AVIATION IN ARIZONA:
FROM PIONEER FLIGHTS TO THE END OF WORLD WAR II

by

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STATEMENT BY AUTHOR

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PREFACE

This study was undertaken to fill a conspicuous gap in the history of transportation in Arizona. In spite of the importance of aviation to the development of Arizona, little has been written on this subject. This is surprising, since Arizona played a unique role in the development of aviation in the Southwest. From the day in 1911 when Tucson became the meeting place of Calbraith P. Rodgers and Robert G. Fowler—the first men to complete transcontinental flights—Arizonans have shown a great interest in aviation in all its aspects. Such interest, and Arizona's ideal flying weather, led to much activity in aviation throughout the state over the following decades. In the 1920's several companies, including the predecessors of Trans World Airlines and American Airlines, began operations in the state. When the U. S. Air Mail system was expanded in 1930, its two new transcontinental routes both crossed Arizona. Ten years later the climate of Arizona figured heavily in the expansion plans of the Army Air Force. From 1940 to the end of World War II, almost 150,000 men received their flight training at bases established throughout the state. This thesis is an
attempt to record the rise of aviation in Arizona from its earliest beginnings to its position of maturity at the end of World War II.

The author is indebted to several people for their assistance in the preparation of this thesis. William L. Alexander, director of the Postal History Department at the Arizona Pioneer and Historical Society, provided a great deal of material pertaining to air mail in Arizona. The staff of the Special Collections Division of the University of Arizona Library, and especially Mr. Joseph F. Park, curator of the Western Collection, was very co-operative in helping the author locate obscure sources for this thesis. The author also wishes to express his gratitude to Dr. John Alexander Carroll, director of this thesis, whose suggestions have greatly increased its value.
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ABSTRACT

Aviation in Arizona began with the flights of Charles K. Hamilton and Charles F. Willard at Phoenix in 1910. The pioneer period also included the meeting at Tucson, in 1911, of Calbraith P. Rodgers and Robert G. Fowler, the first men to complete transcontinental flights, and the air mail flights of Miss Katherine Stinson at the Southern Arizona Fair in 1915. The 1920's saw the beginnings of commercial aviation in Arizona. In the latter part of this decade the predecessors of both Trans World Airlines and American Airlines extended their operations into Arizona. The coming of air mail to Arizona in 1930 marked the opening of a decade of rapid advancement in commercial aviation which was not curtailed until the threat of war shifted attention to an expansion of the Army Air Force. In 1940 the Air Force began a program of expansion in which the state of Arizona was to play a major role. Between 1940 and 1945 the armed forces established twenty-one air bases and pilot training centers in the state, and almost 150,000 fliers were trained here. Thus in thirty-five years Arizona aviation had advanced from a novelty to an important industry.
PIONEER FLIGHTS, 1910 - 1915

On January 10, 1910 an international group of fliers opened a ten-day aviation exhibition at Los Angeles, California in a field which very recently had been a cow pasture. Thousands of people flocked to see the eleven planes, three dirigibles and seven free balloons which performed daily. Some Arizonans also made the trek to Los Angeles. One of them was Nat Reiss, a carnival owner and promoter from Phoenix, who brought back glowing reports of the skill of Paulhan, the famous French aviator, and Glenn Curtiss, one of the best American fliers and president of the Herring-Curtiss aviation company. Reiss made a proposal that the citizens of Phoenix raise the funds to provide for a three-day air show to be held shortly after the close of the Los Angeles exhibition. A group of businessmen responded rapidly and

1. Phoenix Arizona Republican, January 8, 9, 1910.

2. Aviation Scrapbook, II, Arizona Pioneers' Historical Society (hereafter cited as Aviation, APHS). This three volume scrapbook, composed mainly of newspaper clippings, is of great value to the researcher since it is exclusively devoted to the early period of aviation in Arizona.

it was soon announced that Glenn Curtiss and two other members of the Herring-Curtiss flying team had agreed to put on a show at Phoenix on February 10, 11, and 12. Thus Arizonans would soon be able to see Curtiss, the "Man-Eagle," make the first flight in Arizona.

Arizonans suffered a disappointment when Curtiss sent word that he would be unable to attend due to pressing legal matters. In spite of this, the two other Curtiss fliers, Charles K. Hamilton and Charles F. Willard, arrived in Phoenix as scheduled. These businessmen had raised $12,000 in one week. They planned to charge an admission fee of $1.00 for adults and $.50 for children. They were confident that there would be enough paid admissions to more than make up the $12,000.

Curtiss was detained by a court order in connection with the injunction brought by the Wright Brothers against the Herring-Curtiss Company. The Wrights claimed that Curtiss was infringing on their patents.

Charles F. Willard was one of the pilots involved in the tests which convinced the Army that the airplane could be used as a weapon of war.
put on exhibitions each day at the fairgrounds to capacity crowds which were drawn by the novelty of the airplane. On February 12, Hamilton beat a Studebaker automobile in a five-mile race. Hamilton was given a thirty-second head start and beat his opponent by thirty-two and one-fifth seconds. Thus, without the handicap, his margin of victory was only two and one-fifth seconds. At the conclusion of the flights on February 12, it was decided to hold another exhibition the next day. Hamilton raced again on the 13th and lost by four-fifths of a second. Although his airplane had not been an unqualified success in Phoenix, the air show had been a financial success and groups in other Arizona cities began to request exhibitions in their communities.

Hamilton agreed to fly in Tucson for a guarantee of $2,000 and fifty per cent of the gate receipts. He shipped his plane to Tucson by rail and planned to fly on Saturday and Sunday, February 19 and 20. In order to

8. Phoenix Arizona Republican, January 25, February 10, and February 14, 1910. The Arizona Republican gave the pronunciation of the word aviation because several people had written in asking how to pronounce the "new word."


Insure more paid admissions, a field was surrounded by a high board fence which made it extremely difficult to take off or land. Hamilton made one flight of four and one-half miles on the 19th. On this flight he reached a height of 900 feet and a speed of forty miles per hour. The only thing which detracted from his flight was a faulty landing which damaged the wing. The plane was also damaged slightly in both of his flights on Sunday the 20th. In spite of the fact that the flights in Tucson were financially unsuccessful, they were well received by the citizens. Hamilton left Tucson and went on to El Paso, Texas, for an exhibition. These first flights generated a great deal of enthusiasm in Arizona, but they had no real significance for aviation.

Approximately a year later the residents of Arizona Territory witnessed the first truly significant flights in that area. Aviation in the territory at that time

12. Tucson Magazine, July 1929, 5. This article written in 1929 claimed Hamilton's flight in Tucson was the first in the state and completely disregarded the flights in Phoenix.

13. Tucson Citizen, February 21, 1910. Paid admissions amounted to $1,616. Hamilton received $808 as his percentage of the gate receipts, the remaining $808 went toward his $2,000 guarantee, but the Chamber of Commerce had to put up an additional $1,200. Hamilton's flights were so popular that the small town of Patagonia offered him $4,000 and fifty per cent of the gate receipts if he would give a three-day air show there.
was but one segment of a much larger undertaking. Aviators were risking their lives to prove that the airplane was not merely a scientific plaything. By that time, designers had greatly improved the airplane; nothing, however, had been done to enclose the airplane and the pilot still flew entirely exposed to the weather and also without a parachute. Aviators of the period were brave men who faced death every time they went aloft. These men hoped to prove the feasibility of the airplane as a means of transportation by flying from coast to coast.

Aside from proving the dependability of the airplane, there was an added incentive for such a flight. In the fall of 1910 William Randolph Hearst, owner of the famous newspaper chain, offered a prize of $50,000 to the first man to complete a transcontinental flight within thirty days. The deadline for completion of this flight was October 10, 1911. Those who wished to qualify for this prize had approximately one year in which to make their attempts. It was not until August of 1911 that interest in this undertaking reached a peak.

Harry N. Atwood's completion of the 1,265-mile flight

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from St. Louis to New York City in eleven days convinced several aviators that the Hearst prize was within reach. Of the pilots who declared their entry into the competition for this prize, only three actually attempted such a flight.

The planes used for this flight were all of the same type. Two of the fliers used airplanes manufactured by the Wright Brothers and one flew a Curtiss airplane. All three planes were biplanes of the "pusher" type. The pusher had the propellers mounted behind the wings as opposed to the "tractor" type with the propeller mounted in front of the wings. The Wright Model B, used by two of the pilots, had a four-cylinder engine which developed forty horsepower. The Curtiss also had a four-cylinder engine which was slightly more powerful than the Wright engine.

All these fliers transported extra parts for their planes in special trains. This was necessary since it would be impossible to find replacement parts along their route. Thus the pilots made extensive preparations

15. *Tucson Citizen*, September 14, 1911. By this date, Phil O. Parmelee, James V. Martin, Harry N. Atwood, Earle Ovington, James J. Ward, Robert G. Fowler, and Cal P. Rodgers had all made plans to enter the competition.

16. Harris, "Coast to Coast," 46.
before they began their flights.\textsuperscript{17}

The first to embark was Robert G. Fowler\textsuperscript{18} who left San Francisco on September 11, 1911, and planned to fly the Northern route through the Sierra Nevadas. The next day he crashed near Alta, California. His plane suffered extensive damage, which detained him for several days while he made repairs.\textsuperscript{19} On September 13, 1911, James J. Ward,\textsuperscript{20} ex-jockey, climbed aboard his Curtiss biplane and took off from Governor's Island in New York Harbor. He soon became lost over the maze of railroad tracks leading out of New York City and made only twenty miles the first day.\textsuperscript{21} Four days later, September 17, 1911, Calbraith P. Rodgers, a six-foot four-inch ex-college

\begin{itemize}
\item \textsuperscript{17} Charles S. Wiggin, \textit{First Transcontinental Flight} (New York, 1961). This book has no pagination.
\item \textsuperscript{18} Harris, "Coast to Coast," 46-47. Fowler was one of California's best pilots. He also held the automobile speed record from Los Angeles to San Francisco.
\item \textsuperscript{19} \textit{Tucson Citizen}, September 18, 19, 1911.
\item \textsuperscript{20} Harris, "Coast to Coast," 46.
\item \textsuperscript{21} \textit{Tucson Citizen}, September 19, 1911. The fact that Ward lost his way does not seem so strange when one realizes that the aviator's most reliable navigational instrument was the "Iron Compass," or railroad tracks. Thus, an aviator could easily become confused over the jumble of tracks leaving New York City. Wiggin, \textit{First Transcontinental Flight}.\end{itemize}
football player, took off from Sheepshead Bay, Long Island to make his attempt at the coveted Hearst Prize. Of the three fliers, only Rodgers made any real progress. As he crossed New York State, Fowler remained in Colfax, California repairing his plane. Misfortune dogged Ward, and after his plane fell sixty feet and crashed as he attempted to take off from Addison, a small town in central New York, the aviator lost hope of winning the prize. Since he had spent nine days in covering less than one-quarter of the total distance, Ward realized that there was no chance of completing the journey within the allotted time. Thus he withdrew, leaving only two contestants. With Fowler flying from the West and Rodgers from the East, it now became a question of when and where the twain should meet.

22. Harris, "Coast to Coast," 46-47. Calbraith Perry Rodgers was a descendant of Commodore Perry, who opened Japan to trade with the West in 1854, and also Oliver Hazard Perry, hero of the War of 1812. Partial deafness had kept him from a military career. He had enrolled in the Wright School in June of 1911 and was allowed to make a solo flight after instruction totaling only an hour and a half. In August he won first prize of $11,285 at the Chicago air meet for his record setting endurance flights. Thus, he had been flying for less than four months when he began his coast-to-coast flight.

23. Wiggin, First Transcontinental Flight.

24. Tucson Citizen, September 19, 23, 1911. Harris, "Coast to Coast," 78. In Chicago, gamblers gave odds of five to one that Ward would kill himself before he reached Buffalo, New York.
For a time it looked as though Kipling's words would hold true and East and West would never meet. When Fowler crashed the second day of his journey, he was confident that the delay would be of short duration. This, however, was a slightly over-confident prediction. In the crash, both propellers of the plane and also the wings were completely smashed, and repairs could not be completed as rapidly as Fowler hoped. In fact, twelve days passed before he could take to the air again. When work was finally completed, Fowler flew on to Emigrant's Gap, a small station on the line of the Southern Pacific, and attempted to negotiate Donner Pass. Once again fortune frowned, and the treacherous winds tossed his plane about as though it were a plaything. After spending several days waiting in vain for favorable winds, he flew to Los Angeles and made plans to start over again. This time he planned to avoid the mountains by flying a Southern route. By the time Fowler returned to Los Angeles, there was no hope of completing the flight before the


deadline set by Hearst. Only one man, C. P. Rodgers, had a chance to win the prize.

From the outset of his flight Rodgers made much better progress than either of his competitors. In his plane, dubbed the "Vin Fiz Flyer," he made better time crossing New York than Ward. Although he was having better luck than the others, a combination of bad weather and three crashes kept him from reaching Chicago until October 8. Since it was now obvious that he had very little chance of reaching the Pacific before the October 10 deadline, he was asked by a reporter if he planned to continue. To this query Rodgers replied, "I'm going to do this whether I get $50,000 or 50 cents or nothing. I am going to cross this continent simply to be the first to cross in an aeroplane." Even in this, however, Rodgers was to have a competitor. As he pushed on Westward across Missouri, Kansas, Oklahoma and into Texas, Fowler prepared for a new attempt from West to East.

28. Wiggin, First Transcontinental Flight. Rodgers had persuaded J. Ogden Armour, owner of the Armour Company of Chicago, to finance the majority of his flight in return, for publicizing Vin Fiz, Armour's new grape soft drink.

29. Harris, "Coast to Coast," 78-80.

30. Tucson Citizen, October 21, 1911. Harris, "Coast to Coast," 80.
By the time Rodgers arrived in Chicago, his counterpart in California had flown to Los Angeles and was already contemplating a second attempt to cross the continent by air. On October 21 preparations were complete, and Fowler set out from Pasadena on the first leg of this attempt to reach the East Coast. ³¹ On October 25 Fowler took off from Mecca, California and flew to Yuma, Arizona, where he was forced to stop and make repairs. ³² After the engine had been replaced, heavy rains to the east of Yuma held him up until October 29. ³³ As soon as the weather cleared, Fowler resumed his journey across Arizona.

Fowler left Yuma at 10:58 a.m. and flew non-stop to Maricopa. He was over Maricopa at 2:26, but, realizing that he was close to an endurance record, he circled the town and landed at 3:24 p.m. ³⁴ His flight lasted four hours and twenty-six minutes and broke the previous record of four hours and eighteen minutes. The record broken by Fowler had been set only two weeks earlier in St. Louis.

³¹ Tucson Citizen, October 21, 1911. Although the date of departure is given as October 19, in Harris, "Coast to Coast," 80, the author chooses to accept the contemporary sources rather than an undocumented secondary work.

³² Ibid., October 26, 1911.

³³ Tucson Arizona Daily Star, October 29, 1911.

³⁴ Tucson Citizen, October 30, 1911. His flight lasted four hours and twenty-six minutes and broke the previous record of four hours and eighteen minutes. The record broken by Fowler had been set only two weeks earlier in St. Louis.
of four hours and twenty-six minutes was indeed a new record. The next day he left Maricopa and flew to Tucson where he landed on the University of Arizona campus on the edge of town. While Fowler was making his approach, a gust of wind caught his plane and sent it crashing into the wire fence in front of the bleachers. This mishap only added to the local excitement, which had risen with each report of Fowler's progress toward the city. An article in the Tucson Citizen commented regarding his flight from Yuma to Tucson: "On that flight he gave the Southwestern desert, where Indians fought and white bandits once roamed, its first vision of the 20th century aeroplane."36

This "first vision" was followed closely by a second. After flying over Texas for a seemingly interminable length of time, Rodgers left El Paso on October 29 and flew to Deming, New Mexico.37 The people of Tucson now knew that they could expect another visitor from the sky. Although it was known that Rodgers planned to


36. Tucson Citizen, October 30, 1911. This statement is true, since Charles K. Hamilton's flights were all made in and around Phoenix and Tucson.

37. Wiggin, First Transcontinental Flight.
stop in Tucson, when he would arrive was another matter. A newspaper article said: "The date of his arrival is as uncertain as everything else is with an aviator, but he hopes to be here by the end of the week at least." On October 31 he flew the 142 miles from Deming to Willcox, thus becoming the second man to enter Arizona by air. The next morning Rodgers left Willcox and pointed the nose of his plane toward Tucson.

As Rodgers neared Tucson one of the first to spot his biplane was Robert G. Fowler. After completing repairs on his plane, Fowler had decided to remain in Tucson until Rodgers' arrival. Rodgers circled the University campus several times, but, fearful of injuring some of the people in the large crowd gathered there, he landed on South Sixth Avenue. One of the first to greet him was Fowler, who met him as he alighted from his plane. The two aviators congratulated each other and talked

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40. Harris, "Coast to Coast," 80. Fowler watched Rodgers approach through a telescope located on the University of Arizona campus.

briefly of their experiences.\textsuperscript{42} Thus Tucson became the site of a unique event in aviation history. The \textit{Tucson Citizen} proudly proclaimed this to be the first meeting of aviators "bound for opposite ocean shores."\textsuperscript{43}

After meeting Fowler, Rodgers stayed in Tucson only long enough to eat lunch while his mechanics made a routine check of the plane. At 2:45 Rodgers left Tucson and flew on to Maricopa where he spent the night.\textsuperscript{44} The next day, November 2, both Rodgers and Fowler were airborne. Fowler made the short flight from Tucson to Benson, while Rodgers flew from Maricopa to Phoenix and then on toward California. Late that afternoon Rodgers' plane ran low on gas and he was forced to land at Stoval Siding, a Southern Pacific station sixty miles East of Yuma. The next morning Rodgers flew into California and was forced down near Imperial Junction.\textsuperscript{45} On this same day Fowler flew to Bisbee because he had been offered money for an exhibition there. He flew from Bisbee to Douglas on November 4, and on the next day left for

\begin{itemize}
  \item \textit{Tucson Citizen}, November 1, 1911.
  \item \textit{Tucson Citizen}, October 31, 1911.
  \item \textit{Tucson Citizen}, November 1, 1911.
  \item \textit{Tucson Citizen}, November 2, 1911. Near Imperial Junction the engine of Rodgers' plane exploded and drove metal fragments into his right arm. Harris, "Coast to Coast," 80-81.
\end{itemize}
Although Tucson had been the first meeting place for transcontinental fliers, it apparently failed to achieve a first in a more important phase of aviation history. To help defray expenses, Rodgers accepted properly stamped mail for delivery along his route. To these letters and cards, Rodgers affixed a stamp, which, in addition to the date, bore the legend "Carried by Rodgers Aeroplane Vin Flz." There were, however, no records of mail picked up or delivered in Arizona. Arizona's first air mail flight came almost exactly four years later.

46. Tucson Arizona Daily Star, November 5, 1911. Tucson Citizen, November 3, 6, 1911. Harris, "Coast to Coast," 80. He completed the 4,231 miles in 4,924 minutes of actual flying time, but the total time was 49 days. Fowler kept on flying East and reached Jacksonville, Florida, on February 8, 1912. Thus, his flight had taken 149 days from start to finish.

47. Wiggin, First Transcontinental Flight. The charge for this service was twenty-five cents. Pieces of mail have been found postmarked Dallas, Texas, October 19, 1911; Imperial Junction, California, November 4, 1911; and Pasadena, California, November 8, 1911.

48. Tucson Citizen, October 31, 1911. On his flight from Maricopa, Fowler carried a verbal message which he delivered upon his arrival in Tucson. This, however, could hardly be termed air mail.
After Rodgers and Fowler left Arizona, the skies remained empty for four years. Late in 1915 this was changed dramatically by the arrival in Tucson of a young aviatrix who was then the leading pilot of her sex. Once again the people of Southern Arizona could see the man-made bird sweep through the skies, but this time the "bird men" of 1910 and 1911 had been replaced by a girl of nineteen.

Katherine Stinson, the girl who returned aviation to the public eye in Arizona, was the third American woman to become a licensed pilot. Shortly after receiving her license, she began to tour the country, putting on exhibitions of stunt flying. By 1915, when she was nineteen years old, Miss Stinson was one of America's leading stunt pilots. She was the first woman to duplicate the "loop-the-loop" maneuver perfected by Lincoln Beachey, the most popular stunt pilot of the period. It was this small, slender girl who agreed to give an exhibition at the Southern Arizona Fair, held in Tucson on November 4-6, 1915.


50. Tucson Citizen, October 30, 1915.

51. Tucson Citizen, October 26, 1915. Miss Stinson was five-feet, five-inches tall and weighed slightly more than 100 pounds. Planck, Women with Wings, 31.
In the light of her earlier successes, the **Tucson Citizen** commented: "There is no doubt but that Katherine Stinson, the school girl aviatrice will be the drawing card at the Southern Arizona Fair." The fact that Miss Stinson was coming directly to Tucson from St. Louis, and planned to proceed to San Francisco immediately after finishing her flights at the fair, also pleased the promoters of Tucson. This enabled them to advertise her performance as "Miss Stinson's only appearance in the Southwest."53

In the period between the flights of Rodgers and Fowler, aviation engineers had already made great strides in the improvement of the plane. While both of the earlier fliers had used the Wright Model B biplane, which had no enclosed fuselage and left the pilot completely exposed to the elements, Miss Stinson flew the latest model Curtiss machine. The famous Curtiss JN4, or "Jenny," an open cockpit biplane, had almost twice as much power as the early Wright planes and was more stable when

52. **Tucson Citizen**, October 26, 1915.
It was this increased stability which made it possible for Miss Stinson to perform the "loop-the-loop" and the "death dip," which was a steep power-dive toward the crowd. To have attempted maneuvers such as these in the airplanes of 1911 would have been extremely dangerous, if not suicidal. Manufacturers had already made great steps toward the perfection of the airplane.

Miss Stinson arrived in Tucson by train at approximately 7:30 a.m. on the 4th of November. She was met at the station by members of the Tucson Aerial Squad, an organization interested in aviation though none of its members were fliers. Miss Stinson was escorted to her hotel, where she rested briefly before proceeding to the

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54. Wiggin, First Transcontinental Flight. The majority of the text and pictures of Wiggin's book are devoted to the Wright Brothers' airplane used by C. P. Rodgers on his transcontinental flight. Wiggin, then sixteen years old, served as one of Rodgers mechanics on his historic flight. A newspaper article on Miss Stinson contains a very good picture of her plane, which shows the unmistakable lines of the Curtiss Jenny. Tucson Citizen, October 30, 1915.

55. Aviation, I, APHS. Kirke T. Moore was instrumental in the formation of the Aerial Squad, shortly after the Rodgers-Fowler flights of 1911. Mr. Moore later earned the name "Father of Aviation" from his work in the founding of the Tucson Municipal Airport in 1919.
fairgrounds to give her first exhibition.\textsuperscript{56} Her contract with the promoters of the fair called for only one exhibition on November 5. She was, however, persuaded to perform on all three days of the fair. Her three-day stay was due largely to the fruition of a plan brought forward by Assistant Postmaster Albert Rosche. Postmaster J. M. Ronstadt, a member of a prominent pioneer family,\textsuperscript{57} had asked for and received permission from the Postal Department to place a branch office at the fairgrounds. This office was to handle mail going to or coming from the fair. At this point Assistant Postmaster Rosche instituted a campaign to make this an air mail station. He proposed to have Miss Stinson carry mail from the fairgrounds to the main office in her plane. At this time the Postal Department was displaying a great deal of interest in the airplane as a vehicle for the rapid delivery of mail, and Rosche's request was readily

\textsuperscript{56} \textit{Tucson Citizen}, November 3, 1915.

\textsuperscript{57} Ronstadt Clipbook, APHS. José María Ronstadt, born in 1860 in Altar, Sonora, came to Tucson in 1895. He served as Tucson's postmaster from 1913 to 1920. He died May 20, 1933.
granted.\textsuperscript{58} After the Postal Department had given permission, all that remained was to convince Miss Stinson to undertake this extra job.

This was not too difficult, probably because Miss Stinson realized that such as undertaking would increase her reputation measurably. Although several other flyers had carried mail, most of these deliveries were not authorized by the Postal Department. The proposed flights in Tucson were not only sanctioned by the postal authorities, but the route was officially designated as U. S. Mail Route Number 668001.\textsuperscript{59} When Miss Stinson

\textsuperscript{58} Dale Nielson, \textit{Saga of the United States Air Mail} (San Francisco, 1964), 12. Nielson tells that in 1912 Earl Ovington, one of the pioneers of aviation, carried a small quantity of mail for a distance of thirty-eight miles from Nassau, Long Island to New York City. He also carried Postmaster General, Frank H. Hitchcock as a passenger on this flight. Gordon R. Harmer and Eugene N. Costales, (eds.), \textit{Scott's Specialized Catalogue of United States Stamps} (New York, 1963), 27. Hitchcock served as Postmaster General from 1909 to 1913 when he was succeeded by President Wilson's appointee, Albert S. Burleson of Texas, who granted Rosche's request.

\textsuperscript{59} \textit{American Air Mail Society Catalogue} (New York, 1962), 136. Hereafter this book will be cited as A.A.M.S. Catalogue. This book erroneously states that Miss Stinson carried mail during the Southern Arizona Fair Ground Aviation Meet. Since Miss Stinson had the only airplane in Tucson at this time, this could hardly be called an "aviation meet."
agreed to extend her stay and fly the mail, one of the local newspapers was moved to comment: "Visitors may be enabled to send out cards via aero plane, a distinct novelty."60

In addition to her regular performances, Miss Stinson made one trip daily carrying a small sack of mail. She left the fairgrounds on South Sixth Avenue at approximately 4:15 p.m. and flew downtown where she dropped the sack of mail in a vacant lot by the back door of the main post office. The mail carried by Miss Stinson consisted of post cards with the special fairgrounds post mark affixed.62 Since her flights had been sanctioned by the Postal Department, they constituted the first official air mail flights in Arizona.63

60. Tucson Citizen, October 27, 1915.
61. Tucson Citizen, November 5, 1915. Katherine Stinson File, Postal History Department, APHS.
62. A.A.M.S. Catalogue, 136. These post cards are now avidly sought by collectors of air mail covers. The American Air Mail Society estimates that 350 pieces of mail were carried by Miss Stinson in the three-day duration of the air mail service in Tucson and these pieces of mail are valued at $35.00 a piece by collectors.
63. A photograph on file at the Arizona Pioneers' Historical Society shows dignitaries attending the inauguration of air mail service in Arizona in October of 1930.
After flying the mail flights, Miss Stinson performed daily at the fair. Her skillful execution of aerial acrobatics was one of the most popular features of the fair. On the 5th she pitted her biplane against a race car driven by Robert Delino in a race at the fairgrounds. Miss Stinson barely won the race, and one reporter was of the opinion that Delino would have beaten her if his gallantry had not made him hold back and let the lady win. During her stay in Tucson, Miss Stinson was the center of much attention. She was the guest of honor at a dinner given by the Tucson Aerial Squad, she addressed the Luncheon Club, an organization of Tucson businessmen; and she was a guest speaker of the University of Arizona.

In an interview with newsmen, Miss Stinson stated that she expected to meet her death in a flying accident. She went on to say that the knowledge that she could easily lose her life would not cause her to give up flying. Of great interest to Tucsonans was her statement that she was considering the establishment of a flying school in

64. Tucson Arizona Daily Star, November 6, 1915. Delino was one of the professional racers who gathered at Tucson for the fifty-mile automobile race held at the fairgrounds on November 6.

Tucson, which she thought had the ideal climate for flying.

Miss Stinson's plans for a flying school never materialized. After her history making interlude in Tucson, she went on to California and aviation in Arizona again declined. This decline was of short duration, however, for the interest in aviation generated by the flights of these pioneer fliers—coupled with improvements in airplane construction—led to renewed interest in aviation in Arizona as elsewhere.

66. Tucson Citizen, October 27, 1915. Miss Stinson did not die in a flying accident. She is still living in Albuquerque with her husband, Miguel Otero. Unfortunately she is not at present able to grant an interview. Katherine Stinson File, Postal History Department, APHS.
THE BIRTH OF COMMERCIAL AVIATION IN ARIZONA

Less than two years after Miss Stinson's air mail flights in Tucson, a Phoenix businessman became convinced that the airplane had been developed to a point where it could successfully be used to carry passengers. Wesley Hill, who operated an "automobile stage line" from Phoenix to Globe, formed the Apache Aerial Transportation Company early in 1917. He planned to fly from Phoenix to Globe via Roosevelt Dam and estimated that the trip would take approximately one hour. Hill ordered two Curtiss airplanes and the company agreed to provide a skilled pilot. Delivery was scheduled for September of 1917. Hill assured the people of Arizona that these planes were "not the old-fashioned and somewhat dangerous devices of a few years ago, but the latest improved and tested designs built expressly for passenger service, equipped with passenger cabs carrying eight people, stabilizers and all proved means of safety." The planes were never delivered because Hill was unable

2. Ibid.
to raise the funds to pay for them. Although this proposed airline failed before it began operations, it showed that Arizonans, like the people of other western states, were interested in aviation because it provided a possible method of defeating the obstacles of distance and rugged terrain which impeded surface travel. At this time, however, Arizonans were interested in aviation of another type.

When the United States entered World War I, many Arizonans joined the military services. During the course of the war three pilots from Arizona entered the select circle of American air aces by shooting down five or more enemy aircraft. First Lieutenant Ralph A. O'Neill of Nogales shot down five planes and received the Distinguished Service Cross; Major Reed M. Chambers of Fort Huachuca had seven enemy planes to his credit; and the third member of this illustrious trio became the hero of all America. Frank Luke, Jr., of Phoenix, enlisted in Tucson as a private in the Signal Corps on


September 25, 1917, and asked to be assigned to the flying branch of the Corps. He intended to become an aviation mechanic, but he was persuaded to enter flying school instead. Upon his graduation as a second lieutenant, he went to France as a flier in the American Expeditionary Force. He reached the front lines on August 21, 1918, and began his brief but glorious career as an American ace.

Lieutenant Luke soon earned the sobriquet "Balloon Buster" because of his propensity for shooting down enemy observation balloons. Officers who served with him said that he was one of the best natural pilots they had ever seen. He generally operated alone, and on his best day, September 18, 1918, he shot down five enemy craft: two combat planes, two observation balloons and one observation plane. The most amazing thing about this exploit was that all the action took place within a space of ten minutes. On September 29, 1918, after only thirty-nine days of combat flying, Lieutenant Luke was forced to land behind enemy lines and was killed. His eighteen

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7. Ibid., 4.
victories made him the second ranking American ace; only Captain Edward V. Rickenbacker outscored him. For this record and his last action, he was posthumously awarded the Aero Club Medal of Bravery, the Distinguished Service Cross, the Italian War Cross, and the Congressional Medal of Honor. The citation accompanying the Medal of Honor describes Lieutenant Luke's death in the following manner:

Though pursued by eight German planes, which were protecting the enemy balloon line, he unhesitatingly attacked and shot down in flames three German balloons, being himself under heavy fire from ground batteries and hostile planes. Severely wounded he descended within 50 meters (160 feet) of the ground and, flying at this low altitude near the town of Murvaux, opened fire upon enemy troops, killing six and wounding as many more. Forced to make a landing and surrounded on all sides by enemy, who called on him to surrender, he drew his automatic pistol and defended himself gallantly until he fell dead from a wound in the chest.

Thus, Arizonans could be justly proud of their contributions to wartime aviation.

Soon after the end of World War I, the people of Arizona could take pride in having in their state the

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8. An Introduction to Luke Air Force Base and the Valley of the Sun (Glendale, Arizona, 195-?), 1. In 1930, the American Society for the Advancement of Aviation selected Luke as the nation's greatest air hero.

first municipal airport in the United States. In 1919
the City of Tucson purchased land three miles south of
the city on the Nogales highway. The airport was used
primarily as a landing field for United States Air Service
fliers who were engaged in patrolling the Mexican border.
Lieutenant-Colonel "Billy" Mitchell, one of the earliest
advocates of air power, initiated this program early in
1919. Army pilots flew along the border from Brownsville,
Texas to San Diego, California, to "report illegal border
crossings and discourage marauding bands by a show of
military force." These pilots made two flights a
day from each direction. Also during 1919 Air Service
pilots flew aerial patrols over the forests of Arizona
and other western states. These Army fliers often used
the Tucson airport, which was leased to the federal

airport was merely a cleared and leveled piece of land.

11. "Early Days of Aviation," Tucson, Magazine,
July 1929, 8.

United States Air Force, 1907-1957 (Princeton, New Jersey,
1958), 34.

13. Ibid., 35.
government for one dollar a year.\textsuperscript{14} With the purchase of land for an airport, Tucson achieved a leading position in aviation in the state which it did not relinquish for many years.

In 1923 the Tucson airport was improved when the federal government donated two hangars and a quarters building and stationed a Sergeant Cotton and one private there to service military planes.\textsuperscript{15} The next year Charles Mayse, a pilot who had done a great deal of flying in Mexico and South America, opened the first flying school in the state. He also made charter flights from Tucson to other Arizona cities.\textsuperscript{16} Although Tucson was undoubtedly the leading aviation center in Arizona, its citizens were not content to rest on their laurels. The Chamber of Commerce appointed Kirke T. Moore, a lawyer and judge,\textsuperscript{17} as chairman of their Aviation Committee. In this capacity

\begin{itemize}
  \item[15.] \textit{Ibid.}
  \item[17.] Aviation, II, APHS. Kirke T. Moore earned the title "Father of Arizona Aviation" for his part in bringing commercial aviation to Arizona. He served as Chairman of the Tucson Chamber of Commerce Aviation Committee from 1923 until he was appointed to the State Aviation Committee by Governor George W. P. Hunt on July 20, 1928.
\end{itemize}
Moore worked tirelessly to promote aviation in Arizona. It was his hope that a commercial airline could be brought to Arizona to provide rapid transportation. In 1925 the federal government passed an act which greatly enhanced the possibility of an airline through Arizona.

The beginnings of commercial aviation in the United States grew out of what has been called the "spontaneous attraction of the airplane and the Post Office for one another." Earle L. Ovington was the pilot of the first officially sanctioned air mail flight. In September of 1911 he was sworn in as an official carrier by Postmaster General Frank H. Hitchcock and carried a small amount of mail from Nassau to Garden City, Long Island during an air meet held in Nassau. Regular air mail service was begun on May 15, 1918, with planes and pilots provided by the United States Air Service. On August 12, 1918, the Post Office Department began to fly the mail with its own equipment and personnel. By 1920 the first

19. Smith, Airways, 52-53. Frank H. Hitchcock served as Postmaster General from March 6, 1909 to March 4, 1913. In 1930, he was owner and editor of the Tucson Citizen and did much to bring direct air mail to Tucson. Aviation, II, APHS. Harmer and Costales, (eds.), Scott's Catalogue, 27.
transcontinental route was established from New York to San Francisco, and in 1924 night flying was established along the mail routes. Congress passed H. R. 7064, better known as the Kelly Bill, on February 2, 1925. The purpose of the act was described in the title: "An Act to encourage commercial aviation and to authorize the postmaster general to contract for the mail service." By this law the operators of contract air mail services could be paid up to four-fifths of the postal revenue. The passage of this act stimulated the growth of commercial aviation as many airlines sprung into existence in hope of gaining a government mail contract. Arizonans realized that airports would be of vital necessity if their communities hoped to be placed on the route of one of these airlines.

20. John H. Frederick, Commercial Air Transportation (Homewood, Illinois, 1955), 77-78. John Goldstrom, A Narrative History of Aviation (New York, 1930), 105-119. Contains a good account of the first trip over the transcontinental route. The author, a journalist, was authorized to make the trip as a passenger.

21. Smith, Airways, 94. By a coincidence, this act was passed unanimously by the House of Representatives on December 17, 1924, exactly twenty-one years to the day after the Wright Brothers made the first sustained airplane flight at Kitty Hawk, North Carolina. Clyde Kelly, United States Postal Policy (New York, 1931), 137. Congressman Kelly sponsored this bill in the House of Representatives. See Appendix I.
Officials in Phoenix now decided that their city should have a municipal airport. They purchased the Glendale-Phoenix airport, a commercial flying field, and dedicated it as a municipal airport on November 9, 1925.\textsuperscript{22}

By September of 1927 Kirke T. Moore reported that at least two airlines were definitely planning to expand their operations into Arizona. At the organizational meeting of the Air Transportation Committee of the Pacific Coast Transportation Advisory Board, held in San Francisco, Moore talked with airline representatives and discovered that Maddux Airlines\textsuperscript{23} and the Aero Corporation of California\textsuperscript{24} were definitely planning to establish routes

\textsuperscript{22} American Aircraft Directory, 28, and Gordon E. Harrington, "Sky Harbor Airport: Past, Present and Future," 7. This is a research paper presented to the Department of English at Arizona State University by an undergraduate student in 1961. It is accepted by Sky Harbor Airport as the official history of the airport. It is factually correct, but is very poorly documented and contains many errors of a stylistic nature.

\textsuperscript{23} Arthur Q. Hagerman, "It's in the Air," Progressive Arizona, May 1929, 11. Maddux Airlines was formed by J. L. Maddux in October of 1927 in Los Angeles. The company held no mail contracts and carried only passengers.

\textsuperscript{24} Thirty Years of Service, Trans-World Airlines Pamphlet, 1955, 14. Aero Corporation of California was formed in 1927 by Jack Frye, a former Army pilot, and Paul E. Richter, one of Frye's pupils. The company purchased a six-passenger Fokker Universal airplane for $13,500. This was the only plane owned by the company when it began service.
from Los Angeles to Fort Worth, Texas. Officials of the Aero Corporation of California had already decided to make stops in both Phoenix and Tucson. Arizonans now envisioned the day when they would be able to make direct air connections to any point in the country. Commercial aviation was about to arrive in Arizona.

Tucson had prepared for this prospect by building a new municipal airport. The new airport was a 1280-acre tract located southeast of the city. The runways, although unpaved, were a great improvement over those on the old municipal air field. Moreover, the new airport was equipped with flood lights and a flashing beacon which would allow night landing. On September 23, 1927, Colonel Charles A. Lindbergh, on a national tour after his epic-making flight across the Atlantic, formally dedicated the new field as Davis-Monthan Airport. It was named for two local pilots who had been killed in flying accidents. Thus, with the

25. Aviation, I, APHS.


28. The Magazine Tucson, September 1950, 11. Lieutenant Samuel Davis served as a pilot during World War I and was killed in a flying accident at Carlstrom Field, Arcadia, Florida in 1921. Lieutenant Oscar Monthan was a World War I infantry officer who began flying in the Air Service in 1919. He died in a bomber crash near Honolulu, Hawaii on March 27, 1924.
new airport at Tucson and the municipal field at Phoenix, commercial airlines would have at least two good landing fields in Arizona.

Before either Aero Corporation of California or Maddux Airlines could begin operations in Arizona, a third company was formed in Northern Arizona. In October, 1927, an airplane landed near the town of Grand Canyon. This plane was piloted by J. Parker Van Zandt, former Army flier who now organized Scenic Airways, Inc. The company was formed for the purpose of conducting aerial tours of the Grand Canyon National Park. The company hoped eventually to expand operations to cover all national parks in the western states. For the remainder of 1927 Van Zandt studied the air currents over the Grand Canyon and disproved the theory that air conditions in the area were too turbulent for safe flying. He hired men and built an airport on the South Rim of the Grand Canyon and constructed a steel hangar.  

29. Ward Shelby, "It Pays to be Flighty," *Progressive Arizona*, March 1927, 14-15. J. Parker Van Zandt was a pilot in the United States Air Service for eight years and was later asked by the government to do research on European airlines.

While Van Zandt was preparing a field to use as a base of operations, another airline inaugurated passenger service to Phoenix and Tucson. On November 28, 1927, the Aero Corporation of California flew the first regularly scheduled passenger flight into Arizona. Jack Frye, president of this corporation, piloted a six-passenger Fokker Universal monoplane, powered by a 220-horsepower Wright engine, from Los Angeles to Phoenix and Tucson. The trip from Los Angeles to Tucson took seven hours and ten minutes, which was considerably shorter than the trip by train that consumed an entire day. Frye planned to have flights leave Los Angeles at 10:00 a.m. on Monday, Wednesday, and Friday, reaching Phoenix at 3:30 p.m. After a fifteen-minute stop in Phoenix, the plane would proceed to Tucson, arriving at 5:10 p.m. Planes would leave Tucson at 8:00 a.m. on Tuesday, Thursday, and Saturday for the return trip to Los Angeles. Passenger rates were $47.50 from Los Angeles to Phoenix and $60.00 from Los Angeles to Tucson. A ticket from Phoenix to Tucson cost $12.50. With the advent of this service, Arizonans could make direct air connections.


32. Aviation, I, APHS.
to most cities on the west coast.

Since the Aero Corporation had no air mail contract, Frye had little hope of making a profit. To help increase income, he inaugurated a light freight service and also an unofficial air mail service. The new freight rates per pound, or fraction thereof, were as follows: Los Angeles to Tucson, $1.60; Phoenix to Tucson, $.30. Letters would be carried to any point on the line for $.05, plus the regular postage. Although this air mail service was limited in nature, it was a definite improvement. Frye hoped that Aero Corporation could prove its ability as a mail carrier and eventually receive a government mail contract. It was also expected that Aero Corporation would soon extend its area of service in Arizona.

By June of 1928 Van Zandt’s Scenic Airways had made an arrangement with officials of the Santa Fe Railroad. The airline would pick up passengers from the

33. Smith, Airways, 113-114. Very few airlines made a profit without the income from an air mail contract.

34. Aviation, I, APHS.

35. Ibid.
Santa Fe and fly them over the Grand Canyon and return them to the train at its next stop. Between June and October, Scenic Airways carried approximately 5,000 passengers in their three tri-motored planes. The results of a questionnaire survey showed that not one person who had taken the trip was dissatisfied with the tour. The company also transported about thirty-five hunters to a small air field built at Fredonia, Arizona, at the entrance to the famous Kaibab Deer Preserve. This region had been very difficult to reach in a reasonable length of time before this air service came about. As winter approached, the company selected Phoenix as their winter headquarters and began the construction of a $150,000 airport there. With the establishment of this base, Scenic Airways could carry passengers from the northern portion of the state to Phoenix to connect with Aero Corporation's flights. This was the beginning of a period of rapid expansion in Arizona aviation.

Interest in aviation seemed to be contagious, and it spread rapidly throughout the populace. Late in 1927 a group of students at the University of Arizona


formed the Flying Wildcats Aero Club. Most of these students were working their way through school and had very little extra money, but in spite of this they managed to obtain an old fuselage from a Curtiss "Jenny" and rebuilt and recovered it. An old OX5 engine was reconditioned and installed, and the club members began to receive instructions at the flying school, operated by Charles Mayse at the old municipal airport. Members of the club put on a "flying circus" on Washington's Birthday in 1928.

In 1928 Tucson still had the best airport in Arizona. Other cities, however, now began to construct airports rapidly. Many of these were built mainly as a result of civic pride rather than because of any need for an airport in that particular place. The majority of the landing fields constructed in 1928 and 1929 served only for local private aircraft since they were neither located along any established route nor was the


40. "Arizona News," Western Flying, June 1928, 76. At this time, the Phoenix Municipal Airport was considered laughable by many people, since fliers who were not familiar with its location often could not find it.
local population large enough to create demand for an airline. Although the majority of these airports did little to advance aviation in Arizona, there were two notable exceptions. In January of 1928 the city of Nogales dedicated its municipal airport. Prior to this time the only facility near Nogales had been a government controlled United States Air Corps field, located two miles north of the city. This field had only limited supplies, whereas the new municipal airport, located on the Patagonia highway nine miles from Nogales, had complete facilities. The completion of the Nogales airport made a southern extension of service possible. In 1928 also, the Douglas Chamber of Commerce appropriated $20,000 to build an airport. This one was constructed in conjunction with an airfield built by the city of Agua Prieta, Sonora. A two-mile runway was


The article by Moore shows that towns such as Seligman, Ajo and Bowie had constructed airports. Very often, these "airports" were merely a cleared field.

constructed from the Douglas field across the border to the Agua Prieta field. This airport, the first truly "international" airport, made it possible for airlines to extend service eastward from Tucson. 43

While the Douglas airport was under construction, the citizens of Tucson made great changes in their facility. In the spring and summer of 1928, the runways were oiled to combat the dust problem, and a new night lighting system was installed. Four electric gas pumps, one for government use and three for the servicing of commercial planes, were installed. These reduced the time needed to service a plane from thirty minutes to ten minutes. 44 In March of 1929 a sergeant and six privates of the United States Air Corps were stationed at Davis-Monthan Airport to service Army planes and to operate the meteorological and radio facilities which had just been installed. 45 These improvements, coupled with the completion of the Douglas and Nogales airports, made many people feel that aviation had finally come of age in Arizona.

43. Aviation, I, APHS.


The feeling that aviation had matured was strengthened when the federal and state governments began to regulate the operations of airlines and private operators. In April of 1928 the United States Department of Commerce established branch offices in Phoenix and Tucson to supervise aviation in the state. \(^{46}\) In September of that year the Aviation Committee of the Tucson Chamber of Commerce was instrumental in forming the Arizona Air Operators Association. All resident pilots and airline companies operating in Arizona were eligible for membership. The association was organized to "protect the rights of individuals and secure cooperation with the Department of Commerce." \(^{47}\) On November 30, 1928, the Arizona Corporation Commission issued a bulletin stating that every commercial aviation company must obtain a certificate from the commission. To be eligible for a certificate of operation, the airline had to carry insurance against injury to passengers and property damage. The airline must also show that convenience and necessity required the service. The bulletin further stated that

\(^{46}\) Aviation, II, APHS. The passage of the Air Commerce Act (Bingham-Parker-Merritt Act) on May 20, 1926, placed the regulations of aviation under control of the Department of Commerce. Smith, Airways, 97-99.

\(^{47}\) Tucson Citizen, September 29, 1928.
the rules and regulations of the United States Department of Commerce dated June 1, 1928, would apply to airlines in Arizona except where they conflicted with state laws. On June 20, 1929, the Corporation Commission issued a general order which required that every plane carrying passengers or freight for hire must have a federal license and must be flown by a licensed pilot. The order also stated that airline companies must register the limits of territory in which they operated. These regulatory measures were deemed necessary because aviation was reaching new heights of development.

In addition to a rising volume of commercial aviation, the United States Air Corps also carried on extensive operations in Arizona in 1928 and 1929. During 1928 a group of Air Corps fliers used Davis-Monthan Airport as a base while carrying out an aerial survey of Southern Arizona. The pilots surveyed the state from the south bank of the Gila River to the Mexican border. Throughout 1929, the Third Attack Group and the Twelfth Observation Group, flying from Fort Huachuca, protected

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48. Aviation, I, APHS.

49. Tucson Citizen, June 21, 1929.

the border from "air and ground raids" by "renegades" from Mexico. But the work of the Air Corps was largely overlooked by Arizonans, who displayed more interest in the flurry of activity in commercial aviation. In the years 1928, 1929, and 1930 the expansion of existing routes and the creation of new airlines took place with astonishing rapidity.

In December of 1928, approximately one year after the Aero Corporation of California opened its tri-weekly service from Los Angeles to Phoenix and Tucson, a second airline began daily flights to Phoenix. Maddux Airlines was the creation of John L. Maddux, a Los Angeles automobile dealer. Throughout 1927 and most of 1928 it flew only between Los Angeles and San Diego, but in December it inaugurated flights from Los Angeles to Phoenix via San Bernadino, Palm Springs, and Imperial Valley. On April 1, 1929, these flights were re-routed, going from Los Angeles to Phoenix via San Diego and Imperial. This route was more popular with Arizonans since it connected with both San Diego and Los Angeles. Maddux Airlines merged with Transcontinental Air Transport, Inc., (TAT)

51. Ibid., 37.
52. Hagerman, "It's in the Air," 30.
in the early summer of 1929 and became a part of its transcontinental air-rail service.\(^5\) Before TAT could begin operations, the Aero Corporation of California extended its route from Tucson eastward to El Paso via Douglas. Arizonans were now able to make air connections to almost any point in the United States.

In September of 1928 the Aero Corporation was reorganized as Standard Airlines, Inc. Jack Frye and Paul Richter still controlled the company. After the reorganization, the company purchased seven Fokker monoplanes, powered by 525-horsepower Pratt and Whitney engines. The new planes carried eight passengers at a cruising speed of 135 miles per hour. These planes were a definite improvement over the six-passenger plane which had been the company's only asset a year before.\(^5\) On February 4, 1929 Standard Airlines began service from Los Angeles to El Paso with stops at Phoenix, Tucson,

\(^{53}\) Smith, Airways, 142-143.

\(^{54}\) Fred L. Hattoom, "Watching the Earth Go 'Round," Progressive Arizona, March 1928, 12-13. The new planes were equipped with radios, thermos jugs of water and coffee and a lavatory. The six-passenger Fokker Universal lacked all of these features and often had to make a comfort stop on the long flight from Phoenix to Los Angeles. The plane would land at a place called Desert City. Desert City consisted of a gasoline pump and two outhouses. Smith, Airways, 115.
and Douglas. The tri-weekly service was replaced by daily flights. This extension to El Paso was so successful that on August 4, 1929 the company began to use Super F-10 tri-motored Fokkers with a fourteen-passenger capacity. These planes were powered by three Pratt and Whitney Wasp engines which developed a total of 1,275-horsepower and reduced the travel time from Tucson to Los Angeles by one hour.

Although Standard was the leading airline in Arizona, it soon had stiff competition. In July of 1929 Maddux Airlines, now a part of TAT, extended service from Los Angeles to Clovis, New Mexico, with stops at Kingman and Winslow. TAT operated a complicated two-day service by air and rail from New York to Los Angeles. From New York to Dayton, Ohio, passengers traveled by night on the Pennsylvania Railroad; from Dayton they flew to Waynoka, Oklahoma; here they boarded the Santa Fe Railroad and were taken to Clovis, New Mexico, where planes of the Maddux subsidiary picked them up and flew them on to Los Angeles. The chief disadvantage of TAT was that its rates were almost twice those of Standard

Airlines.  

Standard's other competitor, Pickwick Airways, flew daily flights from Los Angeles to Nogales via Phoenix and Tucson. At Nogales it connected with the Compañía Aeronautical Transportes and Latin American Airways. The Compañía Aeronautical Transportes carried air mail in Mexico and picked up and delivered mail at Nogales, starting on August 19, 1929. The citizens of Nogales could send air mail to Mexico City via Cananea, Chihuahua, Jimenez, and Torreon. Thus Nogales was the first city in Arizona to have official air mail service. A series of small local airlines soon developed to connect with these large companies and thus afforded the majority of Arizonans the convenience of air travel.

56. Smith, Airways, 144-145. Hattoom, "Watching the Earth," 13. TAT charged an average of $0.16 per mile as opposed to $0.09 for Standard Airlines. TAT was losing money even at this rate, while Standard showed a profit at a much lower rate.


58. Aviation, III, APHS.

59. Tucson Citizen, August 20, 1929.
The leader among the local air carriers was Van Zandt's Scenic Airways, which extended its line to Tucson in April, 1928. In January of 1929 the Phoenix-based airline, by now a subsidiary of United Aviation Corporation of Chicago, received word that nineteen new planes were on order and would be delivered as soon as possible. Other local air carriers were numerous and generally of short duration. Copper State Airways of Prescott and Arizona Aerial Tours, based in Tucson, were but two of the local air services which began with high hopes but quickly receded into obscurity. The only local air service to rival Scenic Airways was Southwest Air Service, Inc., of Tucson. The company was organized in 1927 with Lieutenant D. Emerick Jones, a seven-year veteran of the United States Air Corps, as president and Kirke T. Moore as legal advisor. The company was incorporated with a capitalization of $150,000 and opened a training school for pilots as well as an agency for private airplanes. On July 8, 1929 the


62. Aviation, III, APHS. Both of these companies began operations in 1928 and operated as charter services. Neither of them was still in operation in 1929.
company was authorized by the Corporation Commission to establish a scheduled air service from Winslow to Nogales with stops between the two points.

With commercial aviation on an apparently solid footing, Arizonans began to request the establishment of an air mail route through Arizona. As early as March, 1928, the citizens of Arizona had begun a campaign to have the Post Office Department grant a contract for a southern transcontinental mail route. It was dramatically shown that Arizona needed air mail service in a newspaper article which stated that the two post offices in Grand Canyon National Park were only eleven miles apart by air; yet mail sent from one post office to the other had to travel approximately 1,025 miles, through four states, since the two post offices were on opposite sides of the Grand Canyon. The Tucson Citizen predicted that its owner and editor, Frank H. Hitchcock, former Postmaster General and "father of the American air mail service," would "use his influence at Washington" to get the proposed transcontinental air route between San Diego

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64. Aviation, II, APHS.
and the East "approved with a minimum of delay." 65

Although Nogales was receiving direct service on a Mexican air mail route in 1929, direct service for Arizona on an American route was not granted until after the passage of the McNary-Watres Act on April 29, 1930. 66 Despite the lack of official air mail, aviation in Arizona had made great progress from its lowly beginnings in 1917.

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65. *Tucson Citizen*, March 2, 1928. Hitchcock's claim to the title "father of the American air mail service" is disputable, but since he was owner and editor of the *Tucson Citizen* at the time this article appeared, it obviously would not be questioned in the *Citizen*.

66. Smith, *Airways*, 379. See Appendix II.
AIR MAIL AND ADVANCEMENT

Many men had worked to bring commercial aviation to Arizona, but one man, Walter F. Brown, brought air mail service to the state. Walter Folger Brown, an attorney and politician from Toledo, Ohio, was one of the first men to support Herbert Hoover's candidacy in 1928. When Hoover was elected, Brown was appointed Postmaster General as a reward for his services. After studying aviation for several months, Brown became convinced that the Post Office Department was the logical agency to aid commercial aviation. He thought that there should be a system of competitive transcontinental airlines intersected by a vast network of feeder routes. This was not actually a new policy, since the Post Office Department had favored a similar policy, more or less, for several years. Brown, however, called for immediate measures to expedite the construction of such a system.¹

With the aid of his assistants, Brown drew up an amendment to the Air Mail Act of 1925 which gave him tremendous power over the air transportation industry.²

² "Aviation and the Air Mail," Fortune, IX, no. 5, 143-144.
This amendment introduced in Congress as the McNary-Watres Bill, was passed into law on April 29, 1930. One of the major provisions of this act had a great deal to do with the granting of air mail contracts which would provide service to the citizens of Arizona. This provision allowed the Postmaster General to extend or consolidate routes "when in his judgment the public interest will be promoted thereby." Two weeks after the McNary-Watres Bill became law, Brown called a meeting of various airline officials. It was decided that Brown would act as an umpire in settling the problems involved in establishing the new transcontinental mail routes. He was of the opinion that no transcontinental route could be successful unless it was entirely operated by a single company. This effectively ruled out the many small companies which had hoped to gain contracts for portions of the new routes. Brown now began to take steps which eliminated competitive bidding and forced a series of complicated mergers.

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3. As in Smith, Airways, 159. See Appendix II.

4. Ibid.
In a series of conferences in May and June of 1930, the problems of the new mail routes were worked out by Brown and officials of the major airlines. Competitive bidding was avoided by a clause written into the Post Office advertisement for bids. This clause stated that to qualify for the mail contract, a bidder must have flown at night for at least six months over a route of not less than 250 miles. This stipulation made it almost impossible for any independent airline to qualify, since only established mail carriers operated night schedules. This clause also eliminated Transcontinental Air Transport because it was an air-rail line and flew only during the daylight hours. This was exactly what Postmaster General Brown wanted. It put him in a position to engineer a merger between TAT and Western Air Express which he felt would strengthen the aviation industry.

Western Air Express, known as WAE, was founded in 1925 by Harris M. Hanshue. In that year the company was granted Contract Air Mail Route 4 (C.A.M. 4) which

ran from Los Angeles, California to Salt Lake City, Utah. The company made a profit of approximately $1,000,000 a year on this route and began to expand. Thus WAE could qualify under the night flying clause, but the Postmaster General's decision that the entire transcontinental route should be flown by one company caused Hanshue consternation because WAE extended eastward only to Kansas City. This gave Brown the upper hand, and he planned to persuade WAE and TAT to merge. Earlier in 1930 Standard Airlines was sold to WAE and Jack Frye became vice-president of operations. This sale was barely completed when the Postmaster General advised Hanshue to sell Standard Airlines to American Airways and to merge WAE and TAT. Rather than lose a chance to gain the central transcontinental route, the two companies merged as Transcontinental and Western Air. Out of this merger the modern giant known as

TWA was born.\textsuperscript{11}

Bids for the two new transcontinental routes were opened on August 25, 1930, and TWA was awarded the contract for the central route, even though United Avigation Company submitted a lower bid. Postmaster General Brown disqualified United Avigation on the night flying clause.\textsuperscript{12} TWA's new route connected New York, Pittsburgh, St. Louis, Kansas City and Los Angeles. Of more importance to Arizonans was the fact that TWA had scheduled a stop in Winslow, which meant that the northern half of Arizona would soon receive air mail service.\textsuperscript{13} American Airways was the only company to submit a bid for the southern route which ran from Atlanta to Los Angeles via Dallas, Fort Worth, and El Paso. Other companies which would have bid on the contract were prevented from doing so by the night flying clause.\textsuperscript{14} American Airways had purchased Standard Airlines from WAE and planned to follow Standard's route from El Paso to Los Angeles. This was well-received by

\footnotesize
\textsuperscript{11} Thirty Years of Service, 15. Transcontinental and Western Air became Trans World Airlines in 1951.

\textsuperscript{12} Smith, Airways, 181.

\textsuperscript{13} Paul T. David, The Economics of Air Mail Transportation (Washington, 1934), 130. See Figure I.

\textsuperscript{14} Ibid., 129. Smith, Airways, 187.
the residents of southern Arizona because Douglas, Tucson, and Phoenix would receive direct air mail service, and other cities could merely deliver mail to the nearest of these three cities. Tucson was prepared for direct air mail service because in June, 1930, improvements costing $25,000 had been completed at the municipal airport.

In November of 1929 the citizens of Tucson had voted for a $25,000 bond issue to improve facilities at the local airport. With these funds a new administration building was constructed. It had a restaurant, ticket office, baggage room, restrooms and attendant's quarters. The remainder of the funds were used to purchase additional lighting equipment. A battery of floodlights, boundary lights and obstruction light, an illuminated wind cone, and a revolving beacon were installed. On June 12, 1930, at the exercises to celebrate the completion of these additions, it was announced that a site for a Department of Commerce weather and radio station had been donated by the city and had already been selected by George D. Barr, an Assistant Airways Engineer. These improvements

15. "Aviation Notes," Tucson, Magazine, July 1930, 8. See Figure II.

raised Tucson's airport to the level of the recently completed Douglas-Agua Prieta airport. While the Phoenix and Winslow airports were not as well equipped as Tucson and Douglas, Arizona's system of landing fields was comparable to most other western states. Arizona was thus well-equipped to handle the influx of air traffic which came with the air mail.

By October of 1930 both TWA, whose route was designated C.A.M.-34, and American Airways, flying C.A.M. 33, had begun operations. All four of the Arizona cities receiving direct air mail service held celebrations on the first day of service. The biggest ceremony was held in Tucson where the citizens saw a "re-enactment with the original cast" of the first air mail flights ever made in the United States. Frank H. Hitchcock, Postmaster General under President Taft and now publisher of the Tucson Citizen, and Earle L. Ovington, who had been authorized by Hitchcock to carry mail by air on September 23, 1911, were present. Hitchcock handed Ovington the first letter to be sent from Tucson on the new air route; it was a personal greeting to President Hoover. With the state now

boasting two transcontinental air routes, Arizona aviation entered a new period of expansion. Unlike the rapid increase of 1928 and 1929, however, this period was characterized by improvements of a technological nature rather than the extension of air routes.

In 1931 the United States Army Air Corps spent $55,000 to construct a steel and concrete hangar and an operations building at the Tucson airport. After this work was completed, the name of the airport was changed from Davis-Monthan Field to Tucson Airport.

In the winter of 1932-33 the Air Corps used a different type of technological advance to aid the Indians of Northern Arizona. Abnormally heavy snowstorms had isolated Indians in New Mexico, southwestern Colorado, southern Utah, and northern Arizona. The Air Corps was asked to help. The Eleventh Bombardment Squadron, stationed at March Field, in Riverside, California, rapidly perfected packing methods for the dropping of provisions. It was now possible, in the words of the Commandant of March Field, Henry H. "Hap" Arnold, to "drop a dozen eggs without breaking a damned one."  

18. The Magazine Tucson, September 1950, II.  
Flying from airports along the TWA line from Kingman, Arizona to Amarillo, the Air Corps dropped food to the isolated villages for several weeks. Shortly afterward, with the coming of the New Deal, funds provided by the Federal Relief Project were utilized to construct paved runways and taxi strips at the municipal airports in Phoenix, Tucson, and Douglas.\textsuperscript{21} With two successful air mail routes and many improvements on the state's major airports, the fact that the country was in the depths of the Depression was not apparent in Arizona's aviation industry.

Aviation was the only transportation industry which increased operations during the early years of the Depression.\textsuperscript{22} In 1929 the total personnel employed by the American air transportation industry amounted to 1,496. By 1933, though unemployment was a national problem, the personnel employed by air carriers had increased to 6,273. The industry also showed a small but steady increase in the number of passengers carried.\textsuperscript{23} The continued success of the air transport industry was

\begin{itemize}
\item \textsuperscript{21} The Magazine Tucson, September 1950, 11.
\item \textsuperscript{22} "Fleet Birds of a Feather," Fortune, VIII, no. 5, 23. See Table I.
\item \textsuperscript{23} Ibid.
\end{itemize}
due both to improvements in equipment and operating methods and to the revenue earned by carrying mail. Innovations in airplane design and operational procedure made possible a lowering of passenger rates from an average of twelve cents per mile in 1929 to six cents in 1933.\(^{25}\) The chief source of revenue was still the air mail contract, however, and few airlines were capable of making a profit solely from carrying passengers.

Early in 1934 the upward trend in the aviation industry was dramatically reversed for a few months. On February 9 President Roosevelt signed an executive order which cancelled all air mail contracts. This was the result of an investigation by Postmaster General James A. Farley into the activities of his Republican predecessor, Walter F. Brown, and the major airline officials during their important conferences of 1930. They were accused of collusion in the granting of air mail contracts under the McNary-Watres Act.\(^{27}\) The

\(^{24}\) Frederick, *Commercial Air Transportation*, 82.

\(^{25}\) *The National Aeronautic Magazine*, XII, no. 3, 15.

\(^{26}\) *Annual Report of the Civil Aeronautics Board* (Washington, 1943) 29. It was not until 1943 that the total non-mail revenues of all airlines exceeded the total operating expenses.

\(^{27}\) Smith, *Airways*, 250.
carrying of air mail was turned over to the Army on February 19, 1934, and the results were disastrous. In a week five Army pilots were dead, six were critically injured, and property damage amounted to approximately $300,000. The Army began flying only during daylight hours, but the crashes continued. On March 10 the President ordered that all mail flights be stopped, but on April 20 contracts were let to commercial carriers under the newly passed Air Commerce Act. Farley had declared that no airline could expect to win a contract if it had been represented at the conferences with Postmaster General Brown. To circumvent this edict, Transcontinental and Western Air became Transcontinental and Western Air, Inc., and American Airways became American Airlines. Both companies received their old routes, but at a lower rate. Although both lines suffered greatly from the loss of two months' air mail revenue, the citizens of Arizona had not been affected to a

28. Ibid., 253-256.

29. Ibid., 278-279. The Air Commerce Act of 1934 restricted payments for the carriage of mail to $.40 per mile and stated that mail contracts were to be awarded by competitive bidding. Provisions of the act tended to prevent monopolies and to create a system of competing air carriers. William F. Ogburn, The Social Effects of Aviation (New York, 1946), 26-27.
greater extent than the rest of the country. Both com-
panies had maintained passenger service throughout the
weeks of cancellation.

Phoenix, in fact, was ready to expand its airport
facilities. With the decline of tourist traffic in
the Depression, Scenic Airways ceased operations in
1932 and Sky Harbor, their airport in Phoenix, was taken
over by the Acme Investment Company. This company built
a new hangar and installed boundary lights. In 1935
the officials of the City of Phoenix realized that their
present municipal airport was poorly located and unable
to handle a large traffic. To alleviate this problem,
the city acquired 235 acres of Sky Harbor land from the
Acme Investment Company and transferred their activities
to this site. Carl Knier, a pilot and employee of
Acme, was appointed the first manager of Phoenix Sky
Harbor Municipal Airport. Phoenix was wise to seek
a better airport in 1935, for the next year saw commercial
aviation rise to new peaks.

The airlines had suffered huge losses in 1934
with the loss of revenue resulting from the cancellation
of air mail contracts. By 1936 they were relying more

heavily on passenger service as a means of revenue. From 1930 to 1934 the national airlines carried between 400,000 and 500,000 passengers per year. The Air Commerce Act of 1934, combined with a general revival of business and the use of improved equipment, had a dramatic affect on the operations of the major companies. Within two years the number of passengers had increased to 1,000,000—approximately one-sixth of the number of railroad sleeping car passengers.31

Much of the credit for the rapid rise in passenger transport during the years 1935 and 1936 was due to technical refinements which increased both the safety and the speed of air travel. The record of reliability established by the air mail contractors had done much to prove that the airplane was a dependable means of travel, and now the airlines began to lure passengers away from the railroads with the inducement of faster service. Speed was increased by streamlining the exterior of the plane. The engines were now mounted directly on the wings rather than underneath them. Wind drag was further decreased by the use of a retractable landing gear.32 By 1934


32. Ibid. "The passenger fatalities per 100,000,000 miles flown on domestic lines were reduced from 28.6 in 1930 to 10 in 1936."
many of these improvements had been made, but no ship had ever been produced which included all of them.
Donald W. Douglas was the man who achieved this, and in so doing he revolutionized the aviation industry.

Upon graduation from Massachusetts Institute of Technology in 1914, Douglas became an instructor of aeronautical engineering at his alma mater with a salary of $500 a year. The next year Glenn Martin hired Douglas as chief engineer of his airplane factory in Ohio, and here he helped to design the Martin bomber which was highly successful during World War I. With this experience behind him, Douglas opened his own plant at Santa Monica, California, in 1920 and began manufacturing observation planes for the United States Army. His success was assured when the Army used his planes on an around-the-world flight in 1924. He decided to enter the commercial field in 1932 when it became obvious that the airlines needed a better plane than the Ford Tri-Motor. He designed a twin-engine plane, the Douglas Commercial or DC 2, capable of taking off on one of its two engines in even the thin air of the highest airports.33 TWA purchased the DC 2 and Jack Frye, vice-president in charge of operations, flew it

from Los Angeles to Newark with the last load of air mail before the contracts were cancelled in 1934. On this spectacular flight, accomplished in the face of a severe snowstorm, Frye set a transcontinental speed record of thirteen hours and four minutes. This ship revolutionized commercial aviation and yet it contained no innovation which had not been proven successful before. The difference lay in the genius of Douglas, who had the foresight to incorporate all the technical improvements in one plane.

The "crop duster" was, in a sense, like Donald W. Douglas. He made no innovations in flying, but he applied proven principles of aviation to agriculture. Crop dusting was begun in Arizona in the late 1920's, but it was of little importance for approximately ten years. The early crop dusters generally used surplus World War I bi-planes. These low powered machines were slow, but they were very stable and maneuverable. These characteristics were of prime importance because low-altitude flying was a necessity. In the late 1930's

34. Ibid., 251-253. Eddie Rickenbacker, an executive of Eastern Airlines at this time, was co-pilot on this flight.

35. Ibid., 339-340.

the crop duster's main job, as the name implies, was to fly over fields and release bags of powdered weed-killer or insecticide. Dusters soon adapted their planes for spraying, fertilizing, and seeding operations. Crop dusting was of prime importance to agriculture in Arizona. It increased Arizona's agricultural output by as much as twenty-five percent. Yet the crop duster, in his wired-together, secondhand airplane, was the last of a vanishing breed. By 1938 the gypsy flier of the 1920's had been replaced in the public image by a solid, sensible industry seeking new levels of respectability and responsibility.

The Civil Aeronautics Act of 1938 was sponsored by the major airlines and showed that the industry had truly reached maturity. This act set up an independent federal agency, the Civil Aeronautics Authority, composed of an administrator and a five-member board. A three-man Air Safety Board was also established to investigate air accidents. The Civil Aeronautics Authority began to function in September of 1938.

37. Frederick, Commercial Air Transportation, 483.
38. Stocker, "Fliers with Green Wheels," 36.
39. Frederick, Commercial Air Transportation, 125.
It issued "certificates of convenience" which gave the airlines permanent rights to their particular operations, subject only to suspension or revocation for violation of the act. The Authority also forbade airlines to open up or close routes without its approval; and it curtailed competition by abolishing the contract mail system in favor of negotiated, non-competitive permits. This last step was, oddly enough, a return to the policy of Postmaster General Brown.40

In 1940 Congress accepted President Roosevelt's two "Reorganization Plans" altering the Civil Aeronautics Authority. The administrator assumed some of the powers of the five-man board and took effective charge of the Civil Aeronautics Administration. (CAA). The Air Safety Board was abolished and its functions were taken over by the five-man board, members of the old Civil Aeronautics Authority. This group was renamed the Civil Aeronautics Board (CAB). The new CAA was placed under the jurisdiction of the Department of Commerce; the CAB remained an independent body.41 With the aviation industry now under federal regulation,


41. Frederick, Commercial Air Transportation, 126-127.
the bitter inter-airline rivalry which had prevailed in
the early 1930's was gone. In Arizona and elsewhere
along their routes, officials of both TWA and American
Airlines were now able to concentrate on improving their
services and planning for the future.

Others were planning also. By 1938 the prophesies
of "Billy" Mitchell were beginning to ring true. Air
power was coming to be recognized as America's best
potential weapon of national defense. In that year
President Roosevelt decided that the Army Air Corps
must increase its number of planes. He wanted 7,500
combat planes, with an additional 2,500 planes available
for training purposes. The creation of such an arsenal
of air power would, however, tax the aircraft production
industry to the point where it would have to refuse orders
from commercial airlines. The difficulty in obtaining
new planes would soon cause commercial lines to forego
any expansion of existing services.

42. Arnold, Global Missions, 179.
WARBIRDS OVER ARIZONA

In September of 1938 President Roosevelt decided that the situation in Europe warranted the immediate enlargement of the Army Air Corps. The existence of a strong American combat air arm, he felt, might deter Hitler. Roosevelt now proposed to have 10,000 combat planes in production by 1940 and 20,000 by 1941. The eruption of war in Europe in 1939 caused him to multiply his estimates. On March 16, 1940, after the German attack against the Netherlands, Belgium and France, the President addressed Congress and pointed out the possibility of attack from the air from dozens of directions. He asked for a production capacity of at least 50,000 planes per year and a program to provide 50,000 military planes in the very near future. The Air Corps had made great advances since the Aeronautical Division of the United States Signal Corps was established in 1907 with one officer, two enlisted men, and no airplanes. Although the promise of additional planes

pleased the Air Corps, it caused a serious problem. With its existing facilities, the Air Corps could train about 750 pilots per year, but under the new expansion program 100,000 pilots had to be trained. As it proved, the state of Arizona was to play an important part in this program of expansion.

The Air Staff recommended the construction of new training bases, but Major General Henry H. "Hap" Arnold, Chief of the Air Corps, overruled this proposal and decided to try an unprecedented experiment. Arnold contacted representatives of the leading civilian flying schools and asked them if they could set up facilities to house, feed, and train flying cadets. The schools were willing to try it and would borrow the money necessary to set up operations—with the understanding that General Arnold would reimburse them when the Air Corps received a congressional appropriation. The schools would send their instructors to Randolph Field, the principal Air Corps training center, to learn the Army method of teaching. The Air Corps would provide the planes and a small complement of officers to teach military courtesy and discipline. Each school would be paid a set fee for each graduated student and a smaller fee for each "washout." General Arnold then convinced

aircraft manufacturers to accept student mechanics and train them on the planes then under construction for the Air Corps. The Civilian Pilot Training system worked so well that by December, 1941, civilian flying schools were handling the entire primary flight program of the Army Air Force, as the air arm was now known. When the Air Corps set up this program, they chose the areas with the best climate for flying. Arizona quite naturally was chosen as an ideal site.

Civilian Pilot Training programs were established in several Arizona cities. Early in 1940 the Ryan School of Aeronautics, located near Tucson, began training Air Force cadets. At first the cadets received four months of primary flight training, but with the threat of war imminent the course was compressed into nine weeks. To combat the lack of time, each instructor worked with only three or four students. Hours were spent on the fundamentals of flying before the student ever left the ground. In addition to the time spent flying, each student attended ground school twenty hours a week. There they studied mathematics, engine theory, flight

4. Ibid., 180-181.

5. Glines, Compact History, 151. The Army Air Corps became the Army Air Force in 1941. Arnold, Global Mission, 184.
theory, and other technical courses, and took military
drill and physical training. After graduation from Ryan
Field, cadets were transferred to basic and advanced
flying schools operated by the Army Air Force. The
"CPT" schools proved to be an immediate success. Cadets
who graduated from the nine-week course had a very low
percentage rate of "washout" in basic and advanced
schools. When the first schools proved so worthwhile,
others were rapidly established.

In the summer of 1940 Southwestern Airways, Inc.,
a Phoenix-based air service specializing in charter
flights and crop dusting, was authorized to give primary
flight training at two air fields. Thunderbird I was
located near Glendale and Thunderbird II was near
Scottsdale. In addition to training American cadets,
Southwestern Airways also gave primary training to
members of the Chinese Air Force. These Chinese pilots,
who arrived in November of 1941, already had two years'
flying experience under combat conditions, but they were
being trained to fly American planes which would be
shipped to China under the lend-lease agreement. In

Highways, January 1944, 26, 27, 29.

addition to the regular ground school courses, these Chinese fliers received instruction in English since all flight training was given in English. After graduation from the Thunderbird primary course, the Chinese boys went on to basic and advanced schools throughout the United States. When their training was completed they were commissioned as sub-lieutenants in the Chinese Air Force. Arizonans had a great deal of respect for these Chinese students and were very fond of them because they were so young. Even after two years in the Chinese Air Force, some of them were only seventeen years old.

Another group of foreigners were being taught to fly at Falcon Field, a facility constructed by Southwestern Airways and located near the town of Mesa. These students, English cadets in the Royal Air Force, were taught by British flying officers rather than by American civilian instructors. The English cadets received basic and advanced training as well as primary instruction at Falcon Field. They had no flying experience, and many of them had never driven an automobile. Learning to fly was for them a totally new

experience, while American cadets had the advantage of driving experience which was an asset in pilot training. Only one group of 135 Royal Air Force cadets was trained at Falcon Field. When they left, Southwestern Airways began to train American cadets there.

In addition to Ryan Field, Thunderbird I and II, and Falcon Field, cadets received primary training under the Civilian Pilot Training program at two other locations in Arizona. In 1941 training centers were set up in Wickenburg and Prescott. Neither of these facilities were as large as the four major centers established a year earlier. Operations at Wickenburg were discontinued in 1943, and all the remaining centers ceased to operate prior to October of 1944. The civilian air schools had served their purpose well, but by the fall of 1944 they were no longer necessary for two reasons. Pilots were no longer needed as desperately as they had been since Germany was obviously close to


surrender; and the Army Air Force had been constructing bases for several years and was now in a position to handle its own flight training program.

In 1940 the Tucson Municipal Airport was designated a United States Army Air Base and the name Davis-Monthan was restored. The new base was assigned to the Phoenix bombardment wing which occupied the facility on May 1, 1941. The base was within the command of the Second Air Force, which had responsibility for training heavy bombardment crews. Davis-Monthan served as an advanced training school for crews of the B-24 Liberator bomber. Throughout the war an average of 150 combat crews were in training at all times. Davis-Monthan was the largest heavy bomber training base in the United States, and officers of the Army Air Force rated it as their best bombing school. During World War II, 1,993 four-engine bomber crews were trained at

12. The Magazine Tucson, September 1950, 11. In 1931, after the Army Air Force spent $55,000.00 on repairs for the airport the name had been changed from Davis-Monthan airport to Tucson Airport.


Davis-Monthan. Since the Liberator bomber carried a crew of ten, a grand total of almost 20,000 men received their final training at Davis-Monthan.

Davis-Monthan Air Force Base was only the first of several Army Air Force installations set up in Arizona. Early in 1941 the City of Phoenix bought 1,440 acres of desert land near Glendale at a cost of $40,000. This land was then offered to the federal government for use as an air base. The government accepted leasing the land for one dollar a year. Orders for construction were issued on March 24, 1941, and the base was named Litchfield Air Base. Lieutenant Colonel Ennis G. Whitehead, who arrived as commanding officer that month, wished to have the base named Luke Field, in honor of Arizona's World War I hero. The Navy already had a Luke Field in Hawaii, but Colonel Whitehead requested the release of the name. The Navy acceded, and the base was named Luke Field by the War Department on June 6, 1941.


A class of forty-five students arrived the same day. For two weeks, however, all flight training was conducted from Sky Harbor airport since the landing facilities at Luke Field were incomplete. The first class of cadets was graduated on August 5, 1941; thereafter Luke Field rapidly expanded.¹⁹

Luke Field became the largest single-engine advanced flying school in the United States during World War II. In addition to training American fighter pilots, officers and men from Great Britain, China, Brazil, Turkey, and the Phillipine Islands were also trained there. Pilots received instruction in the T-6 single-engine advanced training aircraft. After flying the T-6, to acclimate themselves to the increased power of a fighter plane, the student was allowed to fly the P-40 and the P-51, single-engine fighter planes, and the P-38, a twin-engine fighter plane.²¹ In addition to flight training, Luke Field served as a replacement center and gave training in

¹⁸ Ibid., 13.


²⁰ Provence, "Luke Field," 1. See Table II.

²¹ Ibid.
radio repair, mechanics, and general airplane maintenance. The base also maintained specialist training schools in administration.  

Approximately six months after Luke Field began operations, a third large air base was established in Arizona. Williams Field, located near Chandler, Arizona, was opened in December of 1941—just before Pearl Harbor—as a basic training center. The base was named after First Lieutenant Charles L. Williams, an Arizonan who died in 1927 when his plane crashed near Oahu, Hawaii.  

Williams Field was used primarily as a reception center for flying cadets until such a center was opened on the Pacific Coast. The first cadets at Williams received only basic military and physical training. They took no actual flying instruction until the coastal facilities were completed. The Lend-Lease Act made possible the training of a class of Chinese flying cadets in the latter part of December. They received a five-week basic course under Army Air Force instructors. Soon after Pearl Harbor, plans were made for Williams to convert to intensive flight.

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training. Williams became a full-scale training school, primarily in the area of bombardment, for cadets in the advanced stages of their training. Thus, shortly after the outbreak of World War II, Arizona had three functioning Army air bases.

By February of 1942 plans were underway for the creation of a fourth air base in Arizona. In that month, construction began on a new airport near Douglas. This field was built as a Civil Aeronautics Authority Project under the sponsorship of the City of Douglas and Cochise County. The facilities, located eight miles north of Douglas, were to be used for commercial airline and civilian pilot training. General Order No. 1 announced the activation of the base as an "advanced flying school" on July 16, 1942. On November 4, 1942, the first group of cadets arrived to begin their instructions. In September of 1944 students began flying the B-25, or Mitchell Bomber. Later students were trained in AT-9 pursuit aircraft.

27. Ibid.
To replace the Civilian Pilot Training program, the Army in 1942 built smaller bases to provide preliminary flight training. Kingman Army Air Base, Yuma Army Air Field, and Marana Army Air Base all were opened in 1943 and trained pilots to the end of World War II. 28

The United States Navy also abandoned its Civilian Pilot Training program late in 1942, replacing it with what was known formally as the War Training Service. This change brought the Navy to Arizona. During the first year of World War II, the Navy sent its men to Civilian Pilot Training schools in California. The program proved effective, and on December 15, 1942 the Navy inaugurated a similar program of its own. The War Training Service was essentially like Civilian Pilot Training except that the cadets were placed on active duty and were paid seventy-five dollars a month. 29

Prescott, was chosen as the first site for a War Training Service center. It was selected because the Civil Aeronautics Administration had built Ernest A. Love Field


early in 1942 at a cost of $300,000. This training center was staffed by a group of California instructors from Glendale and Fullerton junior colleges. The students spent sixty days at the center, learning the rudiments of flying in planes with sixty-five to seventy-five horsepower engines. The success of the first center at Prescott led the Navy to establish centers at Phoenix, Nogales, Tempe, St. John's, Williams, Cottonwood, and Thatcher. Thus, the Navy availed itself abundantly of Arizona's almost perfect flying weather.

The Arizona climate led the armed services to establish twenty-one air bases and civilian training centers during World War II. From July 1, 1939, to August 31, 1945, 61,300 American, 2,977 Chinese, and 135 British pilots were trained in Arizona. Also 83,688 American and 111 Chinese crewman received flight training in Arizona. A grand total of 145,221 men received flight training in the state. This total represented only the fliers and did not take into consideration the mechanics, ground crews, and other non-flying air force personnel. The effect of the influx of servicemen during World War II is incalculable.

30. Ibid., 15-19, 30.
It is certain, however, that Arizona benefited greatly from the expansion of wartime aviation.

Commercial aviation, however, was not so fortunate. The air transport industry felt the pressures of war soon after Pearl Harbor. In the spring of 1942, 221 of the 370 transport airplanes then operated by the airlines of the United States were ordered to be turned over, by sale or lease, to the armed services. The government also decreed that the airlines would be expected to make equipment and personnel available for special military missions, and to carry priority passengers and cargo on their scheduled flights. With almost two-thirds of their planes commandeered by the armed forces and no new planes available for commercial use, the airlines were forced to reschedule their operations and eliminate some stops on their routes. They were able to operate effectively only by complete utilization of their equipment. The demand for space was so great that the airlines adopted a policy of confirming no reservations west of Chicago. The airlines gained little relief before the close of World War II.

32. Frederick, Commercial Air Transportation, 86.
33. Ibid., 87-90.
With the end of the war in 1945, aviation in Arizona was on the threshold of a new period of expansion. Industries such as the AiResearch Corporation, which had located in Phoenix in 1942 to produce parts for the B-17, would remain in Arizona and re-tool for commercial aviation. Sky Harbor would become one of the leading airports of the Southwest, and a new network of feeder airlines would soon connect all of Arizona with the routes of TWA and American Airlines. Over the next twenty years Arizona aviation was destined to progress apace with national developments in the industry, but its past was worth remembering. Certainly Arizona had its full share of adventure in the air since that day in 1910 when Phoenicians cheered Hamilton, the Bird-Man, and his flying machine of bamboo and silk.

APPENDIX A

THE FIRST AIR-MAIL LAW
(KELLY ACT)
AND AMENDMENTS

H. R. 7064 (The Kelly Act) An act to encourage commercial aviation and to authorize the Postmaster General to contract for Air Mail Service.

Be it enacted, etc., That this act may be cited as the Air Mail Act.
Sec. 2. That when used in this act the term "air mail" means first-class mail prepaid at the rates of postage herein prescribed.
Sec. 3. That the rates of postage on air mail shall be not less than 10 cents for each ounce or fraction thereof.
Sec. 4. That the Postmaster General is authorized to contract with any individual, firm, or corporation for the transportation of air mail by aircraft between such points as he may designate at a rate not to exceed four fifths of the revenues derived from such air mail, and to further contract for the transportation by aircraft of first-class mail other than air mail at a rate not to exceed four fifths of the revenues derived from such first-class mail.
Sec. 5. That the Postmaster General may make such rules, regulations, and orders as may be necessary to carry out the provisions of this act: Provided, That nothing in this act shall be construed to interfere with the postage charged or to be charged on Government operated air-mail routes.

Approved, February 2, 1925.

H. R. 11841 An Act to amend section 4 of the Air Mail Act of February 2, 1925, so as to enable the Postmaster General to make contracts for the transmission of mail by aircraft at fixed rates per pound.
Be it enacted, etc., That section 4 of the Air Mail Act of February 2, 1925, is amended to read as follows:
"That the Postmaster General is authorized to contract with any individual, firm, or corporation
for the transportation of air mail by aircraft between such points as he may designate, and to further contract for the transportation by aircraft of first-class mail other than air mail at fixed rates per pound, including equipment, under such rates, rules, and regulations as he may prescribe, not exceeding $3 per pound for air mail for the first 1,000 miles and not to exceed 30 cents per pound additional for each additional 100 miles or fractional part thereof for routes in excess of 1,000 miles in length, and not exceeding 60 cents per pound for first-class mail other than air mail for the first 1,000 miles, and not to exceed 6 cents per pound additional for each additional 100 miles or fractional part thereof for routes in excess of 1,000 miles in length. Existing contracts may be amended by the written consent of the contractor and the Postmaster General to provide for a fixed rate per pound, including equipment, said rate to be determined by multiplying the rate thereinabove provided by a fraction, the numerator of which is the percent of revenues derived from air mail to which the contractor was previously entitled under the contract, and the denominator 80."

Approved, June 3, 1926.

H. R. 8337 An Act to amend the Air Mail Act of February 2, 1925, as amended by the act of June 3, 1926.
Be it enacted, etc., That section 3 of the Air Mail Act of February 2, 1925 (U.S.C., title 39, sec. 463), as amended by the act of June 3, 1926, is hereby amended to read as follows:
"Sec. 3. That the rates of postage on air mail shall not be less than 5 cents for each ounce or fraction thereof."

Sec. 2. That after section 5 of said act a new section shall be added:
"Sec. 6. That the Postmaster General may by negotiation with an air-mail contractor who has satisfactorily operated under the authority of this act for a period of 2 years or more, arrange with the consent of the surety for the contractor and the continuation of the obligation of the surety during the existence or life of the certificate provided for hereinafter, for the surrender of the contract and the substitution therefore of an air-mail route certificate, which shall be issued by the Postmaster General in the name of such air-mail contractor, and which shall provide that the holder shall have the right of carriage
of air mail over the route set out in the certificate so long as he complies with such rules, regulations, and orders as shall from time to time be issued by the Postmaster General for meeting the needs of the Postal Service and adjusting air-mail operations to the advances in the art of flying: Provided, That such certificate shall be for a period not exceeding 10 years from the beginning of carrying mail under the contract. Said certificate may be canceled at any time for willful neglect on the part of the holder to carry out such rules, regulations, or orders; notice of such intended cancelation to be given in writing by the Postmaster General and 60 days provided to the holder in which to answer such written notice of the Postmaster General. The rate of compensation to the holder of such an air-mail route certificate shall be determined by periodical negotiation between the certificate holder and the Postmaster General, but shall never exceed the rate of compensation provided for in the original contract of the air-mail route certificate holder."

Approved, May 17, 1928.
APPENDIX B

THE McNARY-WATRES ACT

H. R. 11704 (The Watres Act) An act to amend the Air Mail Act of February 2, 1925, as amended by the acts of June 3, 1926, and May 17, 1928, further to encourage commercial aviation.

Be it enacted, etc., That section 4 of the Air Mail Act of February 2, 1925, as amended by the act of June 3, 1926 be amended to read as follows:

"Sec. 4. The Postmaster General is authorized to award contracts for the transportation of air mail by aircraft between such points as he may designate to the lowest responsible bidder at fixed rates per mile for definite weight spaces, 1 cubic foot of space being computed as the equivalent of 9 pounds of air mail, such rates not to exceed $1.25 per mile: Provided, That where the air mail moving between the designated points does not exceed 25 cubic feet, or 225 pounds, per trip the Postmaster General may award to the lowest responsible bidder, who has owned and operated an air-transportation service on a fixed daily schedule over a distance of not less than 250 miles and for a period of not less than 6 months prior to the advertisement for bids, a contract at a rate not to exceed 40 cents per mile for a weight space of 25 cubic feet, or 225 pounds. Whenever sufficient air mail is not available, first-class mail matter may be added to make up the maximum load specified in such contract."

Sec. 2. That section 6 of the act of May 17, 1928, be amended to read as follows:

"Sec. 6. The Postmaster General may, if in his judgment the public interest will be promoted thereby, upon the surrender of any air-mail contract, issue in substitution therefore a route certificate for a period of not exceeding 10 years from the date service started under such contract to any contractor or sub-contractor who has satisfactorily operated an air-mail route for a period of not less than 2 years, which certificate shall provide that the holder thereof shall have the right, so long as he complies with all rules, regulations, and orders that may be issued by the Postmaster General for meeting the needs of the Postal Service and adjusting mail operations to the advances in the art of flying and passenger
transportation, to carry air mail over the route set out in the certificate or any modification thereof at rates of compensation to be fixed from time to time, at least annually, by the Postmaster General, and he shall publish in his annual report his reasons for the continuance or the modification of any rates: Provided, That such rates shall not exceed $1.25 per mile. Such certificate may be canceled at any time for willful neglect on the part of the holder to carry out any rules, regulations, or orders made for his guidance, notice of such intended cancelation to be given in writing by the Postmaster General and 45 days allowed the holder in which to show cause why the certificate should not be canceled."

Sec. 3. That after section 6 of the said act as amended, additional sections shall be added as follows: "Sec. 7. The Postmaster General, when in his judgment the public interest will be promoted thereby, may make any extensions or consolidations of routes which are now or may hereafter be established.

"Sec. 8. That the Postmaster General in establishing routes for the transportation of mail by aircraft under this act may provide service to Canada within 150 miles of the international boundary line, over domestic routes which are now or may hereafter be established and may authorize the carrying of either foreign or domestic mail, or both, to and from any points on such routes and make payment for service over such routes out of the appropriation for the domestic air-mail service: Provided, That this section shall not be construed as repealing the authority given by the act of March 2, 1929, to contract for foreign air-mail service."

"Sec. 9. After July 1, 1931, the Postmaster General shall not enter into contracts for the transportation of air mail between points which have not theretofore had such service unless the contract air-mail appropriation proposed to be obligated therewith is sufficient to care for such contracts, and all other obligations against such appropriation.

Approved, April 29, 1930.
## TABLE I

<table>
<thead>
<tr>
<th></th>
<th>1926</th>
<th>1927</th>
<th>1928</th>
<th>1929</th>
<th>1930</th>
<th>1931</th>
<th>1932</th>
<th>1933</th>
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<tr>
<td>Services in operation—Scheduled Air Transport</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<td>Personnel Employed</td>
<td>462</td>
<td>1,466</td>
<td>2,315</td>
<td>3,476</td>
<td>5,616</td>
<td>5,888</td>
<td>6,373</td>
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<td>325</td>
<td>525</td>
<td>650</td>
<td>590</td>
<td>564</td>
<td>504</td>
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<td>Value</td>
<td>$1,838,462</td>
<td>$7,000,000</td>
<td>$12,000,000</td>
<td>$11,183,510</td>
<td>$9,167,500</td>
<td>$9,762,132</td>
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<td>1,182</td>
<td>1,800</td>
<td>2,060</td>
<td>2,060</td>
<td>2,320</td>
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<td>Other hangar and field personnel</td>
<td>663</td>
<td>691</td>
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<td>1,550</td>
<td>1,507</td>
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<tr>
<td>Pilots</td>
<td>107</td>
<td>308</td>
<td>562</td>
<td>675</td>
<td>696</td>
<td>513</td>
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<td>Co-pilots</td>
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<td>Mechanics (average per month)</td>
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<td></td>
<td>$157</td>
<td>$158</td>
<td>$165</td>
<td>$144</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<td>(not yet available)</td>
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<tr>
<td>Pilots (average per month)</td>
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<td></td>
<td>$520</td>
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<td>$460</td>
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<td>Gasoline Consumed (gals.)</td>
<td>863,617</td>
<td>1,174,498</td>
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<td>4,375,374</td>
<td>14,649,477</td>
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<td>23,366,948</td>
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<td>Oil Consumed (gals.)</td>
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<td>106,726</td>
<td>314,288</td>
<td>482,652</td>
<td>642,089</td>
<td>702,921</td>
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### TABLE II

PERSONNEL ASSIGNED LUKE FIELD 1941 - 1946

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<th>CADETS</th>
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<td>8/41</td>
<td>308</td>
<td>322</td>
<td>2804</td>
<td>1591</td>
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<td>12/31/41</td>
<td>497</td>
<td>881</td>
<td>4877</td>
<td>6255</td>
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<tr>
<td>6/20/43</td>
<td>719</td>
<td>845</td>
<td>3570</td>
<td>4588</td>
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<td>12/31/43</td>
<td>464</td>
<td>927</td>
<td>3197</td>
<td>4319</td>
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<tr>
<td>8/31/44</td>
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<td>2209</td>
<td>3464</td>
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<td>4864</td>
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<td>4/30/45</td>
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<td>515</td>
<td>2461</td>
<td>4555</td>
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<tr>
<td>12/31/45</td>
<td>838</td>
<td>744</td>
<td>1882</td>
<td>3464</td>
</tr>
<tr>
<td>6/30/46</td>
<td>547</td>
<td>881</td>
<td>137</td>
<td>1428</td>
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<tr>
<td>9/30/46</td>
<td>238</td>
<td></td>
<td></td>
<td>375</td>
</tr>
</tbody>
</table>
FIGURE I

MAIL ROUTE OF TWA
FIGURE II

MAIL ROUTE OF AMERICAN AIRWAYS
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