Mail Act of 1920.*
28. *The railroads welcomed the development of air mail service.*
29. *Charles Lindbergh was the first person to fly solo across the Atlantic Ocean in his airplane Spirit of St. Louis.*
30. *Charles Lindbergh was responsible for thousands of people entering pilot training.*
31. *Amelia Earhart was the first woman to fly around the world.*
32. *Amelia Earhart was the first president of an international organization of women pilots known as the "Ninety-Nines."*
33. *In 1925, one of the earliest aircraft companies built in the United States was Travel Air Manufacturing Company.*
34. *Travel Air was formed by Lloyd Stearman, Walter Beech and Clyde V. Cessna.*
35. *Under the Kelley Act, the air mail carriers were paid according to the weight of the mail carried.*

Chapter 3 - The Golden Age: 1919 -1939



36. *The McNary-Watres Act provided an incentive for air mail carriers to fly larger aircraft.*
37. *The first “modern” aircraft built in 1933 was the DC-2.*
38. *TWA was the first airline to use the Clipper seaplanes.*
39. *The Clipper flying boats were replaced by large 4-engine land planes after World War II.*
40. *The Clipper flying boats were replaced by large 4-engine land planes after World War II.*
41. *The Boeing 299 was later known to the Army as the B-17.*
42. *The presidential message of January 12, 1939, to Congress described America’s military’s forces as entirely adequate to meet any threats in Europe.*