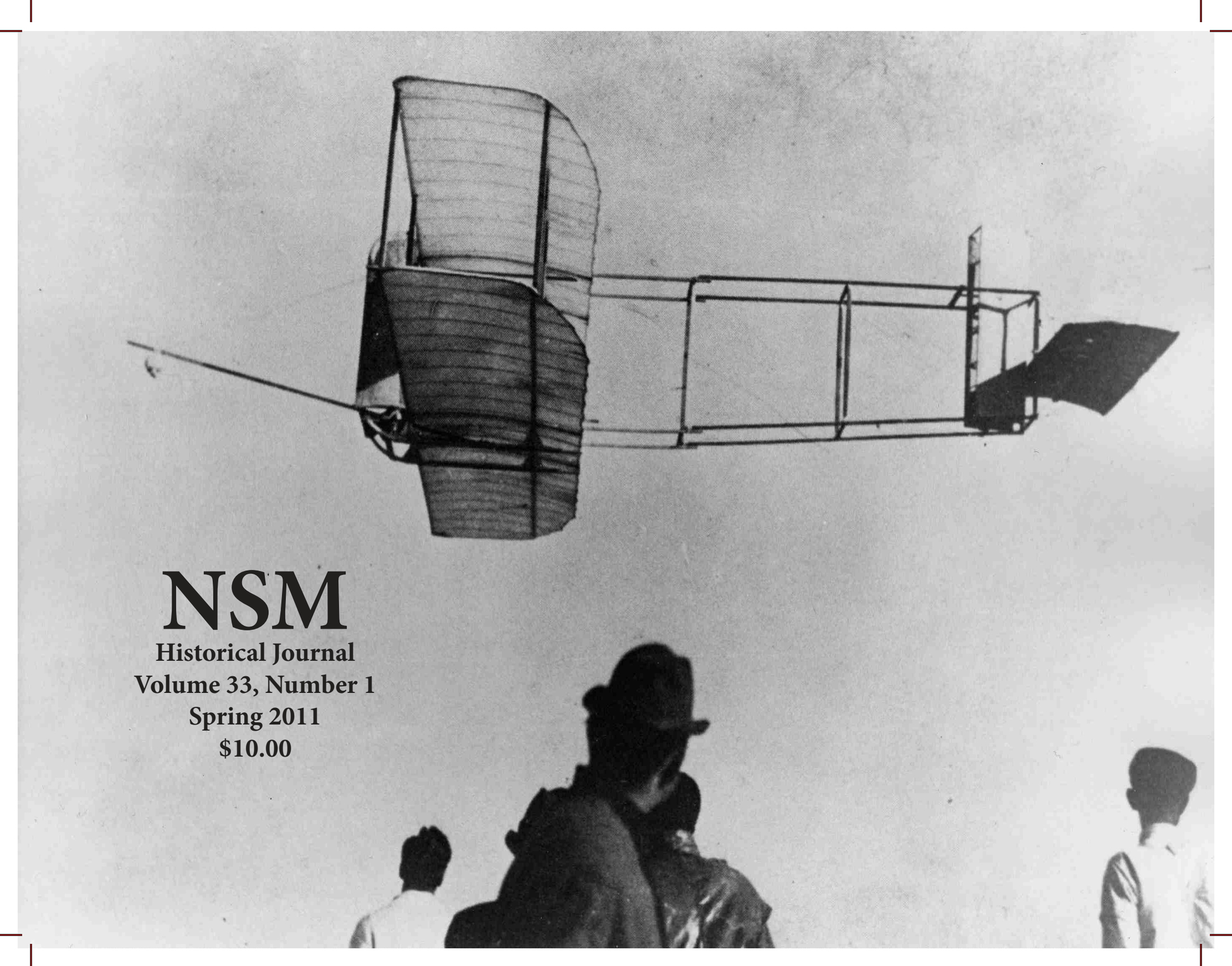

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National Soaring Museum Historical Journal
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Table of Contents

Front Cover:

Orville 1911 - "Flying in a twenty-five meter per second wind is no snap, and I can tell you that one is pretty busy with the levers," Orville wrote to a friend following the history-making 1911 expedition. Collier's magazine, November 11, 1911, "Supported by a forty-five mile gale, Orville Wright was suspended in a motionless biplane a few days ago over the crest of Kill Devil Hill. Loren, the aviator's brother, and Alexander Ogilvie, a visitor from London, held watches that ticked off history-making minutes."

Back Cover:

All alike (except in color schemes), Schweizer 1-26 Sailplanes line up at the first One-Design Sailplane Regatta at Harris Hill, National Soaring Site, Elmira, NY - September 3-5, 1955.

Fifty-four Consecutive Loops in a Waco CG-4A

It was 1944, during World War II, somehwere in Italy. What was supposed to be a routine Waco CG-4A altitude check-out, ended up being a fifty-four count looperama.

The mission started normally enough. The Waco CG-4A cargo glider called "Big Job" was towed to 10,000 feet, piloted by Flt. Off. Don Stevens, with co-pilot, 2nd Lt. Wilbur A. Brown and two observers, 1st Lts. Wm. M. Schneider and Earl H. Jarett.

But for Stevens, old habits died hard. In 1936, he held the world record for doing consecutive loops; and in another peccadillo, he flew a Franklin PS-2 through a hay stack. Noted for his bizarre stunts, NSM Journal readers may recall (2000-No 1) one of Don Stevens's earlier glider gigs. Those photos, taken in the late 1930s, show Stevens dressed as Santa Claus, landing his primary glider on a California beach and passing out presents to a gaggle of what, by modern standards, were very modestly swim-suited starlets.

A loaded CG-4A jinking around enemy fighters and ground fire or slithering into a hot LZ is one thing, but the boxy CG-4A as a looper? But then, after all, it was a check flight, wasn't it?

Stevens's fifty-four loop Italian flight was first reported in the 1944 November-December SOARING Magazine.* He and his crew in "Big Job" released at 10,000 feet over the end of the base runway. He then eased the ungainly ugly duckling into a moderate dive and hauled back on the yoke, shooting the CG-4A into a loop atitude. At that point, the old topsy-turvy gravitational de javu kicked in. Flt. Off. Stevens was back in playland.

Flt. Officers Don Stevens (left) and Stephen Solanic (right) training in Sicily.

In the SOARING article, Stevens explained that flying conditions were not ideal. The twenty-five-mile-per-hour headwind tended to force the glider away from the base. During "Big Job's" ferris wheel descent, it was necessary for the pilots to check their position frequently. The passengers kept a number count of the loops by recording them on sheets of paper. Jarrett, who had a camera, was subjected to a difficult time as Stevens was executing his vertical circles. Special rigging was necessary to hold the photographer in place while still allowing enough movement to snap the topsy-turvy maneuvers.

On Top of a Loop - "You know the old old sailplane - wheelback, head up - horizon, where art thou?

Left to right: Flt. Officer Don Stevens, 2nd Lt. Wilbur A. Brown, 1st Lt. William N. Schneider. Schneider kept track of the loops on a notebook.

* Pg. 16

Thirty-one consecutive loops were completed before the wind forced "Big Job" far enough away from the base to necessitate a change in position. Nothing if not the consummate aerialist, Stevens peeled off another fifteen loops on his way back to the field.

At 3,500 feet, pilot Stevens checked position and said, "It was difficult to keep looping in the direction we wanted to go."

Eight more loops were performed into the strengthening wind before the aerial finale took place over the runway.

There, as the glider hung on its back a scant one-hundred feet from eternity, one of the passengers gasped, "I sure hope she goes over, because if she doesn't..." Before the sentence was finished, they were around. Stevens later said, "As we leveled off, the wheels touched the ground."

The crew reported that the constant centrifugal force and the binding grip of the safety belts exerted terrific strains on the physical reserves of all on board. They expressed extreme fatigue by the end of the flight.

Taking twelve minutes of continuous looping, the CG pilots claim, "Under more favorable conditions, seventy or eighty loops could be made easily." To date, no further official or scuttlebutt information has turned up on whether the Stevens "Big Job" cargo glider record for consecutive loops was ever bested in that type.

Stevens made another solo flight in "Big Job," this time with a dog as copilot. He sat the canine copilot down in the adjacent seat and showed him how he could stick his nose out the window. According to Stevens, the dog "thought it was great stuff and really enjoyed it." Stevens released at 1,000 feet and nosed into a 150 mph dive. The pooch held on all fours to keep from sliding off the seat. As he leveled off at a bare twenty-five feet off the ground, Stevens pulled back on the yoke, shooting "Big Job" into a loop. At the top of the loop, he recalled, "I looked over at the dog and the G-forces had spread his two front paws. His jaw, as well as his big ears, left the seat and were resting on top of the windshield upside down. I had 400 feet and 60 mph at the top of the loop. As I came around and leveled off, the dog flew back in the seat, spread-eagled, with eyes as big as dollars." When he landed and stopped, the dog jumped off the seat and made a bee-line for the door. "When I opened it, he dashed out," Stevens said. "Later, I tried to get him into a glider, but he had had enough--no dice."

John H. Cochrane on "The Evolution of Contest Soaring"

The illuminating, and sometimes startling, developments in contest soaring since 1985 were reviewed by John H. Cochrane at the National Soaring Museum's 39th Annual Ralph Stanton Barnaby Lecture. It was delivered last September 2nd at the Doubletree Hotel O'Hare in Rosemont, Illinois. Covering contest soaring's evolution and revolution, Dr. Cochrane gave his projection of what the future may hold for this unique type of competition.

Initiated in 1973, the lecture series was named for Capt. Ralph Stanton Barnaby, USN (1893-1986) a Naval officer, aviator, author, sculptor, and musician. These lectures are delivered by outstanding personalities in the field on subjects relating to historic and noteworthy achievements in motorless flight.

Dr. Cochrane's Barnaby lecture may be found at http://faculty.chicagobooth.edu/john.cochrane/research/papers/barnaby.html

Darrell Collins, Historian at the Wright Brothers National Memorial, Kill Devil Hills, NC, will deliver the 40th Ralph S. Barnaby Lecture on Saturday, October 22, 2011. It will be held in the Visitors Center at the Memorial and will be part of SOARING100, an event celebrating the 100th anniversary of Orville Wright's 1911 flight that lasted nine minutes and forty-five seconds and is regarded as the first soaring flight. The subject of Collins's lecture will be "A Legacy of Greatness: The Wright Brothers At Kitty Hawk."

Gliders Changing Towplanes in Midair

The exigencies of World War II led to many surprising ideas. One of the more innovative ideas involved switching the tow of a glider from one towplane to another while still in flight. For the whole story, refer back to "Changing Horses in Mid Air" on page 12 of the 1946 May-June issue of SOARING.

A few months after the bombing of Pearl Harbor in the spring of 1942, the Navy was busily engaged with an emerging combat glider program. Capt. Ralph Barnaby's development and tests unit was at flank speed with new plans and designs at the Philadelphia Naval Aircraft Factory. A glider project was suggested that involved switching the towplane of a glider to another towplane while still in flight.

After a great deal of head-scratching and fathoms of coffee, the ever-resourceful Barnaby and his minions came up with a workable configuration that was supported by figures and sketches of the necessary equipment. By June 6, 1942, the parts had been quickly manufactured and installed on a Navy Schweizer LNS-1 (civil SGS 2-12, Army TG-3A). With Barnaby at the controls of the sailplane on tow, the first aerial towline transfer was successfully completed. During the following months, Barnaby and other pilots in his glider test group made many similar transfers. The following is a description from the SOARING story of how it worked:

"The pickup hook as shown in figure 1 was secured under the leading edge of the right wing of the tug as shown in figure 2. From the eye of the hook, a towing pendant ran to the tow fitting at the tail of the tow plane. Actually, the pendant ran in along the upper side of the wing and back along the bottom of the fuselage, held in place by masking tape. A 'plug' or stopper was installed at the tug end of the towline, right next to the ring.

The sailplane was towed aloft by one towplane and released while flying in the high position at 3,000 feet altitude by tripping the towline at the towplane end, leaving the sailplane in free flight with its towline trailing aft and below.

Meeting up at a pre-designated spot, the glider pilot places his ship in straight flight at a pre-determined air speed. The pickup plane, approaching from the rear, lays his right wing on the towline, about two-thirds of its length behind the glider, and kicking a slight amount of left rudder, slides off to the left, catching the towline in the hook. As the pickup plane eases around to the left and out in front of the sailplane, the towline slides through the hook until the stopper fetches up against it, stripping the hook from its clips and ripping the masking tape from its securing. The hook-up is now complete.

With the free end of the towline in flight and whipping around, it was found advisable to tie an "Irish pennant," consisting of a twenty-foot length of rope, to the ring at the stopper end to stabilize it, thus preventing it from slipping around as it slides into the hook.

Barnaby's group further postulated that by having two tow fittings on the sailplane, the second of which is fastened to a spare towline suitably secured so that it could be broken out and trailed by the sailplane pilot, it would be unnecessary for him to break it out until he desired to be picked up. Again, if the towplane is also equipped with two tow fittings, it would be possible for it to pick up the sailplane from which it had previously released.

"It is believed that this concept would make possible the exploration of soaring possibilities in spots where landing conditions are unsatisfactory (over water thermals, for instance), a topic about which much has been written and discussed.

"With the dual tow fitting on the glider, it is also practical to shift the tow without the necessity of the glider being 'on its own' at all. When it is desired to shift tow, the glider pilot trails his second tow line.

"The towplane hooks on, moves around in front of the proper side, and moves slowly ahead taking up on the slack until he is taking the towing load. Then, the glider pilot trips the first towline and the transfer is complete."

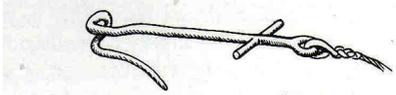

FIG. 1 THE PICK-UP HOOK.

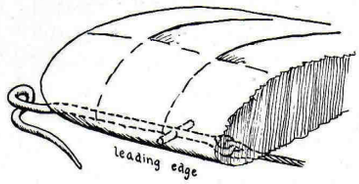

FIG 2 INSTALLATION OF THE HOOK AT THE WING TIP

FIG 3 THE STOPPER INSTALLED ON THE TOW-LINE

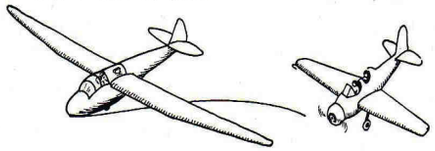

FIG 4 APPROACHING FOR THE PICK-UP

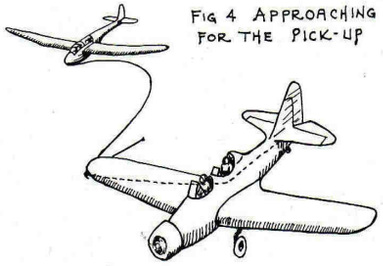

FIG 5 TAKING UP THE SLACK

Art Schultz, the ABC Sailplane and His Legacy

The Arthur B. Schultz (US Soaring Hall of Fame 1957) ABC sailplane never set any altitude, distance or speed records and may not even have been piloted by some of the soaring luminaries; so why does this ship remain fixed in sailplane lore? To this day, it's a sailplane that seems to remain in the consciousness of many of the rememberers of that era.

The ABC sailplane was first prize winner in a field of seven of the Warren E. Eaton Memorial Sailplane Design Competition at the 1937 Eighth Annual National Soaring Contest held in Elmira, NY. The competition was so named by Eaton's widow in honor of her late husband, one of the founders and first president of the Soaring Society of America.

The purpose of the design contest which drew seven entrants, was to encourage the development of new American gliders and sailplanes.

Bases for rating

- **Contest points won using the point award system - 35%**
- **Stability, manueuverability, controllability - 5%**
- **Adaptability to home construction - 25%**
- **Completeness of drawings and analysis - 10%**
- **New and unusual features - 10%**
- **Ease of assembling, disassembling, and trailering - 10%**
- **Workmanship on ship at the contest - 5%**

Art Schultz and his 1937 Eaton Design Award winning ABC Sailplane at Harris Hill. Photo by: Fred Loomis

The ABC was designed as a utility sailplane and first flew over the sand dunes of Lake Michigan. Though its flight characteristics (with a glide angle of 19:1) approached those of high performance sailplanes, its construction was like that of a utility glider. Schultz's ABC was a development of a simpler glider that he had designed three years earlier. The ABC won the $700 first prize in the Eaton Contest due largely to its sound design and ease of construction. Classed with German designs, its performance was about the same as the Goppingen Wolf.* All of the flights were made from winch tows because of the contest limitations. The much higher performing Ross-Stephens RS-1 placed second ($500) due to its complicated construction and emphasis on ground tow capability. Third place ($300) went to the world's first all-metal glider, the pod and boom Schweizer SGU 1-6.**

The ABC got its name from the first letters of the American Business Club, of which Schultz was a member. It was built in Lawrence Tech's workshops by Schultz, John Nowak, Dallas Wise, and Jack Laister, who did all the welding.*

The ABC was not designed for fast cross-country performance, but more for light slope winds and weak thermals. "Its capacity for demonstrating this was very well-shown at the 1937 National Contest."** The ABC's aerobatic performances at that event also revealed its stability, maneuverability, and controlability. It was looped, spun, and otherwise tested to the satisfaction of the Bureau of Air Commerce inspector. It had no trace of flutter in a 90 mph dive and could steeply spiral to take advantage of smaller thermals. The designer's Silver C flight of twenty-seven miles to Binghamton, NY was the longest flight of that contest day. On another contest day, the ABC eeked out a fifteen mile flight in weak thermals to Beaver Dams, NY after all the higher performing sailplanes were down.

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* "The ABC Sailplane". SOARING. May 1937. Pg 4.

** "Wings Like Eagles". Paul A. Schweizer. Pg 55.

* "U.S. Military Training Gliders". Raul Blacksten. TG-16 Schultz.

* "Wings Like Eagles". Paul A. Schweizer. Pg 55.

One of the significant features of the ABC sailplane was its ease of construction for home builders. The fuselage, controls, surfaces, and struts were all fabric-covered steel tubing. The wing layout was two wooden spars, plywood and also fabric-covered. A folding tail and adjustable seat and stabilizer all tended to make it a really utilitarian sailplane. The control system was a wheel operating the ailerons through chain, sprocket, and cables. A push/pull stick operated the elevator, with pedals and cables operating the rudder.* "It can be removed from the trailer, assembled, and ready to fly in ten minutes."**

The practicability of the ABC's design was shown on the way to the 1937 Midwest Soaring Contest. At a gas stop on the way, the ship's tail surfaces and the rear end of the fuselage were severely damaged due to ramming into a low obstruction. "After a few hours of work opening up the fabric, straightening out the tubing, and closing up again, the ship was in the air soaring the same day the damage occurred. Had this happened to an all-plywood ship, it would probably have taken days to make repairs," Schultz wrote.***

* "U.S. Military Training Gliders". TG-16 Schultz. Raul Blacksten.

** "The ABC Sailplane" Promotional Report. Art Schultz. Pg 2.

*** "U.S. Military Training Gliders". TG-16 Schultz. Raul Blacksten.

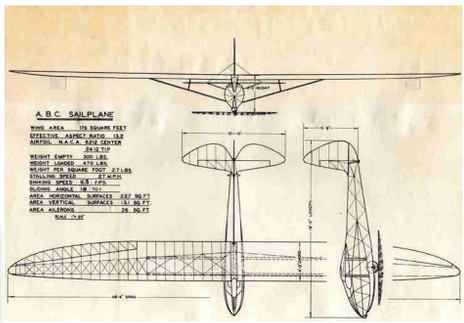
During World War II, two ABCs were pressed into service as TG-16s (Training Glider-16). "One of these still exists and is awaiting restoration at Yanks Air Museum in Chino, California."*

"The ground-bound Jeep, most versatile of all Army get-abouts, is used to lug gliders from landing places to take-off points at the Mobile, Alabama School. Fieldman Cecil McAdams (driving Jeep) brings one in." The Schultz ABC was sold to the USAA as a trainer in 1940 or 1941.

Schultz followed the ABC with the Midwest Utility years later in 1945. The fuselage was welded steel and was designed for use with both Utility and Sailplane wings. The same aileron control connections were used and an extra large attachment point was provided for the single spar of the sailplane wing. Due to wartime shortages, the Midwest could only be obtained under priority. Schultz said that the manufacturer would be all set to produce completed gliders and kits as soon as the material situation permitted.

Midwest Sailplane at Point Betsy near Frankfort, Michigan.
Photo by Art Schultz

* "U.S. Military Training Gliders". TG-16 Schultz. Raul Blacksten.



In 1954, Schultz came up with a more advanced design he called the "Nucleon." With a glide ratio of 22:1, it had a strut-supported laminar airfoils. The unusual wing profile showed that the wings were completely plywood-covered except for the ailerons and intermediate flaps. Under the plywood, except on the inboard flaps, was a supporting layer of styrofoam to preserve the airfoil contour.*

Arthur B. Schultz was one of the earliest and staunchest supporters of soaring during its formative years in this country. He graduated from the University of Michigan in 1927 with a Bachelor of Science degree in aeronautical engineering. For many years, he served as the Treasurer of the Soaring Society of America. During the war years and up until 1947, Schultz was chief engineer at All American Aviation, Inc.While there, he played a key role in the design and building of glider and personnel pickup units. As Senior Mechanical Engineer and Group Leader at the Reactor Engine Division of the Argonne National Laboratory, he still maintained his interest in soaring and planned for a more active part. He died in 1955 after an automobile accident and subsequent heart attack.**

* SOARING. January-February 1955, Pgs 3, 6, 7, and 24.

** SOARING. Obituary. July-August 1955. Pg. 16.

Jay Buxton's 1936 Two-place TRANSPORTER Sailplane

Jay Buxton's two-place Transporter set national two-place sailplane endurance, altitude, and distance records at the 1936 Annual National Soaring Contest. The February 1937 edition of the (then) newly established SOARING magazine called it perhaps the contest's most outstanding entry.

The article noted that preceding national contests had several multi-place ships ranging from two-seaters to the Gross F-5, capable of carrying four. At that time, there were very good aerodynamic and economic reasons for designing and building multi-place gliders. Aside from advancements in sailplane performance, a big monetary inducement was the ability to carry paying passengers and introduce them to the thrills of motorless flight. Other advantages were dual: control flight instruction, and the practicability of carrying an observer who would be free to make meteorological calculations without being concerned with the actual piloting. This led to many new developments in two-place sailplane design and merchandising.

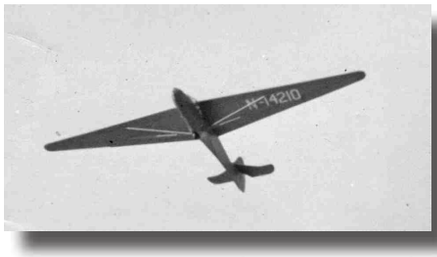
Other American designers/builders began thinking 'two-place', including Frank Gross with his 1930 Sky Ghost, Stan Smith in 1937 with his innovative side-by-side seat 'City of Utica', and the Schweizer brothers with their 1938 Schweizer 2-8 (later, military TG-2).

William Hawley Bowlus built his 1939 Model BA-102 (an expansion of the successful Model BA-100 pod and boom Baby Bowlus layout). Simultaneously, German high-performance ships, such as the 1935 Kranach D-1 306 and later, the 1938 side-by-side seat Goppingen K-4 Goevier were developed.

Designed and built by Jay Buxton (1887-1942) of Hawthorne, CA, the Transporter's specifications were:*

- Span - 52.3 feet
- Length - 26.5 feet
- Wing area - 240 sq. feet
- Aspect ratio - 1:11.4
- Weight empty - 430 pounds
- Gross weight - 725 pounds
- Sinking speed - 2.5 feet/second
- Gliding angle (L/D) - 20:1

The Transporter was at first adapted to mounting an engine above the cabin, but this idea was later discarded and the ship was used only for gliding.



Buxton Transporter showing wing and elevator/stabalizer planforms

* *SOARING. July 1937. Pg. 8.*

Buxton learned hard work on his father's farm near Minneapolis, MN. His mechanical career began with his brother, who owned a garage in California and was a well-known auto racing driver. Jay's adventurous nature led him in turn from steamboating in Mississippi to gold mining in California, and later to shipyards in the South Seas Islands. He returned to California in 1929, this time to raise oranges, and became interested in building gliders (first hang-type then primary gliders).*

The first two-place glider he built was called 'Sloanlo'. In 1936, with the help of his daughter, Lucretia, he built the Transporter. Lucretia became a proficient glider pilot and held an unofficial record at the 1936 Elmira National Meet. Buxton was a vice president of the Soaring Society of America and served as an official at several major meets. He came to Pratt Read in 1941 and was one of the six founders of the company's Aeronautical Division.

Handles on side serve as tow hooks for "Y" shaped tow rope

* *"The Leading Edge - a News Assembler". The Publication of the Aeronautical Division of Pratt Read Company. Deep River, CT.*

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Buxton Two-Place Motor Glider Conversion

In later years (1996), Leon (Pete) A. Bonotaux explained in a written account the eventual demise of the Transporter. Buxton, who was then living in Inglewood, CA, brought the Transporter to the 1939 meet in Elmira.

A young gal was given a ride in it with a good pilot. But the steep climb of the winch takeoff scared her badly and she jammed her feet into the controls (behind the pilot's seat), robbing the pilot of control. He turned toward the tree line and crashed in the edge of the field." Bonotaux was driving the contest retreive Jeep and was first at the scene. He wrote, "The pilot was okay except for a whip lash. The girl passenger in the back seat - basically okay, but was upside down and literally scared stiff, like dead stiff! But with the help of a bystander, we were able to push her up a bit to release the safety belt then ease her out the side door. She was okay, but unable to talk."

The next day, Buxton gave Bonotaux the wreck. "He didn't want to haul it back to California all busted up and he was in the process of designing a new three-place tandem glider," Bonotaux said.

Bonotaux's story goes on from there: "Weeks later, Chet Decker, Carton Schaub, and Felix Chardon, of our soaring gang, towed the cracked up glider to my sister's barn near Doylestown, PA until I could begin reconstruction."

Bonotaux got a job in Miami, FL, so they left the ship in his brother-in-law's barn. Shortly after, his brother-in-law and sister sold the farm "with an OK from the new owners that we would eventually pick up the glider. Then the new owners were killed in a horrific automobile accident."

After Miami, Bonotaux was offered a better job by Felix Chardon on a cargo glider project in Virginia. "Before the year was out, the cargo glider was cancelled and we were on a train going to work on Howard Hughes's huge "Spruce Goose" (HK Hercules)...And so it went all through the war."

"I was never able to contact the new owners. The farm was sold. The glider was most likely thrown out. I never did get to claim the glider, repair, and fly it. It was a very comfortable ship with nice performance too...But it was not meant to be - MINE."

Jay Buxton in his Transporter, 1939

From the Archives:

The PWS 101

A Polish sailplane of the latest type, "PWS-101," launched at the international competitions last July. Photo courtesy Aero Club of Germany.

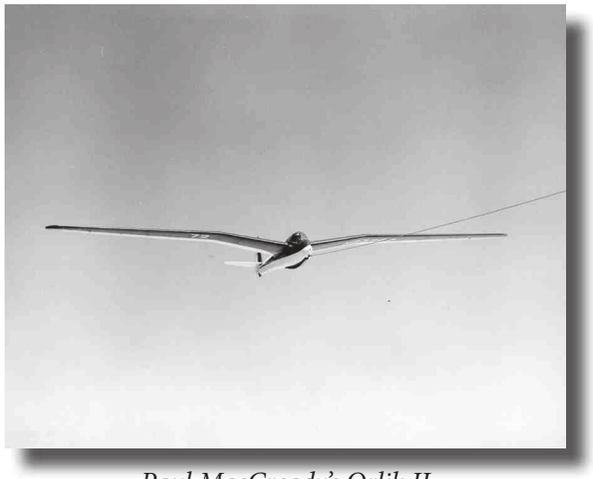
Photos of the PWS 101 (Podlaska Wytwornia Samolotow) are often mistaken for pictures of the Polish Olympic Orlik, Paul MacCready's Orlik II, and even the German DFS Reiher, due to similarities in the gull wing planform, cockpit arrangement, and fuselage profile.*

Waclaw Czerwinski designed the PWS 101 and produced two for the International Competition in 1937. They were equal to the best German sailplanes at that time. On the first day of the meet, pilot Mynarski was one of three to achieve a 351 km flight to Hamburg. The other two were Hanna Reitch in the new Reiher and Heini Dittmar in the Fafnir, the contest's eventual champion.**

Subsequently, several more PWS 101s were built in Poland. In 1938, Thadeuscz Gora soared 577.8 km, which was a Polish national record, the longest sailplane flight in Europe for that year and the second longest sailplane flight ever. The longest was 653 km by Victor Rastourgyev of the USSR the previous year.***

Czerwinski followed the 101 with the PWS 102 Rekin (Shark) in 1939. Two prototypes were built.

In 1939, the German and Russian invasions of Poland brought all gliding to a halt and by the war's end in 1945, all but a few sailplanes had been destroyed.



Paul MacCready's Orlik II
Photo by Henry M. Dittner

NSM ARCHIVAL COLLECTION

The National Soaring Museum houses the official archive of the Soaring Society of America.

Research fees are at an hourly rate and NSM Members receive a 50% discount.

Fees for digital images at discretion of the Director.

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* The Reiher was finished in time for the 1937 Wasserkuppe soaring competitions in which Hanna Reitch finished sixth overall in spire of some control difficulties. The Orlik II, built in 1938, was sent to the New York World's Fair for display at the Polish Pavilion. See "In History Orlik II" by Gary Fogel. Sailplane and Electric Modeler, Winter 1997. Page 16.

** "The PWS 101". The World's Vintage Sailplanes 1908-1945. Martin Simmons. Pg. 150.

*** Ibid 2.

The Many Faces of the Laister-Kauffmann TG-4

Peter M. Bowers wrote in his February 1964 SOARING magazine INTEREST GLIDERS column, "The rarest plane in American skies today is an unmodified Laister-Kauffman TG-4." The TG-4 was the military version of the the Laister-Kauffmann 10A.

Practically all of the 153 L-K 10s built for the Army in 1942 and 1943 and some commercial 10Bs were modified. Most of the accompanying photos and cut-lines are suggested by Mr. Bowers's article and the late Jack Laister's memorabilia.

In 1937, Jack Laister was a student at the Lawrence Institute of Technology and was asked by the Institute's president, George Lawrence, to develop a project for the glider club.

1937 Harris Hill - Lawrence Tech Glider designed by Jack Laister

Working from an earlier design, Laister and two fellow students built a gull wing sailplane that they called "Yankee Doodle."

In 1939, "Yankee Doodle" represented the US in France and scored high in the aerobatic competition.

Its rugged welded steel tube, fabric-covered fuselage differed from other wooden high performance types at that time. Laister had no organization, but John Kauffman, a St. Louis stockbroker, raised $10,000 - enough to start the Laister-Kauffmann Aircraft Corporation.*

Laister reconfigured the single-place basic design into a two-seat pilot trainer. These two-seaters (TGs) prepared pilots to transition to the big cargo and assault gliders (CGs) used in every theater where the Americans and their allies fought.

In order to simplify manufacture, Laister eliminated the gull wing in favor a straight dihedral one; he deleted the smooth contour nose and made a few other changes to comply with Army Air Corps specifications. The Army ordered three L-K 10s, re-designating them XTG-4s in October of 1941. The first glider was delivered to Wright Field, Ohio for static testing in December, remarkably five days ahead of schedule.

The Laister-Kauffmann XTG-4

* Laister was president and CEO, Kauffmann was treasurer, Murray Whitehead was in charge of industrial relations, and Howard Blossom, in whose honor a National Soaring Museum gallery is named, was quality control manager.

Specifications:

- **Span - 50 feet**
- **Length - 21 feet 3 inches**
- **Wing area - 166 square feet**
- **Aspect ratio - 15.06**
- **L/D - 23:1**
- **Empty weight - 475 pounds**
- **Gross weight - 875 pounds**
- **Wing loading - 5.27 pounds**
- **Stall speed - 37.4 MPH**
- **Max speed - 126 MPH**
- **Sink speed - 3.2 feet per second**

Its first flight was in February 1942. One hundred and fifteen were ordered as TG4As. A single commercially-built model was bought as a TG-4B followed by three L-K 10Bs after the military order was completed.

A shift in the training procedures occurred from the use of soaring, sailplane type TGs to de-engined small former power planes such as Aeroncas (TG-5-AE), Taylorcraft (TG-6), and Piper (TG-8). These later types were judged to have nearer the flight conditions that pilots would face with the large tactical combat gliders.

Taylorcraft TG-6

In the middle of WWII, sailplane type training gliders (TG-4s) were declared surplus and practically all became available to the soaring public. Very little reworking was required on the 10A/TG-4A for civilian certification. Bowers wrote, "these ships were snapped up by the soaring activity and formed the most numerous single American model until it was passed by the Schweizer 1-26 kit model in 1958-59. That was fifteen years after the L-K first became available."

Almost immediately, the modifications began.

The Civil Aviation Authority (CAA) went along with most changes as long as they did not affect the basic structure or aerodynamics adversely. These changes included rounding out the windshield like the original Lawrence Tech, into various "bunny nose" contours.

Among the most extensive modification was "flat-topping."

Bowers described it as having the entire superstructure above the upper longerons removed. The pilot's head protruded above the structure and was enclosed in a blown or molded plexiglass bubble. The "flat top" treatment was of little benefit unless accompanied by improvements in nose contours and wing root configuration. Bowers noticed that some zealots modified their L-Ks with structural deviations so extensive that the ships were forced into the "experimental" category.

At Mississippi State College, Dr. August Raspet thoroughly tested the original flat tops and showed the exact gains in the hands of skilled pilots. Bowers said, "Observations in the field indicated that most of the benefits were psychological rather than measurable increases in performance. Following contest reports have not shown any consistent advantage of the "flat tops" over the bunny noses." Further, "whatever performance difference between a standard and modified model, superior piloting can overcome it. In fact, some of the modifications have resulted in poorer overall performance because of sloppy work or pilot inefficiency induced by restricted headroom and general discomfort."

Occasionally, a restored Laister-Kauffmann 4A pops up at a vintage sailplane meet, but most survivors are in museums. The National Soaring Museum has an L-K (N549141 s/n 60) in military garb on exhibit in its Johnson gallery.

The Funk Brothers and the Development of the CG-2 Two-Seater

The Funk Brothers and their CG-2 with sheel conversion, ready for trailering.

Twin brothers Joe and Howard Funk were caught up in a burst of enthusiasm to fly. Interest in powered and motorless flight generated by Lindbergh's 1927 trans-Atlantic flight and other globe-hopping sky blazers was at its height in the mid-thirties. During that time Akron, Ohio looked like it would become the new Detroit of the airplane industry. Akron was the home of the Goodyear Zeppelin Company, The B.F. Goodrich Company, Baker-McMillan gliders, the Gross Sky Ghost, and later, the Funk twins' infant Akron Aircraft Company.

According to "It's a Funk," a book by F. Dale Beach, the Funk twins (born 1910) were blessed with inquisitive minds and an abundance of mechanical ability. They constantly worked on mechanical problems, paying minimal attention to academia. In his book, Beach said that it took them ten years to complete eight grades of school, though eventually, they both attained engineering degrees.

They rebuilt a derelict Model T Ford, then a carbon-arc fired searchlight (this project almost burned down the house from over-heated wires, but when the device was pointed skyward, it was reported that the beam could be seen five miles away across East Akron). Any project that caught their mechanical or electrical curiosity—other than school—seemed ripe for investigation.

The focal point for Joe and Howard's dreams came in 1926, when they scraped enough money together for a ride in a barely airworthy, open-cockpit Waco 9 biplane. They became mesmerized by the magic and challenge of flight.

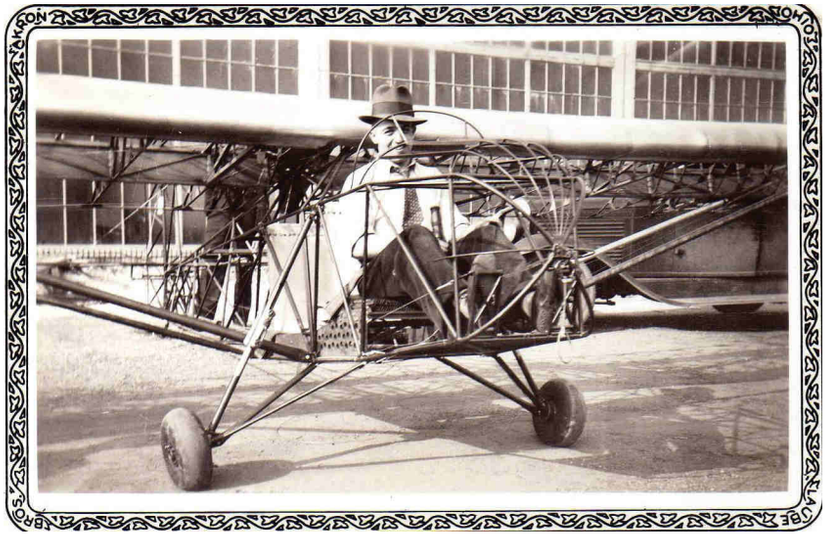
After that experience, their goal was to someday fly an airplane of their own. The newsreels of Charles and Anne Morrow Lindbergh's California flights in a Hawley Bowlus glider deflected their attention to gliders as the quickest, most inexpensive, and practical step toward powered flight.

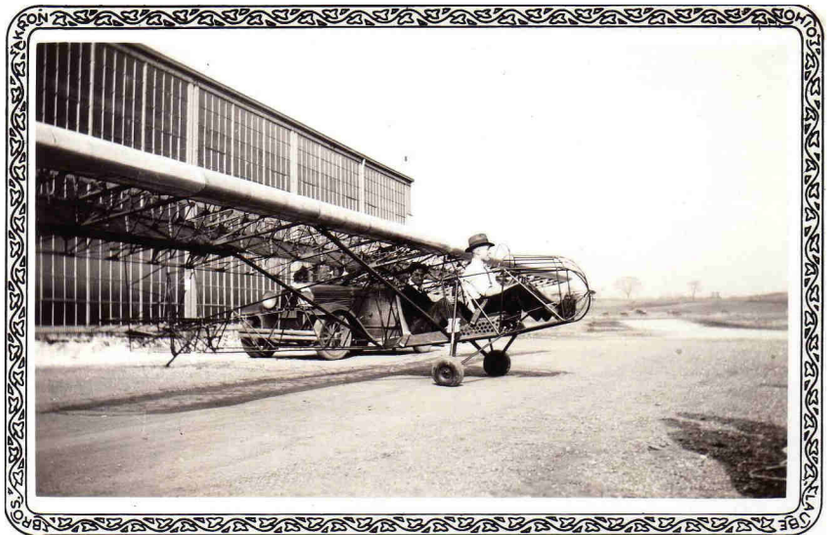
So in mid-1929, the pair joined the Akron Glider Club. The Club owned two gliders: an Alfaro primary and a Baker-McMillan secondary.

Their instructor was Frank White, whose method of instruction was somewhat strange. He had never flown a glider or anything else; he wasn't even a pilot, but he had that innate ability of passing his understanding to others.

Joe and Howard would take turns on the Club's glider mock-up while White explained the workings of the control system in detail: how to pick up a wing, how to prevent a stall, etc. He made sure that the twins had a thorough understanding of the procedures.

Then came the ground training, where the primary glider would be bungee-snapped three feet off the ground with White running alongside and shouting instructions through a megaphone. The launch routine was to tie the glider's tail to a stake. A long three-quarter inch rubber shock cord was then attached to the nose of the glider. Six men positioned at the extremities on either side of the glider put tension on the cord. At the word from the instructor, everyone at the extremities heaved as hard as they could as they ran forward. As the tension increased, the man at the stake would cut the tail rope, slinging the glider into the air at a breath-taking angle.





The twins quickly mastered the technique as explained (but not demonstrated) by White and went on to solo. At that point, Beach wrote, "They immediately saw the need for a two-place glider, where instructions could be given in the plane. This would save a lot of repair time—and coincidentally, retain more students."

Sometimes, it would be a beautiful gliding day and twelve of the Akron clubbies would not be available to handle the launch. With their usual resourcefulness, Joe and Howard came up with a unique launching idea: drive a stake in the ground, run the bungee cord to the nose of the glider, then tie the tail to the front bumper of the truck. With Joe in the truck, slowly backing up, and someone walking the Alfaro's wing, the truck added tension to the line and stretched it to the starting point. The rope was cut and the tiny primary with Howard at the controls whooshed into the air.

The boys accidentally discovered another method of launching during the winter of 1929-30. While towing the Baker-McMillan club glider with the truck into launch position, Howard must have driven a little too fast. Joe, walking the wing, became aware that all of a sudden, the glider was a foot or two off the ground. All the club members took a turn at this new method—the glider being slightly off the ground at first, then ten feet, then twenty-five.

At that point, the twins, who by that time qualified on that ship, hooked a 300-foot line to the truck with the glider at the other end—and the glider auto-tow was born.

In his book, Beach said that they had never heard of anyone using this method of launch before. "They may be among the first, if not the first, to use this method." Later, Howard discovered that using one-sixteenth of an inch of semi-steel bed spring wire from a local mattress factory, they could string 1,500 feet of wire from the glider to an old, used Hudson and this scheme could tow the aircraft up to an altitude of 1,000 feet. There was a small parachute attached to the end of the tow-line so that when the glider released, the chute would deploy and keep the steel line from coiling up.

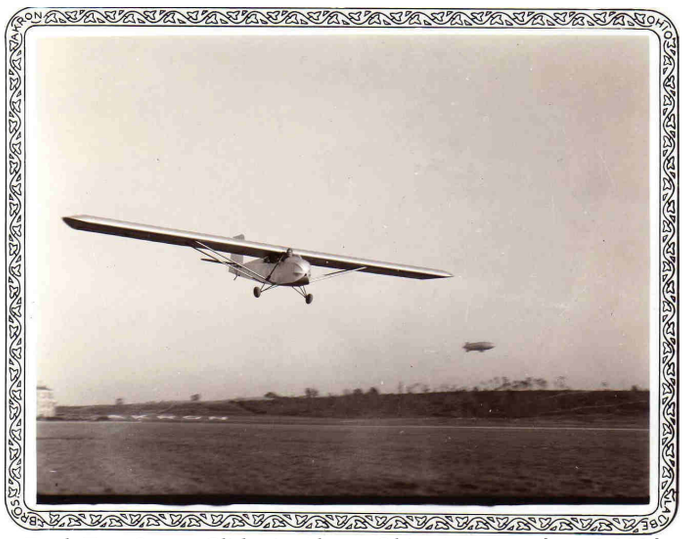
Both of them logged well over five hundred flights using this method. They sometimes scrounged an occasional aero-tow. Beach said that, "…on several occasions, the brothers even talked the Goodyear blimp people into towing them aloft." Active members of the Akron club included the noted glider-man Dr. Wolfgang Klemperer, along with Dick Randolph, Bill Bodenlose, Dave Boone and Bruce Helvie. They and the Funk twins flew the Baker McMillan extensively through the summer of 1930-31.

In a strong diversionary move, their father, Orbin, owner of a string of five fresh produce and poultry stores, presented the duo with a small store. It was about one hundred feet long and about twenty feet wide. Perfect! The twins saw the acquisition of the store as a means of supporting and financing their dreams of getting into the air, first building a glider, and finally, a powered airplane. The back part was quickly converted into a workshop, while the front half continued to be used for the produce and poultry business. For most of the year, 300 East Exchange Street, Akron, Ohio was an aviation laboratory—a place for club glider repair and construction.

After three years of visualizing what the glider should be, the brothers started to sketch and build the ideal glider. It would be a large two-place with tandem seating, a two-wheel landing gear and a thick wing with USA 35A airfoil. It would have a folding tail surface and special brackets that attached to the front and rear of the fuselage to hold the wings. The G-2 was no competition for the advanced German machines. It had not been designed with much streamlining in mind, and while not a soaring plane, it could handle ridge soaring very well.

The glider (and later, power plane) fuselages were welded in the back of the store. Wing ribs were constructed and then assembled on make-shift workbenches laid out on top of chicken coops. During the busy holiday season or on weekends, parts and assemblies were hung by ropes from the ceiling or tucked away along the side. On Mondays, they were back on the benches or on the floor for easy access.

Joe and Howard believed that a lot of people would drop in to see what was going on, especially the young ones, then wind up buying a chicken or some vegetables - good



Funk Two-Seater Glider in Akron, Ohio. Auto-tow from 2,000ft rope up to 1,500ft altitude. Training with dual controls.

for business! . Akron Beacon journal columnist Ken Nichols once wrote, "Wags said that the Funk brothers should know a lot about wings, they were "chicken pluckers."

Work progressed slowly because of other activities, but finally, on June 26, 1933, the G-2 was completed and made its maiden flight. Beach said that it was everything they hoped for. "They immediately secured the tail skid to their pickup truck and headed to the Elmira National Gliding Contest in Elmira, New York."

In his book, "Wings Like Eagles," Paul A. Schweizer mentions that the first American two-place glider was Dr. Frank Gross's "Sky Ghost" and it flew in the 1932 Nationals at Elmira. The following year, the Funk G-2 and Richard duPont's new two-place gliders were entered. "It demonstrated that two could soar as easily as one," Paul Schweizer wrote. He added that "the Funk two-place was unique in that it had provision for attaching automotive wheels to the landing gear and racks to hold the wings so that it could be towed tail first behind an auto. No trailer was required." The innovative Funk CG-2 two-place glider was designed for competition as well as for training (not to be confused with the Schweizer TG-2, a wartime military version of the Schweizer SGS 2-8).

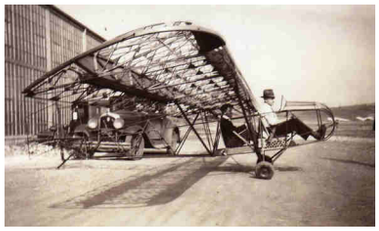
The official Gliding and Soaring 1933 Bulletin #3 reporting on the 1933 contest said that the Haller Trophy for best duration flight for two-place craft was awarded to the Funk Brothers flying their G-2.

Joe suggested that they had already built a successful glider and it shouldn't be that much harder to build a power plane similar to it. Thus, 1934 saw completion of the first of a line of Funk power planes. In 1941, the Akron Aircraft Corporation was sold to Bill and Ray Jensen of Coffeyville, Kansas—but that's another story.

After the glider, they designed a power plane in 1934: the Funk Model B. It was drawn up on brown wrapping paper and built mostly from junk parts. The Funk Model B was powered by a Ford Model A engine with a recast block in aluminum to save weight. Howard later said that the Model B was "unreliable as hell." One day, it lost its guts over downtown Detroit. He glided across the border to a landing in Canada and was advised by a friendly Canadian DeHaviland Moth pilot to alert Customs and stand away from their Model B airplane "so nobody will suspect you of smuggling or something."

Their Akron Aircraft Company eventually manufactured and sold "about 465," Joe and Howard agreed, "from Akron to Brazil." In 1941, the Funks sold the assets of the Akron Aircraft Company to Bill and Ray Jensen of Coffeyville, Kansas.

In order to be honored as an aviation pioneer by the Smithsonian Institution National Air and Space Museum, one's accomplishments must be significant. It is even more exceptional for twins to be recognized together, as were Joe and Howard Funk, for their accomplishments in the years prior to 1949.



Funk Two-Seater, ready for take off in Elmira, NY

Cartoonist Zack Mosley and "Smilin' Jack"

Zack Mosley (left) with Murray Waters in front of Mosley's new Rearwin Cloudster.
Photo by Fred Loomis

Those of us who were enthralled by the romance of flight in the 1930s, 40s, and 50s, remember pouring through the Sunday comic section for the latest installment of our favorite aero-adventurer, "Smilin' Jack" by Zack Mosley. What most of us didn't realize is that he chose actual aviation sites such as Elmira's Harris Hill for his cartooning scenarios. He drew real life planes and gliders whose names you could identify. Aircraft recognition was important to "one-upmanship" conversations with other "Smilin' Jack" aficionados. Not only that, but he interwove those neat scenarios of bad guys and good guys. Who could forget the "Claw," "Toemain," "Hellcat Cindy" the incendiary blonde, "Downwind," and "Fat Stuff," with the ever-popping button? And there was always a threatened, curvaceous "Lil Deicer" who needed rescuing. Mosely got his ideas for the strip from the first-hand experience at the various aviation-related venues that he constantly visited. Gliderports, metropolitan airfields, air races, balloon fests—all events were filed away and interspersed into adventure scenarios featuring the dashing Smilin' Jack.

Mosley popped in at both the 1940 (11th) and 1941 (12th) National Soaring Meets in Elmira, where photographer Fred Loomis snapped some of these accompanying photographs that appeared in the "Elmira Sunday Telegram" newspaper stories. After the 1941 Nationals, the Mosleys were off on an aviation tour that would take them to Buffalo, Detroit, Chattanooga, and the All-Dixie Airshow. At some point, his 87-year-old grandmother took her first airplane ride.

According to the 1941 article, letters from the cartoonist's fans indicated that interest in motorless flight was becoming widespread. "Many still think that soaring in gliders is a figment of my imagination," the cartoonist said. "They just can't get the idea that a craft without a motor can fly. However, when I compare a thermal to an escalator and point out that you can walk down on an escalator and still be carried upward, the doubtful ones begin to see the light."

The Mosleys had a new Rearwin Cloudster.* The newspaper article described the ship as "a flying studio," because Zack carried all his research, drawing board, and other materials with him to use when grounded by bad weather. In the article, Mosley said that upon landing at airports around the country, his plane received considerable attention because of a painted figure of Smilin' Jack on the tail. Also, figures of Joy and Dixie, the two curvaceous cartoon beauties were painted on its wings. These, Mosley called "his deicers." "Because of this," he said, "The plane holds the distinction of being the only Rearwin Cloudster in the country equipped with de-icers." Zack Terrell Mosley's love of airplanes dated back to his childhood in Hickory, Oklahoma, where he was born in 1906, a year before that Indian Territory became a state. The sight of a cracked-up plane when he was just seven years old fired his imagination. When an Army Curtiss Jenny landed nearby four years later,

* The Rearwin Cloudster was a two-three seat light cabin monoplane with a 120 hp Ken Royce engine

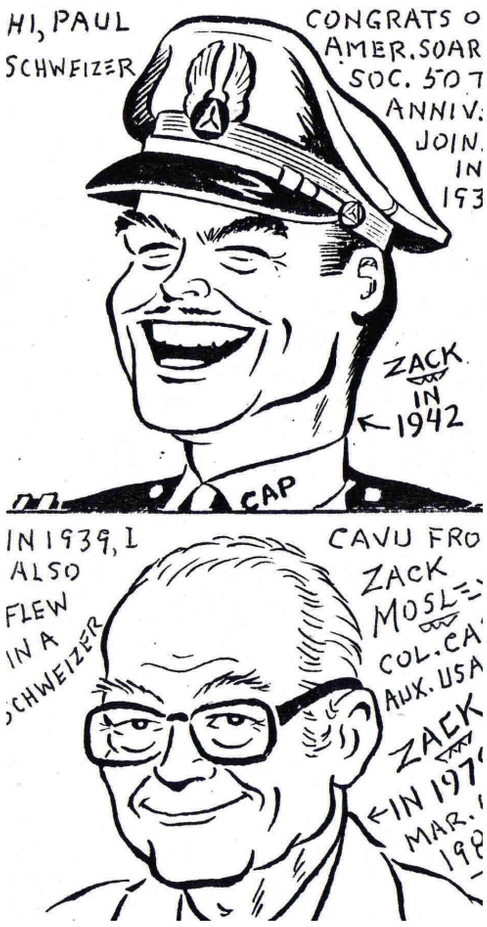
he began sketching planes, a pastime that led to his profession as a successful cartoonist.

Mosley said that with the help of professional cartoonist Walter Brandt, his strip was syndicated in 1933 by owner of the Chicago Tribune-New York News and avid aviation enthusiast, Joseph Medill Patterson. Originally called "On the Wing," Patterson ordered a name change to "Smilin' Jack" on October 1, 1933, just fourteen Sundays later.

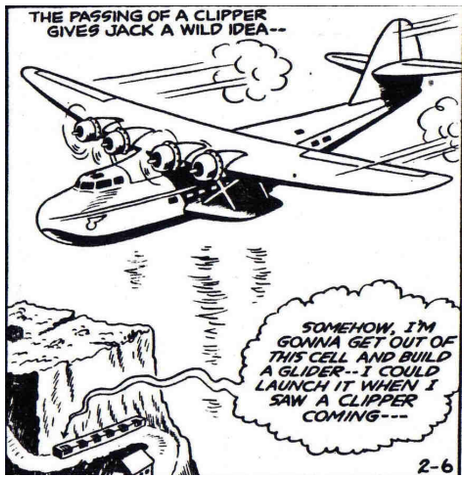
Zack Mosley and his wife on one of his visits to Harris Hill, shaking hands with the Secretary of the Association of Commerce

Recalling a conversation here at the National Soaring Museum during the 2005 International Vintage Sailplane Meet, the late Jack Laister said that he met Mosley at a Michigan glider meet about the time of the name change. Mosley, observing the young Laister, commented that he always seemed to be smiling, even when things weren't going well for the young sailplaner. Laister said that he may have been the source for Mosley's coming up with the new 1933 name for the strip, "Smilin' Jack."

Mosley was very active in aviation in the 30s and 40s and was one of the volunteers who helped

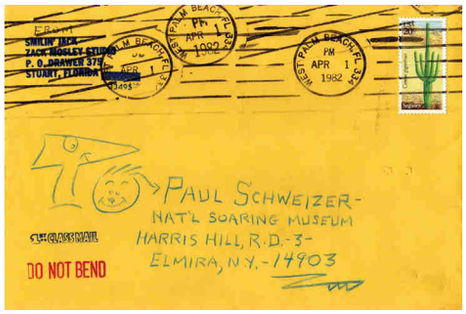


Cartoon sketches Mosely sent to Paul A. Schweizer



February 6, 1939

form the Civil Air Patrol in 1941. During World War II, he flew over 300 hours off the Atlantic Coast on anti-submarine patrols in bomb-laden civilian planes. As wing public relations officer, he held the rank of colonel and was awarded the Air Medal. In 1976, he was inducted into the AUX-USAF Hall of Honor. He lent his talents to illustrating aviation materials and designed squadron insignias for units in all branches of the armed services. During his lifetime, he owned nine planes and had flown over a million miles.* Military and commercial aircraft had taken him to about one-half of the world to gather authentic material for "Smilin' Jack."



The biggest fans of his strip were readers who lived through World Wars I and II. The strip appeared in more than 300 newspapers from 1933 to 1973. At that time, Mosley went into semi-retirement. Later, he issued two books with episodes from the 1930s and 1940s, "Hot Rock Glide" (1979) and "De-Icers Galore" (1980), as well as his memoirs, "Brave Coward Zack…" He died in 1993.

* The Encyclopedia of American Comics

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Our Mission is to preserve and present the heritage of motorless flight and promote, through education, a greater knowledge of soaring, aeronautics and related physical sciences for everyone.

Emil Lehecka and the Gull-Wing Franklin
Philadelphia Glider Council Field
1946 or 1947

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