

The GOLDFINCH

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Iowa City, Iowa

The Sky's the Limit

For thousands of years mankind gazed in wonder at the birds in the air, and dreamed of flying. As early as the 1600s, inventors were studying birds and experimenting — trying to learn how man could fly. Some fools — and a few geniuses like Leonardo da Vinci — thought that people would one day build wings. But it was not as a bird that humans first flew.

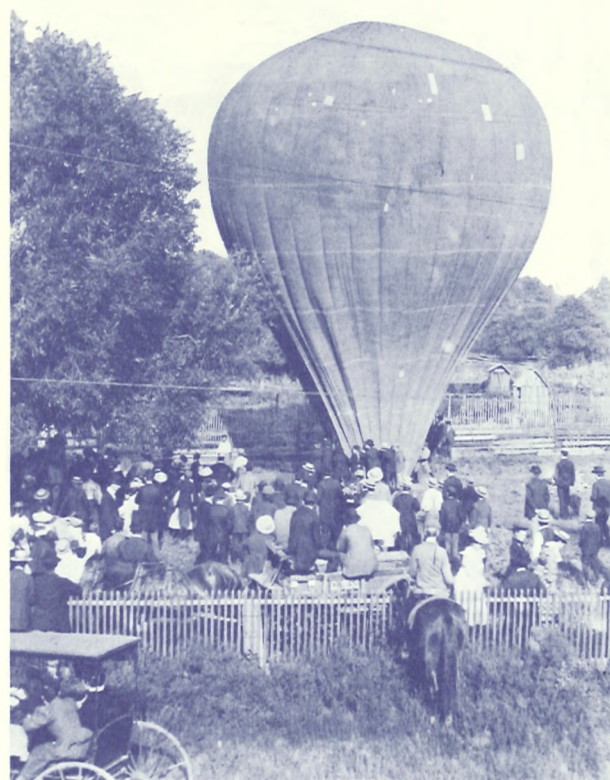
In 1783, two Frenchmen who had noticed that smoke always rises decided to see if smoke could lift a balloon into the air. Their experiment was a success. They soon learned, however, that it was not the smoke but the hot air that caused the balloon to rise. (Hot air rises because it is lighter than the cold air around it.) When the air in the bag cooled, the balloon came down.

So the first people to fly were lifted in baskets hung from huge balloons filled with hot air. Of course, before men dared to try this themselves, they sent up a chicken, a dog, and a donkey — just as they would send animals in the space rockets two hundred years later.

Not long before this time the gas, hydrogen, had been discovered. Scientists knew it was lighter than air and decided to use it in a balloon. Using hydrogen, which does not cool off and let the balloon sink, a balloonist could stay up longer, but he had to be careful because hydrogen is extremely flammable.

Once up in their baskets, balloonists found they couldn't fly where they wanted. They could only go where the wind took them. Ballooning was good sport, but no good for transportation.

But travel by balloon improved in 1900, when a French scientist put one of the newly invented gasoline engines on a cigar-shaped balloon. He then attached a propeller to the rear of the balloon, and a rudder to control the direction. This kind of air ship was called a dirigible. The dirigible was popular, especially in Europe. For a while people thought this a fine and very modern way to travel.



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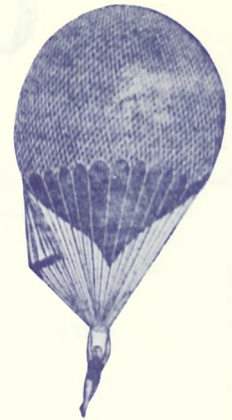
A crowd gathers to watch a hot air balloon ascend in 1890.

Balloons Over Iowa

The ropes holding the huge swaying yellow bag were released. The balloon drifted slowly upward, soaring higher, and becoming smaller, until it disappeared from sight. It was October 9, 1856, and at Muscatine the third Iowa State Fair was in progress. Thousands of Iowans had gathered for their first sight of a man carried up into the air in a balloon.

There was great excitement that day as the balloon ascended into the sky. Mr. Leonard, the balloonist, floated through the air for forty-five minutes. Now and again he dropped feathers to check his direction. If the balloon was rising, the

Aerialist Sam Baldwin rises into the sky before parachuting back to earth. Notice the parachute attached to the balloon (left).



The Daily Gate City

feathers seemed to fall below. If the balloon was sinking, the feathers appeared to rise. If he started to sink, Mr. Leonard would throw out handfuls of sand to make the balloon lighter. If he was rising too fast, he would release some gas from the balloon by pulling a cord. All this called for skill and steady nerve. Mr. Leonard landed in Illinois and returned by train to Muscatine the next day to a hero's welcome. He had travelled fifteen miles through the air!

In the years following the Civil War, other balloonists visited Iowa. Leonard's flight had given Iowans a taste for aerial performances. No county or state fair seemed complete without a balloonist. Some of these showmen would do tricks on a trapeze bar attached to the basket. Others dared to jump out and parachute down!

In the United States the dirigible, like the balloon, was seldom used for transportation. But it provided another exciting form of aerial entertainment. At the 1906 Iowa State Fair, Roy Knabenshue thrilled the crowds by flying his silk dirigible from the fairgrounds to the Capitol, and landing it on the lawn! This air ship was powered by an engine made by Glenn Curtiss, who later became an airplane manufacturer.



Iowa State Fair Board

Roy Knabenshue flies past the Capitol dome during the 1906 State Fair.

The primary source for this story is Ann Holtgren Pellegrino's *Iowa Takes to the Air*, Story City, Iowa, Aerodrome Press, 1980.

A New Bird in the Sky

Even as balloons and dirigibles floated through the skies, there were some inventors who had given up the study of birds. They believed that the future of manned flight depended on heavier-than-air machines. These people studied aerodynamics and built and flew gliders. After the invention of the gasoline engine, they began designing gliders for powered flight. In 1903, Wilbur and Orville Wright tested a powered glider at Kitty Hawk, North Carolina. It flew 12 seconds carrying Orville, and then 59 seconds with Wilbur.

The Wright brothers had proved that a powered flying machine was possible. But did not mean that aeroplanes became useful right away. Improvements were needed: better controls, a more powerful engine, and a stronger propeller.

Not long after the Wright brothers' first flights, other inventors completed and flew machines. In France, a powered flight was made in 1906. Two years later in New York a bicycle manufacturer named Glenn Curtiss won fame when he built and flew the *June Bug*, powered by an engine he designed himself.

Aeroplane builders seemed to pop up everywhere. In shops and barns across the country, flying machines were being built and flown. How flimsy these early aircraft were, made of wood, wire, and cloth!

As more people began to fly, a spirit of competition developed among flyers. As soon as a record was set, someone was up in the air trying to break it, pushing the flimsy machine to fly higher, faster, or further. By 1910 both Glenn Curtiss and the Wright brothers had organized air show exhibition teams. Billy Robinson of Grinnell flew with the Wright Company and Eugene Ely of Davenport performed with the Curtiss group. These daredevil exhibitions were a big attraction at state and county fairs.

Then World War I came, and flying changed. When the war began in 1914,

A New Bird in the Sky



The Des Moines News

Until the airplane was invented, people saw only birds flying in the sky.

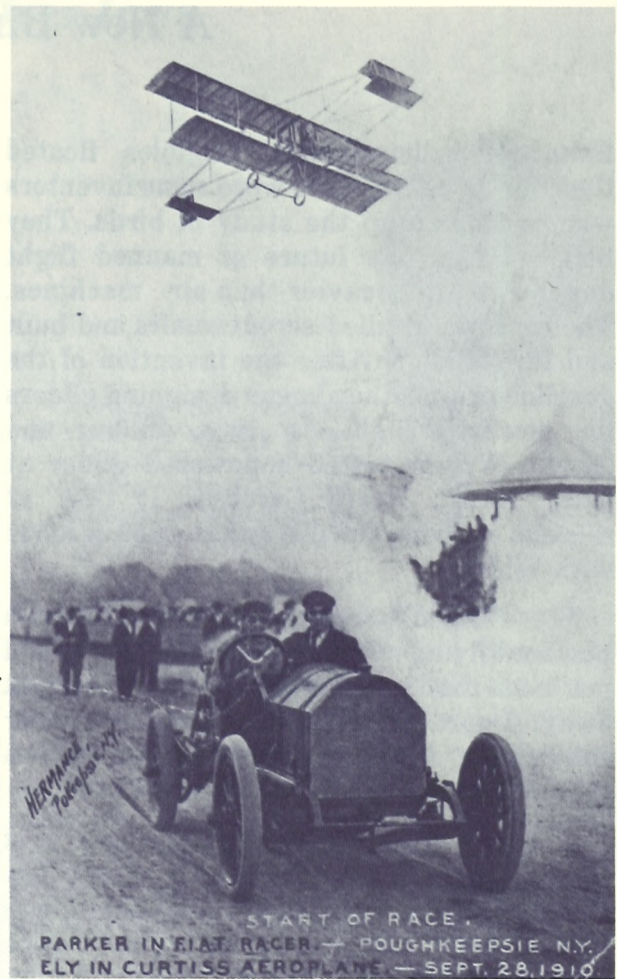
powered air flight was only eleven years old. The flying machines of 1914 were not designed for war. They were slow. They could not make sharp turns, nor could they carry heavy loads. They did not go very far on a tank of gas, either! But countries at war wanted to use aeroplanes, so improvements were made rapidly. By the end of the war aeroplanes travelled faster (135 to 150 miles per hour), carried two people with guns and ammunition, and went longer distances.

When the United States entered the war in 1917, the Army and Navy did not own many aeroplanes. The government bought French and English planes for its flyers to use, while Americans got busy manufacturing their own. But by the time these planes were built, the war was already over. The government no longer needed them, so it put the planes up for sale.

After the war, more people than ever before were interested in flying. A war surplus JN4D training plane (called "Jenny") could be bought for about \$300. Some flyers used Jennies to make a living by "barnstorming." Barnstorming meant going from town to town giving exhibitions of stunt flying. Barnstormers also gave people rides for a dollar a minute.



Ila Fox of Pella earned money flying people to Estral Beach.



Eugene Ely, in a Curtiss pusher, races Ed Parker, in a Fiat, at Poughkeepsie, New York, in 1910.

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A more important result of World War I was that people realized the usefulness of aeroplanes. Design improvements during the war made it possible for planes to carry cargo and passengers. Businesses sprang up, started by flyers ready and willing to carry people or goods from one place to another. Small shop and barnyard builders became aircraft manufacturers.

The Amazing Monocoupe

by Cinda Tallent

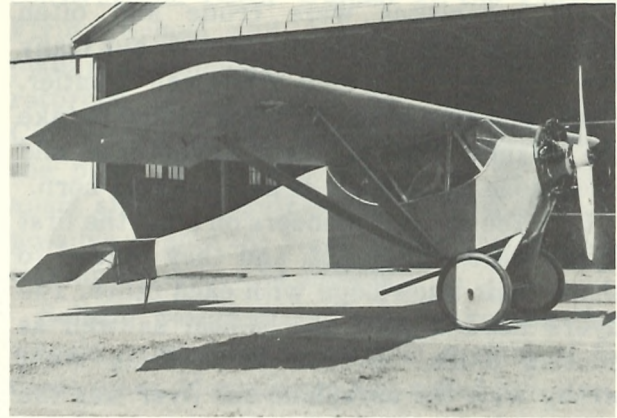
After World War I, many homebuilt airplanes were put together in backyards and empty warehouses. In the basement of his farmhouse in Bristow, Iowa Clayton Folkerts started building airplanes. After two failures, he finally built an airplane that flew.

In Davenport, Don Luscombe had become unhappy with his big, slow, drafty Jenny and he began to work on a new design. It would be light-weight and small with a covered cabin to protect the flyer and passenger from the wind. Luscombe was sure he could sell such a plane.

Luckily, Luscombe and Folkerts met. Folkerts could build fine airplanes and Luscombe knew how to design them. So, in 1926, the Central States Aero Company got under way. The company rented an empty building in Bettendorf and began manufacturing the Monocoupe. It was a monoplane, and like the coupe (a popular automobile) it carried two passengers, side-by-side.

Many small manufacturers went out of business after six or seven planes had been made. But the Monocoupe was an immediate success.

Word of the plane's good handling and speed spread quickly. Central States Aero could not keep up with the orders. The problem was getting enough good engines to put in the planes. So, in 1928, Luscombe went to Willard L. Velie, a Moline, Illinois automobile manufacturer.



In 1928, ninety percent of all American light planes sold were Monocoupes.

The Velie Company had first started as a buggy manufacturer and later changed over to automobiles. Now Velie agreed to build aircraft engines. Central States Aero became Mono Aircraft, Inc., and operations were moved to Moline, Illinois. The Monocoupe rapidly became one of America's most popular private airplanes.

A few years after World War II the demand for small airplanes declined, and many small plane manufacturers went out of business. Monocoupe was one of them. But, to this day, the little Monocoupe that had its beginnings in an old wooden building in Bettendorf is a favorite of antique-airplane flyers.

The primary source for this story is John Underwood's *Of Monocoupes and Men*, Glendale, California: Heritage Press, 1973.

Iowa Airplane Manufacturers

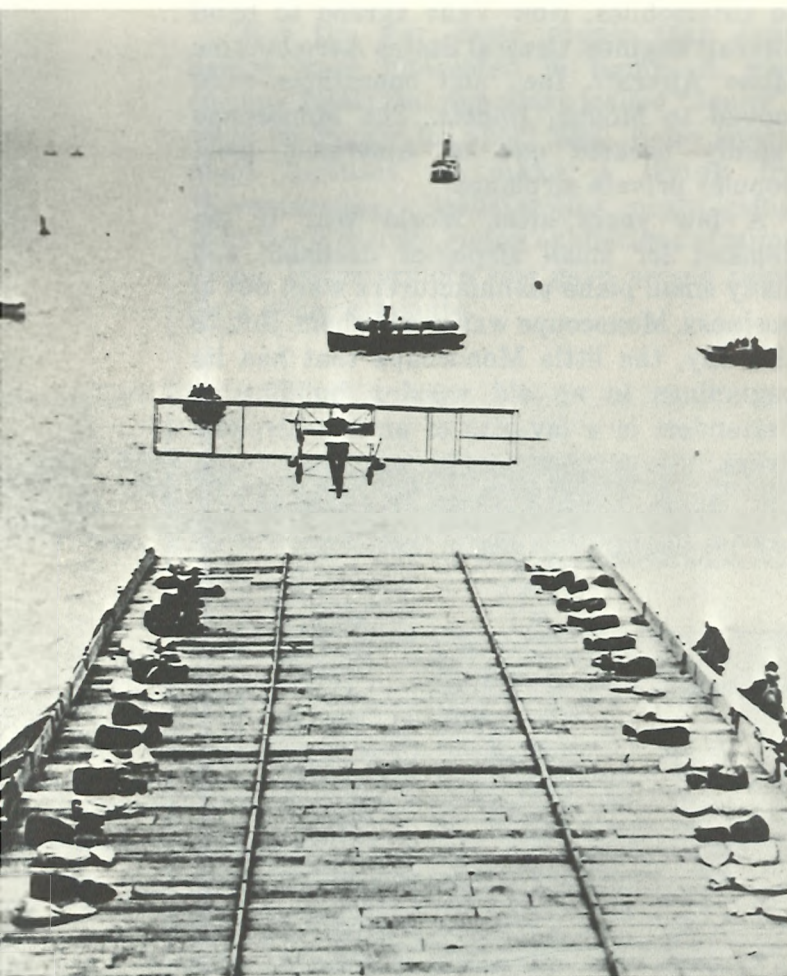
City	Company	Year known to be in business	Aircraft Name
Bettendorf	Central States Aero	1927	Monocoupe
Carroll	Saul Aircraft Corporation	1929	Triad
Clarinda	Dunn Aircraft Corporation	1929	Cruisair
Des Moines	Bolte Aircraft Corporation	1929	Bolte Sport
Des Moines	White's Aircraft Company	1925	Humming Bird
Keokuk	Flagg Aircraft Company	1921	Flagship
Le Mars	Mars Manufacturing Company	1945	Sky Coupe
Orange City	Evangel Aircraft Corporation	1970	Evangel
Sioux City	Kari-Keen Aircraft, Inc.	1930	Kari-Keen Coupe

Iowa's Pioneers of the Air

Early aeroplanes were crude and often unreliable. Flying was dangerous, but many saw the air as a new American frontier. These pioneers of the air were willing to take the chance. Out of their adventures and inventions the science of aviation was born.

Like the earliest pioneers on land, the first flyers were self-taught, and they tended to share their knowledge with each other. The flyers needed good mechanical as well as piloting skills, because if anything went wrong with the aeroplane the flyer was the one who had to fix it!

Because pilots were their own mechanics, too, it is little wonder that many of these daredevil flyers were also clever inventors.



Eugene Ely comes in to land on the *U.S.S. Pennsylvania*. Grabhooks underneath the plane caught on the ropes and the weight of the attached sandbags stopped the plane.

WINGS FOR THE NAVY. Eugene Ely was born at Williamsburg, Iowa in 1886. He left school at 17 and went to work in a garage. Gene liked automobiles and became an expert mechanic and racing-car driver.

A few years later Gene moved to San Francisco, bought a Curtiss "pusher" and taught himself to fly. When aeroplane builder Glenn Curtiss formed his exhibition company in 1910, young Ely was asked to join. He and his wife, Mabel, traveled all over the United States with the exhibitions. Then, Curtiss arranged a demonstration to show the Navy that an aeroplane could take off from a ship at sea. If it worked, the Navy would be buying a lot of aeroplanes in the future.

So on a foggy November day in 1910 Gene Ely sat in a Curtiss biplane on the deck of the *U.S.S. Birmingham*, waiting for the dense fog to lift. After several hours Ely decided to make a try for it — fog or no fog. He started his engine and signaled the sailors to give him a push. The aeroplane moved down the short wooden ramp that had been built for a runway. Ely's plane took off with a roar. But the plane did not have enough speed to stay up in the air. It dropped rapidly towards the Atlantic Ocean. The propeller touched the water before Gene was able to lift his plane back up. Safe from the choppy waves, Gene found himself blinded by spray on his goggles and flew in the wrong direction! Finally, his sight cleared, and he made for the beach two and one-half miles from the cruiser and landed safely. The demonstration was rated a success.

Two months later, in San Francisco, he made a more important flight. This time he flew from land to a platform built on the *U.S.S. Pennsylvania*. To celebrate, Gene and his wife had lunch with the captain. Then he flew back to shore.

To land on the ship, Ely had to come in at exactly the right angle to the deck, touch

down, and then slow to a stop within the 130-foot length of the platform. Glenn Curtiss called it "probably one of the greatest feats in accurate landing ever performed. . . ."

Nine months after he made history, Gene crashed to his death during a performance. In 1933, the U.S. Navy recognized his contribution to aviation, and awarded him the Distinguished Flying Cross, posthumously. Although he had been a flyer for only two years, Gene Ely had given wings to the Navy by proving planes could take off from and land on ships.

THE SOLBRIG TEAM. Mary Solbrig was an excellent aeroplane mechanic. Her husband, Oscar Solbrig, was a well-trained flyer. During the six years (1911-1917) that they worked in exhibition flying they were a highly respected flying team.

Oscar Solbrig came to Iowa from Germany at the age of 21. He started a small machine shop at Washington. He also took up bicycle racing. Oscar married Mary Heidenreich and in 1911 they moved to Davenport where there was already a great interest in

aeroplanes. It was not long before Oscar and Mary were involved in flying.

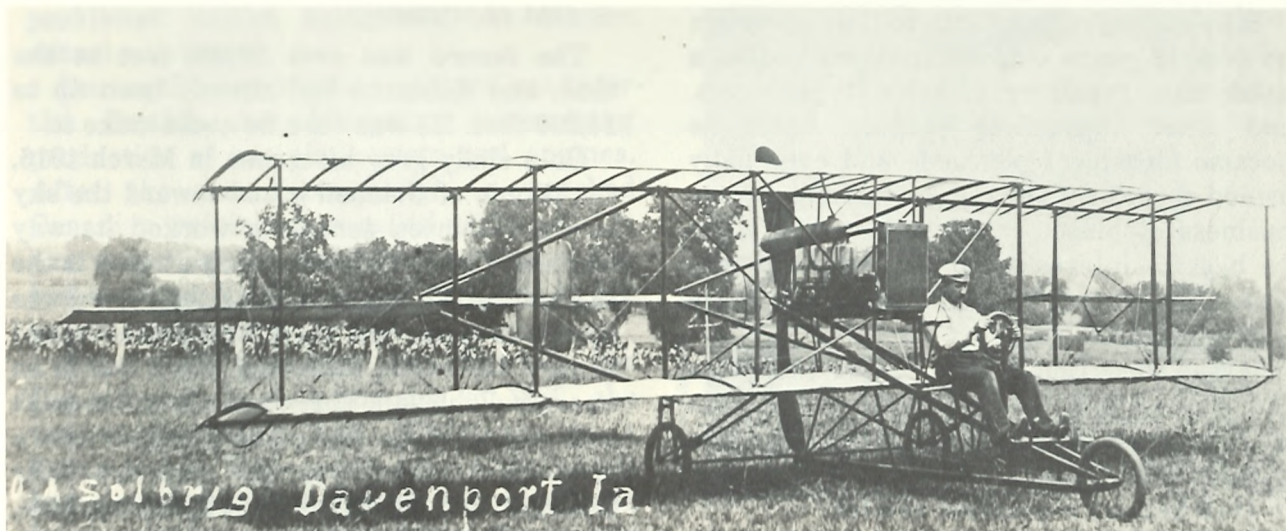
To learn about flying and aeroplane construction, Oscar trained at the Curtiss Flying School and nearby manufacturing plant at Hammondsport, New York. When he returned to Davenport he built his own Curtiss pusher-type biplane. He constructed the plane in sections that could be taken apart and put together easily. This made it possible to ship the plane in four crates from one air exhibition to another.

Solbrig designed and put brakes on the wheels, an uncommon piece of equipment in those times. Most planes just rolled to a stop.

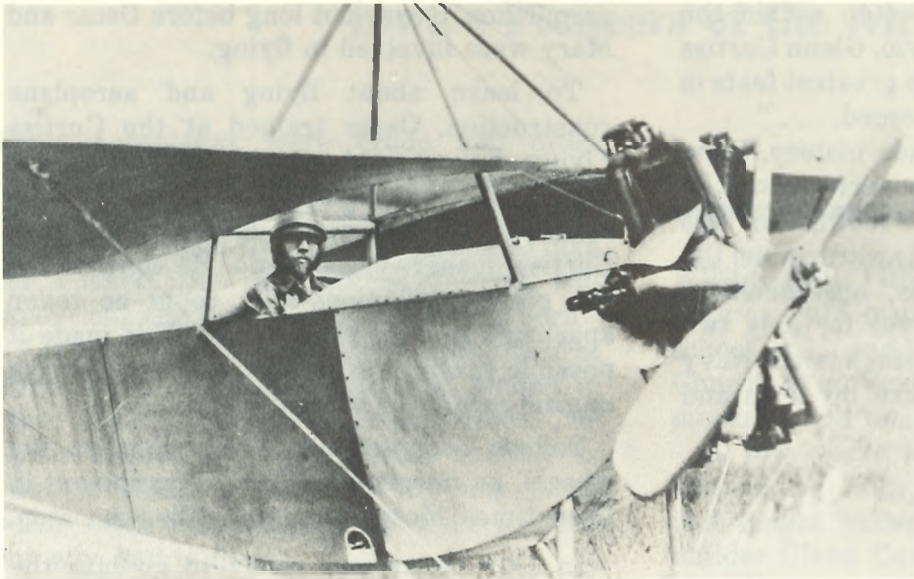
In 1915 Oscar was ready to go into the exhibition flying business. Mary was manager and made the plans for all the publicity and exhibitions. In addition, she worked as the "mechanician," a term she liked better than mechanic. She was also a mother and housewife. After her three children were in bed, she often worked late into the night cutting and fitting the linen fabric for wings and working on other aeroplane repairs.

In 1917 they retired from flying and Oscar returned to his trade of machinist. Both are remembered for their contribution to the promotion of public interest in flying.

Putnam Museum Collection



Early air machines like this pusher built by Oscar Solbrig were often built at home.



Billy Robinson in his monoplane with the air-cooled radial engine.

Professor Emeritus Grant O. Gale, Curator,
Grinnell College Science Museum

A BETTER ENGINE. "Robinson's American Cross-Country Record," the title announced. The first article in *Aero and Hydro* magazine for October 31, 1914, told all about William C. Robinson's record-breaking flight. The young man from Grinnell had made the flight in his home-built "parasol" monoplane with a radial motor of his own design. His speed had been around 80 miles per hour. Robinson had flown from Des Moines to Kentland, Indiana — 370 miles in 4 hours and 44 minutes.

Billy Robinson had come to Grinnell when he was 12 years old. He first worked as a handyman, repairing bicycles, typewriters, and other mechanical gadgets. Later he became an expert mechanic and eventually owned a repair shop and automobile garage business. Robinson was inventive and when he became interested in aeroplanes it was quite natural that he would spend his spare time building one.

It was some time before he had a machine that would fly. When his aeroplane was successful, he decided that it was not much good without a flyer. So, he took lessons and in 1913 became a qualified aviator.

For almost two years, Robinson flew for exhibition and competition. But his greatest

ambition was to design and build flying machines and better engines.

So he returned to Grinnell. The people there who believed in Robinson persuaded him to start his aeroplane company there. They offered to help get the business started by buying stock in Robinson's Grinnell Aeroplane Company.

This support gave him the opportunity to build a biplane with his special radial engine to power it. Robinson believed that with this aeroplane he could break a different record — that of altitude.

The record was over 20,000 feet at the time, and Robinson had already been up to 14,000 feet. He was sure he could make it.

On a chilly gray afternoon in March 1916, the people of Grinnell gazed toward the sky as the Robinson aeroplane worked its way upward. The plane became only a speck in the sky and people began to think the record was surely broken. But then, the plane turned toward the earth, fluttering like a leaf in an uncontrollable fall. There was a terrible crash and explosion as the plane plunged into a farm field. That was the end for Billy Robinson and his magnificent flying machine, but his contribution to aeroplane engine design remained.

DETERMINED TO FLY. From the time she had watched the balloonists at the county fair, Neta Snook had wanted to fly. Neta liked mechanical things. By the time she went to college in 1915, she was driving a car. This was unusual for a young woman in those days.

At Iowa State College (now Iowa State University) Neta studied mechanical drawing, combustion engines, and the repair, maintenance and overhaul of farm tractors. When she learned about Glenn Curtiss' flying school at Newport News, Virginia, she applied for admission but was not accepted. Neta did not let one "no" stop her.

When she read of the Davenport Flying School she went there as soon as her college year ended in June 1917. Neta paid \$400 and joined the other students, all men. She helped build the aeroplane that was to be the trainer. By doing this, the students learned how the plane operated and how to repair it.

Tragedy ended the school at Davenport. The training plane was destroyed in a crash and the instructor badly injured. The school closed.

Neta applied to the Curtiss school again. This time she was accepted. Neta was an excellent student flyer, but World War I cut short her final training. The government prohibited civilian flying and the Curtiss school was closed.

During the war, Neta worked in Canada for the British Air Ministry, supervising production of aeroplane parts and engines. After the war, Neta bought a wrecked Canadian training plane called a "Canuck." It was very much like the American Jenny. She had it shipped to Ames and rebuilt it in her parents' back yard.

Neta made her first solo flight in her Canuck and, in that summer of 1920, she traveled about the Midwest as a barnstormer. When winter came, Neta took her plane apart and shipped it in a railroad boxcar to Los Angeles. Many flyers and airplane manufacturers were moving to

places where the climate was better for year-round flying.

In Los Angeles, Neta worked test-flying airplanes, carrying passengers, and performing aerial advertising. She also taught flying. Among her students was a woman who wanted to learn to fly as much as Neta had. Amelia Earhart became Neta Snook's student and good friend.

Neta did her work well and her abilities as a flyer and mechanic were recognized by others in aviation. When Donald Douglas designed and built a new cargo plane with folding wings, he asked Neta to set up and supervise the wing department.

In 1921 Neta married and eventually quit flying. There were not many women working in aviation at the time Neta Snook learned to fly, but in the five years that she flew, her skill and ability earned the respect of other aviators. She helped prepare the way for other women who would choose to fly.

This story is based on *I Taught Amelia to Fly* by Neta Snook Southern, New York: Vantage Press, 1974.



Vivian Snook Smedal, Ames, Iowa

Neta Snook stands next to her Canuck. Her name was painted on the side.



"Miss Columbia" First Plane to Fly Atlantic with a Passenger
New York to Berlin, June 4, 5, 6, 1927—3905 mi., 43 hrs., 31 min.

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THE RACE TO CROSS THE ATLANTIC.

There were three contestants waiting in New York City that spring of 1927. The goal: to be first to fly non-stop across the Atlantic Ocean. The prize: fame and \$25,000. Two flyers had tried and been killed in attempts to fly the Atlantic. Now, three pilots waited for the bad weather over the Atlantic to clear.

Clarence Chamberlain was an experienced flyer from Iowa. He had made his living selling and flying planes since his World War I flight training. He and the *Columbia* were the popular favorites in the race. The *America* had a four-man crew led by Richard E. Byrd, who had made the first flight over the North Pole a year before. Finally, there was the *Spirit of St. Louis* with a former airmail pilot from Illinois, Charles A. Lindbergh.

The pilots waited around the field for days, checking weather reports and making mechanical adjustments on their planes. Then the weather cleared briefly, and Lindbergh took off. Flying alone, he crossed the Atlantic (a distance of 3,610 miles) in thirty-three hours and thirty-four minutes (about a day and a half). The minute he landed in France, Lindbergh became an international hero.

Only two weeks later, Clarence Chamberlain headed out over the Atlantic on a flight which broke Lindbergh's record.

With him was the airplane's owner, Charles A. Levine. Levine had kept everything about this flight a big secret, including the destination. No one even knew that Mr. Levine planned to go as a passenger! By the time Chamberlain ran out of gas near Berlin, Germany, he had flown 3,911 miles, in forty-two hours and forty-five minutes. Byrd's effort twenty-four days later failed when fog forced him to land in the ocean near the French coast.

President Calvin Coolidge sent a message of congratulations to Chamberlain. The Brooklyn, New York, Chamber of Commerce gave Wilda, his wife, a check for \$15,000. Wilda then took a ship to Europe (which took ten days) to join her husband, who had received \$25,000 from Levine for making the trip.

The Chamberlains vacationed in Europe before returning to Iowa. Clarence had been born and raised in Denison, and spent two years at Iowa State College. Now he was coming home a world-famous flyer. The whole town turned out to celebrate!

In the years that followed, Clarence Chamberlain remained one of America's finest aviators. He designed New York City's new municipal airport, Floyd Bennett Field. He manufactured aircraft parts. And, when World War II began, Clarence Chamberlain trained young men and women to fly, just as he had been trained thirty years before.

Via Air Mail

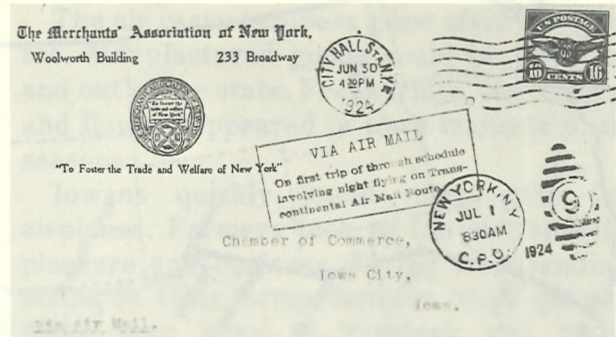
After World War I, while stunt pilots were flying their Curtiss Jennies over crowds at the county fair, other people were finding practical uses for the airplane. The U.S. Post Office decided that airplanes were just the thing to speed up mail service.

Before airmail became a regular service, many demonstration flights were flown. Pilots like Carl Duede of Stuart, Iowa believed the mail could be carried by air, and proved it. Duede flew a demonstration flight from Des Moines to Guthrie Center, Iowa in 1919. He carried one hundred copies of the *Des Moines Capitol* newspaper. It took him 53 minutes to travel 65 miles.

The first regular airmail routes linked large Eastern cities like New York and Washington, D.C. By 1920, airmail service reached westward to Chicago. Then, it was decided to provide coast-to-coast service between New York City and San Francisco.

Until this time, all airmail flights had been made during daylight. Mail was loaded on trains to continue the journey during the night. But, with the beginning of transcontinental service, the Post Office decided to fly the mail all the way without stopping for darkness. The stretch between

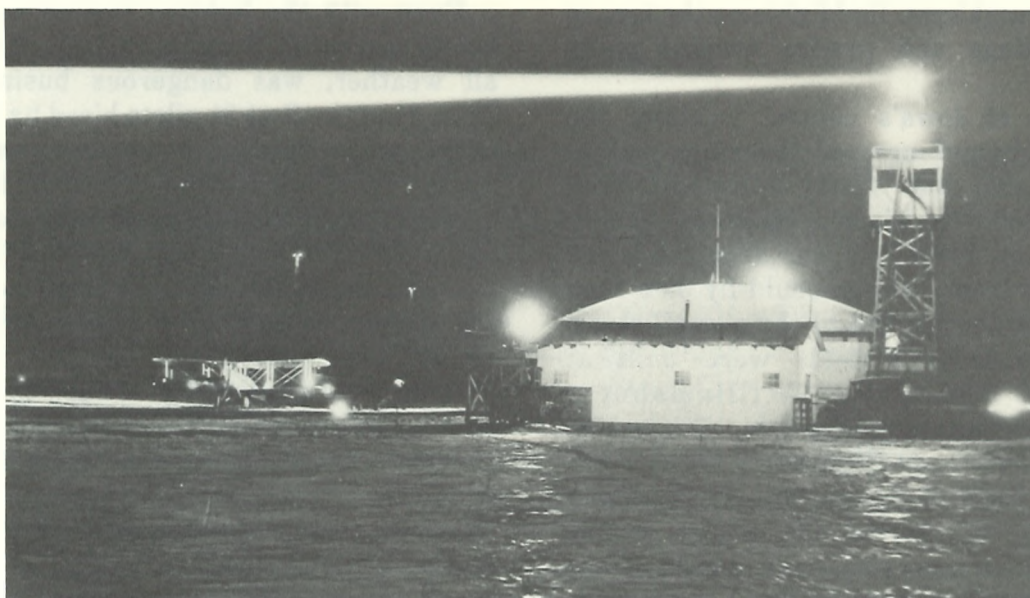
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This envelope carried a letter to Iowa City on the first regular airmail service flight. Notice the special air mail stamp. Regular mail was two cents. The Post Office stopped special air mail rates in the United States in 1977.

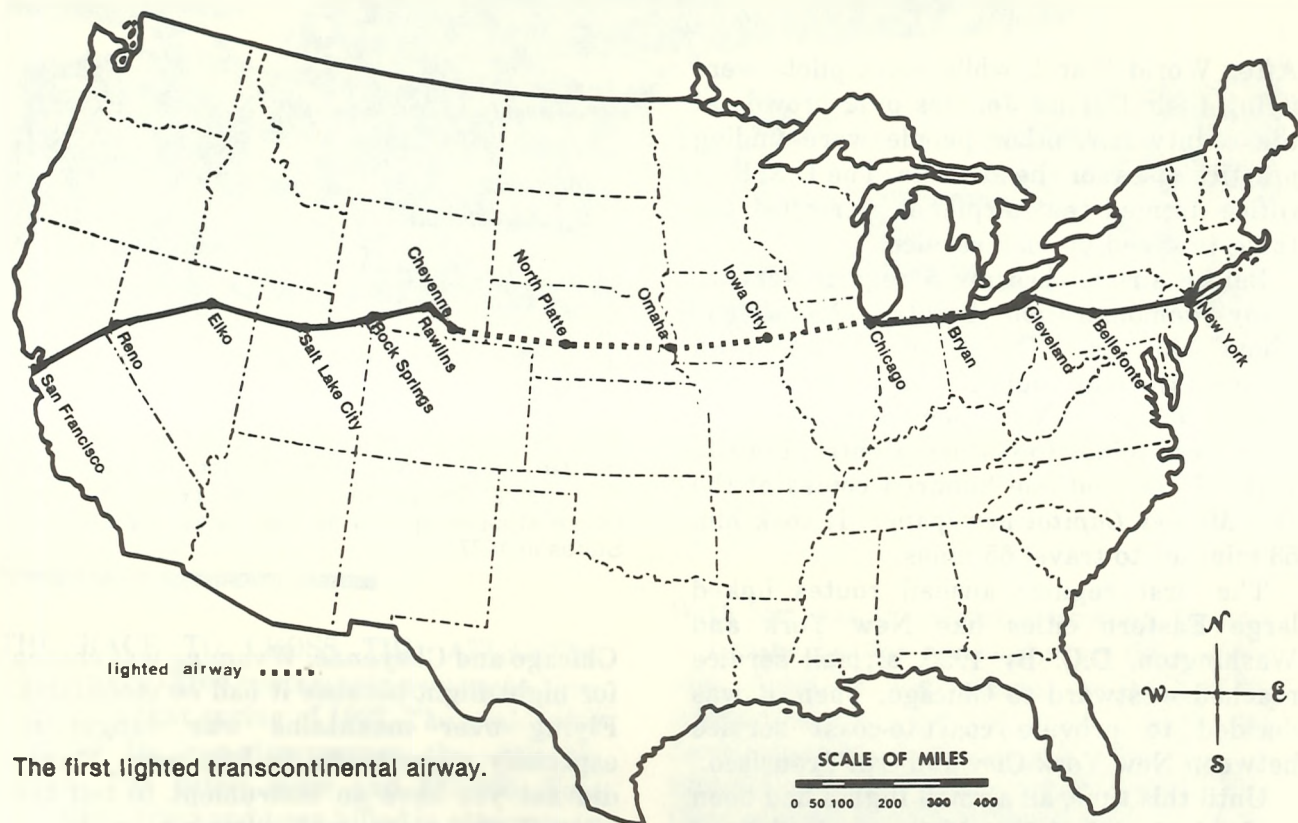
Chicago and Cheyenne, Wyoming was chosen for night flight because it had no mountains. Flying over mountains was dangerous, especially when visibility was poor. Planes did not yet have an instrument to tell the pilot if the plane was climbing or diving toward the ground.

To aid flyers the Post Office planned and built an airway system. Radio stations were installed at each field on the transcontinental route. Between Chicago and Cheyenne the



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The rotating beacon flashes at the Iowa City airport, a stop on the transcontinental airway.



airway was lighted with beacons placed every three miles. The beacons flashed all night to help pilots find the way through the darkness. Every airmail landing field had a rotating searchlight. Red lights on the tops of high buildings and towers warned pilots away.

Because of Iowa's central location, the planned "airway" crossed the state just as wagon trails, the first transcontinental railroad, and the Lincoln Highway had in earlier times. Iowa City was about as far as an airplane from Chicago could fly on a tank of gas, so it became one of the airmail stops. Emergency landing fields were built at Donahue, Moscow, Williamsburg, Montezuma, Reasnor, Carlisle, Booneville, Casey, Atlantic, and Oakland.

In June 1924 the transcontinental airway was ready. All across the nation people gathered at airports to see the airmail planes land. In Iowa City, over 3,000 onlookers were on hand to see the airmail plane arrive. The bag of mail sat importantly in the passenger

seat of the small biplane, behind the pilot's open cockpit.

In the bag there was a special letter for each city where the airplanes would land.

Even with the lighting system and other safety measures, flying both day and night, in all weather, was dangerous business. By 1925, 31 of the first 51 pilots hired by the Post Office were dead. Among them was John Percy Woodward from Mitchellville, who crashed into a mountainside near Salt Lake City, Utah. For his heroic effort to deliver the mail on time, in spite of a blinding snowstorm, the people of Salt Lake City named their airport after him.

In 1926 the Post Office decided to contract with small private airline companies to carry the mail. Often this income from the Post Office contracts was the only thing that kept the young companies going. From these few companies with their daring pilots and old planes, grew such modern airlines as United, Western Airlines, and TWA. They still carry the airmail today.

Aviation Growth in Iowa

After the first lighted transcontinental airway was completed, work began on more airways. Soon, airplanes could travel in almost any direction over well marked routes.

All over Iowa, cities built airports and runways, hoping to attract mail and airline passenger service. Five years after the first lighted transcontinental airway was completed, eight Iowa cities were on a regularly scheduled passenger service route and forty-nine airports had been built. Some had crushed-rock runways, a great improvement over the mowed-grass landing fields that became soggy and unuseable in wet weather.

World War II led to more progress in aviation. Once again airplanes were redesigned to be used in war. These planes held more, traveled faster, and could fly longer distances before stopping to refuel. Toward the end of the war a few jet-powered aircraft had joined the propeller-driven warplanes in the skies.

After the war the cost of air travel dropped. As air fares came close to those of railroads, more and more people chose to fly. By 1958 quiet, fast, jet-powered airliners were used for passenger service, making air travel even more popular.

The air cargo business grew after the war, too. Manufactured goods could be flown in and out of the state. Fresh fruits, vegetables, and flowers appeared in Iowa markets in all seasons.

Iowans quickly found many uses for airplanes. Farmers took to the air for both pleasure and business. Flying from landing strips on their farms, farmers could quickly make long trips to livestock and grain markets, or pick up a needed part to repair farm machinery. In the fields, aerial cropdusting and spraying became a method of insect control.

Aerial photography was another use for airplanes. Photos of the ground helped in the study and prevention of soil erosion. Photographs were also used to make accurate maps.

Today, aircraft are so much a part of our lives that we take them for granted. Huge jets cross the country carrying goods, passengers, and mail. Smaller airplanes zip over Iowa carrying people, checking for soil erosion, or photographing an area to be mapped. Helicopters rush emergency patients to the hospital or hover over cities, broadcasting traffic reports.

The aircraft over Iowa have certainly changed since the first "new bird" appeared in the sky!

Good Books on Iowa and Aviation

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Pellegrino, Ann Holtgren. *Iowa Takes to the Air*. Story City, Iowa: Aerodrome Press, 1980.
Smith, Norman F. *Wings of Feathers, Wings of Flame*. Boston: Little, Brown and Company, 1972.
Southern, Neta Snook. *I Taught Amelia to Fly*. New York: Vantage Press, 1974.
Steuer, H. Guyford, Haggerty, James M., and Editors of *Life Flight*. New York: Time Incorporated, 1965.

Ellen Church: the Flying Nurse

As you board the airliner, a smiling flight attendant in a neat uniform checks your ticket. Before takeoff you learn what to do in case of an emergency. During the flight an attendant serves meals and makes sure that you are comfortable. What would flying be like without flight attendants on the job?

When airlines in the United States began passenger service in 1926, there was no one to provide such extra attention. The small planes carried the pilot, a copilot, and about twelve passengers.

During the flight the copilot would leave his controls and come back to the cabin to care for the passengers. He handed out the box lunches. He took care of those who became frightened or airsick.

Airsickness was common in those days. Planes flew at about 5,000 feet and at that altitude, the air is often rough and bumpy. Sometimes the bouncy ride made people sick in the stomach. It also alarmed first-time travellers.

In 1928, a German airline added a third

crew member, a steward. His main duty was to care for the passengers. Then, the copilot could stay with his job of helping to fly the plane. In 1930, Boeing Air Transport decided to add a third crew member on passenger flights, too. But something happened that changed that plan a little. That something was someone — Ellen Church.

Ellen Church grew up with the air age. She was born at Cresco, Iowa in 1904 — one year after the Wright brothers' successful flight. While Ellen was a young girl she watched aeroplanes perform at the county fair. Sometimes one landed in a nearby Cresco farm field. Ellen decided that when she grew up she would learn to fly.

After graduating from Cresco High School, Ellen studied nursing. Then, she went to San Francisco to work in a hospital. In her free time she took flying lessons. Every day, as she walked to and from work, she passed the Boeing Air Transport office (a forerunner of United Airlines). Companies like Boeing were starting to fly cargo and passengers all over



United Airlines photo

The world's first stewardesses. Ellen Church is at the top left.

the nation. One day, Ellen stopped in at the Boeing office, and asked whether there was any chance she could get a job in flying. Steve Stimpson, the manager, told her the airline was planning to hire stewards, like those on some European airlines.

Ellen thought she could do that sort of work very well. In fact, a nurse was just what the airline needed! Wives would not worry so much about their husbands travelling if there was a nurse aboard. Surely the plane must be safe if a woman dared to fly in it every day!

Mr. Stimpson agreed, but convincing Boeing headquarters was another matter. After some argument, Boeing decided to give Ellen's plan three-month trial. Ellen was hired as head stewardess, and told to find seven other nurses to work on planes. This was not easy. The job paid well, \$125 a month, but often a young woman's parents objected to their daughter taking a job in flying.

Ellen found seven trained nurses who met the rigid qualifications. The early planes could not carry much weight, so a stewardess could not weigh more than 115 pounds. The planes had narrow aisles and low ceilings, so the women could be no taller than 5 feet 4 inches. The age limit was 25.



Captain Ellen Church in 1945.

United Airlines photo



Planes like this carried passengers from Chicago to San Francisco in 1929.

Ellen and her seven nurses worked hard to prove women could handle the job. They cared for airsick and frightened passengers. They took tickets, passed out lunches, served coffee and hot soup. They cleaned inside the plane, and tightened the bolts holding the seats to the floor.

The stewardess was responsible for passenger safety. This included keeping an eye on the emergency exit which was right next to the washroom door. She did not want a careless passenger stepping out into the wild blue yonder!

Passengers liked the service and soon other airlines were hiring stewardesses. Ellen, however, was forced to quit flying after eighteen months, because of an auto accident injury. But this did not end her career in the air.

Ten years later the United States entered World War II. Ellen joined the Army Nurse Corps, and helped evacuate wounded soldiers from Africa and Italy by airplane. Because of her experience working in hospitals and organizing the stewardesses, Captain Ellen Church was called to train evacuation nurses for the D-Day invasion of France in 1944. For her "meritorious achievement in aerial flight" she received the Air Medal, the European-African-Middle Eastern Campaign Medal with seven bronze service stars, the American Theatre Campaign Medal, and the Victory Medal.

Ellen Church created a new career in the new industry of flying, at a time when many men thought the idea of a woman working on a plane was a joke. It took a pleasant and determined young woman from Iowa to change their minds.

The Times-Plain Dealer of Cresco, Iowa

Glossary

aerial. taking place in the air.

aerodynamics. the science that deals with the flow of air and its effects, especially on aircraft.

aeroplane — airplane. a flying machine heavier than air, driven by engines and having fixed wings. In 1916, the United States government formally adopted the word airplane.

ascend. to go up.

biplane. an airplane with two sets of wings, one above the other.

destination. the place to which someone plans to travel.

evacuate. to remove people from a place.

exhibition. a public showing.

flammable. easily set afire, likely to burn.

glider. a winged aircraft without an engine.

hydrogen. an odorless, colorless, flammable gas that is the lightest of all the elements.

monoplane. an airplane with one wing that extends outward on each side of the aircraft's body.

posthumously. occurring after a person's death.

prohibited. not permitted.

pusher airplane. an airplane with the propeller in the rear.

qualifications. skills or experience needed to get a job.

rudder. a broad, flat piece of wood or metal hinged vertically on an aircraft and used to steer it.

tractor airplane. an airplane with the propeller in front.

trimotor. an airplane with three motors.

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