Newly restored NC799H in flight over the northern Illinois countryside. (Kenneth D. Wilson)

C3R CHRONICLE

by Thomas E. Lowe and Kenneth D. Wilson

By the mid-1920s Lloyd C. Stearman had already earned a distinguished reputation as an innovative aircraft designer at the Swallow Airplane Mfg. Co. in Wichita, Kan. His new Swallow biplane had ushered in a new era of design and it virtually sealed the fate of the *Jennys* and *Standards* that had been the mainstays of civil aviation in the U.S. following the end of WWI. In 1924 Lloyd Stearman helped establish the Travel Air Mfg. Co. in partnership with Walter Beech and Clyde Cessna and subsequently he designed the steel tube fuselage biplanes that became known worldwide as the Travel Air 2000, 3000 and 4000 series.[1] But Lloyd Stearman also felt the growing desire to design and build his own airplanes and eventually in 1926 he left Wichita and moved to California where he established his own aircraft manufacturing firm in Venice. In 1927 the struggling Stearman Aircraft Co. produced its first airplane, the C-l, which was introduced to the public at nearby Clover Field in Santa Monica, Calif.[2] The second Stearman airplane built was the C-2 and it was an improved version of the C-l, both of which were powered with the Curtiss OX-5 engine. Only four airplanes were built in Venice, Calif., before Lloyd Stearman was enticed by businessmen friends to return to Wichita, Kan., and reestablish his company there.[3] The first airplane built in Wichita at the Bridgeport plant located on the north side of town was the C-2A, s/n 105, powered with a Wright J-4 engine. This basic airplane powered with Wright radial engines would evolve into the Stearman C-3 series which would become the largest production run of civilian airplanes built by the Stearman Aircraft Co. From the very beginning the basic design of the C-2, C-3 series was so excellent it would serve as the genesis for every subsequent Stearman biplane built.

The designations for the early Stearmans are somewhat confusing due to the fact that a considerable number of Stearman C-2s were built before the Stearman Aircraft Co. received its first Approved Type Certificate for the C-3 in July 1928.[4] The Stearman C-3 was built under four ATCs: Number 55 for the C3B; Number 62 for the Hisso-Stearman C3C; Number 137 for the Stearman C3MB and Number 251 for the C3R.[5] In general, s/n 101-136 were officially C-2s and s/n 137-249 were C3Bs. At times some of the early C-2s would be redesignated as C-3s as they came due for relicensing, etc., but in many cases the subsequent paperwork never caught up with the airplane and they remained designated as C-2s even though their production had since been legally

covered under ATC Number 55 for the C3B.[6] In total, 249 Stearman C-3Bs had been built when production ceased in 1929, most of which were powered with the Wright J-5 *Whirlwind* engine.

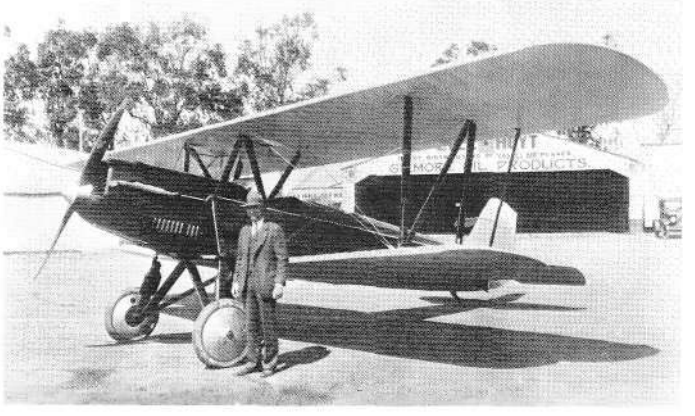
The last C3B built, s/n 249, was pulled from the production line, redesignated as s/n 5001, and used as the prototype for the new line of Stearman biplanes named the C3R *Business Speedster.* The new C3R was in general an upgrading of the C3B design and was a progressive development of the basic C-3 series. The horizontal and vertical tail surfaces were enlarged to provide improved stability and spin recovery and the fuselage was lengthened by the installation of a longer engine mount.[7] The C3R was equipped with more luxury items and finer interior appointments which had been lacking in the earlier more spartan C3B and it was intended to meet the advancing requirements of business aviation.[8] Consequently the new name, *Business Speedster,* was appropriate. The C3R was powered with the new Wright J-6-7 (R-760) *Whirlwind* engine of 225 hp, which later was upgraded to 240 hp, and its performance surpassed that of the C3B.

The first C3R, c/n 5001, NC8828, served well as a prototype airplane and underwent numerous structural changes before the final dimensions were determined. The tail surfaces were enlarged, the fuselage lengthened and shortened several times by changing the tubing in the aft fuselage and the length of the engine mount. The wing center section was modified by adding a cutout portion at the trailing edge in an effort to improve the stability by changing the down wash angle over the tail surfaces. However, it was determined that this had little effect on the airplane and a center section with a straight trailing edge was re-installed.[9] The initial 45-minute test flight of Stearman C3R, NC8828, was made on August 15, 1929, by David P. "Deed" Levy, Stearman's Chief Experimental Test Pilot.[10] This airplane eventually was sold to Hanford Tri-State Airlines of Sioux City, Iowa,[11] and over the succeeding years NC8828 passed through numerous owners and remarkably is still being actively flown by its current owner, Doyle Cotton of Tulsa, Okla.

Between 1929 and 1931 a total of 38 Stearman C3Rs were built. Twenty-eight civilian models were produced (s/n 5001-5019 and 5030-5038) and 10 (5020-5029) were delivered through United Aircraft Exports to Peru for use by its Air Force.[12] The last C3R airframe built was s/n 5039, NC567Y, and was designated as the C3P. It was an oddity since it was powered with an old Wright J-5 engine which was no longer in production. This came about when Mr. Herbert G. Fales of New York City, N.Y., placed an order for a C3R, but stipulated that he would supply his own engine.[13] Since the installation of a J-5 engine into a C3R airframe was a retrogression back to C3B standards, the airplane was designated as the C3P and was licensed under Group 2 Approval, Memo 2-445, May 1, 1933.[14]

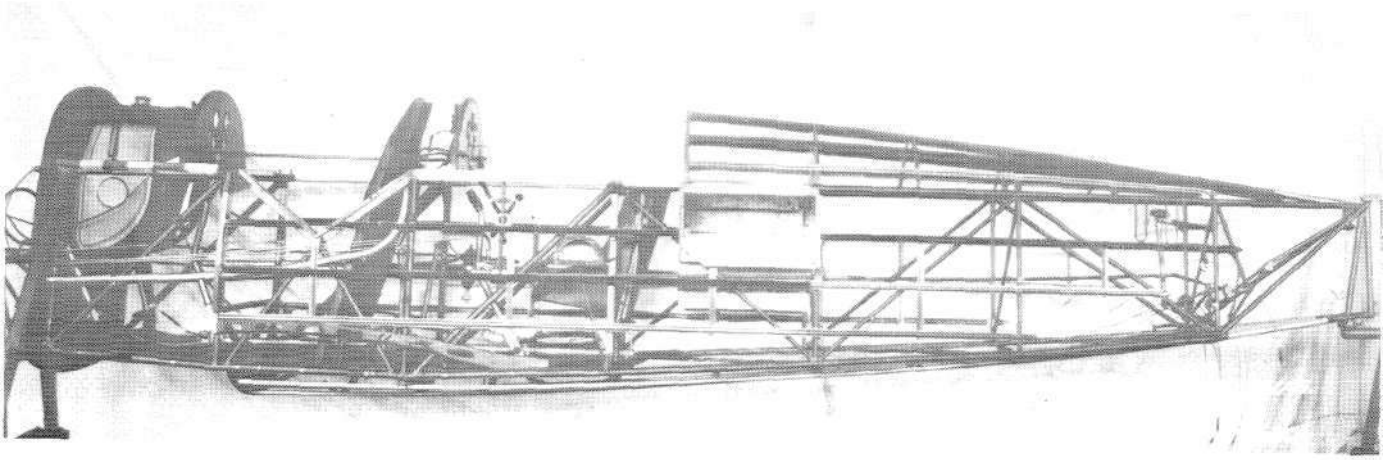
The subject of this article is Stearman C3R, NC799H, s/n 5037, the next-to-the-last C3R built. It was constructed under Job Order 4537 and was completed on January 8, 1931. The initial test flight was made that same day by Stearman test pilot H.C. "Cliff" Callihan who flew it for 40 minutes. The second flight was conducted on January 20, 1931, with Lloyd Stearman at the controls.[15] NC799H was listed on Stearman Co. records as a company demonstrator, most likely the result of the cancellation of a commercial order, and as such remained at the Stearman factory until September 1931 when it was eventually sold.[16] During those months, NC799H was flown several more times by Cliff Callihan, Lloyd Stearman and Mac Short, chief engineer for the Stearman Co., who later would become vice president of Lockheed. After July 20, 1931, Cliff Callihan was the only pilot to fly NC799H and when the C3R was sold in September, it had acquired a flight time of 47:05 and the engine had received a top overhaul at the Stearman Service Center just prior to its sale.[17]

During this same time period across the country in New York the other portion of this epic was beginning his aviation training which eventually would lead to a lifelong association with Stearman C3R, NC799H. Elwyn C. Heidenreich was a young man who owned the E.C. Heidenreich Laboratories in Buffalo, N.Y. His company designed and built specialized electrical testing equipment and one of his major customers during the 1940s would be the Bendix Scintilla Co. which had a plant in Sidney, N.Y.[18] He began receiving flight instruction from Harold S. Dawson and made his first solo flight in Travel Air NC607K on September 5, 1930.[19] Later that month he acquired his first personal airplane, a Travel Air E-4000, NC620K, s/n 1253, powered with a Wright J-6-7 engine. He continued receiving dual instruction in NC620K from Harold Dawson and passed his flight check for a private license on October 30, 1930. He flew the Travel Air for about

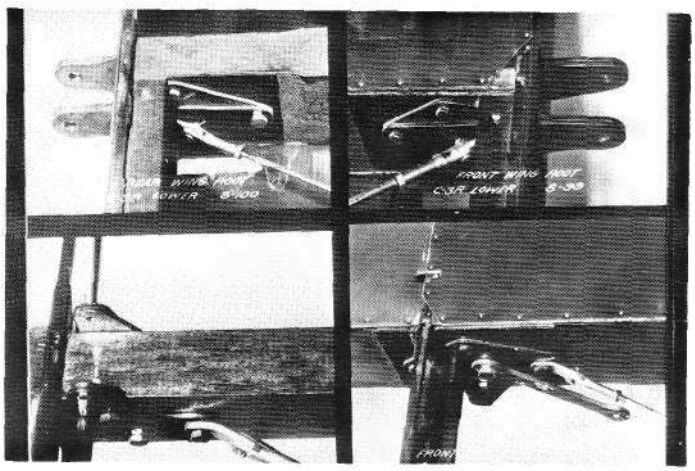


Lloyd C. Stearman with his first Stearman biplane, the OX-5 powered C-1, built in Venice, Calif. (Stearman Aircraft Co.)

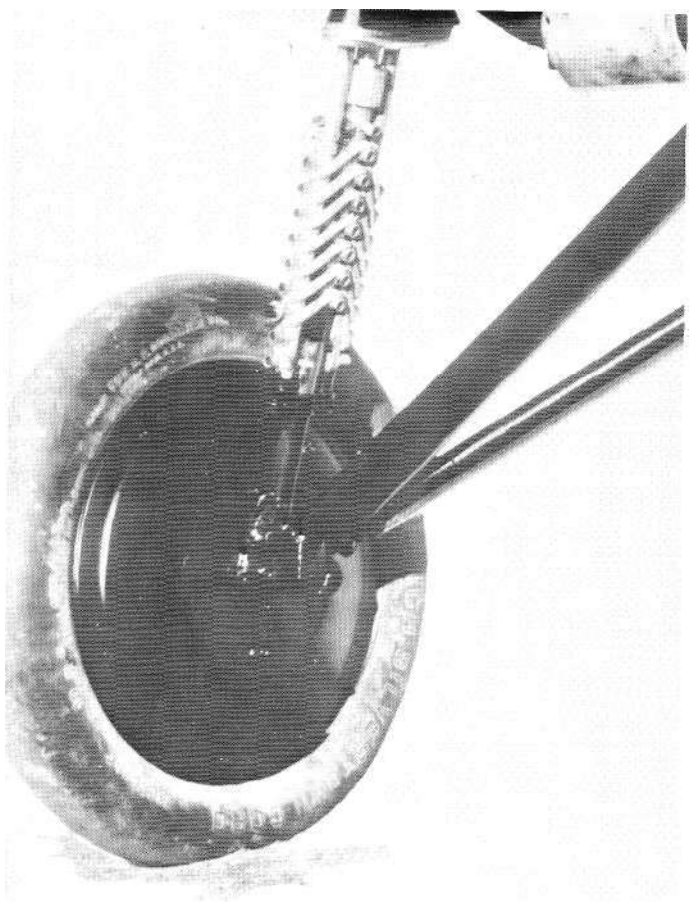
Stearman C3B, 5309, s/n 126, was delivered to Barrett Airways of Armonk, N.Y., on May 15, 1928. (Stearman Aircraft Co.)

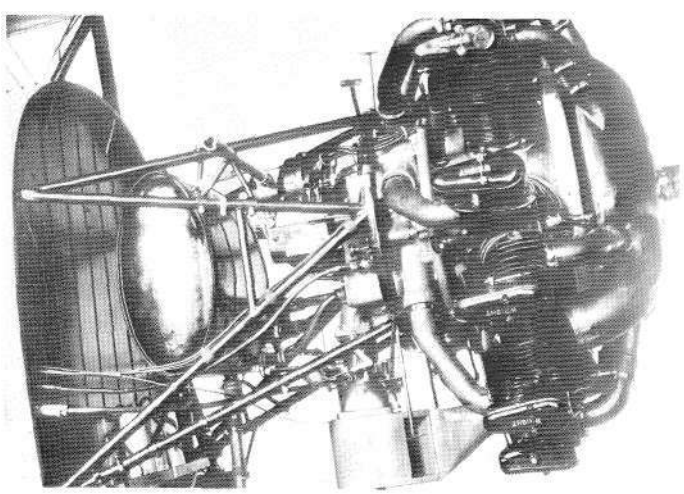


Stearman C3R fuselage, left side, before the addition of fabric and cowling. (Stearman Aircraft Co.)



Details of C3R lower wing root and strut fitting attachments. (Stearman Aircraft Co.)



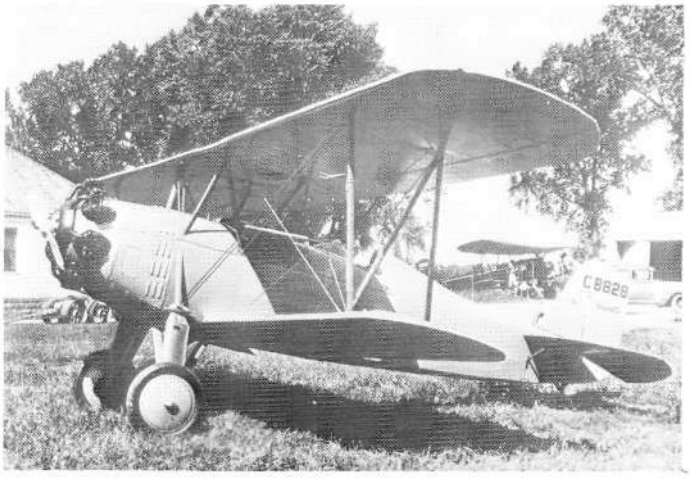


Installation of Wright J-6-7 *Whirlwind* engine in the Stearman C3R. Right side of fuselage. (Stearman Aircraft Co.)

Stearman C3R right main landing gear showing the details of the Stearman Rubber Draulic Landing Gear which combined hydraulics and shock cords. (Stearman Aircraft Co.)

a year until it was destroyed in an accident on August 30, 1931.[20] He had made a flight to Hartford, Ct., and New York City and apparently had gotten a late start from home. He was blown off course and in the darkness ran out of fuel, resulting in a crash in a field on the outskirts of Falconer, N.Y., which is near Jamestown. His wife and mother-in-law were passengers in the front cockpit and were hospitalized for several days with minor injuries. Mr. Heidenreich received a facial cut and later expressed that they had been very lucky to have survived and he attributed the cause of the accident to his inexperience. He had 178 hours of flying time.[21]

With his Travel Air destroyed, Elwyn Heidenreich began an immediate search for a replacement airplane. On September 9, 1931, he made a solo demonstration flight at North Beach, Long Island, N.Y., in a 1929 American Eagle, NC547H.[22] This airplane was s/n 564 and was owned by S.W. Ingersol of Angola, N.Y.[23] He apparently placed an order at this time for another new Travel Air biplane, but shortly thereafter canceled it. On September 12, 1931, Lawrence J. Walsh, vice president of George Wies, Inc., the Stearman distributor at Roosevelt Field, Garden City, Long Island, N.Y., wrote Elwyn Heidenreich a letter acknowledg-

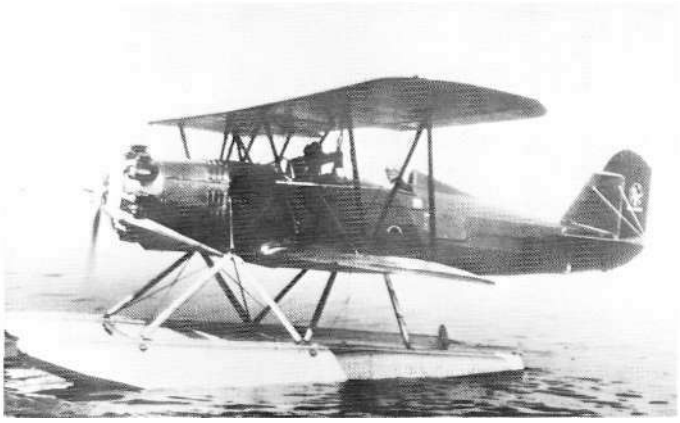


The prototype Stearman C3R, C8828, s/n 5001, at Wichita in 1929. The prototype Stearman LT-1 (Light Transport), C8829, s/n 2001, can be seen in the background. (Stearman Aircraft Co.)

The first Stearman C3R, NC8828, as it appears today. (Kenneth D. Wilson)

ing a telephone conversation with him relative to the cancellation of the order for a Travel Air and his subsequent inquiry into the purchase of a new Stearman biplane. Mr. Walsh described an airplane at the Stearman factory that was available that had only 30 hours on it.[24] Two days later Mr. Walsh again wrote Elwyn Heidenreich another letter giving details on the Stearman airplane available in Wichita. The Stearman was listed as having a total time of 30:30 and was equipped with dual controls, front instrument panel, brakes, hand inertia starter, turn and bank indicator, battery and navigation lights. The color scheme was described as the Western Air design with the overall color of silver with a band in Western Air Express Red down the side of the fuselage sweeping up onto the rudder. The wings were finished in silver on the inside of the panels and orange on the outside. The price of the C3R was listed at $8,753, but with a 20% discount for having been used as a demonstrator it was available for $7,000. Mr. Walsh urged Elwyn Heidenreich to "Please give this Stearman every consideration from a standpoint of ruggedness and service; you will never find it wanting in any respect."[25]

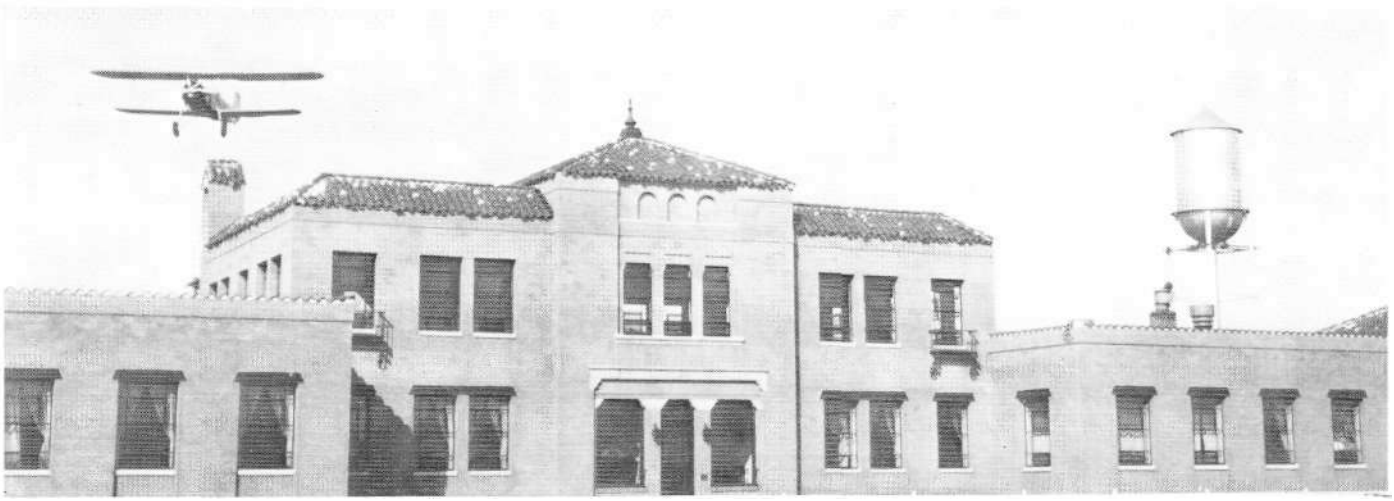
About a year earlier in August 1929, the Curtiss and Wright companies merged and Travel Air was invited to



Stearman C3R on floats. (via Kenneth D. Wilson Collection)

Stearman C3R, NC799H, in flight over the Stearman factory in Wichita, Kan., in 1931. (Stearman Aircraft Co.)

Lineup of some of the Stearman C3Rs that were used by the Peruvian Air Force. (Stearman Aircraft Co.)



Official factory photo of NC799H was made at Elwyn Heidenreich's airstrip at Short Tract, New York. Photo is incorrectly annotated as the C3H and incorrectly dated as March 4, 1928. (Stearman Aircraft Co.)

become a part of the new corporation. Due to this merger Walter Beech subsequently was required to leave Wichita when he was appointed president of the Curtiss-Wright Flying Service sales division. In addition he was the chairman of the sales committee of the Curtiss-Wright Corp. and also continued to serve as president of Travel Air. To serve in these various jobs he was provided with offices in both New York City and St. Louis.[26] In these capacities he was aware of Elwyn Heidenreich's search for a replacement airplane and the inability of Travel Air to provide one. Apparently Elwyn Heidenreich's order for a new Travel Air biplane had been canceled because Travel Air did not have an airplane available for immediate delivery. One of the stories that has surrounded NC799H is that Walter Beech reportedly telephoned Elwyn Heidenreich and informed him that the Stearman Co. had a number of airplanes available following an order cancellation from Transcontinental and Western Airlines and that perhaps he would like to investigate the purchase of a Stearman.

Elwyn Heidenreich then traveled by train to St. Louis where he met Walter and Olive Ann Beech and they drove to Wichita together in the Beechs car.[27] On September 18, 1931, Elwyn Heidenreich flew Stearman C3R, NC799H, for 15 minutes and promptly thereafter purchased it.[28] He flew the C3R for an additional 15 minutes the next day and on September 20, 1931, he began the flight back to his private airstrip at his summer home in Short Tract, N.Y. Walter Beech accompanied him on the first leg to St. Louis in the C3R while Olive Ann drove the family car back to St. Louis.[29] Elwyn Heidenreich then continued the flight home to Short Tract with a total flight time of 8:25.[30]

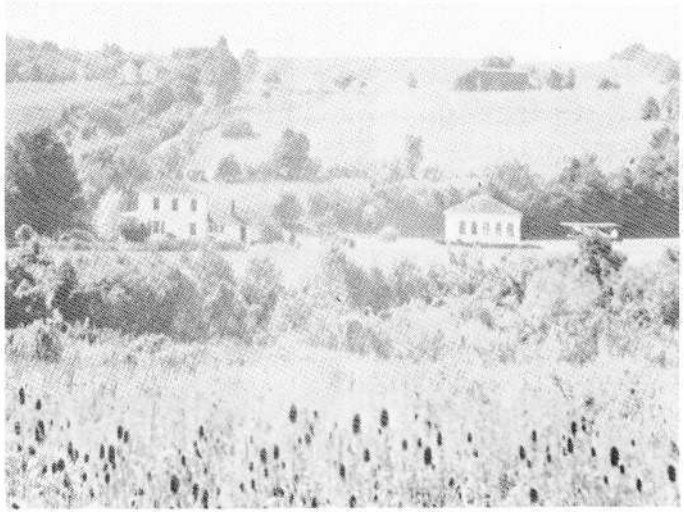
For the remainder of 1931 and early 1932 Elwyn Heidenreich flew the C3R locally and on business and pleasure trips in the eastern part of the U.S. In May 1932, he began a flight which was a major undertaking at that time which proved to be an exciting adventure in air travel. He flew the C3R from Buffalo, N.Y., to California and back accompanied by his wife, Ethel, and his 12-year-old daughter, Lois, who kept a very interesting journal of their trip. To make the trip even more enjoyable and interesting, Elwyn Heidenreich invited his sister, Genevieve Hughes, and her husband, Tom, to accompany them by auto. Mr. Heidenreich paid all the expenses so that he would have access to a car throughout the vacation trip. Elwyn Heidenreich and his family would fly the Stearman to a prearranged point and his sister and her husband would eventually catch up to them in the automo-

Elwyn Heidenreich in the cockpit of his Stearman C3R, NC799H. (Lois Yoerg Collection)

bile.[31] In 1932 such an arduous trip in both an airplane and an automobile must have been extraordinary.

The Heidenreich family departed Buffalo, N.Y., at 1:15 P.M. on Wednesday, May 18, 1932, and flew to St. Louis, Mo., with an en route fuel stop at Indianapolis, Ind. The next day they flew to Wichita, Kan., where they waited for the Hughes to arrive in the car and also had the C3R thoroughly inspected at the Stearman Service Center. Early Saturday morning they left Wichita and flew to Amarillo, Texas, for a fuel stop and then continued on to Albuquerque, N.M., where they again waited through Sunday for the Hughes to catch up to them once again in the car. On Monday, May 23, they departed Albuquerque and flew to Holbrook, Ariz., where they landed on an emergency airfield. No one was at the airstrip so they proceeded on to Winslow, Ariz., where they hired a taxi and returned to Holbrook to wait for the Hughes to catch up once again. They spent the remainder of the day touring the Petrified Forest and the Painted Desert by car. Tuesday morning they all drove on to Winslow where Elwyn Heidenreich flew his wife and sister to the Grand Canyon Airport in the C3R while his daughter, Lois, rode with her uncle in the car. They explored the Grand Canyon area by car and also took a scenic flight over the canyon in a Travel Air before spending that evening in a lodge. The following day the flight continued on to Glendale Airport in California and they spent several days touring the Los Angeles area, visiting friends and conducting business.

The next portion of the trip took them north to the San Francisco area, but when they left Los Angeles on June 2, they were forced to return due to thick fog. After they landed they were fortunate to see Ken Maynard, the Universal Studios movie star, land in his airplane, and Lois was extremely pleased when he agreed to pose for some photographs. After the weather improved the flight continued to Merced where they met the Hughes and visited Yosemite National Park. They arrived in San Francisco on Sunday, June 5, and while at Sunnyvale saw the airships *Akron* and *Los Angeles.* The following day while flying locally over the city they happened to see the *Akron* in flight and chased it all the way to San Jose and were able to take some aerial photographs of it. The following day, June 7, Elwyn Heidenreich and his family



The Heidenreich country home as viewed from the east looking towards the west. House is on the left and the hangar on the right near the C3R which is sitting adjacent to the runway. *(The Sportsman Pilot)*

Elwyn Heidenreich's C3R at an airshow in Niagara Falls, N.Y., in 1956. (James Furlong Collection)

bade farewell to Tom and Genevieve Hughes at Placerville which was the last time they met during the remainder of the trip. The C3R was then flown to Reno, Nevada, where they spent the night. Reno was described by young Lois Heidenreich as "... a very disappointing town. All gambling and wild women, etc."

The next day a fuel stop was made at Elko en route to Salt Lake City, Utah, and the final leg of the day was from Salt Lake City to Cheyenne, Wyo. The following day they flew over Rocky Mountain National Park northwest of Denver and then continued along the South Platte River to North Platte, Neb. The final stop for the day was at Omaha, Neb. On Friday, June 10, 1932, they flew eastward and landed in a pasture at Nashua, Iowa. This drew a large crowd of local people and after lunch they visited the Little Brown Church in the Vale. Later that afternoon they continued to Chicago, Ill., and the next morning they toured the Field Museum and Adler Planetarium before departing Chicago that afternoon for home.[32] When they arrived home again on July 11, 1932, the Stearman had been flown 58 hours.[33]

After the return from the long flight to California the engine received a top overhaul on July 1, 1932. The engine had a total time of 170 hours at that time. Throughout 1932 Elwyn Heidenreich continued to fly the C3R over the eastern part of the U.S., but apparently not without mishap. The C3R was severely damaged, most likely in either a ground loop accident or hard landing, for on September 1, 1932, the aircraft logbook reflected the completion of repairs. The right landing gear and lower right wing were replaced, the upper right wing was repaired and tubing repairs were made to the lower longerons in the forward part of the fuselage and the engine mount. Finally, the propeller was straightened and the airplane returned to service. Unfortunately within a month the Stearman was again apparently subjected to another ground loop accident, only this time all the damage was inflicted to the left side of the airplane. New lower and upper left wings and a new left landing gear were installed and new tubing spliced into the lower left fuselage longeron and the propeller straightened once again. Repairs were completed on October 15, 1932.[34]

From 1933 through 1935 the C3R was flown for business and pleasure with only minor maintenance being accomplished. However, the engine did receive another top overhaul on January 31, 1934, when it had a total time of 303 hours. On October 20, 1936, Elwyn Heidenreich made his

last flight in NC799H powered with its original Wright J-6-7 engine. The original engine, s/n D13782, was removed with a total time of 434 hours. The airframe time was 386 hours. On January 4, 1936, a new Wright J-6-7 (R-760-E) *Whirlwind* engine, s/n 14155, rated at 240 hp was installed. This engine would remain on NC799H throughout the remainder of Elwyn Heidenreich's life and is still powering the Stearman to this day. On January 11, 1936, Elwyn Heidenreich made a 10-minute test flight on the new engine and recorded that the takeoff and landing were made with 15 inches of snow on the ground.[35]

Elwyn Heidenreich and the C3R also played an important part in helping solve a problem that had developed with the Wright R-760-E engine. The Wright engines had been experiencing excessive valve guide wear and Elwyn Heidenreich and a friend designed and made new valve guides and springs and installed them in the engine on NC799H. Sometime later the Wright Corporation inspected his design and installation and incorporated those ideas in a Service Bulletin that was issued to users of Wright engines.[36]

In June 1936, Elwyn Heidenreich enjoyed the rare privilege of being one of the few civilian pilots allowed to fly a U.S.

Elwyn C. Heidenreich poses **with his** Stearman C3R at **Short** Tract, **N.Y. (Rod Babbitt)**

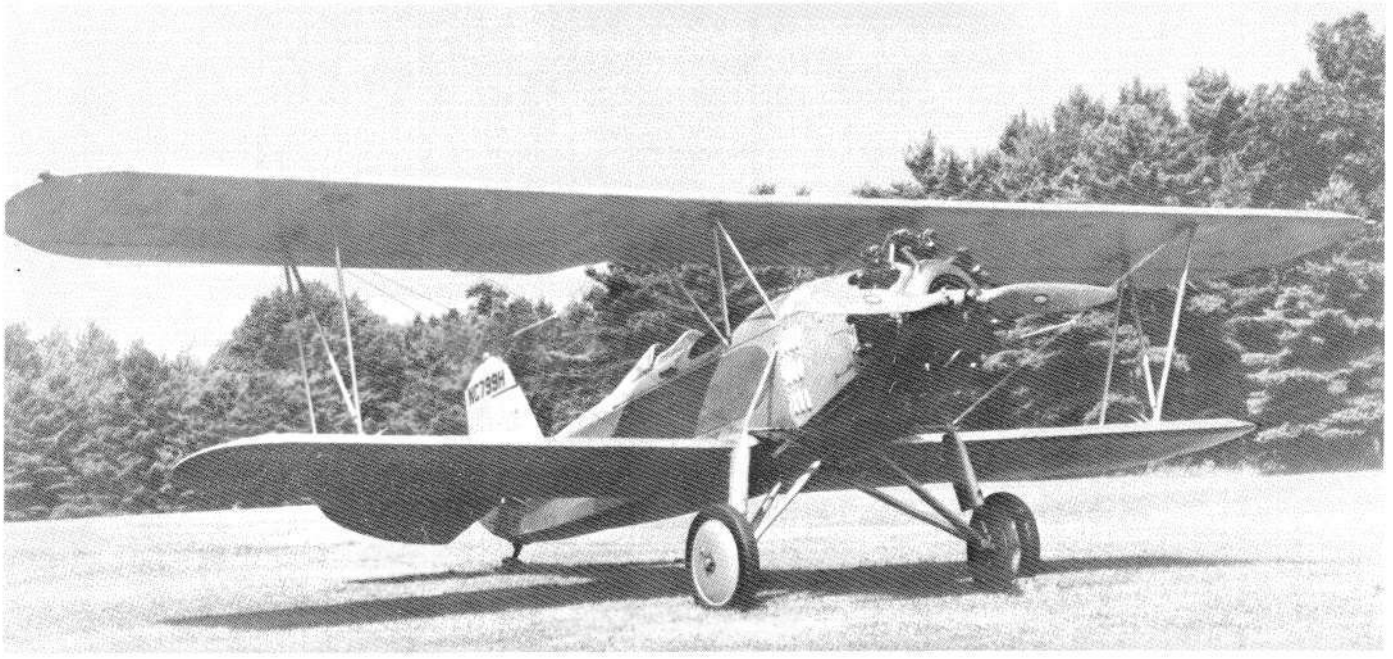
Navy airplane, most likely due to his extensive business contacts throughout the aviation industry. On June 11 he flew NC799H into the Philadelphia Navy Yard where he made a 20-minute flight in a U.S. Navy Chance Vought biplane powered with a Pratt & Whitney engine.[37] In 1938 he made his second flight to California in NC799H for the purpose of attending the Shrine Convention. The flight was a near duplicate of his previous trip except that he departed from his summer home at Short Tract. Departure was made on June 2, 1938, with en route overnight stops at Wichita, the Grand Canyon, Boulder City and Burbank, Calif. The return flight home had stops at Boulder City, Cheyenne, Moline and Buffalo. Total flight time for this trip was 50:45.[38] In addition to his extensive cross-country flying in NC799H, Elwyn Heidenreich was also extremely generous in providing rides for friends and acquaintances. By 1938 he had accumulated over 1,000 hours of pilot time, most of it in NC799H, and had given rides to over 3,000 passengers. He record for passenger rides in a single day was 33 persons.[39]

On August 27, 1940, Elwyn Heidenreich departed on another extensive cross-country flight in NC799H to San Antonio, Texas. He was accompanied by his friend, Everett Smith, and the object of this trip was to attend the graduation ceremonies of Everett's son, Bob Smith, from U.S. Army Air Corps pilot training at Randolph Field.[40] This flight required 32:05 flying time and stops were made at Indianapolis, St. Louis, Tulsa, Dallas, Waco and San Antonio. The return flight covered the same ground except stops were made in Grand Prairie, Texas, rather than at Waco and in Claremore, Okla., between Tulsa and St. Louis.[41] On September 9, 1940, Elwyn Heidenreich received his Commercial Pilot License and Flight Instructor rating and began giving student flight instruction, mostly in Piper J-3 Cubs and a Waco PT-14 and occasionally in NC799H.[42] Sometime in 1940 Elwyn Heidenreich made his third trip to California in NC799H, again to attend the Shriner Convention.[43] Unfortunately, none of his pilot or aircraft logbooks or any of his other records reflects any details concerning this flight.

With the advent of WWII, NC799H's flight time declined dramatically each year: 45 hours in 1942; 17 hours in 1943; but in 1944 back up to 122 hours.[44] In 1944 Elwyn Heidenreich received a request from Hamilton Standard to use his Stearman C3R in a series of propeller vibration tests that were to be flown by Pratt & Whitney Aircraft Experimental Flight Test at Hartford, Conn. The Stearman's registration was temporarily changed to NX799H and it was delivered to Pratt & Whitney on May 18, 1944.[45] It is not known what compensation, if any, Elwyn Heidenreich received for the use of his C3R, but the airplane received fairly extensive maintenance from Pratt & Whitney mechanics before beginning the test flights. Considerable fabric repair work was completed on all four wing panels as well as the fuselage and the ailerons and rudder were completely re-covered with new fabric. Repairs were also made to the engine exhaust collector ring and to the magnetos.[46]

The first flight was made on June 8, 1944, and a total of 19 test flights were conducted between that date and June 28, 1944. The majority of the propeller vibration and stress analysis test flights were flown by Paul Berk, but some flights were also flown by Harold Archer, who was the head of Flight Test, and other pilots, Gardner, Haven and Funk. The passenger and test technician on all these flights was Oates. A total of 13 hours and 34 minutes were flown by Pratt & Whitney test pilots in NX799H during the series of tests.[47] Before the Stearman was returned to Elwyn Heidenreich on June 30, 1944, the Pratt & Whitney mechanics installed a new thrust bearing and starter on the engine as well as a new spoon on the tailskid.[48]

An interesting side story to this episode was that just prior to delivering the C3R to Pratt & Whitney for the propeller tests Elwyn Heidenreich had installed a new set of tires on the 30x5 wheels. They were made of reclaimed rubber and Pratt & Whitney wore all the tread off them during the time they had the airplane. Pratt & Whitney eventually replaced the



NC799H on the manicured runway at Short Tract, N.Y., after Elwyn Heidenreich passed away. Aircraft was sold by Julius Palermo for Lois Yoerg, Elwyn Heidenreich's daughter. (Julius Palermo)

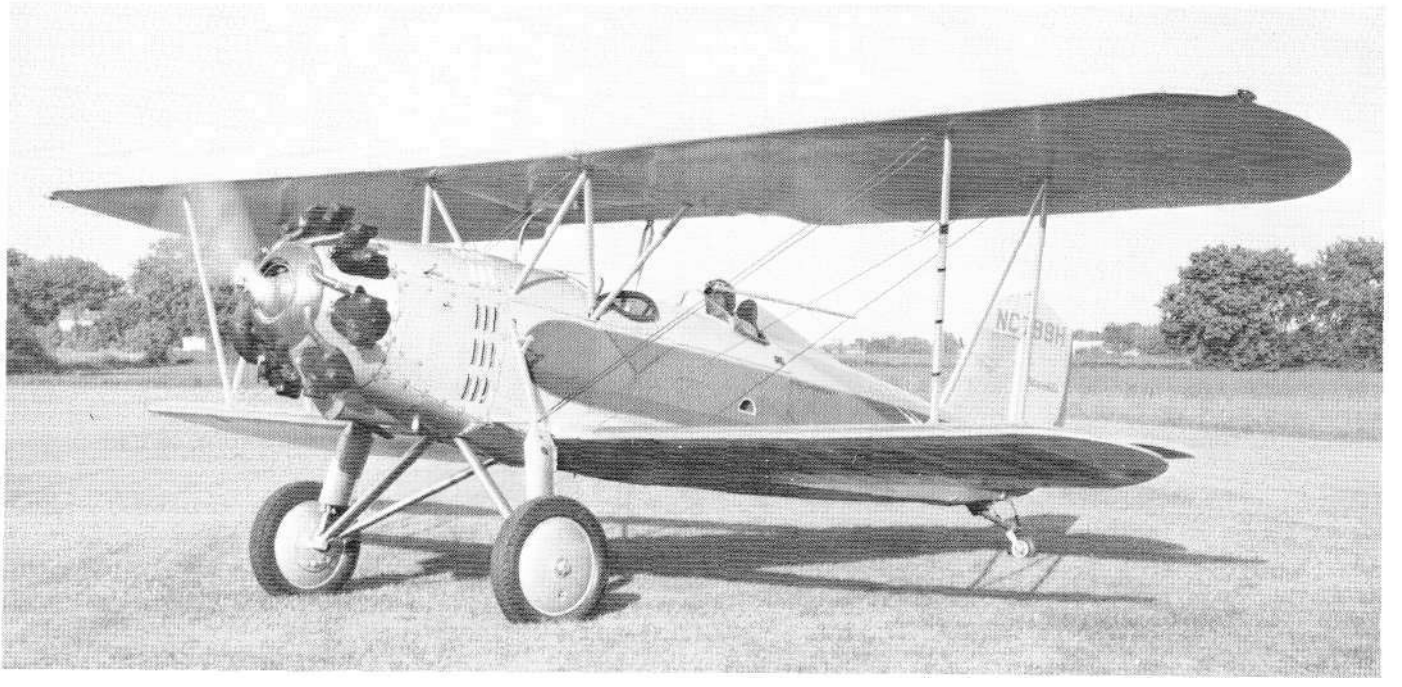
tires, but were not able to get a new set until three months had passed after returning the Stearman to Mr. Heidenreich. By that time he had obtained a new set of tires on his own from Goodrich in Akron, Ohio. Elwyn Heidenreich stored the synthetic rubber tires received from Pratt & Whitney in the cellar at his country home in Short Tract and as of 1964 he still had them and was planning to finally install them on the C3R.[49]

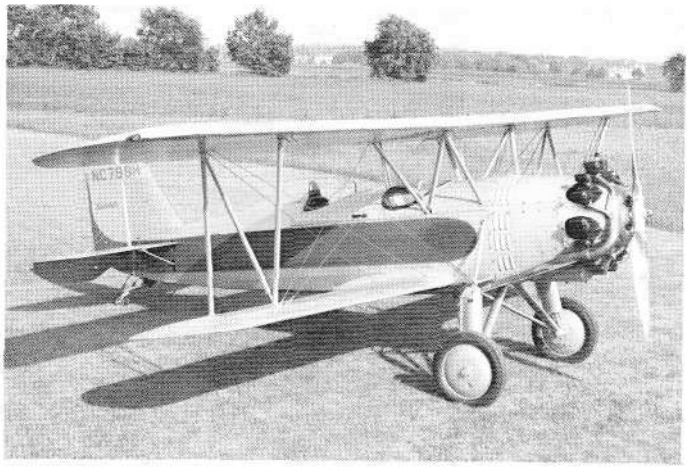
In 1945 the wings and fuselage were re-covered with new fabric and the wings were finally modified by adding 1/16-inch plywood sheeting to the underside of the leading edges as required by Stearman Bulletin No. 54 and CAA Airworthiness Note A-633. Between August and November 1938, considerable correspondence had passed between Elwyn Heidenreich and the CAA in regards to these service bulletins. Mr. Heidenreich had requested a waiver from the requirements of the airworthiness directives on the basis of the excellent care and maintenance that NC799H received and the fact that he used the airplane primarily for transportation and did not engage in aerobatics with it. The request for exemption was denied several times, but eventually a compromise was reached and on November 22, 1938, the CAA issued NC799H an aerobatic restriction that enabled Mr. Heidenreich to continue to fly and relicense the C3R without complying with the airworthiness directives.[50] From November 1938 to May 1945, NC799H had operated with the restriction that no aerobatics could be performed.

After WWII, Elwyn Heidenreich continued to fly NC799H regularly in the local Buffalo and Short Tract areas and also continued his extensive flying over the eastern U.S., especially to Sidney, New York, where the Bendix Scintilla plant was located. Up until the mid-1950s, Mr. Heidenreich had been very meticulous in keeping accurate records of NC799H's operations and had saved all correspondence relative to it. But as he got older and flew it less and less his record keeping deteriorated. After 1955 the only entries into the aircraft and engine logbooks were the total annual flying time recorded when the airplane was relicensed each year. In 1969 his annual flying time in NC799H had declined to only 8.5 hours.[51]

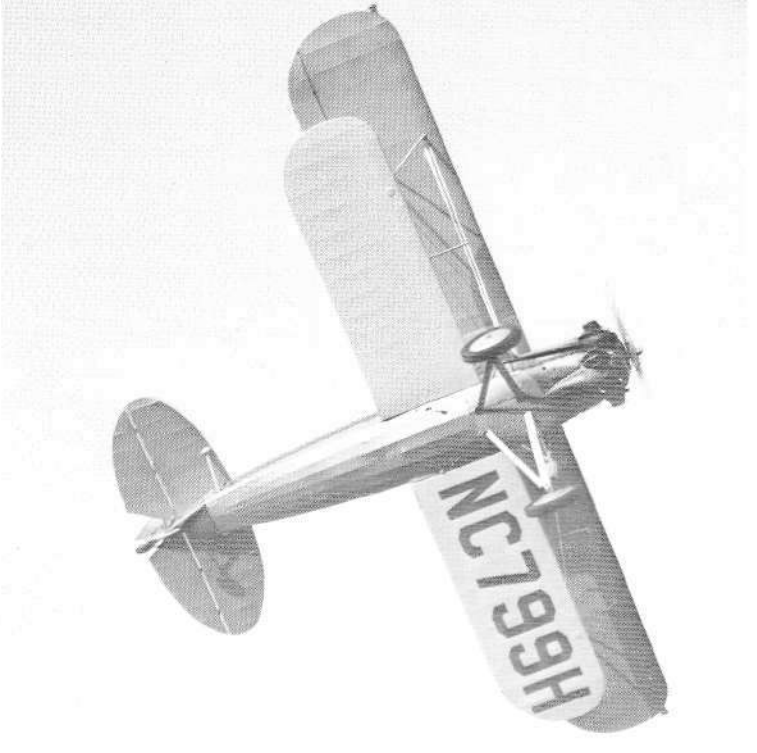
Over the many years that Elwyn Heidenreich owned NC799H and operated it in and out of his airstrip on his summer home at Short Tract, New York, he had become a legend to the local population of the western part of the state. His generosity in taking many people for flights in his Stearman generated tremendous interest in and appreciation for aviation in a time when airplanes were still a novelty. Quite a few of the young people who received their introduction to flying in the C3R later went on to various careers in aviation, a result that pleased Elwyn Heidenreich very much. A large part of the mystique that Mr. Heidenreich and the Stearman held was due to his private airstrip at Short Tract, located about 40 miles southeast of Buffalo. He owned 52 acres on which were a house, a guest cabin and a large combination hangar-garage that was well heated and lighted. The runway was all turf extending for 1,000 feet in a NW-SE direction with about 900 feet of it usable. The runway, besides being quite short, sloped fairly sharply uphill to the NW with a tree-covered hill rising even higher above that. He normally took off downhill and landed uphill, but if the wind was strong enough to require it, he would land downhill.[53]

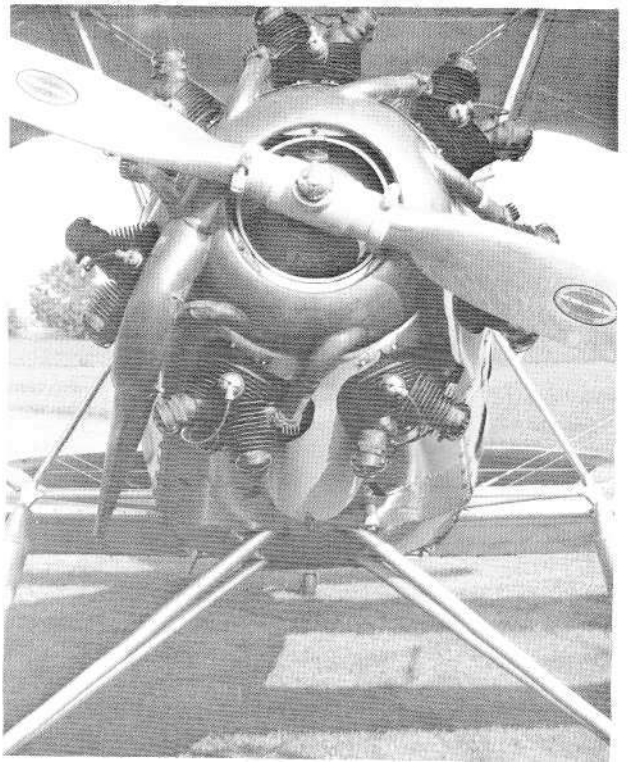
Many of the stories that still circulate about Mr. Heidenreich center around his ability to fly the Stearman in and out of his short airstrip and the many hilarious and near-disastrous attempts by other pilots in more modern airplanes to do the same. After WWII quite a few aircraft salesmen tried to entice Mr. Heidenreich into replacing the C3R with a new modern airplane. He reportedly would invite them to load their airplane to gross weight and fly into his airstrip. On almost all occasions he watched as the demonstration pilots made numerous attempts to land, only to finally give up in frustration and fly back to their departure airports.[54] The fact that Elwyn Heidenreich was never able to find a modern light airplane that would meet his operational requirements at Short Tract reflects very highly on the dependability, perfor-





Newly restored Stearman C3R, NC799H, at Dacy Airport in Harvard, III., in the summer of 1986. (Kenneth D. Wilson)





mance and ruggedness of his Stearman C3R that had served him faithfully for so many years. When Lawrence Walsh of George Wies, Inc., wrote to him in 1931 urging his consideration of buying a Stearman, little did he know that his words, "Please give this Stearman every consideration from a standpoint of ruggedness and service; you will never find it wanting in any respect," would continue to hold true over 30 years later.[55]

Elwyn C. Heidenreich made his last flights in NC799H on September 5, 6 and 7, 1970, at his airstrip at Short Tract when he was 73 years old. On the 5th he took his grandson, Peter Yoerg, for a 15-minute flight followed by another 15-minute flight the next day. His final flight was a five-minute flight on September 7, 1970.[56] On May 21, 1971, he passed away, thus ending a 40-year love affair with NC799H. It is truly remarkable that a man and a machine maintained such a lifelong association and the fact that the C3R survived so long in such good condition is a fitting tribute to both the sturdiness of the design and to the outstanding maintenance and love lavished upon it by Elwyn Heidenreich.

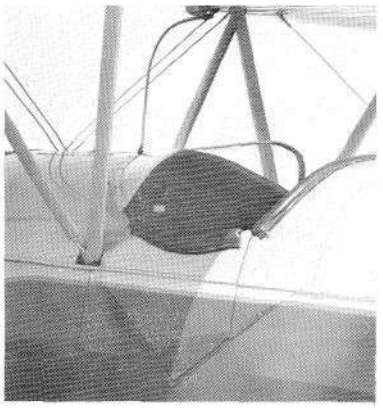
After Elwyn Heidenreich passed away, his daughter, Lois Yoerg, sold the C3R on May 11, 1972, to Carmen and Theodore Perrotti of Melrose, Mass.[57] The Perrotti brothers were well-known East Coast antiquers and collectors and at the time they purchased NC799H they also owned the prototype Stearman C3R, NC8828, and a Travel Air 4000. They owned NC799H for the next four and a half years and were very active with it in attending unique airplane functions in the eastern part of the U.S. During this time the only major change they made to NC799H was to remove the tailskid shoe from the tailskid assembly and to install a steerable Scott tailwheel in its place. In 1976 the Perrotti brothers moved to Florida and on December 14, 1976, they sold NC799H to Richard Jackson of Rochester, N.H.[58] Richard Jackson is another well-known antiquer and is especially noted for his extensive and varied collection of Waco airplanes. He flew NC799H for a short time, but unfortunately it was severely damaged in a ground loop accident in the summer of 1977 while attending an antique fly in Maine.[59] The Stearman was disassembled and trucked back to his hangar/home in Rochester, N.H., where it was placed in storage among his many other airplanes awaiting restoration.

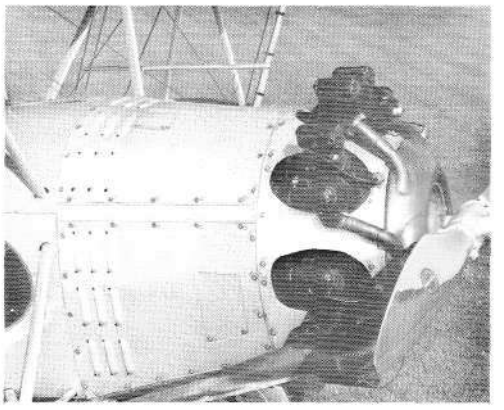
The C3R languished in storage for the next couple of years until it was eventually purchased by the author on September 19, 1979.[60] It was loaded into a U-Haul truck and transported across the country to Dacy Airport, Harvard, Ill., where restoration work began immediately. The extent of the damage to the C3R became more apparent as the parts were disassembled. The ground loop had torn every single piece of the landing gear apart and not a part of it would be usable again. The left main geat had gone up through the lower left wing and coupled with the wingtip having struck the ground, the lower left wing was about 80% destroyed. Both longerons in the forward fuselage were damaged as well as the landing gear mounting fittings, the engine mount and the propeller. The rest of the airplane was in amazingly good condition reflecting the excellent care it had received. Dirt and crud had collected through the airplane and the inside of the fuselage was oil soaked. Considering that the last time it had been recovered was in 1945, it was amazing that the Grade A cotton fabric was still in serviceable condition with most all fabric-covered parts testing as airworthy.

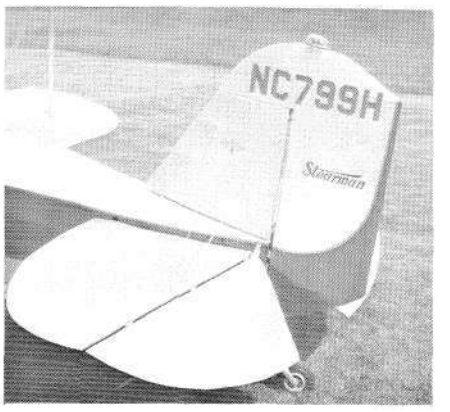
The C3R was completely rebuilt with new landing gear being manufactured to original factory specifications, the engine overhauled, fuselage repaired, all wings rebuilt or repaired and eventually the entire airplane re-covered with Ceconite synthetic dacron fabric and finished in a paint scheme exactly as it had appeared when it left the Stearman factory in 1931. The only major changes made to the C3R was to remove the hand-cranked inertia starter from the engine and install a direct drive electric starter and to add an alternator and a full electrical system to replace the original battery-only system that was used to power the navigation position lights and the cockpit instrument panel lights. The restoration project became a joint effort by the entire Lowe family and required five years and 11 months of concentrated work to reach completion.

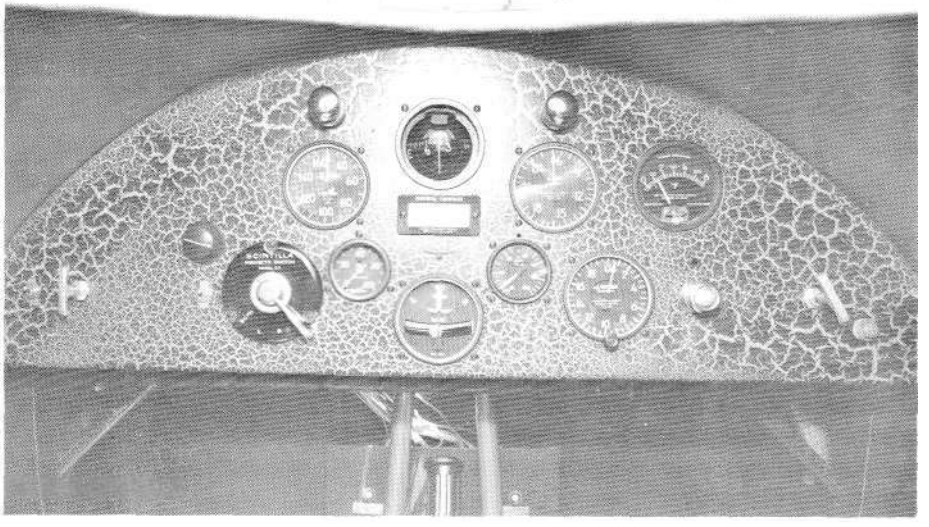
The restoration project also led to the foundation of a unique relationship and a close friendship between the author and Jeff Robinson and Garth Carrier in California. Jeff Robinson owns a 1930 Steatman C3R, NC794H, s/n 5036, which was one serial number ahead of NC799H. NC794H had served many years as a duster and had been modified extensively. Consequently, Jeff Robinson had very few original parts for it. We decided to combine our efforts, for NC799H was an airplane that was still as original as when it left the factory and Garth Carrier was a skilled mechanic and craftsman who had the knowledge, skill and facilities to make our needed parts. Jeff Robinson's business brought him to the Chicago area several times each year and each time he would load pieces and parts from NC799H into his company *Aerostar* and fly them back to Los Angeles for Garth Carrier to use as patterns for making new ones for their C3R. Over a period of several years almost every part of NC799H, except for the fuselage, wings and tail surfaces, traveled to California and back via Jeff Robinson's *Aerostar* or UPS. In return, Garth Carrier built all the items for NC799H that I did not have the capability of producing, such as a new set of landing gears, new cowling and numerous other small pieces and parts. During this time a great friendship developed and we were mutually able to assist in each other's restoration projects and out association continues today as we periodically discuss continuing maintenance and operational problems. Our mutual hope during the restorations was that someday we would be able to meet at some antique airplane function and have the two C3Rs parked side by side.

Finally after almost six years of restoration work, NC799H was once again complete and ready to fly. The first flight was made on Sunday, August 11, 1985, at Dacy Airport, Harvard, Ill., with a large crowd of interested aviation enthusiasts in attendance. The initial 30-minute flight was uneventful and a second flight was made with Nancy and Mike Lowe, who had worked diligently on the restoration, as passengers in the front cockpit. The next day was spent conducting additional test flights and on Tuesday, August 13, the first cross-country flight was made to Antique Airfield in Blakesburg, Iowa, to attend the Antique Airplane Association National Fly In. The C3R was very well received in its first public appearance and was presented with five awards including the AAA Grand Champion Trophy for 1985.



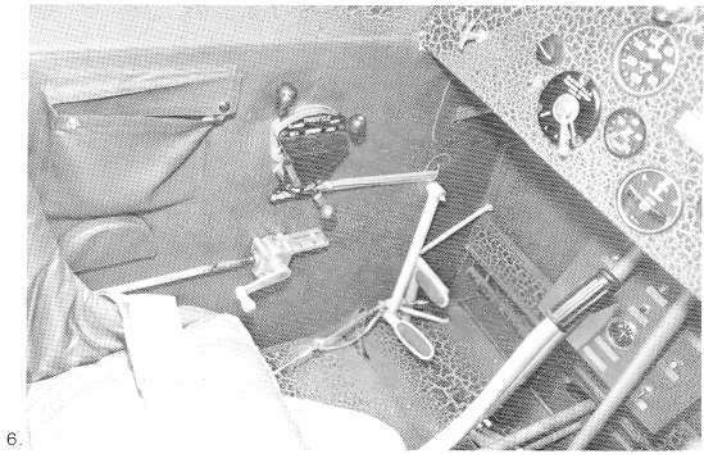






1. Front cockpit showing the entry door and center section fuel tank with a capacity of 38 gallons. Aileron push-pull rods are seen coming up through cowling behind front cockpit coaming.
2. Engine cowling details are shown. Cowling is held in place by drilled studs and clip pins.
3. Tail section of the restored NC799H show the original Stearman factory emblems that were duplicated from factory stencils found in Elwyn Heidenreich's personal papers,
4. The Lowe family which spent almost six years restoring NC799H. Nancy (on wing), Mike in front cockpit and Tom in the rear cockpit.
5. Rear cockpit instrument panel of NC799H restored to the original crackle lacquer finish.
6. Left side of rear cockpit shows the crackle lacquer finish of everything in the cockpits. Throttle quadrant is above stabilizer trim handle and brake and rudder pedals are shown. Control stick mechanism is mounted above the cockpit floorboards.
7. Instrument panel in the two-place front cockpit. Fuselage fuel tank of 28 gallons capacity is just below and forward of the instrument panel.
8. Stearman C3R, NC799H, data plate is mounted on the outside of the rear cockpit cowling.

(Kenneth D. Wilson Photos)



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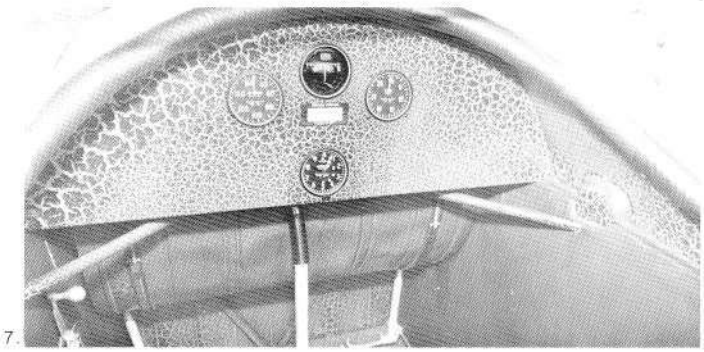

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At the time of writing this article, NC799H has been flown almost 200 hours and has had cross-country flights to Iowa, Kansas, Oklahoma, Louisiana and throughout most of Illinois. In August 1986, one of the goals established during the restoration was achieved when both NC799H and Jeff Robinson's NC794H attended the AAA National Fly In at Antique Airfield and for 10 days sat side by side in the grass parking area. Numerous formation flights were also made together during the fly in and it certainly was unique that these two airplanes with consecutive serial numbers which had last been together on the production line of the Stearman Aircraft Co. in Wichita, Kan., in late 1930 were once again side by side.

In the two years since NC799H has once again been flying, it has proved to be an extremely comfortable, dependable and fast airplane truly living up to its billing as the ''Business Speedster." It served Elwyn Heidenreich faithfully for 40 years and now 56 years after it first took to the air it continues to provide dependable service with comparable performance to many of today's light airplanes and it is a living, flying museum piece that enables today's generations to have a glimpse of the Golden Age of Aviation. Surely Lloyd C. Stearman would be proud.

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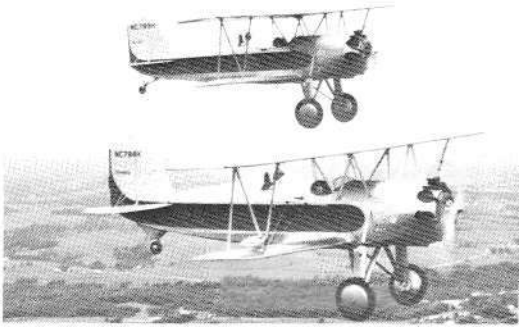
Thomas E. Lowe in flight in the C3R over Lake Geneva, Wis., in the summer of 1986. (Kenneth D.Wilson)



NC794H, with a blue stripe down the fuselage, and NC799H, with a red stripe down the fuselage, reflect two of the standard paint schemes for the C3R Business Speedsters offered by Stearman Aircraft Co. (Tom Lowe)

Stearman C3Rs fly together for the first time since they sat side by side at the Stearman Aircraft factory in Wichita in 1930. Aircraft are consecutive serial numbers, 5036 and 5037, and are NC794H, owned by Jeff Robinson, and NC799H, owned by Tom Lowe. (Bob Jesko)

STEARMAN C3R SPECIFICATIONS[61]

General Information	
Trade Name.	• Business Speedster
Make of Engine .	Wright R-760
Rated hp at 2000 rpm	. 2 4 0
Model Number	C3R
ATC Number.. .	251
Type.	OLB
Number of Seats. . . .	.3
Number of Seats as Mail	1
Fuel Capacity.	.66 gallons
Oil Capacity.	.7 gallons
Cargo Space as Mail Plane .	26 cu. ft.
Aerodynamic Data	
Span Overall	. 35 ft.
Wing Area ..	288 sq.ft.
Length Overall	24 ft. 1 1 in.
Height Overall	9 ft 8 in.
Gear Tread.	.7 ft. 6 in.
Wing Loading	9.56 lbs./sq. ft.
Power Loading	11.47 lbs./hp
Performance Data	
Maximum Speed, Full Load (Sea Level) .	133 mph
Cruising Speed, Full Load (Sea Level) 1700 rpm	110 mph
Landing Speed (Sea Level)	42 mph
Climb, Sea Level, Full Load .. .	1000ft./min.
Climb, Sea Level, Full Load in 10 Minutes	. 7625 feet
Service	.16,000 ft.
Normal Range	605 miles
Weight Data	
Weight Empty	1741 lbs.
Useful Load.	1013 lbs.
Payload	400 lbs.
Normal Gross Weight	2754 lbs.

STEARMAN C3Rs STILL IN EXISTENCE

NC8828, s/n 5001, Doyle Cotton, Tulsa, Okla.
NC8840, s/n 5003, Greg Babcock, Wapato, Wash.
NC656K, s/n 5007, R.J. McWhorter, Prosser, Wash.
NC794H, s/n 5036, Jeff Robinson, Arleta, Calif.
NC799H, s/n 5037, Tom Lowe, Crystal Lake, III.

ABOUT THE AUTHORS

This is the second collaboration on an article for the *Journal* by Tom Lowe (in the cockpit of his 1942 Stearman N2S-3) and Ken Wilson. Their first co-authored article was the "Saga of a Square Tail Stearman" which appeared in the Summer 1982 issue of the *Journal.* Each has had other articles published previously in the *Journal.* Ken Wilson's article, "The National Stearman Fly In," appeared in the Spring 1977 issue, and Tom Lowe has had several articles published including "The Flying Aces Air Circus" which received both the Willis L. Nye Award and the Contributor's Award for 1977. They have been cooperating on research into the Stearman Aircraft Co. for several years and plan to co-author a book on the history of the Stearman Co. and all the airplanes produced by it. Ken Wilson is an employee of Alcoa Aluminum Co. in Evansville, Indiana, and Tom Lowe is a pilot for United Air Lines in Chicago, Illinois.

(Photo: Kenneth D. Wilson)