October 2023

Corey J Beitler's

# "Distelfink Airlines"

An Online Aviation Newsletter

★ Celebrating 10 Years Of Publication! ★

## The Curtiss "Jenny":

### The Airplane That Introduced America To Aviation


*Bell 407GX*

*John Jenkins Designs 1/30 Scale Albatros D.III*

*Fokker Dr.I Triplane*

*Hawker Hurricane Mk. IIC*

*Boeing KC-135R Stratotanker*

*Golden Age Air Museum Unveils Spad X.III Reproduction*

*Paul Dougherty Jr., President of the Golden Age Air Museum, flies the museum's 1917 Curtiss JN-4D "Jenny" during a special event at the museum. The Golden Age Air Museum acquired this "Jenny" in 2001 and spent several years restoring it to airworthy condition. The "Jenny" is painted in the colors of famous barnstormer and Hollywood pilot Earl S. Daugherty from Long Beach, California.*

# *FROM THE EDITOR'S DESK*

## *An Improvised Feature, PSP Bell 407GX, Spad X.III Debut, Last NJ ANG KC-135R*

*Greetings Everyone:*

*As fall begins here in the Northeast and Mid-Atlantic regions of the United States, I present to you the October 2023 edition of "Distelfink Airlines". In this region, the fall season often brings unpredictable weather, and we have had our share of it through September and early October. A few airshows being affected by weather forced me to totally rework this edition of the newsletter and come up with a feature that wasn't planned but turned out pretty well, and joins some other great content in this edition.*

*The feature for this edition is an article about the Curtiss JN-Series or "Jenny" biplane trainers. The "Jenny" is one of America's most famous early airplanes and is one of the most well-known American aircraft used during World War I. A slow aircraft with excellent handling characteristics, the "Jenny" trained thousands of Allied pilots during the war. But the "Jenny's" claim to fame took place after World War I, when thousands were sold as surplus to intrepid pilots who hauled airmail with them, barnstormed across the country selling rides, and participated in flying circus airshows that entertained thousands at fairs and carnivals. These "Jennies" and their pilots introduced many Americans to aviation in the 1920s. Today, only a few "Jennies" survive. Most are on static display in museums, with a few being airworthy in museum collections or with private owners. The feature article is a brief history of the "Jenny" and features photos of two excellent airworthy examples, the Golden Age Air Museum's 1917 JN-4D, and the Old Rhinebeck Aerodrome's 1917 JN-4H. Both of these museums fly their "Jennies" regularly, and it is great to see these classic airplanes in the air. Special thanks to the Golden Age Air Museum and Old Rhinebeck Aerodrome and pilots Paul Dougherty Jr. and Ken Cassens for continuing to fly these "Jennies" for the public and helping people connect with American aviation history.*

*Also featured in this edition is an article about the induction ceremony for the newest aircraft in the Golden Age Air Museum's collection, a Spad X.III reproduction. The Spad X.III was unveiled to the public and inducted into the museum collection in early September. This reproduction of the World War I fighter will eventually fly at special events held at the museum.*

*The 141st Air Refueling Squadron of the New Jersey Air National Guard recently said farewell to the last Boeing KC-135R Stratotanker that they operated at Joint Base McGuire/Dix/Lakehurst. The KC-135R is being replaced at the base by the new Boeing KC-46A Pegasus. The KC-135R featured in the "Aircraft of Special Interest" section is the last airframe that was operated by the 141st Air Refueling Squadron. This KC-135R wore special "tiger" markings to commemorate the heritage and history of the squadron.*

*Finally, the Bell 407GX helicopter operated by the Pennsylvania State Police is featured in this edition. Several of these helicopters played an important role in helping the Pennsylvania State Police apprehend escaped prisoner Danelo Cavalcante in Chester County. The Pennsylvania State Police operate six of these helicopters, and they are used for a variety of law enforcement duties throughout the Commonwealth.*

*There is lots of great aviation content in this edition and something for everyone with both classic and modern aircraft included in the newsletter. Please check everything out, and as always, feel free to share the newsletter with whomever you wish. If you haven't already, please consider joining the newsletter's social media groups on Instagram and Facebook. The links are listed below. As always, thank you for reading and supporting my aviation photojournalism efforts.*

*Regards,*
*-Corey*

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# Bell 407GX


*A Bell 407GX operated by the Pennsylvania State Police in flight at the Reading Regional Airport in Reading, Pennsylvania. The Pennsylvania State Police operates a fleet of six Bell 407GXs, a variant of the popular Bell 407 civil utility helicopter that was introduced into service in 1996. Several of the Bell 407GXs operated by the Pennsylvania State Police provided aerial support and surveillance during the recent manhunt and capture of escaped prisoner and murderer Danelo Cavalcante in Chester County, Pennsylvania.*

The Bell 407GX is a variant of the Bell 407 four-blade, single-engine civil utility helicopter introduced in 1996. Variants of the Bell 407 are in service worldwide with civil operators such as airlines, hospitals, corporations, media companies, and law enforcement agencies. Several military operators also operate the Bell 407 in a training, armed reconnaissance, or light attack role.

Bell began developing the Model 407 in 1993 as a replacement for its aging Model 206 series. The new Model 407 featured a four-blade main rotor and hub developed for the OH-58D Kiowa military helicopter. The blade and hub were constructed of composite materials with no life limit and provided improved performance as well as a more comfortable and stable ride for passengers. The Model 407 also had a wider fuselage with increased cabin space, larger main cabin windows, and a tail boom constructed of carbon fiber composite. The larger cabin could accommodate two pilots and up to five passengers. For improved performance and an increased maximum takeoff weight, the Model 407 was equipped with the more powerful Rolls-Royce/Allison 250-C47 turboshaft engine. Since its introduction in 1996, over 1,400 Model 407s have been produced in several civilian and military variants. The 407GX variant features the Garmin G1000-H glass cockpit and improved avionics and flight controls.

The Bell 407GX featured here is one of six that are operated by the Aviation Section of the Pennsylvania State Police. In addition to the six helicopters, the Aviation Section of the Pennsylvania State Police also operates two fixed-wing aircraft, a Cessna 208B Caravan and a Pilatus PC-12. The Aviation Section is divided into six Aviation Patrol Units consisting of thirty-five trooper pilots and six mechanics spread across the Commonwealth of Pennsylvania. The Aviation Patrol Units log thousands of hours each year in the Bell 407GXs on aerial support missions for federal, state, and local law enforcement agencies. These missions include aerial photography, criminal surveillance, search and rescues, assisting in vehicle pursuits, aerial surveillance of sports and civic events, and supporting law enforcement community outreach efforts. Several of the Pennsylvania State Police Bell 407GXs, as well as the Cessna 208B and Pilatus PC-12, saw significant use in aerial support and surveillance missions during the recent manhunt and capture of escaped prisoner and murderer Danelo Cavalcante in Chester County, Pennsylvania.


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# John Jenkins Designs 1/30 Scale Albatros D.III

*John Jenkins Designs excellent 1/30 scale Albatros D.III model has been released several times in the paint schemes of several German pilots. This model represents an aircraft flown by an unidentified pilot from Jasta 36 in February 1918. The model has many fine attributes, including excellent engine and cockpit details, beautiful paintwork replicating the wooden fuselage and lozenge camouflaged wings, and realistic weathering. This model and other World War I aircraft from John Jenkins Designs make impressive display pieces in any model airplane collection.*

The Albatros D.III was a biplane fighter used by the Imperial German Air Service during World War I. It was the premier fighter during a period of German aerial dominance known as "Bloody April" in 1917. The D.III was flown by many of Germany's top aces, including Manfred von Richthofen, the "Red Baron".

Design and development work on the D.III started in the summer of 1916. The D.III used the same streamlined, plywood-skinned fuselage as the earlier D.I and D.II variants but incorporated a sesquiplane wing arrangement similar to the French-built Nieuport 11. The upper wing was extended and the lower wing was redesigned with a reduced chord and a single main spar. "V" interplane struts replaced the parallel struts found on the earlier variants. In September 1916, Albatros received a production order for 400 aircraft.

The Albatros D.III entered service in December 1916 and was praised by German pilots for being pleasant to fly, maneuverable, and having a good rate of climb. The sesquiplane arrangement also gave pilots good downward visibility in aerial combat.

Unfortunately, two faults with the Albatros D.III were discovered. The first was the radiator's position, located in the center of the upper wing, which could spew hot water and scald the pilot if punctured by gunfire. Later production D.IIIs had the radiator moved off-center to solve this problem. Aircraft already in service were modified in the field with the revised radiator design.

The other problem was more serious. Several D.IIIs experienced failures of the lower wing's leading edge and wing ribs. Albatros attempted to solve the problem by strengthening the lower wing. The problem was later discovered to be the design of the wing itself, which twisted under aerodynamic loads. The wing failures were never fully solved, and D.III pilots were advised not to perform steep or prolonged dives with the aircraft.

Over 1,800 Albatros D.IIIs were built by Albatros and contract manufacturer OAW during the war. The peak time of service for the Albatros D.III was in November 1917, when 446 aircraft were on the Western Front. However, the D.III remained in service well into 1918.



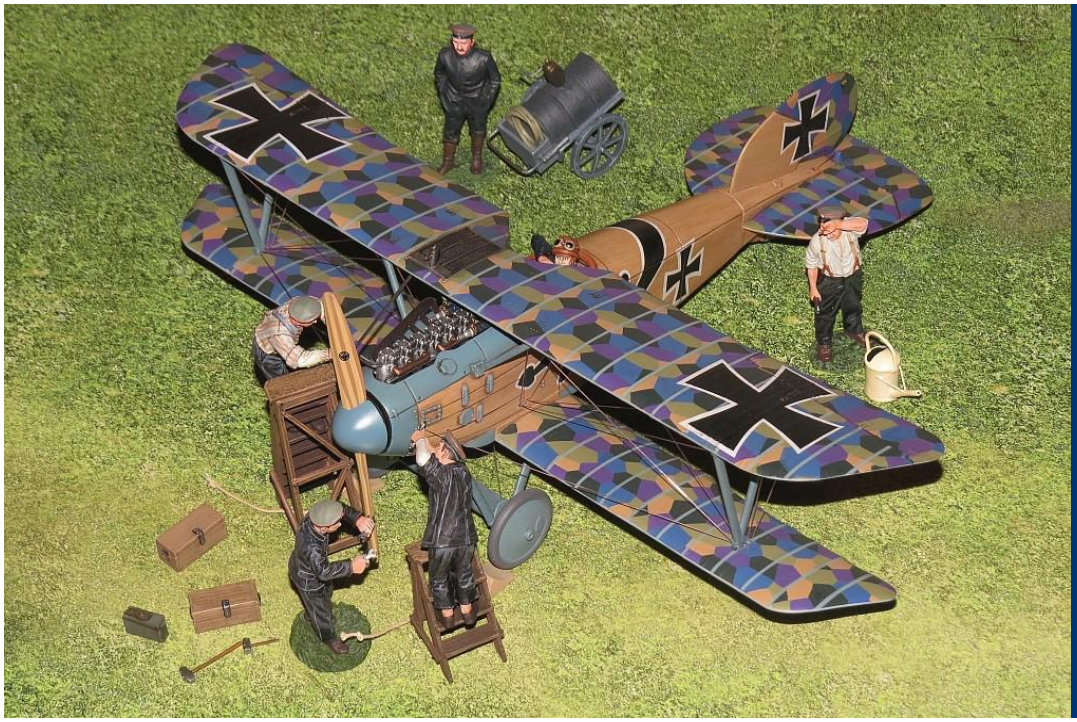
John Jenkins Designs manufactures toy soldiers, vehicles, and diorama accessories in 1/30 scale. The company has product lines covering all eras of history, from the Revolutionary War to World War II. John Jenkins Designs is known for its exceptional World War I aircraft models, part of their "Knights of the Sky" product line covering World War I aircraft and pilots. This Albatros D.III model represents an aircraft assigned to Jasta 46 based at Ascq, France in February 1918.

John Jenkins Designs World War I aircraft models have a level of craftsmanship and detail that are unmatched, and the Albatros D.III is no exception. The model features excellent paint quality throughout. The intricate lozenge camouflage on the wings, difficult to replicate on a model, is flawless. John Jenkins Designs also did a great job with their paint detail to replicate subtle weathering on the aircraft and the wooden fuselage, a defining characteristic of the Albatros D.III. The model also features exceptional cockpit detail, with the instrumentation, seat belts, and controls all replicated.

Another excellent feature of this Albatros D.III model is the replication of the bracing wires. The wires are all tight and secure, something many other model companies seem unable to achieve on their models. The wire is also finished in a subdued earthly tint that is very realistic and compliments the model's incredible detail.

Unfortunately, the model does not come with any type of display stand or pilot figure for the cockpit. Both display stands and pilot figures are available for purchase separately for those who want to display any of the John Jenkins Designs "Knights of the Sky" aircraft in flight. A far better idea for collectors is to invest in some of the company's excellent ground crew figures and display accessories. With just a few of these figures and accessories, a collector can display the finely detailed models in a very realistic diorama on a desk or shelf.

John Jenkins Designs makes excellent use of research, mixed media materials, and quality manufacturing to create excellent models of World War I aircraft. The Albatros D.III is no exception. The John Jenkins Designs model of this World War I fighter is faithful to the original aircraft and has excellent attention to detail. Although the higher price point of this company's models may scare some people off, these are simply some of the best models of World War I aircraft you can buy on the collector market today. No collector will be disappointed having the Albatros, or any of the company's World War I aircraft, on their shelf.

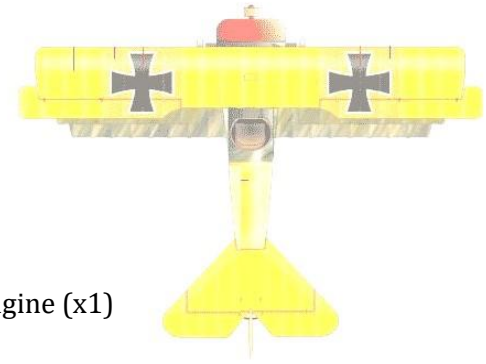


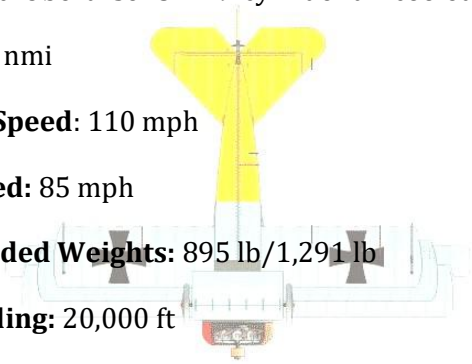
*The exquisite details of the Knights of the Skies World War I model aircraft from John Jenkins Designs are even further enhanced when the models are displayed with some of the figure sets from the series depicting ground crewmen and their equipment. The Albatros D.III looks great with one of the German pilot figures in the cockpit and some German ground crew figures busy servicing the aircraft for its next mission over enemy territory. The large 1/30 scale of the figures and the aircraft models allow lots of detail to be shown absent on smaller scale models.*

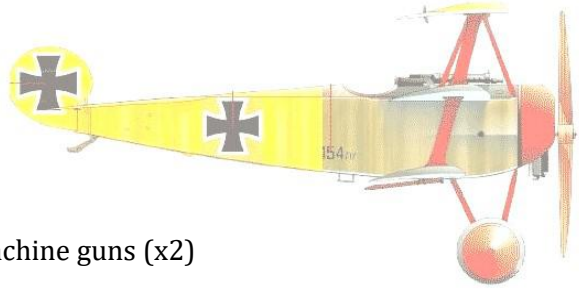
# Fokker Dr.I Triplane (1917)

*Often known simply as the Fokker Triplane, the Fokker Dr.I was a German fighter aircraft built by Fokker-Flugzeugwerke during World War I and is one of the most widely known aircraft from that war. The Fokker Dr.I saw widespread service in the spring of 1918, and German pilots praised its excellent maneuverability and fast rate of climb. Unfortunately, the Dr.I was slower than most Allied fighter aircraft and suffered from a number of fatal crashes due to wing and structural failures, some caused by faulty workmanship at the Fokker factory. The wing failures prevented any large production orders from being authorized. Production of the Dr.I ended in May of 1918 after only 320 aircraft had been built. This Dr.I reproduction was built by the Golden Age Air Museum and is painted in the colors of German ace Lothar von Richthofen.*

## *Fokker Dr.I Triplane*







**Crew:** 1

**Length:** 18 ft 11 in

**Height:** 9 ft 8 in

**Wingspan:** 23 ft 7 in

**Wing Area:** 201 sq ft

**Powerplant:** Oberursel Ur.II 9-cylinder air cooled rotary piston engine (x1)

**Range:** 160 nmi

**Maximum Speed**: 110 mph

**Cruise Speed:** 85 mph

**Empty/Loaded Weights:** 895 lb/1,291 lb

**Service Ceiling:** 20,000 ft

**Armament:** 7.92 mm (0.312 in) Maschinegewehr 08 “Spandu” machine guns (x2)



## *Fokker Dr.I Triplane 454/17, Ltn. Lothar von Richthofen, Luftstreitkräfte, Jasta 11, Avesnas-le-Sec, France, March 1918*

*Lothar von Richthofen was the younger brother of the famous German fighter pilot Manfred von Richthofen (the Red Baron). The younger von Richthofen was a prolific fighter pilot and was credited with 40 aerial victories during World War I.*

*Like his brother Manfred, Lothar began the war serving as a cavalry officer. In 1915, with the assistance of Manfred, Lothar joined the German Army Air Service (Luftstreitkräfte) and became an observer for Jasta 23. In 1917, his first posting as a pilot was to his brother's squadron, Jasta 11. Unlike Manfred, who was cool and calculated, Lothar was aggressive and impulsive in combat. The German high command loved the propaganda value of the two brothers flying together and exploited it often in the German press. Several times throughout the war, Lothar was sidelined from combat because of health issues or wounds. Lothar was an efficient combat pilot, with 33 of his 40 victories coming in three months, April 1917, May 1917, and August 1918. Had he not been sidelined for such extended periods due to wounds and illnesses, Lothar von Richthofen may have eclipsed his older brother's total of 80 victories. After the war, Lothar worked on a farm before becoming a commercial pilot. Lothar von Richthofen lost his life in an airplane crash in July 1922.*

*The Fokker Dr.I Triplane shown here is one of Lothar von Richthofen's most well-known aircraft. While flying this aircraft on March 13, 1918, Lothar von Richthofen suffered a wing failure of the leading edge of the top wing while engaged in combat with Bristol fighters from No.62 Squadron and Camel fighters from No.73 Squadron. Richthofen nursed the aircraft to the ground for a forced landing but clipped some high-tension wires and crashed, destroying the Dr.I and suffering severe head injuries. The Dr.I is painted in the standard factory finish of green-streaked camouflage. The red cowling, wing struts, and wheel covers identify the aircraft as being assigned to Jasta 11. The Dr.I also carries Richthofen's personal color of yellow on the rear fuselage, tailplane, and top wing.*

# The Curtiss "Jenny":

## The Airplane That Introduced America To Aviation


***The "Jenny", designed for use as a flight trainer during World War I, played a more significant role in the postwar years, as pilots barnstormed with it across America selling rides, hauling airmail, and performing in flying circus airshows.***

*Ken Cassens flies the 1917 Curtiss JN-4H "Jenny" owned by the Old Rhinebeck Aerodrome, an aviation and living history museum located in Rhinebeck, New York. This rare surviving Hispano-Suiza powered "Jenny" is restored in the colors of an aircraft used for flight training by the U.S. Navy at Naval Air Station Pensacola in the early 1920s.*

*Paul Dougherty Jr. flies the Golden Age Air Museum's 1917 Curtiss JN-4D "Jenny" in a rare formation flight with Neil Baughman flying the museum's 1928 Velie Monocoupe 70 during a public event at the museum. Built as a trainer during World War I, the Curtiss "Jenny's" fame came during the 1920s, when thousands of surplus examples were used by barnstorming pilots to haul airmail, give rides, and fly in flying circus airshows.*

When Golden Age Air Museum President Paul Dougherty Jr. brings the museum's 1918 Curtiss JN-4D "Jenny" in for a landing during one of the museum's public events, there is a collective sense of wonder from the spectators. With its huge wings and pedestrian pace, the "Jenny" looks like a large red bird gliding in for a landing. Closer inspection of the aircraft as it taxis into its parking spot reveals the wooden propeller, spoke wheels, and maze of bracing wires and wooden struts that hold the airplane together. As Paul Dougherty Jr. shuts down the engine and removes his flying cap and goggles, he waves to the crowd from the cockpit. As the spectators wave back and clap in appreciation of another excellent flight demonstration, few can appreciate that this 105-year-old aircraft is one of the few airworthy examples of its kind and is one of the most significant early airplanes in American aviation history.

The story of the Curtiss "Jenny" began in 1914. The U.S. Army was disgusted with its open-to-the-wind pusher training aircraft. Their performance was inferior to the aircraft being built in Europe, and the accident rate was high. The U.S. Army approached Glenn Curtiss and asked him to design and build a new training aircraft with a tractor propeller and an enclosed fuselage. Curtiss hired designer B. Douglas Thomas from the Sopwith Aviation Company in England to help him build the new aircraft.

The first production version of the JN or "Jenny" series was the JN-2, appearing for the first time in 1915. The biplane had large, equal span wings with ailerons controlled by a shoulder yoke in the rear cockpit. The eight JN-2s built were handed over to the 1st Aero Squadron of the Aviation Section of the U.S. Signal Corps. Unfortunately, the pilots of the 1st Aero Squadron soon found that the JN-2 lacked performance and was unsafe to fly. The new airplane was overweight, lacked stability, and had an oversensitive rudder. Shortly after they began flying the JN-2s, the 1st Aero Squadron wrecked two of them in crashes. The 1st Aero Squadron and its aircraft were grounded for safety reasons. Curtiss was ordered to make design changes to the JN-2 to improve its performance.

Curtiss redesigned the JN-2 and designated the new aircraft the JN-3. The improved JN-3 had wings of unequal span and ailerons on the top wing controlled by a wheel. A foot bar was added in the cockpit to control rudder movements. These changes to the flight controls improved the "Jenny" enough that it could be flown safely. In March 1916, eight JN-3s were deployed to Mexico and used an observation aircraft during the Pancho Villa Expedition.

After the success of the JN-3 variant of the "Jenny", Curtiss once again made improvements to the design, the new "Jenny" being designated the JN-4. With World War I in full swing, both the U.S. Army and the Royal Flying Corps in Canada needed training aircraft and placed large production orders for the JN-4. In Canada, the name "Canuck" was adopted for the new aircraft. The Canadian "Canuck" also had some differences from the American "Jenny" including a more rounded rudder, differently shaped wings and elevators, and strut-connected ailerons on both wings. The JN-4D ended up being the definitive variant of the "Jenny". Changes to this model included a control stick instead of a wheel, ailerons on the upper wing only, and curved cutouts on the inner trailing edges of all four wing panels to facilitate easier access to the cockpit.

The "Jenny's" slow speed and gentle handling characteristics made it an ideal training aircraft. The tandem cockpit seating allowed a student pilot and instructor to fly together. The slow speed of the "Jenny" meant that if there was an accident, it usually was not fatal. The "Jenny" and the Canadian "Canuck" would play a pivotal role in pilot training for the Allies during World War I, with an estimated 95% of pilots completing at least some primary flight training in the aircraft. This training took place even in the harsh winter weather of Canada, with the "Jennies" wheels being replaced with skis to fly off snow-covered runways. In addition to its use as a trainer, the "Jenny" was also used as an air ambulance, its rear fuselage decking removed to accommodate a stretcher, one of the first times an aircraft was used in this role.


*Ken Cassens taxis the Old Rhinebeck Aerodrome's 1917 Curtiss JN-4H "Jenny" following a flight demonstration of the aircraft during one of the Aerodrome's weekend airshows. The JN-4H was one of the final production versions and substituted a 150 or 180-horsepower Hispano Suiza engine for the unreliable OX-5 engine used in earlier variants of the "Jenny". The JN-4H also had strut-connected ailerons on both wings.*

*The Golden Age Air Museum's 1917 Curtiss JN-4D "Jenny" on static display on the airfield during a public event at the museum. The JN-4D was the main production variant of the "Jenny", and thousands were built for use as trainers by the U.S. Army and Royal Flying Corps. The "Jenny" was an excellent training aircraft, being easy to fly and having stable flight characteristics. Unfortunately, the JN-4Ds Curtiss OX-5 engine could be unreliable.*

If there was any weak point in the "Jenny's" design, it was the Curtiss-designed OX-5 V-8 engine that powered the aircraft. The 90-horsepower OX-5 engine was often described by "Jenny" pilots as a failure waiting to happen. The overhead valve system was open and exposed to the air, weather, bugs, and dirt. The engine was single-ignition, so one bad spark plug could cause an engine failure. The single-pushrod, arm-stirrup valve mechanism employed three springs per valve when spring manufacturing was not as exact as it is today.

The OX-5 engine's greatest weakness was its cooling system. The engine was water-cooled and weighed in at a staggering 390 pounds. This excess weight contributed to the "Jenny" needing such a large wingspan and having a slow top speed and climb rate. The cooling system for the OX-5 was prone to overheating in the summer and leaking freezing water from the carburetor in the winter, stopping up the vents and sticking the valves. The water pump, located on top of the carburetor, leaked frequently. It was usually only a matter of time before the leaking water pump contaminated the gasoline supply.

As a result of the OX-5 engine's unreliability, both the U.S. Army and the U.S. Navy began searching for a replacement engine that would fit the "Jenny's" airframe with minimal modifications and provide improved horsepower and reliability. The search for a new engine resulted in a new advanced trainer variant of the "Jenny" being built, the JN-4H. The JN-4H was powered by a 150 or 180-horsepower Hispano-Suiza V-8 engine license-built by the Wright-Martin. This engine was lighter, more reliable, and produced almost twice the horsepower of the Curtiss OX-5. The final production version of the "Jenny" was the JN-6H, a variant for the U.S. Navy also powered by a Hispano-Suiza V-8 engine. These late-production models of the "Jenny" also had ailerons on the top and bottom wings. When production ended in the mid-1920s, Curtiss and several contractors had built over 6,500 Curtiss "Jennies". The Curtiss "Jenny" remained in service with the U.S. Army as trainers until 1927.


*Ken Cassens brings Old Rhinebeck Aerodrome's 1917 Curtiss JN-4H "Jenny" in for a photo pass for the spectators during one of the Aerodrome's weekend airshows. Old Rhinebeck Aerodrome's "Jenny" wears U.S. Navy colors from Naval Air Station Pensacola in Florida. U.S. Navy pilot trainees learned to fly on JN-4Hs throughout the early 1920s.*

After the end of World War I, thousands of Curtiss "Jenny" aircraft ended up on the civilian market, being sold as surplus. In anticipation of offering surplus "Jennies" to the civilian market, Glenn Curtiss and his company bought back unneeded production aircraft from the U.S. Army and began offering them for sale at $4,000 each and surplus OX-5 engines for $1,000 each. Curtiss aggressively marketed the surplus aircraft and engines, and their applications on the civilian market. Unfortunately, the thousands of surplus "Jennies" on the market brought the price of the aircraft and engines down to as little as $600 for a "Jenny" and $50 for an OX-5 engine, both brand new in their shipping crates. This was a financial disaster for Curtiss, who had spent almost $20 million buying back "Jennies" from the U.S. Army only to have to sell them at a loss when the market became flooded with surplus aircraft.

These pilots and their "Jennies" began the barnstorming era in the United States. With no civil aviation regulations in place, the pilots were free to fly wherever and whenever they wanted. The pilots lived in their airplanes, wearing only the clothes on their backs and carrying all their possessions in their "Jennies". Many of these pilots were World War I veterans or those who had completed fight training but never served in combat.

At first, the barnstorming pilots traveled from town to town, offering rides at $25 a hop. They marketed themselves by telling tales, often fantasy, of their exploits in the war. Farmers who allowed the pilots to use their fields as landing strips were offered rides for free. Kids from the town who assisted the pilots by organizing the line for rides also got free rides. For many people in rural parts of the United States, a barnstorming pilot visiting their town with a Curtiss "Jenny" was the first time they saw an airplane or rode in one. In the first years of the barnstorming era, some pilots made over $10,000 a year. By 1925, the market had become oversaturated with barnstorming pilots offering rides, and the price for a ride had stabilized to about $5. The barnstorming pilots were now lucky to make $5,000 a year.

As the ride market became more competitive, the barnstormers and their "Jennies" formed air circuses and flew in groups. These air circuses visited state, town, and county fairs and carnivals around the nation, performing airshows, often with multiple aircraft flying at once. The pilots performed various aerobatic maneuvers and stunts with their aircraft. Aerobatics and stunts included loops, rolls, landing on one wheel, and parachuting from the airplane. As the air circuses grew in popularity, the stunts grew more elaborate to include wing-walking, plane-to-automobile transfers, plane-to-plane transfers, and on occasion, deliberately crashing an airplane. The air circuses drew thousands of spectators, some coming just to see if someone was unfortunate enough to get killed during the stunts.

In many ways, the old Curtiss "Jennies" were the perfect aircraft for the barnstormers. The OX-5 engine, though unreliable and prone to failure, was easily repairable, and many automobile and marine engine parts were compatible with the engine. If a bracing wire was snagged landing in a farm field and snapped, wire from a farmer's fence could be used as a temporary repair. The fabric wings could be patched with simple fabric and dope. The wings, with all those struts and bracing wires, combined with the slow speed and stable flight characteristics of the "Jenny", made the aircraft a perfect platform for wing-walking and plane-to-plane and car-to-plane transfers during flying circus airshows. Aircraft and engines wrecked in accidents or mishaps were easily replaced with new ones bought at surplus for reasonable prices.

Unfortunately, all good things come to an end. As the barnstorming continued into the late 1920s, the number of accidents grew at an alarming rate. Many of these accidents were due to aerobatic maneuvers being performed too low, but a troubling number of accidents were attributed to the "Jennies" experiencing structural failures. Although parachutists falling to their deaths or "Jennies" crashing sometimes thrilled the crowd at a flying circus airshow, the federal government thought otherwise.


*Paul Dougherty Jr. flies the Golden Age Air Museum's 1917 Curtiss JN-4D "Jenny" on a beautiful summer afternoon during an event at the museum. This picture shows the "Jenny's" impressive wingspan and all the struts and wires that held the wings together. These struts and wires were ideal wing-walkers performing wing-walking acts at flying circus airshows during the 1920s.*

In 1927, the federal government published the first civil air regulations in the United States. These regulations essentially ended the barnstorming era in the United States. The pilots could no longer fly and do whatever they wished. The new regulations also established airworthiness requirements for civil aircraft. Many of the "Jennies" were so worn out that they failed to meet the new airworthiness standards. Charles Lindbergh's "Jenny" was so worn out and tattered from barnstorming that when he joined the Army Air Service he was ordered to remove the aircraft from the airfield. By the late 1920s, the barnstorming era was over, and most of the "Jennies" were scrapped.

Of the over 6,000 "Jennies" built, very few survive today. The barnstorming era took its toll on the wooden and fabric-covered "Jenny", and most of the airframes were so worn out that they were beyond saving. Most of the surviving "Jennies" are in museums. Less than a dozen "Jennies" are in airworthy condition, and only a handful of these airworthy examples fly regularly. This article features photographs of two of the surviving "Jennies", which are probably the most active airworthy examples in the world, the Golden Age Air Museum's 1918 JN-4D and the Old Rhinebeck Aerodrome's 1917 JN-4H.

The bright red "Jenny" featured in photographs in this article is a 1917 Curtiss JN-4D model. This "Jenny" is owned by the Golden Age Air Museum in Bethel, Pennsylvania. The museum acquired the "Jenny" in 2001 and began a lengthy process to restore it to its original condition, including the aircraft's rare original OX-5 engine. The "Jenny" flew for the first time after its restoration in 2009, and since that time, has been flying regularly at the museum during special events when wind and field conditions allow. The JN-4D is painted in the colors of famous barnstormer and Hollywood pilot Earl S. Daugherty from Long Beach, California. In 2017, Golden Age Air Museum President Paul Dougherty Jr.'s daughter, Caroline, soloed for the first time on her 16th birthday in the "Jenny", an aircraft that is her father's and the museum's pride and joy.


*Golden Age Air Museum President Paul Dougherty Jr. and his daughter Caroline prepare for takeoff in the museum's 1917 Curtiss JN-4D "Jenny". In 2017, Caroline had the opportunity to complete her first solo flight as a pilot flying this "Jenny".*


*With his flying scarf blowing in the wind, Ken Cassens pilots the Old Rhinebeck Aerodrome's 1917 Curtiss JN-4H "Jenny" in a flight demonstration during an airshow at the aviation museum. This JN-4H is one of only three Hispano-Suiza powered "Jennies" remaining in airworthy condition. This "Jenny" flies in the Aerodrome's weekend airshows, weather and winds permitting, from June to October.*

The second "Jenny" featured in photographs in this article is the 1917 JN-4H owned by the Old Rhinebeck Aerodrome in Rhinebeck, New York. Old Rhinebeck Aerodrome museum founder Cole Palen received this aircraft, missing parts and its engine, in 1957. The "Jenny" was discovered to be a rare Hispano-Suiza-powered example of the aircraft. Eventually, some of the missing parts turned up, and Palen was able to acquire a 180-horsepower Hispano-Suiza engine from the Franklin Institute to use in the "Jenny". The restoration of the "Jenny" began in 1967, with parts of several other JN-4s used during the rebuild to restore the aircraft to flying condition. After flying at the Aerodrome from 1969 to 1998, the "Jenny" was once again completely restored by Old Rhinebeck Aerodrome master mechanic and pilot Ken Cassens. The "Jenny" returned to the skies of Old Rhinebeck Aerodrome in 2001 and has flown in weekend airshows at the museum ever since. The JN-4H is restored in the color scheme of a training aircraft used by the U.S. Navy at Naval Air Station Pensacola in Florida in the early 1920s.

The Curtiss "Jenny" performed admirably as a trainer and was responsible for training thousands of pilots during World War I, but the role it had in postwar aviation in the United States was more significant. Throughout the 1920s, the "Jenny" introduced thousands of Americans across the country to aviation, either through a barnstorming pilot giving rides at a local farm, a flying circus performing at a county fair, or a pilot delivering airmail to a town. The "Jenny's" ease of operation, affordability, and ruggedness helped to make it one of the most successful early aircraft in American aviation history.

As Ken Cassens takes Old Rhinebeck Aerodrome's 1917 JN-4H "Jenny" up for a flight during a weekend airshow, the spectators stare into the sky as an airplane over 100 years old gracefully dances with the clouds and the wind. They are captivated by the sound of its engine, the maze of struts and wires holding the wings together, and the pilot wearing his leather cap, flying goggles, and scarf, just like many Americans were when the barnstormer came to visit their town in a "Jenny".

# Hawker Hurricane MK. IIC


*A Hawker Hurricane Mk. IIC on display at the National Air and Space Museum's Steven F. Udvar-Hazy Center in Chantilly, Virginia. The Hawker Hurricane was one of the most influential fighter aircraft designs in aviation history, being Britain's first monoplane fighter as well as the first British fighter aircraft capable of over 300 miles per hour in level flight. The Hurricane served in all theatres of operation with distinction throughout World War II but is most famous for the significant role it played during the Battle of Britain in the summer of 1940.*

The Hawker Hurricane, designed by Sydney Camm, is one of the most important military aircraft designs in aviation history. Designed in the 1930s when most fighter aircraft were still open cockpit biplanes, the Hurricane was Britain's first monoplane fighter and the first British fighter aircraft to exceed 300 mph in level flight. The Hurricane is most famous for its role in the Battle of Britain, when during the summer of 1940, the aircraft and its pilots played a significant role in defeating the German Luftwaffe and protecting Britain from a planned German amphibious invasion.

Design work in the Hurricane began under Camm's direction in 1933. An adaptation of the famous and successful Hawker Fury biplane, the new monoplane had a wide-track, hand-operated retractable landing gear and an enclosed cockpit. These features made the aircraft faster and reduced drag. The new design was powered by an early version of the Rolls-Royce Merlin inline engine, and after more refinements, was known as the Interceptor Monoplane. In 1935, Hawker received official approval to build a prototype of the aircraft.

Hawker's new Interceptor Monoplane was a blend of new and old aviation technology. The revolutionary monoplane design with retractable landing gear was combined with Hawker's proven construction technique of using tubular metal cross-braced sections covered in fabric. The new fighter aircraft was armed with eight .303 in machine guns in its wings. Despite some early difficulties with the Rolls-Royce Merlin engines, flight trials began immediately as the engine was refined for improved performance and reliability, as the aircraft clearly had excellent potential.

In 1936, the name Hurricane was officially adopted for the new fighter. Later that year, with the threat of war clearly on the horizon, Hawker received a production order for 600 aircraft, one of the largest production orders for a military aircraft from the British government during peacetime. The first Hurricanes were accepted into service with the Royal Air Force in 1937. Hawker continued to refine and improve the Hurricane, switching to a three-blade propeller in 1939 that increased the Hurricane's climb performance and service ceiling.

The Hurricane's most significant role in World War II came in the summer of 1940 during the Battle of Britain. The Hurricane and another famous British World War II fighter, the Supermarine Spitfire, were the two most modern fighter aircraft available to the Royal Air Force during this battle. In comparison to the main German fighter, the Messerschmitt Bf-109, the Hurricane was slower and less heavily armed but could out-turn the German fighter and sustain more battle damage. The aircraft were so evenly matched that oftentimes a contest was determined by pilot skill.

Throughout the war, Hawker continued to modify and improve the Hurricane. Later variants of the Hurricane had more powerful versions of the Rolls-Royce Merlin engine that were only slightly larger, allowing production to continue uninterrupted. In 1941, Hawker built the Mk IIC variant of the Hurricane armed with four 20 mm cannons instead of the original armament of eight machine guns. One of the last variants of the Hurricane built in large numbers was the Mk IV, which had improved armor protection and universal mounts under the wings to carry a variety of ordinance for use in ground-attack roles. Several Sea Hurricane variants were built with arresting hooks for use on aircraft carriers and convoy escort ships. By the time production of the Hurricane ended in 1944, Hawker and its partner contractors had built 14,233 examples of the aircraft.

The National Air and Space Museum's Hawker Mk. IIC Hurricane LF686 was built in 1944 and was part of the Royal Air Force's last order of 1,300 Hurricanes. This Hurricane never saw combat in World War II, being used instead for operational training and later for training of mechanics and ground personnel. In the late 1960s, the National Air and Space Museum arranged a trade with the Royal Air Force Museum in Hendon, trading a Hawker Typhoon for Hawker Hurricane Mk. IIC LF686. The Hurricane was stored for several years before National Air and Space Museum specialists began restoring the aircraft in 1989. Restoring the aircraft took specialists 11 years to complete. The Hawker Hurricane Mk IIC LF686 is now on display at the National Air and Space Museum's Steven F. Udvar-Hazy Center.

# Boeing KC-135R Stratotanker (1984)


*The Boeing KC-135R Stratotanker is an upgraded variant of the American KC-135 Stratotanker aerial refueling and military transport aircraft. Developed alongside the Boeing 707 commercial airliner, the original KC-135A variant entered service with the U.S. Air Force in 1957 and was the U.S. Air Force's first jet-powered refueling tanker. Initially tasked with refueling strategic bombers, the KC-135 was used extensively during the Vietnam War and in later conflicts, such as Operation Desert Storm, to extend the range of tactical fighters and bombers. Extensively upgraded since its introduction into service, the KC-135 has served with the U.S. Air Force for over 60 years. Over 800 KC-135s were built, and 396 remain in the U.S. Air Force inventory. In the future, the KC-135 fleet is expected to be replaced by the Boeing KC-46A Pegasus.*

## *Boeing KC-135R Stratotanker*

**Crew:** 3-4 (Pilot, Co-Pilot, Boom Operator, Navigator (on some missions))

**Passenger Capacity:** 37 (Standard), 80 (Maximum)

**Cargo/Fuel Capacity:** 83,000 lb, 150,000 lb of transferable fuel

**Length:** 136 ft 3 in

**Height:** 41 ft 8 in

**Wingspan:** 139 ft 1 in

**Wing Area:** 2,433 sq ft

**Powerplant:** CFM International CFM56-2 turbofans (x4)

**Range:** 1,300 nmi with 150,000 lb of transferable fuel

**Cruise Speed:** 529 mph

**Maximum Speed:** 580 mph

**Empty/Maximum Takeoff Weights:** 98,392 lb/322,500 lb

**Service Ceiling:** 50,000 ft

# Core Aerial Refueling Capability

## Design

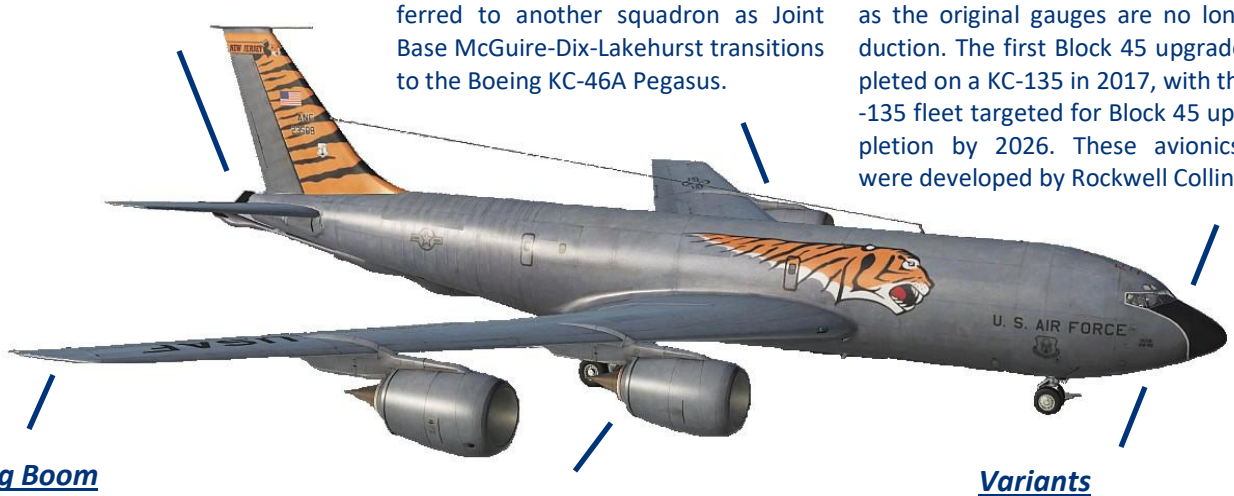
The KC-135 Stratotanker, like the Boeing 707 commercial airliner, was based on the Boeing 367-80 prototype built by Boeing at its own expense in the mid-1950s. The KC-135 has a narrower fuselage and is shorter than the Boeing 707, and structurally a very different aircraft. The KC-135 has 35-degree aft swept wings and tail. One of the most recognizable features of the KC-135 is the hi-frequency radio antenna on top of its tail. The fuselage of the KC-135 contains fuel tanks and the refueling system. A cargo and passenger deck is located above the refueling system.

## KC-135R #60-0366

This colorful KC-135R was operated by the 108th Wing, 141st Air Refueling Squadron of the New Jersey Air National Guard based at Joint Base McGuire-Dix-Lakehurst. In 2017. this KC-135R was painted with these special "tiger" markings to honor the squadron's 100th Anniversary. The unit traces its tiger logo to Capt. Hobey Baker, the commander of the 141st Aero Squadron in World War I, and who played football and hockey for the Princeton Tigers. Recently, this KC-135R, the last operated by the 141st Air Refueling Squadron, was transferred to another squadron as Joint Base McGuire-Dix-Lakehurst transitions to the Boeing KC-46A Pegasus.

## Avionics

Since its introduction in 1957, the KC-135 has undergone numerous avionics upgrades to improve its reliability and capabilities. One of the most significant avionics upgrades was the Pacer-CPAG program that ran from 1996 to 2002. This upgrade allowed the navigator position to be eliminated from the flight crew and replaced the fuel management system. The latest upgrade to the KC-135's avionics suite is the Block 45 program. The Block 45 program adds a new glass cockpit, digital autopilot, radio altimeter, a rudder position indicator, and computer updates. The Block 45 program replaces all analog cockpit and engine instrumentation with digital versions, as the original gauges are no longer in production. The first Block 45 upgrade was completed on a KC-135 in 2017, with the entire KC-135 fleet targeted for Block 45 upgrade completion by 2026. These avionics upgrades were developed by Rockwell Collins.




## Flying Boom

Receiving aircraft are refueled by the KC-135 using the flying boom. This boom is lowered or extended during aerial refueling and controlled by a boom operator stationed in the rear fuselage of the KC-135. Nearly all of the KC-135's fuel can be pumped through the boom. To refuel aircraft fitted with probes, a special shuttlecock-shaped drogue can be attached to the flying boom. Unfortunately, when this drogue adapter is attached to the boom, receiver aircraft using the standard boom receptacle cannot be refueled until it is removed. The Multi-Port Refueling System (MPRS) can be fitted to the KC-135, which adds refueling pods to the KC-135's wings. These pods use the probe and drogue refueling method, and allow the KC-135 to refuel most U.S. Navy, U.S. Marine Corps, and NATO tactical aircraft, up to two at a time.

## Engines

All KC-135s were originally powered by the Pratt & Whitney J-57-P-59W turbojet engine. In the early 1980s, two programs were implemented to re-engine the KC-135 with more efficient powerplants. The first program retrofitted 157 aircraft with Pratt & Whitney TF33-PW-102 turbofan engines from retired Boeing 707 commercial airliner airframes. These modified KC-135As were designated KC-135Es. A second and more extensive re-engine program retrofitted 500 aircraft with new CFM International CFM56 high-bypass turbofan engines built by General Electric and Safran. These engines greatly improved the KC-135's performance, range and capabilities while reducing operational costs and aircraft noise levels.

## Variants

The KC-135A was the initial production variant of the KC-135. A specialized variant, the KC-135Q, was modified to carry the JP-& fuel used by the SR-71 Blackbird spy plane by separating the fuselage fuel tanks from the KC-135's wing fuel tanks, which carried the JP-4 or JP-8 fuel supply used by the KC-135. The two current versions in service are the KC-135R (KC-135As or KC-135Es retrofitted with CFM 56 engines) and the KC-135T (KC-135Qs retrofitted with CFM56 engines). The U.S. Air Force operates a fleet of 396 KC-135Rs and KC-135Ts split between Active Duty, Air Force Reserve, and Air National Guard squadrons.

# Golden Age Air Museum Unveils Spad X.III Reproduction

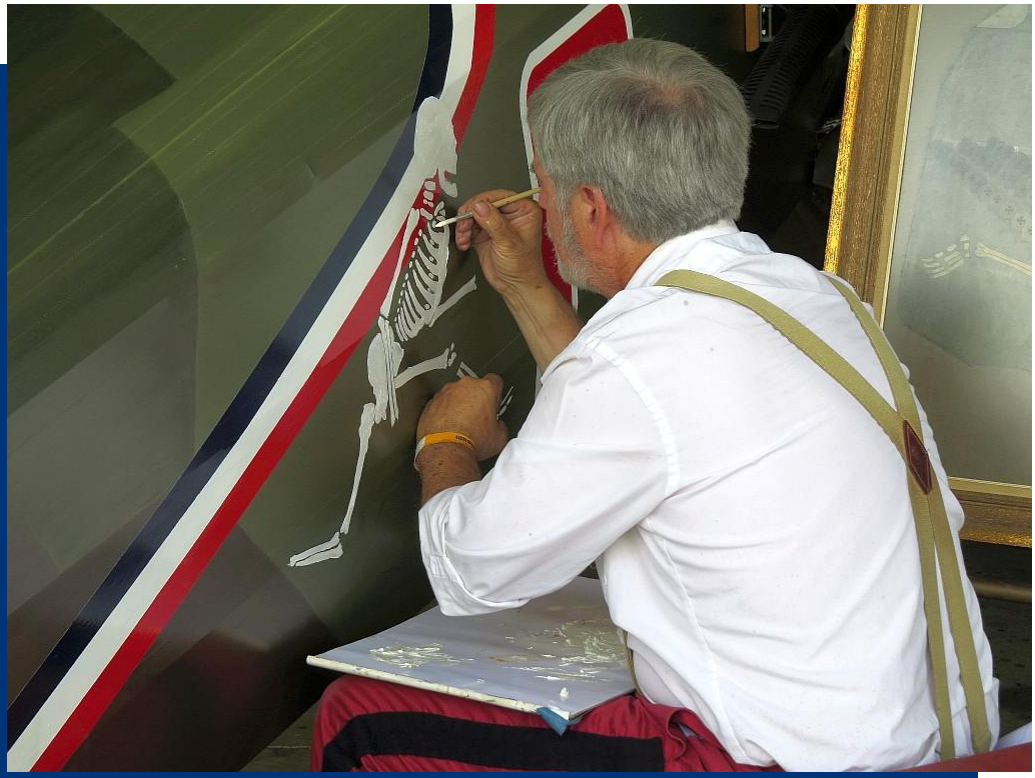
*The Golden Age Air Museum in Bethel, Pennsylvania recently debuted the newest edition to their aircraft collection in a public induction ceremony, a reproduction Spad X.III World War I fighter. The induction ceremony included painting the squadron insignia on the Spad X.III using the original metal template and surviving artwork by museum historian and aviation artist Michael O'Neal.*

The Golden Age Air Museum in Bethel, Pennsylvania recently unveiled a new aircraft in their collection to the public. After over 12 years of research and construction by museum volunteers, a reproduction Spad X.III World War I fighter was inducted into the museum collection in a public event held on Saturday, September 9, during the museum's World War I Fly-In Weekend on September 9-10.

The Spad X.III was a French-built fighter aircraft introduced into service in 1917. An improved version of the successful Spad V.II, the Spad X.III had more powerful armament, a higher top speed, and increased endurance. Fast, sturdy, and popular with its pilots, the Spad X.III proved to be one of the most capable fighter aircraft built during the war. The Spad X.III was also one of the fighter aircraft used in large numbers by the U.S. Army Air Service.

The museum's induction ceremony for the Spad X.III included a special presentation by Golden Age Air Museum historian Michael O'Neal about the life and military career of Maj. Charles J. Biddle, the American ace whose markings the Spad X.III was finished in. Golden Age Air Museum President Paul Dougherty Jr. discussed the building of the Spad X.III and thanked all the museum volunteers for the time they devoted to the project. Finally, the ceremony included the tracing and painting of the squadron emblem of Biddle's unit, the 13th Aero Squadron, on the aircraft. To trace the squadron emblem, the "Grim Oscar", onto the Spad X.III, the museum secured permission to use the original metal stencil used by the squadron during the war, which survives today in a private collection. After this was completed, honored attendees and special guests at the event, including the family of Charles Biddle and renowned aviation artist Keith Ferris, were allowed to apply a few brushstrokes of paint to begin painting the emblem. Later in the afternoon, Michael O'Neal finished the "Grim Oscar", basing his artwork on original artwork contained on two pieces of surviving souvenir aircraft fabric from the 13th Aero Squadron displayed at the event. The museum hopes to fly the Spad X.III on a test flight in the near future.

In addition to the Spad X.III induction ceremony, the WWI Weekend event also included flight demonstrations of several aircraft in the Golden Age Air Museum collection, including the museum's original Curtiss JN-4D "Jenny", and Sopwith Pup and Fokker Dr.I Triplane reproductions. The event also included displays of World War I uniforms and memorabilia and living history interpretations by World War I reenactors.



Distelfink Airlines

Est. 2013

# ABOUT DISTELFINK AIRLINES

*My late grandfather, John Brey, and I at the 2007 Geneseo Airshow. This was one of the few times that we had our photo taken together at an airshow.*

***The story of "Distelfink Airlines" begins in the early 1990s when my late grandfather, John Brey, began building and flying remote control model aircraft in his retirement. He enjoyed the hobby and quickly amassed a large fleet of model airplanes, which filled his garage and woodworking shop. He gave a name to his fleet of aircraft, "Distelfink Airlines". For the symbol of his fleet, he chose the Pennsylvania Dutch/German hex sign featuring the "Distelfink", a colorful bird that is a symbol of good luck and happiness. This hex sign and symbol is very common on Pennsylvania Dutch/German barns in Eastern Pennsylvania and is an important part of our local culture. He had custom "Distelfink" decals made for all his airplanes and had T-shirts made with "Distelfink Airlines" printed on them. It wasn't long before curious people began asking about "Distelfink Airlines" and what it was. My grandfather told anyone who asked that "Distelfink Airlines" was a new startup airline that was going to be offering service between the Lehigh Valley International Airport and Philadelphia International Airport with more routes to come soon.***

***In addition to flying his model airplanes, my grandfather enjoyed attending airshows and we traveled to airshows together for almost 20 years. He also enjoyed local aviation history and was particularly fascinated by the history of the Consolidated TBY Sea Wolf, a torpedo bomber that was built locally in Allentown, Pennsylvania during World War II. He also remembered when famous aviator Amelia Earhart visited the Lehigh Valley in the early 1930s to raise funds for her failed attempt to become the first woman to fly around the world.***

***Established in 2013 in memory of my grandfather, "Distelfink Airlines" is an online aviation newsletter that carries on a tradition of sharing a love for aviation that my grandfather shared with me. This newsletter features photographs and writings on a variety of aviation topics. The logo that was chosen for "Distelfink Airlines" is the hex sign that my grandfather chose for his fleet of remote control model aircraft many years ago. This proud symbol of local Pennsylvania Dutch/German culture is joined by a pair of Consolidated TBY Sea Wolf torpedo bombers, the aircraft that was built locally in Allentown during World War II and is such an important part of our local aviation history. Thank you for reading "Distelfink Airlines" and sharing in the passion for aviation that my grandfather shared with me.***