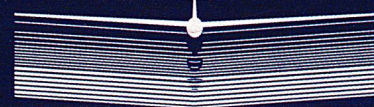


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National Soaring Museum



Soaring Thru The 20th Century

The 27th Annual Ralph S. Barnaby Lecture

Given by Paul A. Schweizer



The 27th Annual Ralph S. Barnaby Lecture was delivered by Paul A. Schweizer last November 20th at the Colony South Hotel, Clinton, MD.

"I will give you some of my most memorable observations and experiences during the 20th century," the

pioneering sailplane builder, competitor, and writer said.

He and his brothers weren't around for the first soaring flight by Orville Wright on October 24, 1911, "but we didn't miss it by much," he laughed. (1) "So we are fortunate in having been around for the major part of the 20th century."

Hosted by the National Soaring Museum, this lecture series is named for the late Capt. Ralph S. Barnaby, USN, who broke Orville Wright's record with a 15-minute, 5-second soaring flight at Corn Hill, Cape Cod, MA. In 1929, Lt. Barnaby demonstrated the feasibility of a glider launch from the Navy airship Los Angeles. He was also Honorary Vice President of the National Soaring Museum until his death in 1986. These lectures are given yearly, at various sites throughout the country by outstanding personalities in the field of motorless flight.

Mr. Schweizer presented slides to highlight his comments. Starting with the famous 1911 photo of Orville soaring over the Kitty Hawk dunes, he pointed out that this flight had not been given the acclaim that it deserves. "Many think that soaring started in Germany. We need to work to give more attention to this flight," he said.

In 1919, the first dirigible to cross the Atlantic, the British R-34, passed over the Schweizers' Elmhurst, Long Island home to its stateside moorings. Barnstorming Jennys, the great 1919 trans-Atlantic NC-4 flying boat, all made lasting impressions on the Schweizer boys. "There were five events during the 1927-1929 period that hooked us on aviation," the speaker said. The first was Lindbergh's solo trans-Atlantic flight. Then came the

exciting event that they read on the front page of the *New York Times* in the summer of 1928. Peter Hesselbach, a German soaring pilot that J. C. Penney, Jr. brought to Cape Cod to start a glider school, had soared his Darmstadt 1 for four hours over the sand dunes of the Cape. The Schweizer brothers were eager to learn more about that type of flying. They later found out that the Darmstadt hit a pole and was wrecked when an automatic tail release unit malfunctioned.

"A whole new world opened up to us when we read the June 1929 *National Geographic*," Mr. Schweizer said. The article described gliding and soaring activities in Germany. Young Germans, the Schweizers' age, were building and flying gliders.

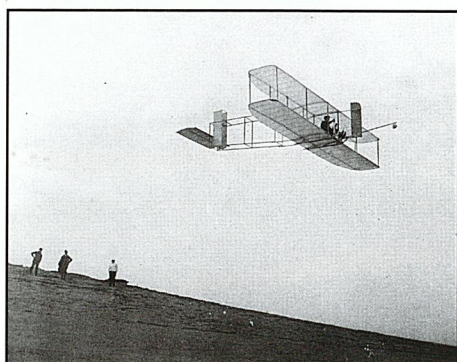
The fourth event was Lt. Ralph Barnaby's August 1929 record-breaking soaring flight over the dunes of Cape Cod. This flight was not impressive compared to Hasselbach's, but it was by an American, and it beat Orville Wright's record.

The fifth event was at Todd's Field near the new family Peekskill home when they had their first airplane ride with Capt. Arnold in his banana-winged Standard biplane.

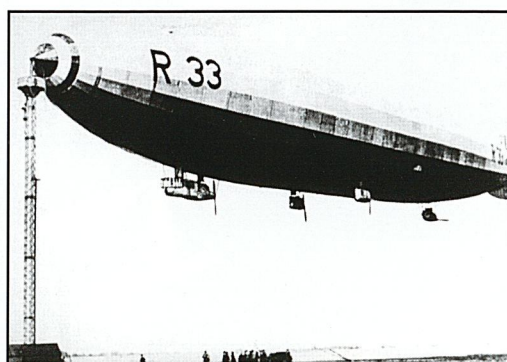
Such enthusiasm couldn't be contained. In 1929, the Schweizer brothers began work on a primary glider. After the first flights in June 1930, they made a trailer from a pair of motorcycle wheels and hand-towed the primary a mile to Todd's Field. "At the start, many of the neighborhood kids were eager to pull the bungee. However, after the novelty wore off, they were hard to find, so we used the family Ford to pull the bungee. By this time, Ernie was old enough to get a driver's license," he said.

In 1931, the brothers visited the second National Soaring Contest in Elmira. On their way to the Caton Avenue contest headquarters, an ambulance passed them. Later they learned that Capt. Phillips crashed and broke his legs. Mr. Schweizer said, "There were three more accidents during the contest. They made an impression on us, and played a part in forming Ernie's conservative design practices that helped to improve the safety of Schweizer sailplanes."

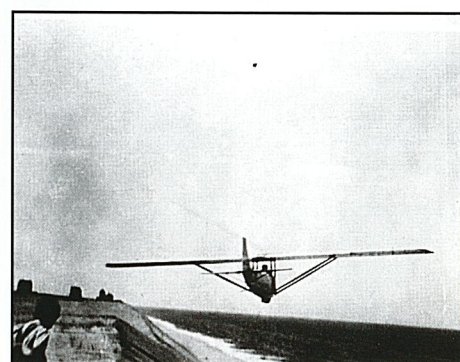
The first two Nationals were run by the National Glider Association, and many people were not satisfied with the contest safety record. The NGA was a commercial organization, while



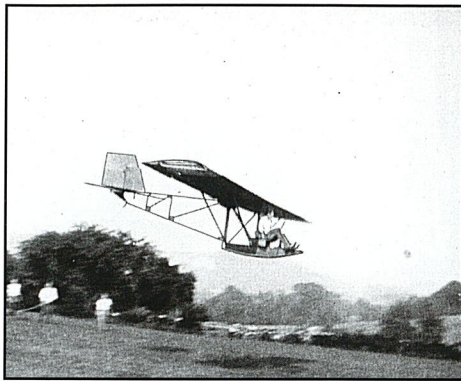
Above: The 1911 Wright Glider No. 5 in which Orville set a record soaring over the sand dunes of Kitty Hawk.



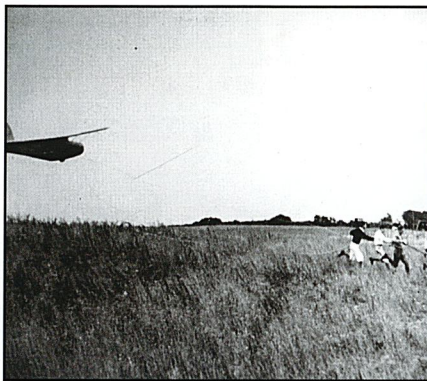
Above: The airship R-33, a sister of the R-34 that passed over Schweizer's boyhood home.



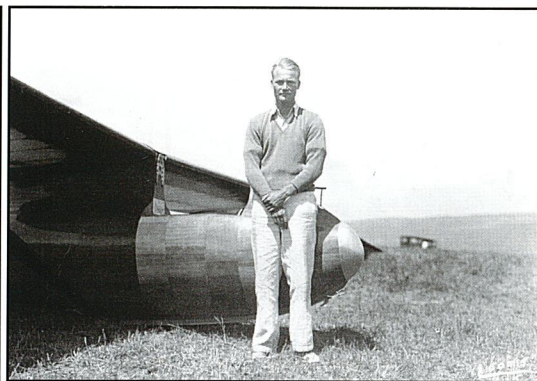
Above: Ralph Barnaby in the Pruffling, at Cape Cod.



Above: The Schweizer 1-1 Primary in the air at Todd's Field.



Above: A shock cord launch from Elmira's East Ridge in the early thirties.



Above: Richard duPont and his Bowlus-duPont Albatross sailplane.

most of the pilots were interested in soaring as a sport.

"These differences, and the NGA's financial difficulty, due to the Depression, resulted in efforts to form a new soaring association," Schweizer said. The Soaring Society of America was formed in early 1932 by Warren Eaton, with 14 other founders, including Ralph Barnaby. One of its first projects was to conduct the 1932 Nationals, won by Jack O'Meara in his "Chanute."

At the 1933 Nationals, Richard C. duPont arrived with two Bowlus-duPont Albatross sailplanes. He with his father as passenger crashed the two-place Albatross sailplane into the woods after an unsuccessful bungee launch. While neither was seriously hurt, Richard later flew the other Albatross and almost exceeded O'Meara's altitude record. duPont was elected an SSA Director and later became its President.

In 1934, Germany held the world distance record. At the 1934 U.S. Nationals, duPont beat this record with a 158-mile flight from Elmira to Basking Ridge, NJ. "But it didn't last long," Schweizer said. "The Germans beat duPont's record four times in 1934. It would be 17 years before the U.S. would get it back." That year, SSA President Warren Eaton was killed in a freakish accident, and Ralph Barnaby took over the entire SSA operation. "When finances got tight, Barnaby would buy another Life Membership to keep SSA going financially," Schweizer said.

There were no gliders in production in the U.S. in 1936. Warren Eaton's widow offered prizes of \$1,500 in a design contest to encourage new sailplane production. The Schweizers entered the 1-6 Utility, the world's first all-metal sailplane. Although the 1-6 placed third, "It was too labor-intensive, so we designed and built the smaller and simpler 1-7," he said. The first place Schultz ABC, and second place Ross I, were never produced, but the 1-7 design concept was used in the Schweizer 2-22 and 2-33, of which almost 900 were built.

Early in 1938, they received their first order. It was from Eliot Noyes, for a 1-7, the "Pterodactyl" for his Altosaurus Soaring Club. With this order, the brothers formed the Schweizer Metal Aircraft Co. Then came orders from the Airhoppers Glider Club and the SSA for the proposed 2-place trainer, the Schweizer 2-8. Both ships were ready for the 1939 Nationals. There, Lewin Barringer flew the Airhoppers' 2-8 to a national two-place sailplane record. "The 2-8 and our business had survived," Schweizer said.

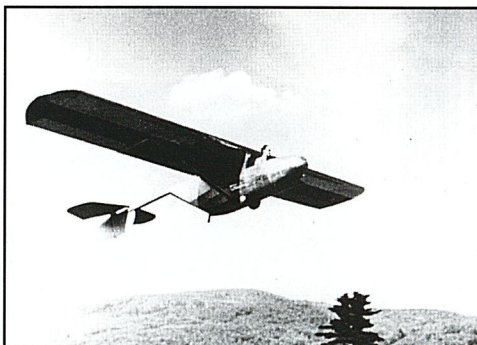
"While delivering the SSA's 2-8 to the National Soaring Contest, we were encouraged to move our plant to Elmira. In return for stock, we relocated in a loft of the Elmira Knitting Mills building. We were near friends. The Elmira Aviation Ground School, with Floyd Sweet as Director, was on the first floor," Paul said. In December of that year, the Schweizer Aircraft Corporation was formed. Mid-September of 1939, Ernie and Paul attended the New York World's Fair. "We felt sad about our Polish soaring friends when we saw the Orlik sailplane on exhibit at the black-draped Polish Pavilion because of the war."

The 2-8 was certified in June. At the 1940 contest, Bob Stanley with Ernie Schweizer as a passenger soared 216 miles from Elmira to the Washington area for a national two-place record. Stanley said that if he had another thermal, he would have landed on the White House lawn. "We loaned a 2-8 to Lewin Barringer who took it to Sun Valley where he set a two-place altitude record, which could not be homologated due to the war."

Early in 1941, Major Fred Dent met with the Schweizers. An order for three TG-2s, the military version of the 2-8, followed. Later, General Henry "Hap" Arnold arrived in Elmira by plane. He was flown in a TG-2 to Harris Hill, where he spoke to a waiting



Above: Jack O'Meara and his "Chanute" rebuilt from the original Darmstadt 1.



Above: Emil Lehecka tests the Schweizer 1-6 Utility the world's first all-metal sailplane.



Above: The Altosaurus Soaring Club's "Pterodactyl," now restored by Dr. Walter Cannon.



Above: Warren Eaton with his Bowlus Falcon.



Above: The Polish Orlik at the 1946 Nationals.



Above: Gen. Henry "Hap" Arnold being greeted by Ralph Barnaby (left) and Edward S. Evans.

crowd on the proposed military glider program.

Soaring was greatly restricted during the 1941-45 wartime period. Ben Shupak, a schoolteacher from Brooklyn and secretary of SSA, put out *Soaring* magazine and kept SSA going throughout the war.

In the early post-war years, the Schweizer Aircraft Corporation went into production with the 1-19 and the 2-22. The great number of surplus military gliders available at very low prices made it difficult to sell these new models, so glider production was discontinued. SAC had switched to subcontract work when their glider contracts ended. This provided work during the post WWII years and on into the rest of the 20th century.

SSA was reorganized after the war, with Barnaby elected President the third time. Dick Comey won the exhausting 1947 Wichita Falls Nationals in the new high-performance Schweizer 1-21. It was the first production sailplane to have water ballast. "In spite of the win, and with a price of under \$3,500, only two 1-21 prototypes were sold and so the ship was never tooled for production," Schweizer said. The 1-23 was developed to make available a lower cost sailplane than the 1-21. Toward the end of 1950, Bill Ivans set two world altitude records at Bishop, CA, with the new 1-23.

On August 5, 1951, Dick Johnson flew his RJ-5 545 miles to a world distance record. It had been held by the Russians since 1939. The U.S. again led with the top number of world soaring records.

The SSA sent a team to the first 1952 World championships in Spain. Due to poor communications there, the contest organizers planned to give each pilot two carrier pigeons to fly

back landing positions. They ran into problems with that idea so each pilot received a very legal-looking document, guaranteeing action by the police. The team did not do well. Dick Johnson and Stan Smith had damage that took several days to repair. Of the 29 single-place sailplanes entered, the U.S. team was the fastest with Johnson in the RJ-5, Paul MacCready 2nd in the Schweizer 1-23B, and Stan Smith 7th in the Schweizer 1-21. "I was 8th in the 1-23D," Schweizer said.

Weather was the dominant factor at the 1954 World Championships held at Camphill, England. "All launchings were by winch-tow. With poor weather, it was questionable if there would be enough flying days to make a contest." Among the 32 single-place sailplanes entered, Paul MacCready finished fourth in the 1-23E and Paul A. Schweizer placed 15th in the 1-23D. Stan Smith and Bob Kidder were third with the 2-25 in the two-place class.

Schweizer said, "With a short ridge and a low cloud base and both classes being launched one right after another, the density of gliders over the ridge was like a swarm of locusts. Only Helli Lasch, who couldn't be seen in the dark-tinted canopy of his Air 100, had clear sailing," he laughed, "for everyone stayed away from him."

In 1955, Schweizer Aircraft went into 1-26 production. It was lower priced than the 1-23 and was available in kit form. "In spite of its lower performance, 1-26's have made six flights over 400 miles, 29 pilots have won their Three-Diamond Badges, and 82 their Gold Badges in 1-26's," he said.

The 1-26 Association was formed to promote one-design competition and recreational soaring. It conducts yearly 1-26 Championships and is joined by the World Class Sailplane



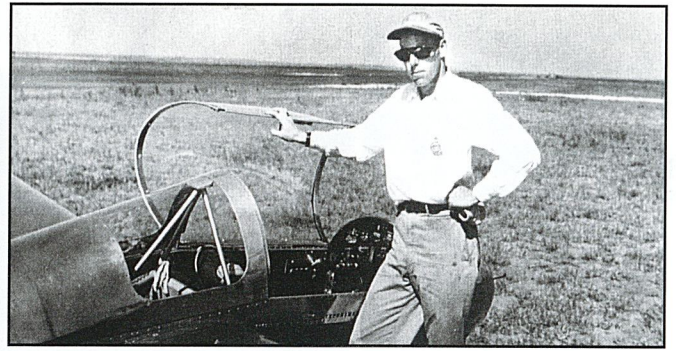
Above: Ben Shupack and (left) Gus Raspet check a thermal sniffer on a Schweizer 2-8.



Above: Club road builders at the 1954 Camphill, England, World Championships.



Above: A restored Schweizer 1-19 Utility glider.



Left: Dick Johnson in the RJ-5 in which he set a world record of 545 miles in 1951.

Center: The U.S. Soaring Team at St. Yan, France, in 1956, during which Paul MacCready became the first U.S. World Champion.

Above: Richard Comey and the Schweizer 1-21.

Association in promoting the one-design concept of top competition in low-cost sailplanes that don't become obsolete.

In the first three World Soaring Championships, Paul MacCready had finished second, sixth, and fourth. He became the first U.S. World Champion at the 1956 competition held at St. Yan, France, flying a Breguet 901. Bill Ivans managed to place fifth even though on the last day he was injured, crash-landing his Olympia IV in great turbulence. The Kempes Trager/Bruce Miller two-place team finished fourth in a Schweizer 2-25. The U.S. Team was captained by Barney Wiggin and managed by Floyd Sweet.

The year 1957 heralded the start of what Schweizer called "The Golden Decade." Lloyd Licher was hired as SSA Executive Director and its directors were elected on a regional basis. "I was elected as SSA President, since I had been the active SSA Secretary since 1947, after taking over from Shupak and Gale. We didn't know how we would finance Licher's salary, but soaring was growing and we were ready to meet this challenge." Three things happened to put the SSA on a break-even basis:

- 1) A grant of \$29,000 arranged by Floyd Sweet from the Chichester duPont Foundation.
- 2) A gift of a Schweizer 1-21 by Dave Stacy that was auctioned off for \$6,000.
- 3) An effective, "Every Member Get A Member" drive that started a steady SSA growth until the 1980's.

At the 1956 OSTIV (*Organisation Scientifique et Technique Internationale Vol a Voile*) a new Standard Class sailplane was proposed. It was to be an inexpensive, easy-to-fly club type that would popularize low-cost, recreational soaring. The jury on which Paul Schweizer served chose the Schleicher Ka-6. He said, "The

jury recommended that much stricter requirements would have to be set. These intentions were not met and the Standard Class became another competition class, instead of the low-cost, easy to fly sailplane originally intended."

By 1961, the U.S. was on top with ten world records. That year, Paul Bikle set two single-place records in the Schweizer 1-23E: absolute altitude of 46,267 feet and an altitude gain record of 42,303 feet.

The Schweizer Aircraft Corporation had sponsored several N.Y. Wing Civilian Air Patrol (CAP) glider encampments. In 1965, the first national CAP glider encampment was held in Elmira with 92 cadets from every state in the union. After 30 years of only Wing glider programs, CAP, working with the SSA, came back with a national program.

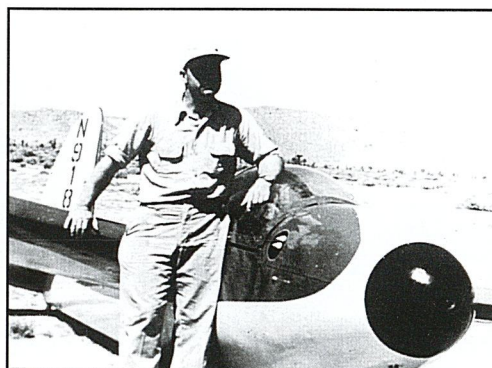
In 1966, after a failed initial try due to a technicality, Schweizer and Clyde McCarthy set a 500km triangle, two-place national record in a 2-32 at Odessa, TX.

Several media boosts to soaring occurred in 1967, resulting in raising the public's interest in soaring. SSA membership grew 38%. That same year, Virginia Mayer and Paul A. Schweizer were married. Ginny started gliding in Hicksville, NY, in 1941. "She was the first woman's Silver C, and holder of several women's soaring records. She assists me in many ways which helped her win the Katherine Wright Award in 1996," Schweizer said.

On July 4, 1969, the SSA Board, with Bernald S. Smith presiding, unanimously voted Harris Hill to be the site of the National Soaring Museum, archives, and library. The Harris Hill



Above: Bill Ivans and his Schweizer 1-23 in which he set two altitude records at Bishop, CA, in 1950.



Above: Paul Bikle's Schweizer 1-23E



Above: Clyde McCarthy and the Schweizer 2-32 in which he and Paul Schweizer set a National record.



Above: Paul & Ginny's first Christmas card, 1961.



Above: Harris Hill Soaring Corporation President Ned Kelley accepting the Minimoa from Carl Groom.



Above: Joe Lincoln at the 1970 Marfa, TX, World Championships.

Soaring Corporation had a small museum in the Administration Building which became NSM. In 1971 it was moved to the Merrill House on Harris Hill. The newly acquired Minimoa sailplane that Dick duPont had flown was officially added to the NSM collection. At the same time, SSA's 40th anniversary was celebrated with Capt. Barnaby giving the anniversary address at Elmira College. In 1975, the 2-32 of writer and championship sailplane pilot Joe Lincoln was donated to the Museum.

The Smirnoff Transcontinental Derby, a soaring race across the U.S. in stages, was sponsored by the Heubling Company in 1976. It was won by Wally Scott flying a Schweizer 1-35. The ship was on exhibit at the Smithsonian before it was given to the SSA and raffled for the Society's benefit.

A fire destroyed the historic "Ad" building on Harris Hill on January 19, 1977. It was built under Roosevelt's Works Progress Administration program, by the Civilian Conservation Corps. The NSM Board felt that this site was the logical place for a new museum building. Chemung County turned over the \$87,000 insurance claim to NSM with the understanding that a community room be included in the new structure. NSM trustees pledged an additional \$105,000 which, with the insurance money, enabled them to kickoff a successful half-million dollar fund drive. Eliot Noyes designed the new NSM building which was dedicated in September 1978. Sadly, he passed away before its completion.

By early 1980, the three young Schweizers—Stu, Paul H., and Les—were well integrated into the Company. Schweizer said, "At that time the private aviation industry, as well as sailplane and Ag Cat manufacturing at SAC, all went into a nose dive due to escalating product liability insurance costs. We were forced to get out of the sailplane business." The second generation Schweizers

located an opportunity to buy the Hughes 300 helicopter, "and soon SAC was deep in the helicopter business."

The National Soaring Landmark Program was created in 1981 to mark places where noteworthy soaring events occurred. The first was to be at Corn Hill, Cape Cod, where Ralph Barnaby had exceeded Orville Wright's soaring duration record in 1929. The same year, Ralph and Marg Barnaby announced their gift of \$250,000 for an NSM Archivist Chair, and Elmira Mayor Edward A. Mooers was elected as NSM Trustee Emeritus.

Early in 1983 SAC received orders for motorgliders from the Air Force Academy. Each Schweizer was given an opportunity to deliver a 2-37 to the Academy in Colorado Springs. "These ships did not have navigational radios, so Ginny and I had to follow railroad tracks and highways as the old barnstormers used to do," he said. Also, like the old days, a crowd would usually gather to look over the 2-37 whenever they landed.

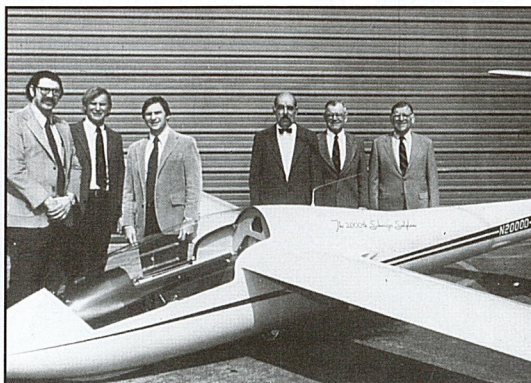
NSM celebrated the 75th anniversary of Orville Wright's record soaring flight in 1986, with Orville's nephew Horace Wright, who was present at the 1911 flight, and Horace's wife, Susan. Highlighting the celebration, the Smithsonian's Paul Garber gave the 13th Barnaby Lecture on the Wrights, and Smithsonian Curator Tom Crouch spoke, "On Leading To Powered Flight."

In early 1986, Ralph Barnaby, who was an authority on the Wrights at Philadelphia's Franklin Institute, died. Later that year, the NSM received a \$700,000 bequest from the Barnaby estate.

For the celebration of SAC's 50th anniversary in 1989, Ernie and a group of volunteers built a full-size replica of the 1-1 Primary. It flew successfully "but we were embarrassed when we couldn't remember doing a weight and balance computation on the



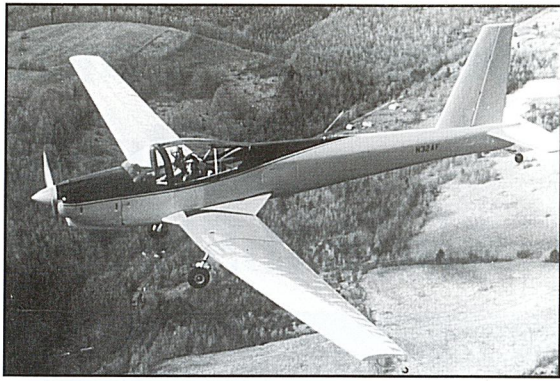
Above: Wally Scott in the Schweizer 1-35.



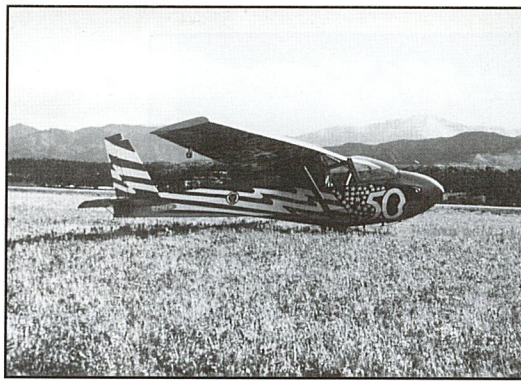
Above: Two generations of the Schweizers: (L. to R.) Les, Stu, Paul H. Ernie, Paul A. & Bill



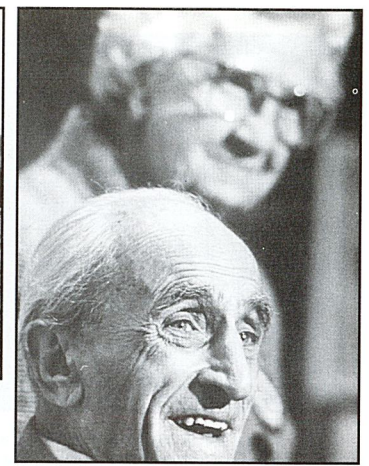
Above: Mayor Edward A. Mooers presenting an award to Katy Jones who ran the Elmira SSA office for several years.



Above: The Schweizer 2-37 Motorglider



Above: The 50th Anniversary Schweizer 2-33 at the Air Force Academy.



Above: Susan & Horace Wright at NSM in 1986

prototype back in 1930,” Paul said.

Twenty-six years ago, NSM encouraged Jan Scott and a group of vintage sailplane enthusiasts to form the Vintage Sailplane Association. The high point of the VSA was the International Vintage Sailplane Meet that was held at Harris Hill in July of 1995. That same year, Ginny and Paul were invited to help celebrate the 30th anniversary and 1,000,000th flight of the Air Cadet League of Canada glider program at Red Deer Lake, Alberta. “Ginny and I were given the honor of making the first of their second expected 1,000,000 flights of this very successful youth glider program.”

Looking back, SAC has produced over 5,500 certified aircraft: 2,170 gliders, 2,646 Ag Cats, 727 helicopters, and 40 special-purpose aircraft. Looking ahead, the speaker said, “We have a line of helicopters and special surveillance airplanes as well as subcontract work. The only connection with sailplanes is that our surveillance airplanes have a sailplane heritage.”

NSM also helped form the Sailplane Homebuilder’s Association in 1980, after a very successful first workshop was held here in 1979.

NSM’s Board, under Linn Buell, announced an expansion plan and fund drive in 1999. Headed by Bernald S. Smith and Paul H. Schweizer, the plan will:

- 1) increase the endowment
- 2) broaden the appeal of the NSM exhibit program
- 3) expand the Museum’s facilities so it can more effectively carry out its overall mission in the 21st Century (see *NSM Historical Journal*, Vol. 21, No. 2).

Schweizer closed by saying, “There is a need for other soaring people to record their experiences and observations during the twentieth century, so that there can be a more complete history of soaring.” He is presently writing a book expanding on these subjects. “And I hope others will do the same,” he said.



Above: Paul A. Schweizer signing his new book, *Sailplanes by Schweizer* with NSM’s Mary D. Flaspahler (above), and Jaye Fish

- (1) “Ernest was born five months later, I was born a year and a half later, and Bill in 1917.”

It was with great sadness that the National Soaring Museum learned of the passing of Ernest (Ernie) Schweizer as we went to press. Ernie Schweizer was one of the co-founders, of the Schweizer Aircraft Corporation. He was a member of the United States Soaring Hall of Fame, a staunch supporter of the National Soaring Museum, and a pioneering American authority on sailplane design and safety. The National Soaring Museum trustees, staff, volunteers, members, and supporters extend deepest sympathy to the Schweizer family. The world aviation community has lost a quiet mentor.



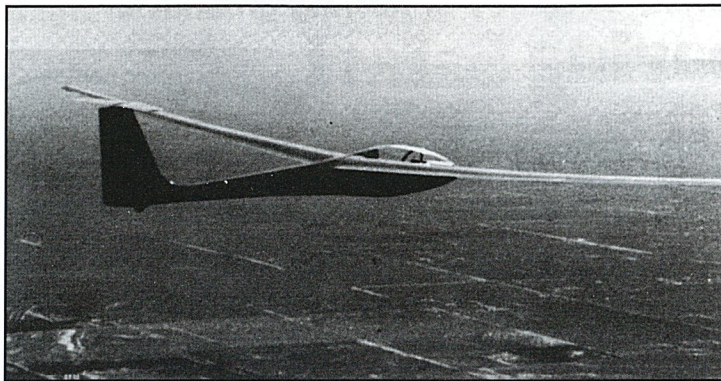
Above: Bill Schweizer in flight during the 50th Anniversary celebration with the Schweizer 1-1 Replica.



Above: Canadian Air Cadet Sara Tuffts and instructor in a 2-33.



Above: A Schweizer 330 turbine-powered helicopter.



George Applebay's Mescalero- "The Sweetest ship I ever flew" said the test pilot, Rick Apgar, in the March 1975 *Soaring*

Following a reception and banquet March 18, at the Albuquerque Convention Center, Octave Chanute, one of the first American aeronautical trailblazers, and contemporary innovative sailplane designer and builder George Applebay were inducted into the United States Soaring Hall of Fame.

The Soaring Hall of Fame received its start in 1954 when the Helms Athletic Foundation of Los Angeles, CA, decided that soaring was a sport of such national and international stature that it deserved Hall of Fame designation. Accordingly, the Directors of the Soaring Society of America were asked to recommend candidates to so honor. In 1975 the SSA Directors transferred the Hall of Fame to the National Soaring Museum. Currently, honorees are recognized and deliver their acceptance talks at the annual SSA convention, which is held at various locations throughout the country.

The SSA staff wrote of George Applebay on his election to the U.S. Soaring Hall of Fame: "George Applebay is one of the unsung heroes of American soaring. He has been working tirelessly behind the soaring scenes for nearly 50 years. Even today, as a man



George Applebay by his self-launching Zia in 1983.

well into his 80s, he continues his efforts."

Friend and fellow worker for 31 years, Stephen Hill introduced George Applebay, saying, "No other American can claim to have accomplished what George has." Applebay was a founding member of the Wichita Soaring Club, and has taught hundreds of students to fly. In 1958 he built the third Cherokee sailplane. "Circling for 35 years through a series of owners, the Cherokee is still being flown today by its present owner, George Applebay," Hill said. Applebay was introduced to

composite materials working in the experimental department at Cessna in the 1950s. He recognized that these materials were the key to successful high performance sailplanes. He became an expert by using these composites in every feasible project.

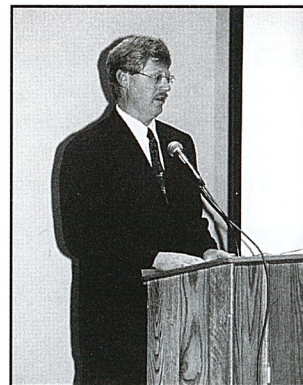
In the 1960s, Applebay worked at EG & G (Edgerton, Germilshousen & Greer), in Santa Monica where he continued to increase his expertise in these materials by using them in radomes and parts of sophisticated airborne sensors. While there, he designed

Octave Chanute and George Applebay Inducted into the 1999 United States Soaring Hall of Fame



Top Row: Left to Right; Charlie Spratt (1993), Ed Seymour (1995), Ed Byars (1992), Paul A. Schweizer (1955), Bill Sproull (1997), Hal Lattimore (1989), Sterling Starr (1979), Howie Burr (1987), Henry Combs (1988), Carl Herold (1996).
Seated: Left to Right; Alcide Santilli (1979), Hannes Linke (1998), Paul MacCready (1954), Joseph Hodges (Octave Chanute 1999), George Applebay (1999), Virginia (Ginny) Schweizer (1971), Bertha Ryan (1972), Dick Johnson (1956), Floyd J. Sweet (1963).

and built the 15-meter one-of-a-kind, standard class sailplane, the Chiricahua. He then started work on the 21-meter open class sailplane, the Mescalero. In 1969 he transferred to Albuquerque, NM. In response to the SSA's 1970 Sailplane Design Competition, Applebay created the Mescalero, a sailplane with such features as a 71-foot wingspan and controls which are 100% mass balanced and connect automatically. The new open class ship was completed there in 1974. Hill said that the Mescalero, with a fiberglass fuselage and aluminum wings, had a glide ratio of 51-to-1. He added that it was the highest performance sailplane ever built in America.



Stephen Hill introducing George Applebay.

Applebay used his life savings, sold stock to friends and associates, and founded AERO TEK,

a corporation that produced the 15-meter Zuni. Paul Schweizer, in his book, *Wings Like Eagles - The Story of Soaring in the United States*, said that the Zuni was only the second all-fiberglass sailplane to be put into production in America. "This racing sailplane was competitive with anything that the Germans had to

offer at that time," Stephen Hill said during the introduction.

Billy Hill, in the February 1980 *Soaring*, "Zuni-The American Challenger" wrote that, "after extensive airfoil and design studies, Applebay's approach was to incorporate all things that have been shown to give the greatest possible potential for performance. Some of the distinguishing features of the Zuni design included an all-flying tail, flap/aileron interconnect, a double ellipse derived wing planform, and a main gear providing extra high ground clearance." Stephen Hill said that the Zuni did well in competition, flew in the 1983 World Championships, set nine world records and is now on display at the National Air and Space Museum.

He continued that Applebay was responsible for the tremendous growth of Moriarity Airport in Albuquerque, home of the Albuquerque Soaring Club. Applebay's latest project is the new Southwest Soaring Museum, currently located at the airport. "Working there, teenagers, 20-and 30-something-year-olds lagged behind, just trying to keep up with him," the speaker said.

"It was at AERO TEK that George inspired many on how to succeed later in their own endeavors," Hill said. "Working with George gave one the opportunity to learn all the skills necessary to build an airplane: welding, machining, painting, composite work, assembly design, drafting and engineering." He added that none of these people can call George "father," but he certainly treated many



George Applebay's 1976 American Challenger, Zuni

of his helpers as his own children. He listed several who became outstanding Albuquerque civic, community, and industrial leaders.

He mentioned John Sharp, championship air racer at Reno, NV, who won nine consecutive times. Here are excerpts from a congratulatory letter that Sharp and his wife Tricia sent: "I met George in 1973, an R/C model plane builder interviewing for a job. George hired me. He saw a twinkle in me that I had yet to see. George sent me to a drafty back shop, handed me some templates and said, 'help me build my dream, a sailplane, the Zuni project.' He kept a positive outlook while teaching us determination, design and fabrication skills and, let us show him his dream." Sharp credited the love of his life, Tricia, and the



Applebay reminisces about his experience in soaring

skills and knowledge of composites learned from George Applebay, for making their dreams come to fruition: winning 47 of the 50 races entered, nine consecutive formula one championships, 16 world speed records, and four Pulitzer Prize trophies. "On behalf of all the people who have been able to share in our dreams and teaching us how to succeed in life, George, congratulations on your induction in the U.S. Soaring Hall of Fame. You've been in our Hall of Fame since we met."

Stephen Hill closed his introductory remarks by saying, "I've known George Applebay's family since I was in the fifth grade. I worked in his shops since I was 15 years old. Early on, George insisted that I attend college and get a degree in mechanical engineering. I would not have finished college were it not for the encouragement he furnished in some tough times. I'd like to take this opportunity to publicly thank you for everything you've done. I'll never be able to repay you."

George Applebay moved to the rostrum amid a standing ovation. Acknowledging the applause, he said, "Thank you, thank you all. I'm a little overwhelmed by the reception that you have given me. This family has supported me from the time they were first born. As indicated we've had a lot of youngsters work for us over the many years. We've tried to teach those youngsters to be achievement motivated. Make that their first objective." He said that there are many different motivations that

make people move through life, but “we’ve always felt that the most important thing was achievement.”

Applebay has become interested in the development of the Southwest Soaring Museum. “We want to present to the soaring world something that tells our story,” he said. “But the most important thing is to entice youngsters to stay with their education; get into aerospace. We want to make this very viable to the youngsters that will come.” Architectural plans call for a new building in an expanse north of Moriarity Airport.

The speaker mentioned that he had been close friends with the Harlan Ross family since 1953. He said that Betty Ross had recently donated Harlan Ross’s papers, engineering books, and his entire library to the museum facility at Moriarity.

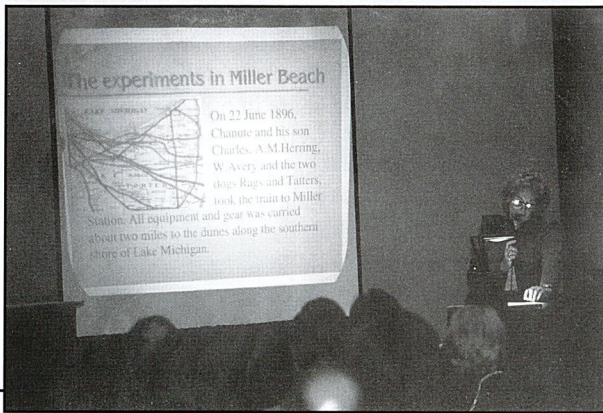
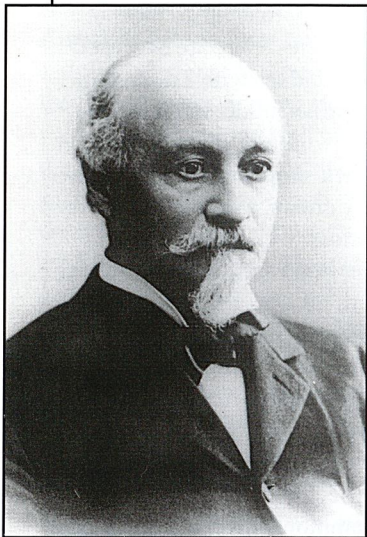


Soaring Society of America President Larry Sanderson (left) presents George Applebay with the 1999 Soaring Hall of Fame Award during the Albuquerque Convention.

In closing George Applebay said, “I am very humbled by this honor that you folks have bestowed on me. I never dreamed that anything like this would happen in my lifetime. Thank you all very, very much.”

OCTAVE CHANUTE

Simine Short, Lockport, IL, NSM Landmark of Soaring Chairperson, pictured below, has published several articles on Chanute and the early days of gliding. She presented a detailed and engaging overhead slide scenario of Octave Alexandre Chanute’s life and of his tireless contributions to the development of flight. The following are excerpts from her talk and program.



Octave Chanute was born in Paris in 1832. Six years later, his father, Joseph Chanut and young Octave left France and immigrated to New Orleans, LA. Elise and the younger children followed when Joseph became settled as vice president of Louisiana’s Jefferson College. Octave, the future aeronaut, was educated in New York at a boarding school where he decided on engineering as a career. There, classmates nicknamed him “naked cat.” (*chat nu* in French) To make his last name sound more American he added an “e.” In 1849 he started his career as an apprentice chainman on a surveying crew with the Hudson River Railroad Company. By 1853 he had advanced to division engineer.

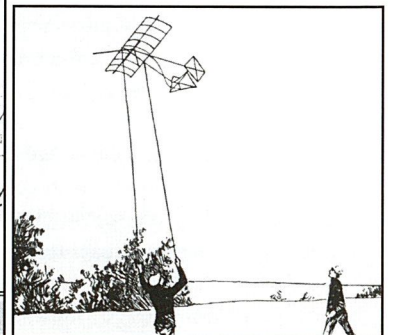


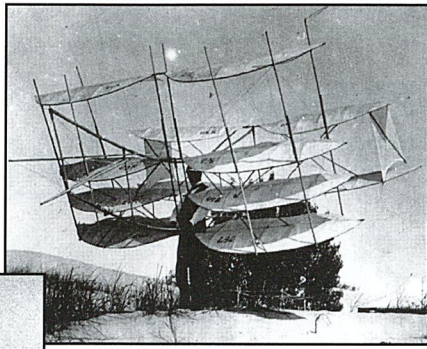
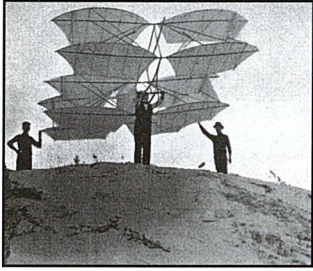
Opening of the first railroad bridge across the Missouri, July 3, 1869.

He became an American citizen in 1854 and, in 1867, married Annie Ridell James of Peoria, IL. Professionally, he joined the American Society of Civil Engineers. In 1869 he was a founding member of the Western Society of Engineers. He served as chief engineer for several railroads that were being constructed to haul Texas cattle into Kansas City. As a civil engineer, Chanute was responsible for the first bridge over the Missouri River, and the Union Stockyards in Chicago and Kansas City. He was



Many kite designs were tried (below) along with the full size Lilienthal (left)





Chanute's second experimental machine, the Katydid, which was re-rigged for each experiment.

chief engineer of the reorganized Erie Railroad in 1873. Around that time he began a new interest: aeronautics.

During this period he also chaired a group studying the feasibility of rapid transit systems for New York City. He and an associate, M.N. Forney, prepared a model report calling for the construction of the elevated railways that were eventually put into service there. Moving west, he founded the Chicago Tie (railroad) Preservation Company in 1889. He was designated Chairman of the 1893 World Columbian Exposition in Chicago.

During the early years of his retirement, he started correspondence with almost all the world personalities who were engaged in aeronautical investigation and experimentation. Later he wrote a series of articles on the progress of aeronautics for the *American Engineer and Railroad Journal*. He created an informal community where aeronautical knowledge was shared. His book, *Progress in Flying Machines*, (Chicago, 1894) became the definitive publication of the history and current status of flying machines. In 1899 the Wright Brothers wrote to the Smithsonian Institution for information. Several books and pamphlets were sent to them, including Chanute's book. The Wrights recalled that he was always encouraging and available for discussion.

Short pointed out that Chanute formalized some of the aeronautical terminology that would become standard in the future: aeroplane, lift, drag, aeronautical engineer. She listed Chanute's ten separate problems for the mastery of artificial flight. 1. The resistance and supporting power of air. 2. The motor, its character and its energy. 3. The instrument for obtaining propulsion (propeller). 4. The form and kind of apparatus (airframe). 5. The extent of the sustaining surfaces (wings and tail). 6. The material and texture of the apparatus. 7. The maintenance of equilibrium. 8. The guidance in any desired direction. 9. The starting up in all conditions. 10. The alighting safely anywhere. (1)

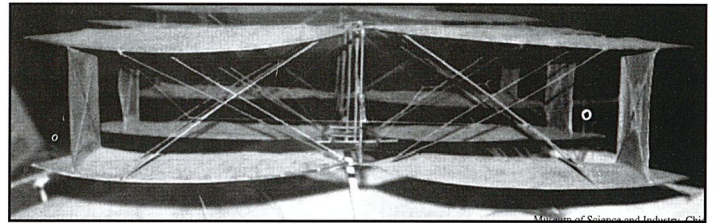
By 1895 Chanute had moved beyond conferences and theoretical studies. He began active gliding experiments to maintain his leadership in American aeronautics. (2)

On June 22, 1896, Chanute took the train to Miller Station, IN, to begin his aeronautics experiments with his son Charles, Augustus M. Herring, William Avery and, two dogs, Rags and Tatters. All equipment materials were carried about two miles to Miller Beach in the dunes of Lake Michigan's southern shore.

During the two weeks at Miller Beach, several experiments were with kite designs, and two full-size gliders, the "Lilienthal" and

the "Katydid." Chanute's multiplane "Katydid" was re-rigged for each experiment. The experiments were continued on August 15 in Dune Park, a more remote site along the lake. Dr. James Rickets and Paul Butusov joined the group. Short commented that Chanute's knowledge of the Pratt truss used in railroad bridge construction was utilized in the design of his 1895 models. This method stiffened and strengthened the gliders' airfoils. It was used in the triplane, which became a biplane after a few flights. "... then Herring and Avery devised and mounted an elastic attachment to the tail." (3)

After Otto Lilienthal's death in 1896, Chanute's design was the most advanced glider of its time. At that point, both Avery and Herring made longer duration and distance flights than anyone else in the world. Use of the Pratt truss provided reliable structure that could withstand not only the expected



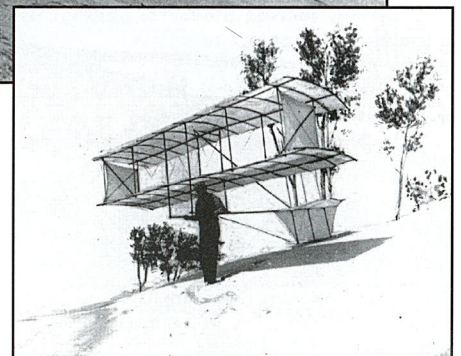
The Pratt truss was used in Chanute's 1895 models to obtain strength and stiffness.

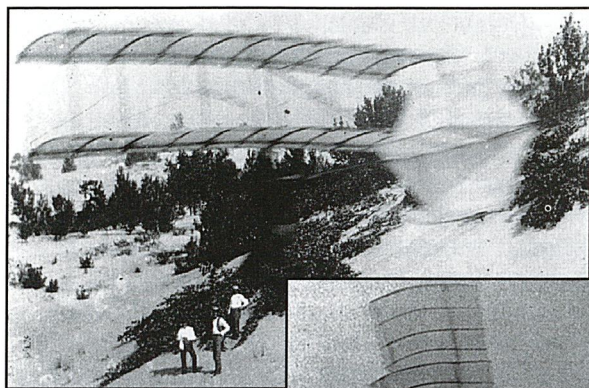
forces of flight but also possible mishaps due to pilot misjudgment.

The *Chicago Tribune* reported on September 12, 1896, "One wholly new freak of the air was experienced by Mr. Herring when his machine rose with a sudden gust 40 feet higher than his starting point, then coming to a sudden poise, balancing like a bird, swooping at a right angle, traveled a long journey, alighting gracefully upon a hillside." Short reported that Chanute was possibly the first to promote the sport of gliding in United States. This, from a



Chanute's biplane glider, braced with the Pratt truss, became the basis for future aeronautical development.





"If we had a long straight ridge and a suitable wind blowing at right angles there to, we would have attempted to have sailed horizontally along the ridges top transversely." (Chanute 1897, "Recent Experiments in Gliding Flight").



lecture by Chanute to the Paris, France, Aero Club, April 1903: "Our experiments permitted us to learn completely 'the art of birds.' Besides, these glides provide the most original and enticing of sports . . . Moreover some of our dauntless automobile sportsmen will happen to make themselves some similar machines and seek out somewhere a favorable spot for competing in these glides."



Joseph G. Hodges, Denver, CO, Chanute's great grandson, reading from some of Octave Chanute's writings.

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Anyone is invited to contribute material and pictures with identification, about historical soaring activities, renovation of old sailplanes, soaring pioneers, unusual uses of sailplanes, etc. Manuscripts are subject to whatever revisions, additions or deletions are necessary to make the material conform to the space limitations and standards of the NSM. Material that is to be returned must be accompanied by a stamped self-addressed envelope. No compensation other than credit will be given.

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The National Soaring Museum is an affiliate of The Soaring Society of America and, as such, is the official repository for all its documents and artifacts.



Joseph G. Hodges receiving the 1999 U.S. Soaring Hall of Fame Award on behalf of his great grandfather, from Soaring Society of America president Larry Sanderson.

According to Short, in five years Chanute spent about \$10,000 of his own money to support the development of building and flying gliders. (For comparison, she added that a supervisor in the engineering field at the Smithsonian Institution then made \$1,800 a year.)

Octave Chanute died November 1910 in Chicago. James Means wrote in the March 17, 1911, issue of *Science*, "We may well believe that whenever the future of aviation shall be reviewed, the name of Chanute will stand forth as that of one of the few great founders."

In one of her closing panels, Short pointed out that Chanute utilized the findings of such eighteenth and nineteenth century experimenters as Cayley, Penaud, Wenham, Otto Lilienthal, and Henson for some of his ideas. But, "It was the addition of Chanute's concepts that put the design together," she said.

A century later, in 1996, National Landmark of Soaring No. 8 was dedicated at Miller Beach, a suburb of Gary, Indiana, honoring the glider flight experiments of Octave Chanute and his associates.

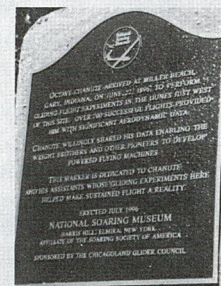
In his acceptance of the award, Chanute's great grandson, Joseph G. Hodges of Denver, CO, read some of the great aviation pioneer's writings about the future of gliding and soaring.

1. From Chanute's 1897, "Recent Experiments in Gliding Flight."
2. Tom Crouch 1981, *A Dream of Wings*.
3. Chanute 1908, "Evolution of the Two-Surface Flying Machine."

The Chanute-type 100 years later

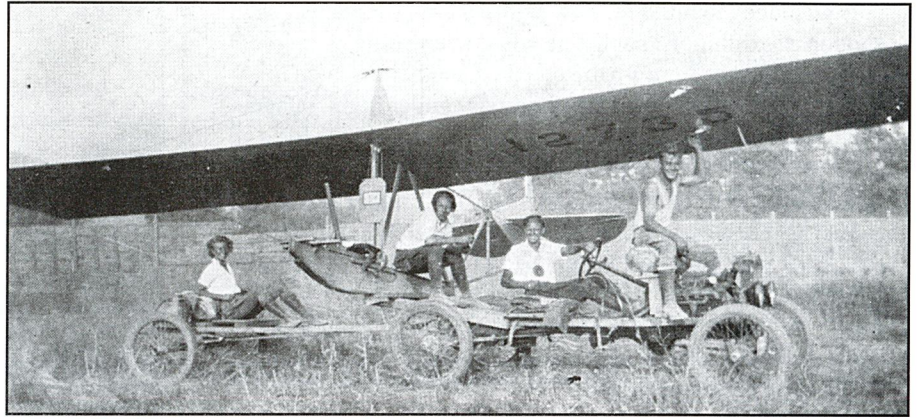


National
Landmark of
Soaring No.8



dedicated in 1996 in Miller Beach, a suburb of Gary, Indiana, honoring the glider flight experiments by Octave Chanute and his team.

Cloyd Artman - The Northwest's Soaring Trailblazer of the 1930s



Cloyd Artman, believed to be at right with left hand raised, and sister, Audrey, at left with friends and the "Lone Eagle" primary. (Soaring photo)

Cloyd Artman of Oroville, Washington, was one of those unique characters who levitate to recognition for a brief flash, then lapse into the mists of historical recall. Artman had intelligence, dash, stamina, and a life optic that focused on motorless flight in his own terms. Maybe it's the romance and notoriety of aviation, but it seems that a disproportionate number of these men and women turn up on the flight line.

Cloyd L. Artman treated the buttes and valleys of America's rugged Northwest as an aerial playground. He designed and built his first primary in 1931, from pictures he had seen in some magazine. Incredibly, he had never before actually seen a real glider! He taught himself to fly with no outside instruction and had several hours of flight time before ever having seen another glider. Ralph S. Barnaby wrote a story about him in the July 1967 *Soaring* magazine (1). Early in 1933, Artman made his first soaring flight of one hour and fifty-five minutes. He regularly flew his primary to altitudes of 3,000 feet. His best duration in the primary: thirteen-and-a-half hours; best cross-country flight: twelve miles with return to starting point.

Later that same year he taught his 16-year-old sister, Audrey, to fly. Soon after, she soared three hours and eighteen minutes in the primary, reaching an altitude of 2,400 feet. She also helped him build his gliders.

The April 1, 1935, *Gliding and Soaring Bulletin* quoted Artman as working his way through college, "with my little primary, by staging programs and giving talks on gliding and soaring."

Aero historian Pete Bowers wrote: "His accomplishments were fabulous, and in a home-built glider. Artman launched off a steep mountain and stayed up all day. He'd take along a knapsack lunch and, astonishingly, a coronet, on which he played tunes as he flew. If he stayed until dark, which he often did, he'd blow a certain bugle call as a signal for his sister or mother to come out of the house and set the lights in the back pasture for his landing." Bowers continued, "He made a monkey of the experienced hotshot pilots from Seattle who went to Oroville to show up this country bumpkin. Cloyd not only out-flew their secondaries with his primary, he literally knocked them out of the air by flying above them and tossing apple cores on them. They just didn't know how to slope soar that cliff." (1)

Himself a member of aviation's elite Early Birds, Barnaby commented on the unique launching arrangement that Artman designed and built. It consisted of a wooden chute affair, mounted on the roof of his old Ford car. He'd back the Ford up to the edge of a cliff with the glider mounted on the chute, restrained by a release mechanism. The chute would then be tilted down to

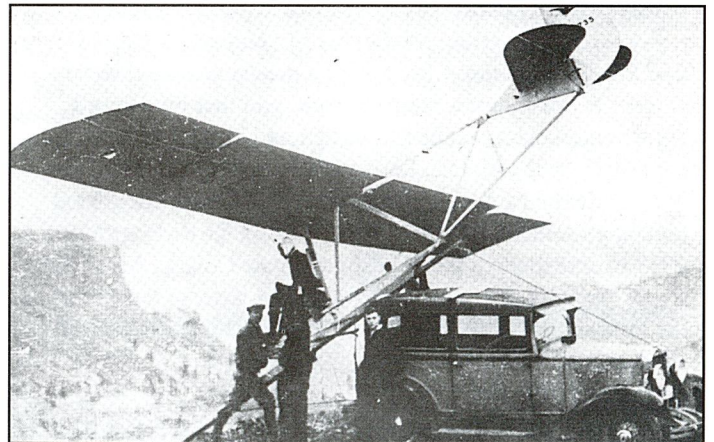
an angle of about 45 degrees, with the lower end extending over the edge of the cliff. Safety belted in the seat, complete with food supply, coronet, and a surveyor's altimeter hung around his neck with a lanyard, Cloyd would pull the release and away he'd go! Barnaby said, "I, who was dropped from the Navy's dirigible 'Los Angeles' at an altitude of 3,000 feet, can make my back hair stand on end by just looking at the picture of Cloyd in his primary just after release, with the valley and river some 2,000 feet below!"

Unfortunately, on April 25, 1935, the primary, dubbed the "Lone Eagle" by Artman's mother, came to a splintered demise while being trailered with a friend aboard for ballast. An oncoming car demolished the entire rig. The human ballast escaped with nothing but a few bruises, scratches, and a startling re-evaluation of the mortality of man.

Artman had plans for he and his sister's barnstorming around the West that summer. He said that his flying was very limited unless he could find a backer "with the money and interest."

He wrote Barnaby that he expected to turn out about five new soaring pilots before the end of that year's school term. "So you can still expect to hear occasionally from gliding activities in the Northwest in spite of the loss of the 'Lone Eagle'."

In answer to Barnaby's letter of encouragement, Artman wrote, "I am already nicely started on a new ship. I began working day and night on it on June 13th and gave it its first test hops on July 12th -- how's that?" Artman had to



Artman in his home-built "Lone Eagle" primary prior to launching above the Snake River Valley (Soaring photo)

borrow money to build the new primary and planned to get enough at exhibitions so that he could keep going as before.

On July 19, Barnaby received another dispatch in which Cloyd described a July 15 primary glider flight, bungee-launching into what seemed like weak lift. "I barely made a go of it," he said. "In a couple of hours the wind increased until I could slowly drift backward, and it became smooth as silk. I gained as much as possible and worked out away from the mountain reaching about 5,000 feet. My altimeter registered 5,700 feet at the peak, and believe me, it looked every bit of that!" On one of his succeeding flights doing a couple of loops and a few wingovers, Artman reflected, "No more loops for me until I get a parachute."

Throughout the spring and summer of 1935, Artman kept Barnaby apprised of the activities and progress of his soaring group. He mentioned one of his flights in which he was propelled up from an altitude of 400 feet to 1,200 feet in 10 seconds, a rate of climb of 80 feet per second!

In October of that year, Artman reported that there were approximately fifteen gliders in the state of Washington, three of them sailplanes, two secondaries, and the rest primaries. The only licensed glider was a sailplane owned by a McAllister of Yakima.

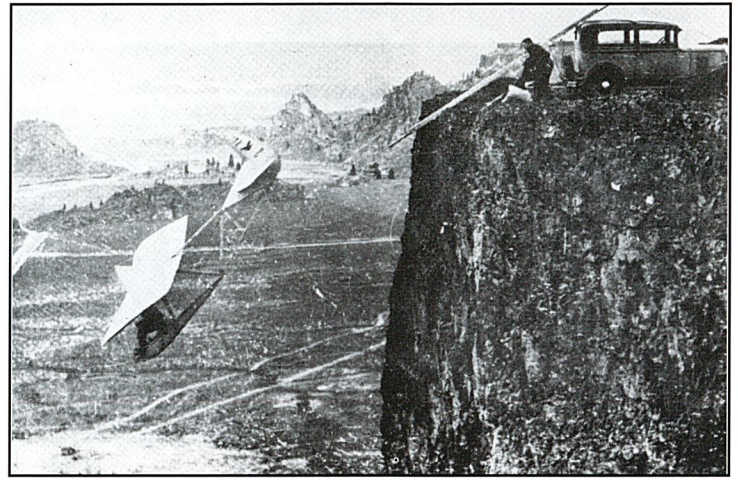
In April, 1936, with Cloyd's leadership, a soaring meet was held at Steptoe Butte, WA. It was shortened two days by a fatality. Elmer Carlson made a downwind turn and crashed into the hillside. Still the meet boasted 83 flights and almost 48 hours of soaring.

Barnaby wrote, "Cloyd's descriptions of his flights continue to fascinate me. How many people have had the experience of sitting out in the breeze on the hard board seat of a primary glider, viewing the scenery around and directly down between one's knees, from an altitude of over 5,000 feet? Or the experience of bringing such a craft in to land in the middle of the night after a flight of several hours, the landing taking place in a small pasture by the light of a hand-held flashlight and headlights of a couple of cars?" Artman did it repeatedly.

Cloyd continued his search for more and better soaring sites in the Northridge. He mentioned a flight off Badger Mountain in which he tracked 20 feet in the wake of a hawk. "Believe it or not," he wrote Barnaby, "I gained steadily along with him and he would turn his head to look over or under his wing at me. In the minute that I followed him I gained 300 feet, and gained 1,100 feet above the take-off point. . . using what I learned from the hawk to good advantage."

In a letter published in the November 1, 1935, *Gliding and Soaring Bulletin*, Cloyd, then a mechanical engineering student at Washington State College, said that his aircraft construction class planned to design and build a two-place secondary-type sailplane for dual instruction. The new low-wing glider had a retractable landing gear. It was completed after approximately 2,300 hours of work in the early spring of 1937 by members of the Washington State College Aero Club. It was reported in a local newspaper that Artman had tested the new ship solo on Steptoe Butte from Monday through Wednesday, April 17. He even had one flight of four hours and twenty minutes.

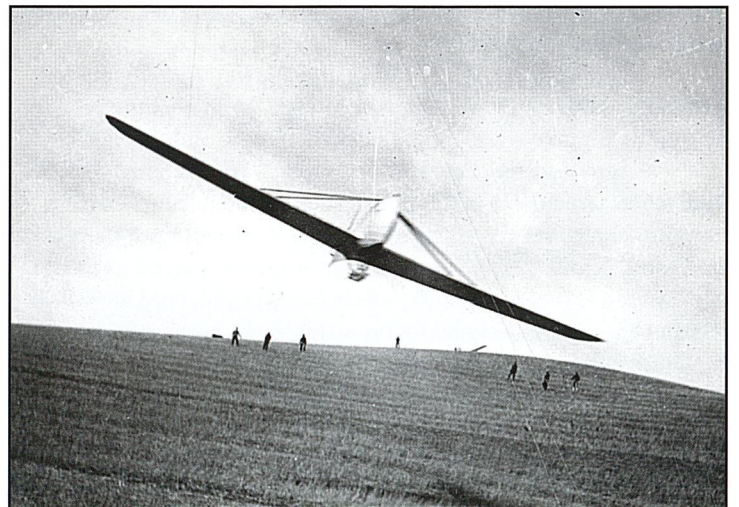
After being denied permission by landowners to glide atop Steptoe, the club moved to the Snake River bluffs (WA)



Catapult release! Artman swoops down over the Northwest's Snake River Valley (Soaring photo)

on the following Saturday. On Sunday, April 11, 1937, Artman inaugurated the first two-place flight in the club's new Comet secondary glider with Frank See, a glider student from Colfax WA. Both were juniors in mechanical engineering.

The May 1937 *Soaring* magazine related the tragedy that ensued. "Artman and See took off at 12:05, from a bluff overlooking the Snake River at Wawawai. They were in a slope wind blowing up the 1,200 foot bluffs along the banks of the river, and apparently encountered very turbulent air." At this point, the witnesses' accounts differ slightly. One says that, "after five minutes in the air, the ship encountered an exceptionally strong up current." The other says that, "after a few minutes . . . the ship dropped by a down current and then caught a strong upgust." Both reports agree that at the last minute, observers saw the left wing fold back and the ship fall straight into the rocks 500 feet below. Speculation was, that if too much altitude was lost regaining the starting point, Artman and See had intended to land on the other side of the river. When the wing failure occurred, they were flying above a cliff, halfway down the



Washington State College Aero Club's two-place Comet, with landing gear extended (Gene Davidson photo, NSM Archives)

bluff. Watchers said that with a few more turns they probably would have veered out across the river to land.

From *Soaring*, June 1937: "Examination of the wreckage indicated that a shear failure occurred in the wing butt

fitting. It is possible that a previous landing and ground loop may have resulted in some damage to the wing which was not noted on routine inspection, or lacking a proper stress analysis, the fitting was not designed with a proper safety factor. The glider was not licensed."

Barnaby said, "And so, at the young age of twenty-four years, Cloyd L. Artman passed into history -- a brief but brilliant meteor flashing across a corner of the aviation sky. Remember his name. He was one of the true pioneers of our sport of soaring."

(1) *Soaring* July 1967 "Cloyd Artman Soaring Pioneer of the Northwest" pg. 12-17

ON THE COVER:

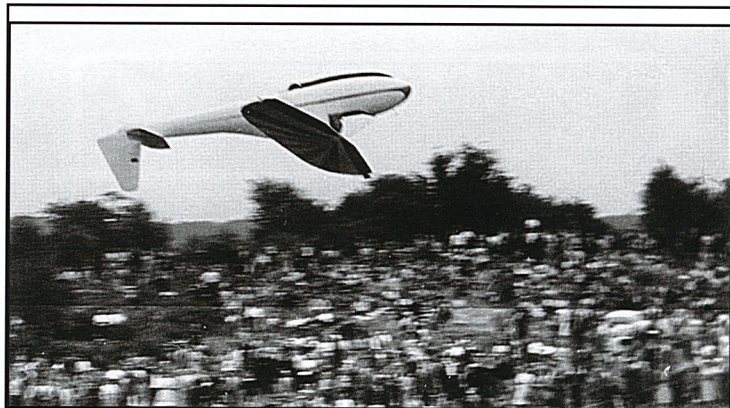
"Soaring Heritage" is the name of the virtual reality watercolor reproduced on the cover. The original 18x24 print is a limited-edition offering for donors of \$300 or more to NSM's Heritage Campaign. From top to bottom, the ships represented are: Schleicher Ka-6E, Niemi Sisu 1-A, Schempp-Hirth Goppingen-III Minimoa, Bowlus-du Pont Albatross, Nelson Hummingbird motorglider, and Schweizer SGS 1-26. All are in NSM's collection. To receive your copy of "Soaring Heritage," send your check for at least \$300, payable to NSM, to: The Heritage Campaign, 51 Soaring Hill Drive, Elmira, NY 14903-9204. Or call 607-734-3128 to receive more information about the campaign or to charge your gift.

From the NSM Archives . . .

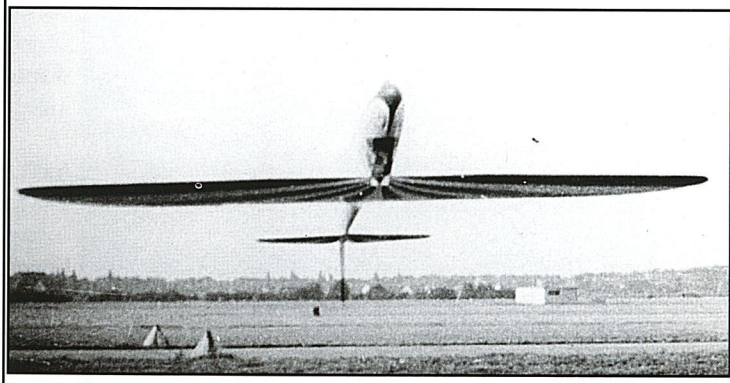
Right- Stunt pilot Don Stevens on a California beach in his primary glider, playing Santa Claus for a gaggle of waiting Hollywood starlets. (Probably a movie studio publicity shot done in the late '30s. Note the cameraman at left.) **Below-** an un-bearded, gift-laden Santa, Don Stevens and the surfside Christmas tree, complete with life preservers.



The Austria was the largest sailplane ever built. It had a wing-span of approximately 100 feet (30 meters). It was designed by Dr. Kuepper of the Munich Akaflieg in the early 1930s, especially for pioneer sailplane pilot Robert Kronfeld. Nicknamed "The Elephant," because of its cumbersome ground handling, the Austria had an aspect ratio 25.7, a Gottingen 652 airfoil, and an empty weight of approximately 864 pounds. The Austria broke up during a July 1932 Rhoen (Germany) sailplane meet. It was thought that Kronfeld could not recover from a high speed spiral at cloud base and half of the wing came off. Kronfeld parachuted to safety amid hurtling sections of the Austria.



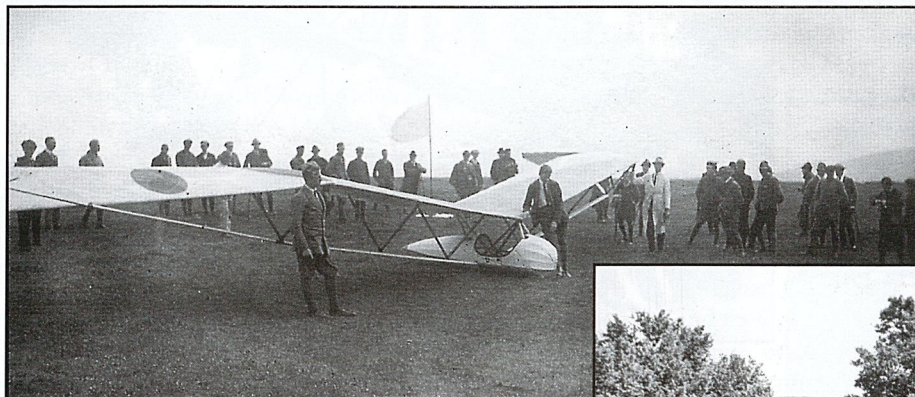
Translated from German on the reverse side: "My friend Sepp Tilling in his Lo 100 at an air meeting in the Summer of 1957. He amazed watchers with his three-meter inverted flight." (unsigned)



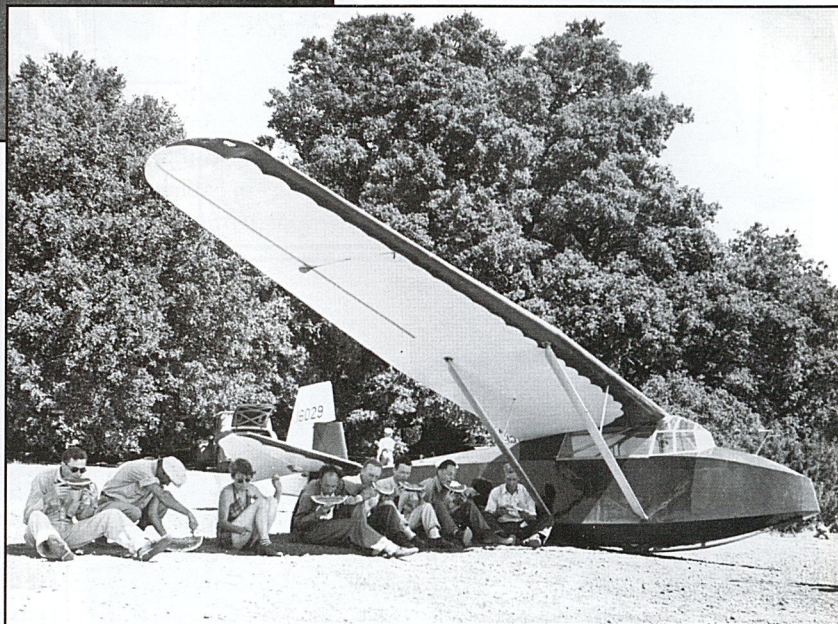
From the NSM Archives, continued



Members of the Goodrich Girls Glider Club and their Baker-McMillan Cadet, Akron OH, 1929.



Left: The Weltensegler glider of Dr. Friederich Wenk, piloted by Wilhelm Leusch at the 1921 Wasserkuppe meet. "It flies as light as a bird out of hand. You only need five strides to launch it. The canopy had to be removed for the pilot to get in." (Translated from the photo's reverse side.)



Above: "Watermelon time, waiting for the wind. Don, a helper, Al Harfllich's brother, Mrs. Asbech, Al Harfllich, Tim H., another helper, Dan Sanborn, Rod Taylor, and the good old Grunau 8. "(Written on the reverse side; no date or location.)



Left: Written on photo, "The CADU-50 (Ceiling And Distance Unlimited-50- foot span) designed and built by Francis A. Joslin. Length 24.5 feet, empty weight 323 pounds, gross weight 575 pounds. Sitka spruce, geodetic construction, birch plywood, and fiber glass stress points. Dacron cover wings and fuselage-June 8, 1964." (Editor's note: Can anyone furnish additional information on CADU-50: location, completed ship, flight history?)