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dd Job: Parachute Jumper Has Had 652 Thrills

aping from moving lane just work for Burt Croff

BY KATHERINE SMITH

rt Croff, our only local profes- l parachute jumper, is one of than a dozen Americans with than 600 such jumps to his . Exactly 652 times he has step- rom a moving plane, with noth- but air between him and terra . Frequently, he leaves the nearly 2½ miles above the

here's a thrill in every jump, but ally, not much danger after a ...ce counted experienced," he told "that is, if the jumper keeps nd is careful when packing his e. More of my friends than I to think about have met death pped to chutes that failed to ; but virtually all deaths of that can be traced to carelessness or or."

How did you happen to break a an arm, and a shoulder?" I en- ed, pointedly.

Through inexperience," he swered, without hesitation. "You it takes practice to come down ere you want to. In the beginning used to land in the queerest ces. Once I found myself in a rn apple tree. That was tough. other time I stopped twenty feet m the ground. For a minute I ought the world had suddenly e topsy-turvy and gravity had functioning; then I turned my d and saw I'd got caught in a e behind me."

Lands Where He Chooses

For more than a decade, Burt off has been landing where he

BURT CROFF, Parachute Jumper

too scared to think about pulling the rip cord to open the chute. Besides, there's no telling where they'd come down. They couldn't be expected to know how to steer the chute with the risers."

A golf enthusiast, Mr. Croff has made a hole in one and frequently goes around an eighteen-hole course in 72. Horseback riding is another of his hobbies. His new home at 507 Stenzil Street, North Tonawanda, absorbs many of his leisure hours at present. He's self-appointed handy man about the house and the acre of ground surrounding it.

He married Cyaire Hagedorn of this city.

"Our taste is modernistic," he told me. "Our home is furnished with modernistic furniture we brought from the Chicago fair. I made a parachute jump at the fair and when we saw the furniture we couldn't resist it."

Questioned about the parachute jumping business, he says it isn't what it used to be.

"Too much competition," he avers. "Ten or twelve years ago jumps used to come to the house—I mean contracts for them, of course—now it keeps a man on the jump to get them."

Mr. Croff is a member of the Rip Cord Club of the World and the National Parachute Jumpers' Association.

Aerial Santa Claus act is among his achievements

SOUTH BUFFALO PICNIC

Education center play day at Chestnut Ridge Park

Final plans for the South Buffalo Adult Education Center play day have been completed, according to Joseph McLean, general chairman. It is scheduled for Tuesday, August 24th, at Chestnut Ridge Park. Special buses will leave the South Buffalo Center at 9.30 a. m.

Many awards will be offered for those taking part in the many athletic events for men, women, boys and girls.

On the cover: Burt Croff - Para Batman

L. Burton Croff was a cadreman of that colorful group of skydiving barnstormers who thrilled fair-goers of the 30's and 40's. He'd bail out of a plane; an almost imperceptible sky-speck, hurtling earthward at almost terminal velocity. Then snap! Bat-like wings would open and he'd swoop and dive until almost the last millisecond to eternity. Watchers would gasp as the white puff of the parachute deployed behind the batman. He would work the chute risers to a dramatic landing, hopefully in front of the grandstand, amid enthusiastic applause. Saved once more!

But why?

Oft-quoted British aero-historian, Charles Gibbs-Smith noted, "The idea of human flight has engaged the waking and sleeping thoughts of men from the time when they developed visual imagination to regard the birds with envy. With envy came the ambition to emulate." (1) Even the Psalmists wrote, "O, that I had the wings like a dove, I would fly away and be at rest."

Unfortunately, many of these latter day birdmen did find permanent rest plying their risky trade, but not Burt Croff. He passed away in 1949, from natural causes.

His son, Ronald Croff of N. Tonawanda, NY, (Cover picture, lower right, with NSM Executive Director James W. Swinnich), and daughter, Sondra Diane Croff Maglisceau, of Dallas, TX, recently donated their father's batwings to the National Soaring Museum where they will be part of a future exhibit.

Burt's first parachute jump was on a dare, in 1924, when he was a sophomore at the University of Michigan. It earned him a job with a real estate firm. As a promotional stunt, the firm hired him to make parachute jumps where subdivisions were being developed.

In an Aug. 15, 1937, Buffalo Courier-Express story, Croff said, "At that time jumpers were in great demand. There weren't fifteen of them in the United States." Realizing that there was good money in jumping, Croff improved his technique with instructor, Joe Crane, who was then associated with a jumpers' school at Roosevelt Field, L.I.

In 1925, Croff made $250 a week. "The money went to my head," he said, "and I left college." The story said that when not on the sky-diving circuit, he worked as a tool and die maker at the Curtiss Aeroplane and Motor Co. "The company was very good about letting me take time off for jumping," Croff said.

The canvas, bat-like, webbed wings which fitted from his arms to his legs were designed by Croff himself. He said that they were larger than those of the pioneering skydiver, Clem Sohn, who visited Croff in 1935. (Pictured in white Batman Suit at middle right on cover.) Sohn was killed in 1937, at an exhibition in Vincennes, France. Croff said that his wings were broken so often in landing, he gave them up. "But I haven't chucked the idea of flying with wings," he said, "I'll design another type one of these days." But he never did.

Son, Ronald recalled a story his mother (Eva Claire Hagedorn Croff) told about a winged jump Burt made. When he popped the chute the wind carried him away from the landing site. Even working the risers hard, Croff couldn't control the direction of his descent. He wound up in a field of tail corn, and it took three hours to get to him.

"There's plenty to occupy my mind, especially when I open low," Croff told the interviewer, "I've often kept my chute closed 'til I was within 250 feet of the ground. It gives the spectators a bigger thrill." He said that he had to continuously keep calculating his distance from the ground. "And that's not easy. You're falling so fast your eyes don't focus normally." (Parajumpers in the 30's did not have the advanced instrumentation now available.)

Add Burt Croff's name to the roster of birdmen dating back to Icarus and Daedalus. Greek myth holds that Daedalus fashioned wings of feathers and wax for his son, Icarus. The father's admonition to Icarus was that he not fly too high, lest the solar heat melt the waxen airfoil. Icarus, filled with the joy of flight, disobeyed, and soared too close to the sun. The melted wings sent him crashing to his doom in the Ionian Sea.

The chronicles report the flight of England's King Baldud, father of Shakespeare's King Lear, and founder of Bath. "He overtaxed his powers of necromancy (magic) attempting to fly over London with artificial wings and was killed in the attempt." (2)

Left, King Baldud attempting to fly over London

Right, A sketch of one of the early tower jumpers.

The scholarly Arab, Armen Firmen, in 852, attempted a flight in Cordoba, then Moorish Spain. Around 1020, a Benedictine monk, Oliver of Malmesbury, fitted himself with wings and jumped from Malmesbury Abbey. Surviving the flight/jump, but with both legs broken, he is said to have regretted that he had no tail surfaces attached to his feet. And so it went through the ages.

Before a jump, July 1939, Croff alongside a Waco cabin plane with wife, Eva Claire, 2 year old son, Ronald, and pilot.

Burt Croff must have been an adrenalin junkie. He also raced cars in Cleveland. By 1937, he had logged 435,000 miles as a stunt pilot, and had taught 75 others, including three young women, to jump with parachutes. He was a member of the Rip Cord Club of the World and the National Parachute Jumpers Association.

With the birth of his son, Ronald, in 1937, Eva Claire started to gently persuade her husband to curtail his aerial activities. By the time daughter, Sondra Diane, arrived in the early 40's, Burt was out of skydiving and barnstorming and into the hardware business.

After WWII, L. Burton Croff became a prominent Tonawanda builder, naming a street, Roncroff Dr., after his son, Ronald. The retired daredevil only used his plane recreationally and to fly with his friends on hunting trips.

(1) Aviation an Historical Survey from its Origins to the End of World War II - by Charles Harvard Gibbs- Smith, London, Her Majesty's Stationery Office, 1970, pg. 1
(2) ibid, pg 3.

Cover - Croff standing on the wing of an American Eagle biplane - 1937, Buffalo Courier Express story. (available at NSM) 2. NSM Director James W. Swinnich inspecting the Batwing with Ronald Croff, Burt's son. Inset, Batman Clem Sohn.

The National Soaring Museum Hosts The Northeast Aero Historians Annual Meeting

Orville Wright impersonator (Bill Gallagher, with arm raised) discusses some of the Wright Brothers designs with a group of Northeast Aero-Historians.

On the weekend of October 9-12, Harris Hill was adorned in its most festive fall colors to greet the 33rd meeting of the Northeast Aero-Historians at the National Soaring Museum. The 38 attendees from Virginia to Quebec explored aero-lore from the Wright Brothers to the economics of cropdusting. Glenn H. Curtiss, Alexander Lippisch, Leroy Grumann, the Schweizer Brothers, Walter and Reimar Horten, Edwin Link, and Cpl. Margaret Hastings, lost in New Guinea's "Shangri-La," were some of the personalities highlighted.

A Friday afternoon "Fly Market" and book sale was held for aero browsers, followed by an evening reception in the NSM's Main Exhibit Hall. Saturday morning sessions opened with welcoming remarks by NSM Executive Director James W. Swinnich. For spouses not attending the speakers' sessions, Jaye Fish, the NSM's Development Director planned a tour of the Corning Museum of Glass, Rockwell Museum (Western art), Market Street shopping & antiquing, and the Christmas House.

The County, City and Community Role in Making and Maintaining Harris Hill as "The Soaring Capital of America"

By J. Arthur Kieffer, Chemung County Historian

The first speaker was J. Arthur Kieffer, Chemung County Historian, and former Chemung County Buildings and Grounds Superintendent. He traced the evolution and development of motorless flight in the Chemung Valley, from the six original surrounding launch sites to the present Chemung County Harris Hill recreational park and gliderport. The county purchased surrounding farms on the hill in the 1930's and graded the land for a grass runway. With help from the W.P.A. (Roosevelt's Works Progress Administration) and the C.C.C. (Civilian Conservation Corps.) a hangar, an administration building (destroyed by fire in 1977) cabins, and picnic area were added to the new hilltop recreational area. He noted that 1934 was the first year in which the new field was used.

The gliderport was officially known as the Warren E. Eaton Motorless Flight Facilities. It became unofficially known as Harris Hill, in honor of Lt. Henry "Hank" Harris who, during the Fifth National Contest in 1934, was killed at an auxiliary Big Flats airport. A glider was late releasing from the 1917 Hudson tow car in which he was riding. Swerving to miss a stone fence the touring car overturned when one of its wooden-spoked wheels collapsed.

As former Buildings and Grounds Superintendent, Kieffer was heavily involved with the National Soaring Museum and was present at its dedication. With his keen sense of historical continuity, he saw the NSM and Harris Hill develop into one of Southern New York's outstanding tourist atttractions.

Kieffer offered this advice on how to develop a museum: Keep the public active and involved at every level. Attend political action meetings. When it's time to start building, take the last five years inflation rates plus today's costs, and that's probably what it will cost five years down the line.

Northeast Aero-Historians

The Link Aviation Story

by Ted Mumford Retired V.P. of Link Aviation

Who better to talk about "The Link Aviation Story," than Ted Mulford, Binghamton, NY, retired Link Aviation Vice President. Mulford was with Ed Link in the early days and saw the company taken over first by General Precision Equipment in 1954, and then by the Singer Company when they decided to move into aero-space. In 1980 Singer was raided and Mulford's company was sold to Canadian Aviation Electronics (Montreal) and finally Link Aviation was taken over by Hughes Training, and the Binghamton, NY operation was dismantled. "A very sad story," commented Mulford, quickly adding, "But mine is a very happy one."

The Edwin A. Link history began in 1904. Ed Link's parents separated early and his mother took him to Los Angeles. When he was 16, Ed began taking flying lessons from an instructor named Sidney Chaplin, the famous comedic movie tramp's brother.

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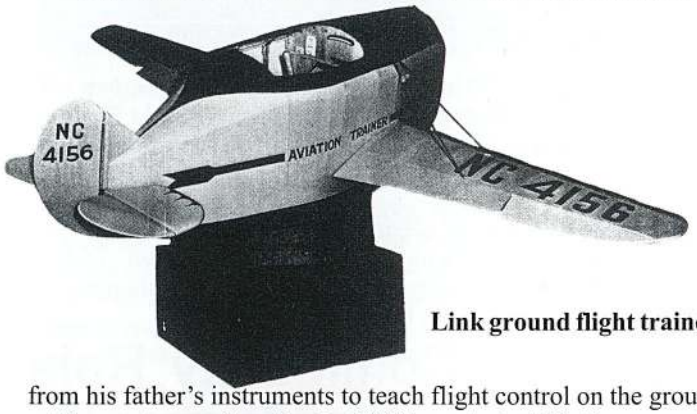
Young Edwin's parents settled their differences, and his mother moved back to Binghamton, where the father ran a piano factory. Ed joined the family business and became an outstanding piano repairman. The lure of flight was too strong, however. By 1926, Link was back flying at the old Binghamton Airport. He became so proficient, he wound up barnstorming.

The technique of flight instruction at that time was based on the "Penguin System," used by the French in WWI. The student taxied the aircraft up and down the runway to get the feel of the stick and rudder controls. It was a good but expensive way to learn. ($200 to $300 then.)

Link came up with a device, using bellows and components



Link ground flight trainer

from his father's instruments to teach flight control on the ground, cutting costs considerably. In 1929 he patented his tiny grounded imitation airplane and used it in his flight school; $85 for ground lessons and two air lessons.

Ed's older brother, George, was the guinea pig. George spent 42 minutes in Ed's new device, then took off solo. He landed hard, ran off the runway, breaking some of the plane's struts. He never flew again...

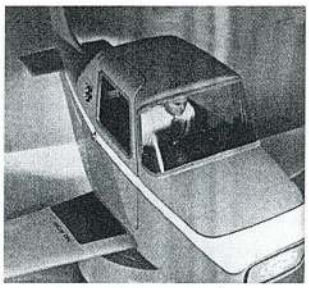
Mulford emphasized that in those days a trainer was not a simulator. It didn't pretend to act like an airplane.

Then came the Depression, causing both the flight instruction and his father's organ business to collapse.

Mulford said that Ed built a "Pilot Maker." To keep him going during those bad times he hauled it around to carnivals and sold rides in it. Link added a hood and a communication system along with instruments for blind flying. The instructor outside monitored the student's progress.

About this time Link began an association with two ex-WWI flying aces, "Casey" Jones and George Vaughn. They bought one of Ed's devices for their Eastern Aero Training School in Newark, NJ.

In 1934 the Roosevelt administration directed that the U.S. Army Air Corps fly the mail as an economy measure. Totally untrained for this mission and suffering many casualties, the Air Corps was desperate for qualified pilots. Jones invited the Air Corps brass to come to Newark and see a demo of the Link trainer. Brig. Gen. Westover was impressed. Even though military budgets were pinched, Gen. Westover prevailed on Congressman Howard McSwain to back an appropriation for six Link Trainer units at $3,400 apiece for the Air Corps. The value of the Link trainers accelerated as a remote recorder was added to trace the student's simulated flight path.



The Link GAT-1 simulator duplicates flying conditions with instruments and radio communication.

"Casey" formed the J V W Company and became sales representative for the Link Company.

Most of the early sales were to foreign governments, including ten to Japan and four to AMTOR, the Russian procurement agency.

With the onset of WWII sales took off. A plant was established in Gananoque, Ont., Canada for early sales to Great Britain. By 1943 Link was turning out one unit every 43 minutes.

While those models did not fully have the feel of a flying aircraft, a critical situation could be programmed where the student pilot had to react quickly and his response noted.

One of the successful offshoots was the design of the Celestial Navigation Tower (CNT). Located in a 45-foot-high silo-like column, student navigators sighted on an array of 379 stars in the planetarium overhead, while bombardiers trained with Norden bombsights on terrain plates moving below. Around 50 CNT's were produced, along with flexible gunnery and radar trainers.

A Canadian Air Vice Marshall commented at the end of WWII, "The Luftwaffe was defeated in the Link Trainer."

In 1945 Link developed the first fully instrumented trainer. In the late 40's all devices became computerized. The most outstanding was the Model C-11, a jet trainer that duplicated the Air Force's F-80. Hundreds were produced, some in use through the 1960's.

In 1954, Link built the first simulator that had the feel of an aircraft. Later, cockpit motion was added to the mix, with the vehicle atop a high pedestal. It duplicated every configuration and flight sensation experienced by the pilot.

The retired VP said that Link quickly moved into the space program. He mentioned the Apollo 13 crisis, the incident on which the movie was based. It was a Link simulator that enabled engineers on the ground to figure out the on-board glitch and relay corrective modes to Cernan, allowing the capsule's safe return home.

"Simulator has become a generic word," Mulford said, "a credit to Ed Link in 1928."

Northeast Aero-Historians

National Warplane Museum Status Report

Linn Redder, Marketing Specialist

The Status Report on the new National Warplane Museum, located at the Elmira-Corning Regional Airport, was given by Linn Redder, Marketing Specialist and Curator, Brian Howard. The original Museum was started in 1983 in Geneseo, NY, and last year moved to the Elmira area.

The first 30,000-square-foot hangar was taken down from its old location, moved to the Elmira-Corning Regional Airport and raised in five weeks. Work will soon start on another 30,000-build-

Brian Howard, National Warplane Museum Curator

ing that will house administrative offices, a display area, a 300-seat theater and a comprehensive research library and working archives. Also included will be comprehensive new exhibits on the history of military aviation to 1975.

The National Warplane Museum presently has 35 flyable warbirds, including a B-17, C-47, F-4, B-57 and a BTD-1 aircraft destroyer. The goal is to have 75 historically significant planes in its collection in five years.

The National Warplane Museum's "Wings of Eagles Air Show," last summer featured 100 static and flying airplanes. The Museum took part in four air shows this year. Howard emphasized the success that the Museum has had putting on high quality, large production air shows.

Redder and Howard said that one of the most exciting Museum projects is the promotion of reunions. Recently 3,000 invitations were sent out to various organizations suggesting that their next meeting/reunion/conference be held at the National Warplane Museum.

Promotional tour packages are already being drafted for the three world-class museums: The National Warplane Museum, The National Soaring Museum and the Glenn H. Curtiss Museum.

The History of the Ag-Cat Airplane

By William Schweizer

Left, William Schweizer. Above, The Ag-Cat in action (all photos from William Schweizer's book " The Ageless Ag-Cat," available at the NSM Gift Shop or the Schweizer Aircraft Corporation.)

The next speaker was William Schweizer, co-founder and retired CEO of the Schweizer Aircraft Corporation, author of "The Ag-Cat, The Ageless Cat," "Soaring With The Schweizers," and member of the United States Soaring Hall of Fame. He briefly profiled Leroy Grumman and his Beth Page, Long Island Company, its long commitment to producing military aircraft and its post WWII shift to workhorse amphibians. Schweizer said that in the 1950's, the amphibian market softened and was being replaced by the agile helicopter. Grumman was advised by three company fact-finders, Joe Lipert, Art Koch (designer of the famous WWII "Avenger" torpedo plane) and Sales Manager Randy Ross, that expanding ag-tech field required new more expansive fertilizing and dusting techniques.

At that time, only the converted wartime Stearman PT-17 trainer and the Piper Super Cub were in general use for crop dusting. The latter suffered from weight distribution problems and experienced a number of fatalities.

Stearman P T - 1 7 World War II trainer

The original Grumman design concept called for a 35-foot wingspan (so it would fit in farm structures, gross weight 3,700 lbs., a 215 gallon hopper at the center of gravity) rugged structure and crash protection. All panelling could be removed so that corrosive dusting and spreading chemicals could be washed off.

Model "B" Ag-Cat panels are removable with a screwdriver for wash down after spraying/ dusting.

Leroy Grumman kept referring to the prototype, completed in 1957 as "The Grasshopper," until it was pointed out that ag-people don't like grasshoppers. In keeping with the Grumman tradition of naming their ships after cats ("Wild," "Hell," "Tiger," "Bear," "Tom") the new biplane was become the "Ag-Cat."

The Grumman Board did not want to invest in another production facility, so it decided to sub-contract the Ag-Cat manufacturing

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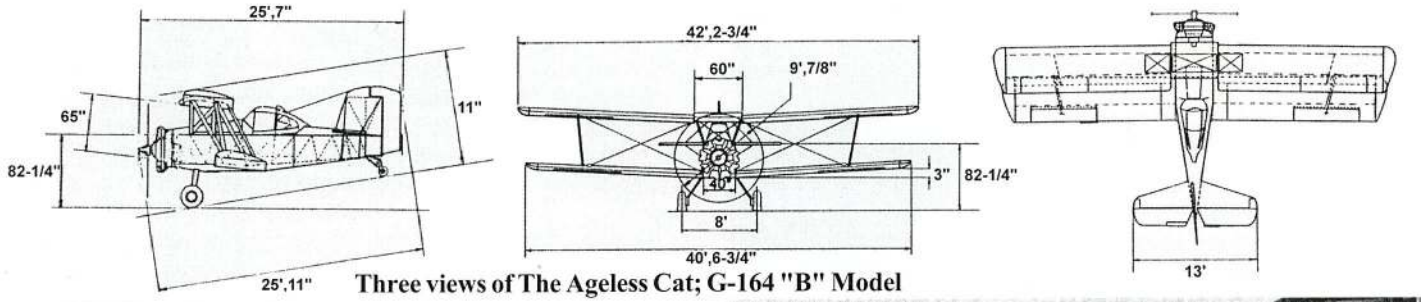

Three views of The Ageless Cat; G-164 "B" Model

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operation.

In 1957 LeRoy Grumman signed a contract with the Schweizer Aircraft Corporation. Grumman was to act as manager, control the design and handle the marketing. Schweizer was responsible for making the production tools, manufacturing parts and assembling the aircraft to Grumman's specifications and schedule. Schweizer was also to flight test each aircraft, presenting Grumman with an FAA licensed Ag-Cat. At that time, Grumman would pay for the ship. Additionally, Schweizer had the right to review all engineering designs before the work started, to ensure cost effectiveness and efficient handling at the Schweizer facility.

The first production ship, N10200, flew on October, 1958. Retail cost - $17,500. Four independent distributors were appointed to handle sales and services in the United States. The airplane could be converted from dust to spray in twenty minutes.

By the end of 1958, 35 Ag-Cats were built, but only 10 were in customers' hands. In spite of the outstanding technological advantages, it was hard to justify that expenditure against the $750 for a surplus Stearman biplane.

Fitted with additional fuel tanks, one Ag-Cat was flown 9,000 miles in 500 mile hops to Uruguay in South America.

Ag Cat S/N 17 made a 9000 mile delivery flight to Uruguay, South America in 1960.

"The Ag-Cat airframe had excellent growth potential," Schweizer said. Several modifications followed. A 300 hp Jacobs radial engine was installed and an enclosed cockpit was added. 1966 saw the redesigned "A" model, powered by a 450 hp Pratt & Whitney radial engine. It had a 300 gallon fiberglass hopper that could safely handle water-based chemicals amounting to a payload of 1.25 tons.

Around this time helicopters were making inroads in the fixed-wing ag business. Because of their aerodynamic characteristics, they could deliver chemicals to both sides of the leaves.

In 1973 ownership and management of the Ag-Cat program was transferred by Grumman to a subsidiary company, Grumman American. In the 70's the ag business peaked to where, in 1976, The Schweizer Aircraft Corporation produced 286 Ag-Cats and enjoyed about 20 percent of sales in the field.

Starting in 1975 all A models were powered by a 600 hp Pratt and Whitney radial engine. The "B" model's wingspan was increased from 36 to 42 1/4 feet and was projected to carry the same payload

Bill, Paul and Ernie Schweizer talking over flight characteristics of the Ag-Cat with Clyde Cook after first test hop.

with a 450 hp engine as the "A" did with a 600 hp unit. The expected reduced fuel costs and increased wing span would provide a wider spray swath, increasing the ship's productivity.

The "C" model developed in 1977 had a 500 gallon hopper and could carry a payload of two tons.

A major change was made in the "D" model with the PT6 turbo-prop engine. One customer said that his firm could do the same amount of work in a season with only two "Turbo-Cats" instead of four radial powered ships. The turbo had a lower noise level, used less expensive jet fuel, and took less than 4 seconds from idle to full throttle. They ran 3,000 hours without an inspection, as opposed to the 700 to 1,000 hours for engines then in use. Because of the slimmer engine profile, there was less drag and weight, enabling a greater payload.

Super "B" Ag Cat with 750 HP Pratt & Whitney PTG-34 AG turbine engine.

In 1977 the market started to dwindle, with over 10,000 ships operating. Other causes were: The artificial oversupply of crops developed by the government, a business recession, improvement in the quality of ag-planes (The first production Ag-Cat in 1958 was still flying in 1994.) and a grain embargo on the Soviet Union, the largest foreign customer of the 70's.

In 1978, American Jet Industries purchased the Grumman American Division. The following year the Schweizer Company attempted to purchase the Ag-Cat from the new Gulfstream Company and an $8.7 million price was tentatively agreed on. However in the face of rising interest rates (in March 1980 the prime was 20 percent) the S.A.C. stockholders voted that proposal down. Later that year

Schweizer bought the Ag-Cat for $3.3 million, plus a royalty on all airplanes and parts sold for the following seven years. In 1995 Schweizer sold the Ag-Cat agricultural airplane program to the Ag-Cat Corporation of Malden, MO.

Between 1958 and 1994 a total of 2,646 Ag-Cats plus spare parts were manufactured by Schweizer, including five different models with annual updating and with various engine configurations.

The Schweizer Company now manufactures Hughes helicopter models, 300C, 300B, and 330, along with special project motorgliders.

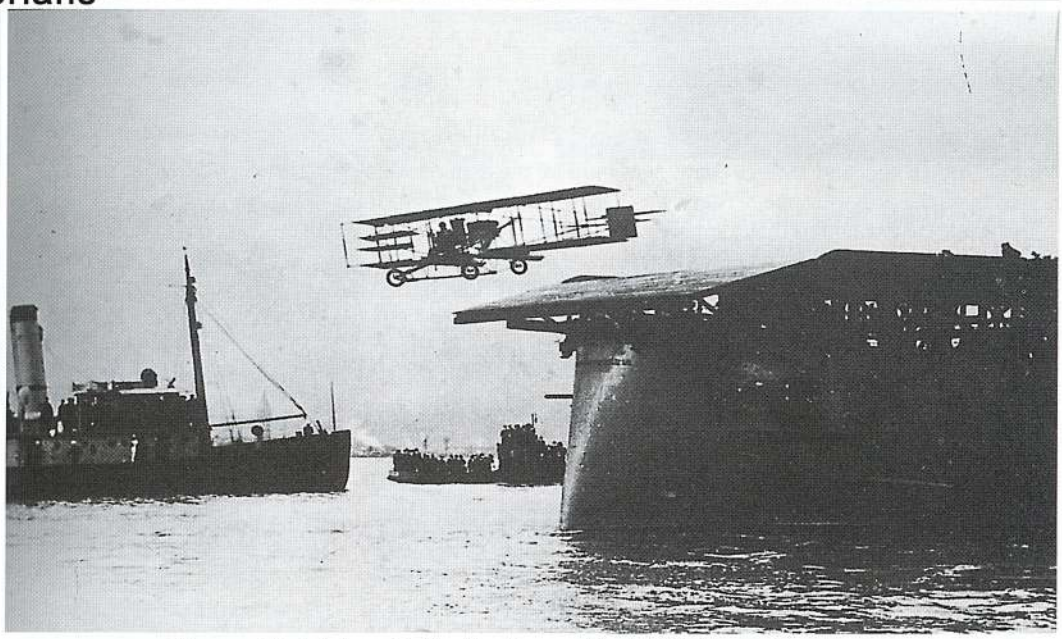
The retired Schweizer CEO closed saying, "We are the only WWII aircraft company that is still the same...and still in business."

Left, Schweizer Model 330 Turbine Helicopter

Right, Schweizer Model 300C Helicopter

Northeast Aero-Historians

Curtiss Flying Boats



Eugene Ely taking off after landing on the U.S.S. Pennsylvania

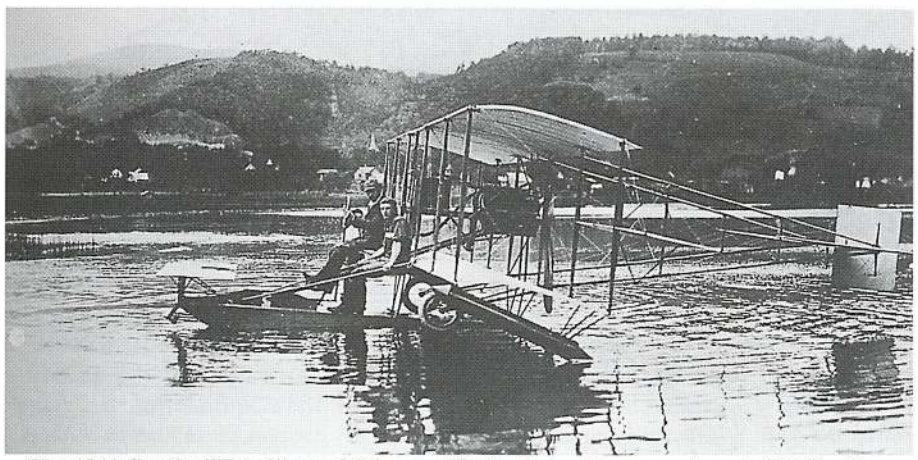
By Kirk House, Curtiss Museum Director & Curator

By way of introducing the "Curtiss Flying Boats" speaker, Kirk House, Director and Curator of the Glenn H. Curtiss Museum, asked Bill Dessereit, Ridgefield, NJ, to key his tape player. The Northeast AeroHistorians heard the erratic, "pop, pop..." then "gr-r-r-owl" of the famous Curtiss OX-5 engine.

Working a slide presentation, House took attendees back to the time of Alexander Graham Bell's tetrahedron kite, and the July 4, 1908, flight of Glenn H. Curtiss' "June Bug."

For the last two years the Curtiss Museum has been building a 1913 "Model E" Flying Boat, powered by an original Curtiss OXX-6 engine. The original hull belongs to the National Air & Space Museum and is presently at the Hammondsport museum where it is being studied for construction techniques and material used, along with precise dimensions.

The project should be completed in a year. When finished, the ship will be flown off its initial launch site, Keuka Lake, one of New York State's picturesque Finger Lakes.



The 1911 Curtiss "Triad" amphibian, on Keuka Lake, Hammondsport, NY. Curtiss at controls, Lt. Theodore Ellyson on wing.

The first flight in Canada took place over the frozen lake at Baddeck, Nova Scotia in 1909. The Curtiss "Silver Dart," with a water-cooled engine, was piloted by the Aerial Experiment Association's John A. D. McCurdy.

House said that Curtiss favored float planes and flying boats because in those days there weren't many open fields, and Hammondsport was a commercial port with a long tradition of boat building.

Curtiss developed an early relationship with the U.S. Navy in 1910, when Eugene Ely, using inner tubes for a life jacket, took-off in a Curtiss Model "D" from an especially built ramp on the cruiser U.S.S. Birmingham, in Hampton Roads, VA. In January 1911, Ely made the first

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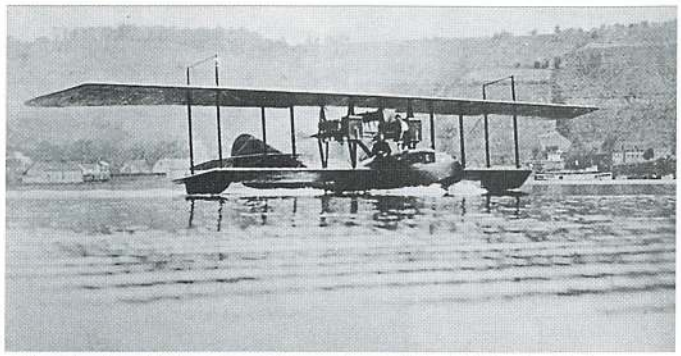

The Curtiss flying boat "America" lifts off Keuka Lake.

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shipboard landing on the makeshift deck aboard the old battleship U.S.S. Pennsylvania.

Each of Glenn Curtiss' early aircraft, the "Red Wing," "White Wing," "June Bug," and "Silver Dart," was built on the experience gained from the previous one. "There was a lot of re-configuring," House said. He explained that the Navy was not going to modify their ships to accommodate wheeled airplanes. The great designer added floats to a Curtiss tractor, and 1911 he landed a float plane alongside the U.S.S. Pennsylvania.

House described the difference between a float plane where a single float is attached to the underside of a land plane, with small stabilizing pontoons at the wing tips, and a flying boat where the wings, tail and engine(s) are built around a boat hull.

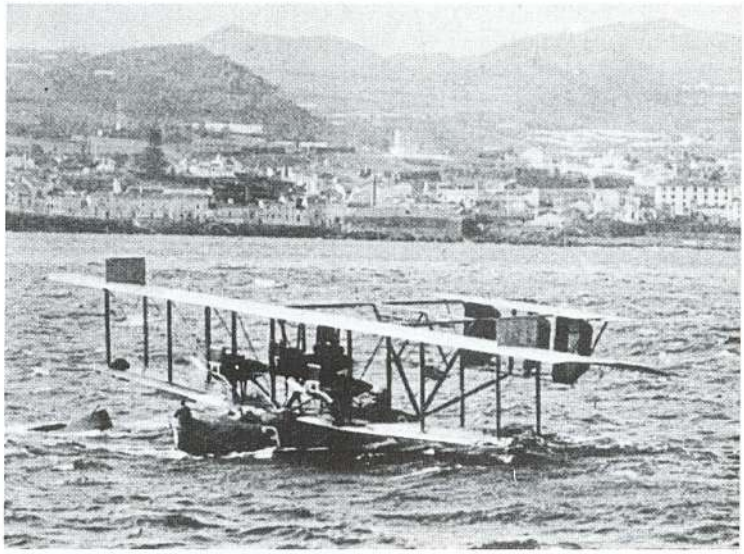
In 1911 Curtiss built the "Triad," a ship with wings, floats and wheels.

Curtiss faced a major problem with his flying boats. Surface tension, created suction, sticking the hulls of his ships to the water as they moved through. He solved the problem by nailing a piece of wood laterally across the hull's underside. That broke the tension and from that Curtiss developed the hull-step. House said that Curtiss patented his invention but never enforced the patent against those who used his idea.

The first commercially-built Curtiss flying boat was the 1913 Model "E." The "E" carried a pilot and passenger. Most were configured for dual controls, for instruction and to lessen pilot fatigue. The pusher-type engine was started with a hand crank from the cockpit side. House smiled and said, "By this time, Curtiss advanced to a point where his ships were almost useful; they could carry something."

With interest shown by scientists, the military and wealthy sportsmen, flying boats became big business. Curtiss even built a flying boat glider.

In 1914 the first enclosed hydroplane, "America," was built to fly across the Atlantic. WWI interrupted the project, and the three-engined ship was sold to Britain for anti-submarine duty. Curtiss flying boats were also used for convoy protection and reconnaissance.

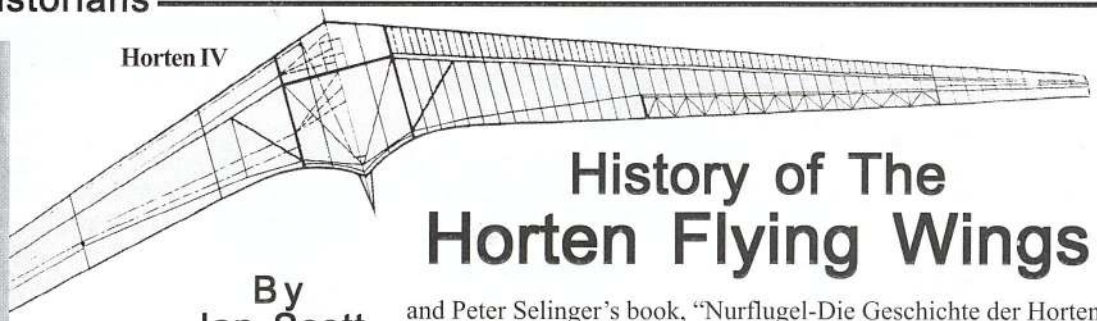


NC-3 limping into Ponta Delgada, Azores after fighting choppy seas for 205 miles.

On May 16, 1919 three flying boats, NC-1, NC-3, and NC-4 (NC- Navy Curtiss) took off from Trepassey Bay, Newfoundland, for an Atlantic crossing attempt. NC 1 and 3 had three 12 cylinder, Liberty engines, while NC-4 had an additional pusher Liberty. NC's-1 and 3 were forced down at sea and NC-1's crew was rescued. NC-3, battered by choppy seas, made it to the Azores. NC-4 flew on to the Azores, Portugal, and Spain. Lt. Cmdr. Read and his crew, in NC-4, reached Plymouth, England, May 31st.

Six more of the NC's were built, Numbers 5 through 10 at the Philadelphia Naval Aircraft Factory.

Northeast Aero-Historians

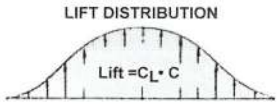


History of The Horten Flying Wings

By Jan Scott

The fascinating story of how two brothers, Walter and Reimar Horten, and how their aircraft influenced the direction of aerodynamic investigation, was delivered by Jan Scott, Lovettsville, VA, at the Northeast Historians' session.

Scott is a past president of the National Soaring Museum, a retired American Airlines A-300 pilot and one of the founders and past presidents of The Vintage Sailplane Association. He is recognized as an outstanding authority on the Hortens and their work. He was well acquainted with the brothers and translated Reimar Horten and Peter Selinger's book, "Nurflugel-Die Geschichte der Horten-Flugzeuge 1933-1960," into English. Scott and Paul A. Schweizer were responsible for bringing the International Vintage Sailplane Meet to the United States for the first time in 1995.



Scott reviewed the aerodynamic background of the flying wing and what made the concept so appealing to the Horten brothers, Walter (b. 1911) and Reimar (b. 1913).

Scott explained that when the sweptback wings on airliners flex

they change the angle of attack, making the ride more comfortable. In flying wings the elevators are out on the tips. When the wing flexes, it has the opposite effect: the angle of attack is increased, the "G" forces increase and the airplane gently porpoises. Scott used a simple paper flying wing model to demonstrate.

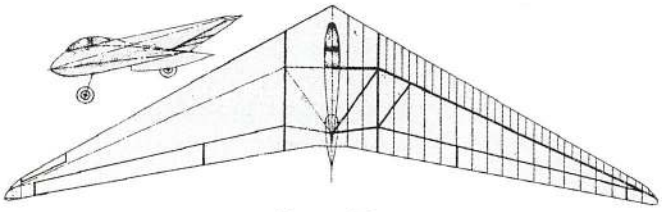
"The secret of the flying wing," Scott said, "is what the Hortens called 'the bell-shaped lift distribution curve.' The wingtips provide no lift at all, most of the lift being distributed over the wing in the shape of a bell, with the maximum lift at the center section. The advantage of this is that if you deflect the aileron upwards, induced drag occurs on the wing that is going down, and the airplane will turn in the proper direction. In a conventional airplane, adverse yaw is caused by the wing going up, causing more lift and drag and turning you in the opposite direction that you wish the airplane to go. The pilot opposes this effect by adding rudder in the direction he wishes to head," he said.

Scott indicated that the advantage of the Horten wing is: it will turn in the direction that it is banked, which a conventional plane will not. Because of the short distance between the center of gravity and the elevator, the ship will not stall or spin accidentally; however, it can be forced into those conditions. When the flying wing is subjected to increased "G" forces at high speed, the wing will fold down, not up, with minimum chance of wing failure. The pilot does not sit, but lies prone, "head first like a bird," Scott quipped.

Hugo Junkers' Huge G-38 Airliner

There are also disadvantages to the flying wing. It is almost impossible to land in a crosswind; you cannot cross-control it. The only rudder available is a little spoiler on each wingtip. The spoilers can be operated one at a time for a turn, or together as a spoiler for a descent. The flying wing porpoises and also "swims," as Scott referred to the continuous swing from side to side. He added, "Modern jet liners do that too, but they have full-time yaw dampers built into the rudder as a countermeasure."

Scott said that Reimar Horten once told him that he thought tails are not an advantage to flight, but a hindrance to maneuvering. "A tail back there will force an airplane into a position that it doesn't want to be in. That's why modern airplanes will stall and spin, which Horten airplanes will not," Scott said.



Horten II

The Horten brothers were fascinated with a concept that Hugo Junkers put forth in 1910, called "The Volume Patent." If the wing is very thin at the tips and very thick in the middle, it should be possible to put the pilot and the cargo or passengers inside the wing and a fuselage wouldn't be needed. To prove the idea, Junkers built four huge G-38 airliners. Four diesel engines along with pilot and passengers were sealed in the wings as well as the fuselage. Although the G-38's, first built in 1929, had stability problems, they flew until all four were destroyed during WWII.

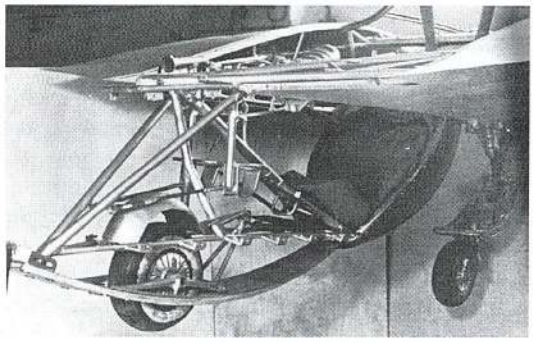
To test their theories, the 13- and 15-year-old Hortens built their first flying wing in the family living room. The control response was the opposite of what they had expected and it crashed while landing. Undismayed, they flew the repaired glider next on the Wasserkuppe where it crashed again. This time they took a match to it and burned it.

Rudy Opitz and the Horten IV

In 1935, they built the Horten II, applying the bell-shaped lift distribution curve, and the wing flew well. (NSM Historical Journal, Vol 18, No 1, 1996) In the Horten II, the pilot was completely inside the wing. The idea is to have no lift on the wingtip when the control is neutral, so when the aileron or elevon goes up, induced drag is produced on that side. "That means that the glider turns in the direction that it is supposed to be going," Scott said.

In the U.S. The Northrop Company had seen pictures of this new development and presented it to Congress as a new secret weapon in Germany. Northrop built several small flying wings culminating in the 1946 XB-35, four-engine flying wing bomber. Scott said, "They knew what a flying wing was supposed to look like, but didn't know much about the aerodynamics behind it." After a tragic crash the Northrop program was canceled.

After the war, four of the Horten II's were brought to this country for study by Northrop engineers and were subsequently left deteriorating outside. In the 1960's they were finally brought indoors at the Smithsonian's Silver Hill facility. The four Horten II's are presently being restored by Polish craftsmen, for the Berlin Museum for Technology and Commerce. Three will be returned to the U.S. and one retained at the Berlin Museum.



Horten Ho IV undercarriage, looking forward showing pilot's prone position.

The Horten III was the most successful of all, according to Scott. It incorporated many of the II's features. It had three segmented elevons, and later a 60 horsepower engine. The National Air and Space Museum has a two-place III and the world's largest collection of Hortens.

The 1941, Horten IV had a respectable 37-to-1 glide ratio. A Horten IV was flown to seventh place by Rudy Opitz in the 1952 U.S. Nationals. "It was so cramped, that there was no way you could read a sectional map in there and Rudy got lost," Scott said. The Horten V was designed as an Argus powered trainer, and because it sat at the proper angle of attack, the V could fly off the ground with the stick in the neutral position.

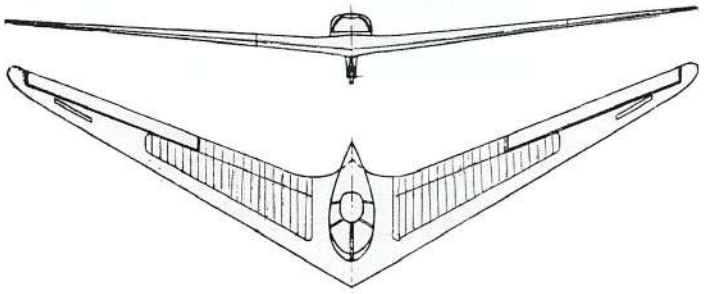
The unique 1945 Horten IX was designed as the fastest jet of

Continued on page 10

Continued from page 9

WWII. Constructed mainly of wood and graphite, its minimum radar visibility anticipated the U.S. "Stealth" bomber by almost a half century. The IX was designed at the direction of Reichmarshall Goering as the "Triple Thousand" airplane, to: carry a thousand kilo bomb, a thousand kilometers, at a thousand kilometers an hour. Because the engines were not ready, the first model was built as a glider. It had no brakes and deployed a parachute to stop. The completed multi-engined ship

Right, the Horten I.Ae 34 2-place. Below, Horten H Xvc I.A.e 41 "Urubu."



flew a number of times, but was destroyed on landing and the pilot killed when one engine failed.

The Horten XIII had a 60-degree swept wing, (The Horten norm was 28 degrees.) It had the characteristics of a supersonic airplane. The sweepback of the wing caused the center of gravity to be located behind the wing at its midsection. The pilot flew with an overhead stick in a gondola slung below the trailing edge.

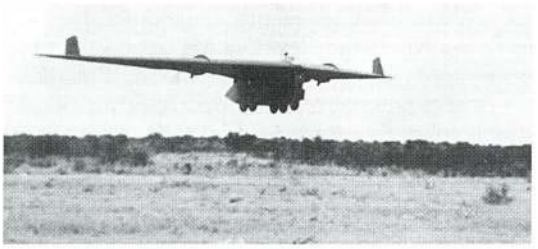
The Horten XVIII, six-jet, flying wing was designed to bomb the United States, but the Junkers organization couldn't get the engines working properly at the necessary high altitude. The project was still being developed at the war's end. "You people were very lucky," Reimar Horten said.

After the war, Reimar Horten, then in Argentina, conceptualized a four-engine flying-wing airliner for transatlantic flight but it was never built. Walter remained in Germany where Scott met with him in 1979.

Reimar joined the Aeronautical Institute in Cordoba, Argentina. In 1949, he built a two-place training glider, the I.Ae. 34., based on the plans of the Horten XV which had never been built. Two single-place versions (I. Ae. 34 m) were prepared for the 1952 World championships in Spain. In these models Reimar raised the cockpit to prevent mixing of air in the middle, thereby straightening out the airflow over the wings. Three of the four two-place I.Ae. 34's built, were ordered by PR-minded Argentine generals to be displayed in parks. There, they quickly deteriorated. Reimar offered the surviving one to Scott. "But I had no way of bringing it home," he lamented.

Scott said that the best Horten aircraft built in Argentina was

Horten I.Ae.38 transport

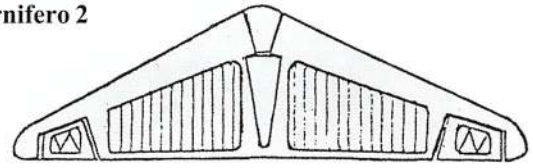


the I.Ae. 41., (H Xvc) "Urubu." In October, 1956, Heinz Sheidhauer flew the "Urubu" from Argentina, over the majestic Andes Mountains to Chile, the first ever to do so.

The next design of Horten's was the I.Ae. 37, delta wing supersonic fighter. The mock-up flew as a glider with the pilot on his belly.

Reimar was pressed to build the monster I.Ae. 38 because an Argentine general had an orange farm in a hidden valley, and he had no means of getting his produce to the market in Buenos Aires. Four 600-horsepower engines were required, but the Argentineans only had 300-horsepower engines. In spite of Horten's protestations, the ship was built with four 300-horsepower engines which were barely enough to get it in the air. "It was sort of like the 'Spruce Goose'," Scott said. "After only three or four flights, it was put

Piernifero 2



aside; they couldn't do anything with it," he added. Unfortunately, the failure was blamed on Reimar. He was fired from the Institute, and spent the rest of his career as a mathematics professor at the University of Cordoba.

There he became involved with foot-launched hang gliders based on his principles. He built the H X known as "L'Alita" or "Piernifero." A small flying wing, it had about a 7 °-meter span, weighed 30 pounds and could be foot-launched or aero-towed. A 10-meter version was also built by Heinz Scheidhauer. "It was still hanging on the wall when I was last there," Scott said, "and never flew as far as I know."

In 1979 Scott visited Horten at his home in Argentina. Scott later wrote several articles on their meetings and translated Selinger and Horten's book into English.

Reimar designed the "Pacara," a two-seater turboprop used by the Argentineans in the Falkland War.

The speaker said that the Hortens have a great following among modelers. He showed a slide of a Horten IX, with twin jet ducted electric fan engines. "The most beautiful model I've ever seen," he said. He also mentioned a radio-controlled model Horten VII, built in Holland that flew very well.

Were elements of the Northrop B-2, "Stealth," based on the Horten Brothers' work? Scott described some of the B-2's flight characteristics and idiosyncracies. "When Horten's book became available in this country," Scott said, "Northrop bought seven of them. Who knows?"

Northeast Aero-Historians

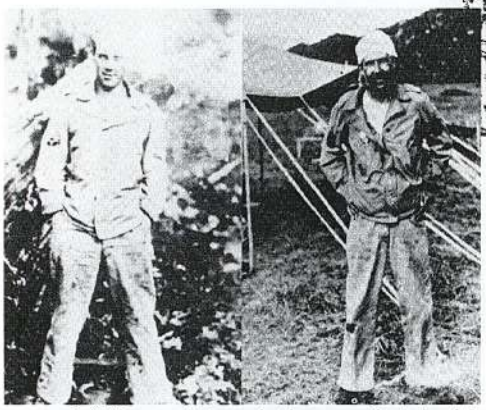
Nuggets of Soaring History

New Guinea 1945-
A Glider Snatch From Shangri-La

"Nuggets of Soaring History," by Bill Gallagher, NSM Curator of Education, featured a slide presentation of a little-remembered WWII jungle glider rescue, "New Guinea 1945 -- A Glider Snatch from Shangri-La. (See NSM, Winter 1986-87, Vol. 9, No. 3.)

Left side, aft section of the C-47's fuselage at the crash site.

The Survivors: Cpl. Margaret Hastings, above; Lt. John McCollom, left; T/Sgt. Kenneth Decker, right. Twenty-one others, including McCollon's brother, perished in the crash of the C-47.



Map and description above: from "A WAC in Shangri-La," November, 1945 Readers Digest. Copyright holder, King Features Syndicate, Inc., all rights reserved. (Map and description reprinted with special permission of King Features Syndicate, Inc.)

The scenario had all the ingredients of a cinematic "Indiana Jones" epic. It was the daring rescue of three survivors of a C-47 plane crash deep in the then unexplored and unknown Grand or Hidden Valley of the Beliem River, in what is now Indonesian West Irian. According to Dutch and Australian authorities, few if any, Westerners had penetrated that far into the forbidding, 16,000 foot Oranje Mountains.

While only 130 air miles southeast of Hollandia on New Guinea's northern coast, the terrain was considered to be among the world's most inhospitable. Wild rumors abounded that the valley was inhabited by fierce seven-foot head-hunters, or was the site of a lost civilization. Hence, "Shangri-La," in G.I.-speak, after James Hilton's 1933 popular novel, "Lost Horizon."

On May 13th, 24 off-duty service personnel, including nine W.A.C.'s (Women's Army Corps.) took off from Hollandia's Sentani airstrip in a Douglas C-47 and headed for a sightseeing hop over "Shangri-La." Only three returned.

Fifty-five minutes into Hidden Valley, the ship slammed into a mountainside. A seriously burned Cpl. Margaret Hastings, a bruised and burned Lt. John McCollum and a relatively unscathed T/Sgt. Kenneth Decker staggered out of the incinerating C-47. McCollum went back and dragged out two W.A.C.'s who were so badly burned, they died soon afterwards.

The rain chill that night was punctuated by what sounded like dogs barking. It turned out to be natives talking among themselves.

Next morning the battered trio hauled a tarp to a jungle opening where they were spotted by air searchers. By this time the curious locals appeared out of the bush. While fierce-looking, the indigenous people were not seven feet tall, and apparently not head-hunters. While primitive, they seemed friendly.

Filipino paramedics were dropped into the survivors' position. They were followed by paratroopers dropped in the valley floor where they were to establish a base camp. It took Capt. Cecil Walters, commander of the ground operations and his party, three days to hack their way up to Hastings, McCollum, Decker and the Filipino medics.

The big question was how to get them out? Helicopters in 1945, couldn't reach those altitudes, nor did they have the necessary range. Similar problems precluded the use of light planes or even an autogyro. Because of the injuries sustained, a walk-out was impractical...

The only answer...a glider snatch. The old warhorse, Waco CG-4A glider had never operated at a 6,000+ foot altitude before. There were alarming drawbacks: the weight of the glider, the terrain, and the limited number of trained personnel, just to name a few.

Still, the plan glider proceeded, and the sweating and insect-suffering troopers carved out a marginally operative, valley runway.

After several false starts from Hollandia, a C-46, Curtiss "Commando" towed a CG-4A, nicknamed, "Fanless Fosdick," (A knock-off of Al Capp's cartoon character "Fearless Fosdick," which was Capp's parody of the "Dick Tracy" strip) over the valley. The glider made a successful landing at the hacked-out field. "Fanless" was

Continued on page 16

Floyd J. Sweet (staff photo)

The second part of "Nuggets of Soaring," was a slide presentation on the evolution of the WWII assault glider through many innovations to become this country's first jet transport plane, the jet version of the C-123. Floyd J. Sweet, NSM Trustee, Past President of the Soaring Society of America, member of the U.S. Soaring Hall of Fame, and retired Lt. Col., U.S.A.F., was chief of glider design and engineering, and a test pilot during the war. Sweet commented on the progression.

The Army Air Force experimented with the attachable radial and inline engines to the CG-4A, for more efficient retrieval.

Meantime, the Laister-Kauffmann Aircraft Corporation developed the giant YCG-10A "Trojan Horse," glider that would

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CG15A powered by two Jacobs R-755-9 engines and two JATO's under the wings. (Archive photo)

Continued from page 11

transport a combat load of 8,000 pounds. It had cantilevered wings and a span of 105 feet. It boasted clamshell rear doors with a ramp to load a two and one-half ton truck. In early 1945 after a meeting between War Production Board head, William Knudsen and Jack Laister, an order for 1,000 YCG10-A's was placed in anticipation of the planned invasion of Japan. Drawings were made for the addition of power units to the YCG-10A, but the idea was never implemented.

In a succession of combat glider actions, it became clear to military planners that the glider's mission must be expanded and that new glider designs were needed to meet a variety of objectives. Gliders in the current inventory deteriorated badly. They were inflexible in that they could be used mainly to transport personnel, and only operate as gliders.

The government's new proposal stipulated that the weight and dimensions of the cargo that the glider could carry, not the number

Chase/ Stroukoff XCG-18A

Chase/ Stroukoff XC-122

of personnel it could transport, would be the paramount consideration. Also, these proposed designs must accommodate the addition of engines. However, the new program was not fully expedited until after hostilities ended.

One of the first ships constructed under this directive was the Chase Aircraft's XCG-18A, designed by Chase co-owner, Russian-born, Michael Stroukoff. The XCG-18A had a thin aluminum-covered, steel framed fuselage, aluminum-covered wings and tail, and a tricycle landing gear with a retractable nose wheel. Several modifications were made in production, and in 1948 two Wright R-1850 engines were added and the XCG-18A became the XC-122.

Chase Aircraft XCG-20

Chase Aircraft XC-123

The XCG-20 was the most advanced American glider built up to that time. The following is a summary of the XCG-20 taken from James Mrazek's book, "Fighting Gliders of WWII."

The symmetrical high-wing XCG-20 was of all metal monocoque construction. (No stress absorbing fuselage frame - The fuselage aluminum covering was structured to take the stress.) It had a fully retractable tricycle landing gear and electrically driven, hydraulically-actuated slot, flaps. The XCG-20 had a rear door/loading ramp and could carry a military cargo of 16,000 pounds, or sixty troops, or fifty litter patients.

With the addition of engines, the sleek glider became the XC-123. In his book Mrazek said, "Surprisingly, in 1951 the glider was equipped with two J-47 twin jet pods, 'borrowed' from a B-47. It was flown in and out of short fields and had a maximum speed of over 500 miles per hour. It became America's first jet transport."

The Chase XCG-20 and C-123 provided test beds for the aircraft industry's many later designs and innovations.

Northeast Aero-Historians

Featured Banquet Speaker Paul A. Schweizer

Even as youngsters, the Schweizer brothers were fascinated by flight and followed its development closely. "One of my early recollections, in 1919, was of the British dirigible, R-34, flying over our house at Elmhurst, Long Island, after its historic trans-Atlantic crossing," the pioneer sailplane builder said at the Northeast Aero-Historians Oct. 11 banquet.

Paul A. Schweizer is an author, co-founder with Ernest and William, of the Schweizer Aircraft Corporation, past president of the Soaring Society of America, trustee of the National Soaring Museum, retired corporate CEO, and member of the United States Soaring Hall of Fame.

The Schweizer boys had heard of the glider activity on the German Wasserkuppe. There, in 1921, Wolfgang Klemperer, shock-cord launched in his "Blaue Maus," bettering Orville Wright's duration record by staying aloft for 13 minutes.

Following Lindbergh's solo crossing in 1927, their enthusiasm led to the formation of a model airplane club. Later, the Schweizers got a ride in a Standard biplane and they were hooked. The June 1929 National Geographic carried an account of glider activity in the Rhon Mountains of Germany. Motivated by such happenings, the model club became a glider club, and the Schweizers built their first

Schweizer Aircraft Corp. founders left to right William, Paul A., and Ernest Schweizer pictured with the 1930 SGP 1-1 primary reproduction. Designed by Ernie, it was flown by Bill & Paul as well as W. Stuart, Paul H., and Leslie of the second generation Schweizers, May 20, 1989 to mark the firm's 50th anniversary.

glider, Schweizer SGP 1-1, Primary.

Schweizer spoke of outstanding flights being made here in the U.S. Peter Hesselbach of Germany, in a Darmstadt I sailplane, stayed aloft for 4 hours over the dunes of Cape Cod in 1928. Ralph Barnaby became the first American to earn a "C" Badge over the same terrain. By 1934 Richard du Pont had soared to a new world record, with an 150-mile flight from Elmira to Basking Ridge, NJ, in his Albatross II.

But, Schweizer said, this was during the depth of the country's worst depression. Of Schweizer's 50 graduating classmates from the N.Y.U. School of Aeronautics, only three found jobs in aviation. Schweizer went to work in a restaurant.

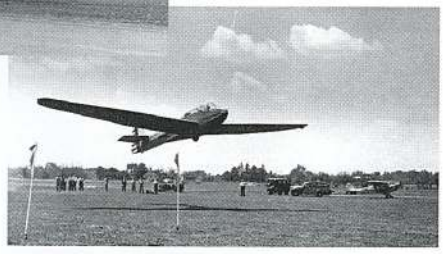
In 1937 the Schweizers built the SGU 1-6 Utility sailplane, the first all-metal glider in the world. It placed third in the Eaton Glider Design Competition.

It was followed by the SGU 1-7 "Pterodactyl." Purchased by the Altosaurus Soaring Club of North Conway, NH, this ship was the first glider sold by the Schweizer Metal Aircraft Company.

1938 saw the development of a two-place training plane, the SGS 2-8 (S-Schweizer, G-Glider, S-Sailplane, 2-two place, 8-number of the design.) The second 2-8 they built went to the Soaring Society of America for training purposes. In 1939, the organization, which up to that time operated out of the Schweizers' Peekskill, NY, barn, moved to Elmira, NY. It was renamed The Schweizer Aircraft Corporation.

With WWII came the conversion of the SGS 2-8 to the Army's TG-2 (Training Glider - 2). As wartime metal shortages became more acute, the Schweizer TG-3A was designed to be produced with minimum use of strategic metals. A total of 114 TG-3A's were built. In November, 1945, Paul Schweizer and test pilot Franklin Hurtt flew a

Schweizer TG-2



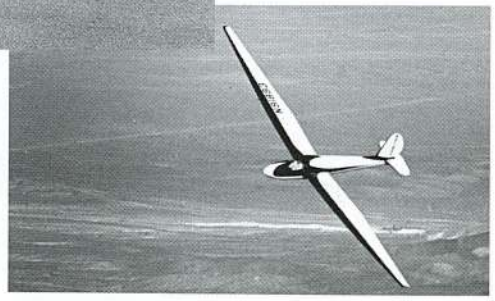
Schweizer TG-3A

TG-3A to a 9-hour, 17-minute, post-war duration record, off Harris Hill ridge, not far from the plant. "The flight received good publicity and may have encouraged others to try soaring," Schweizer said.

The Schweizer Soaring School, established in 1946, brought the fun and adventure of motorless flight to hundreds of students and produced several championship competition pilots.

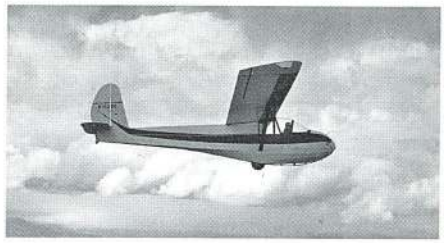
The SGS 1-21, debuted in 1946. It was an all-metal design, with a high aspect-ratio (length to width) wing. It was the first American ship to incorporate water ballast. Dick Comey won the 14th Wichita Falls, TX. Nationals in 1947 with a 1-21. This ship was redesigned in

Schweizer SGS 1-19



Paul Bikle's Schweizer SGS 1-23E

Schweizer SGS 2-22 two place



1949 as the SGS 1-23, selling for $2,500. The planform featured a straight, then tapering wing.

In 1952 the bi-annual World Soaring Championship was held in Spain, and three Schweizer ships were entered -- two SGS 1-23's (C and B models) and an SGS 1-21. The American Team was plagued with logistic, communication and red-tape problems. To make matters worse, the Spanish road infrastructure was so primitive that it sometimes took two days to retrieve gliders. Even so, Paul MacCready managed a fifth place in a Schweizer sailplane.

MacCready finished fourth in a Schweizer SGS 1-23E, two years later at the Camp Hill, England, Internationals. Schweizer said, "At Camp Hill, 60 gliders were disassembled and stowed in trailers after each day's activity. The Schweizer ships were just wheeled off the runway and tied down. It was an excellent ad for the durability of metal ships." Seventy-five of the popular SGS 1-23's were sold in 15 years.

One of the most outstanding concepts of the Schweizer line, the SGS 1-26, made its appearance in 1954. It was so widely accepted in the soaring community that a one-class movement evolved with the creation of the 1-26 Association. Over 700 were built, 200 in

Schweizer SGS 1-26

kit form. Along with the Schweizer two-place, SGS 2-22 trainers, the U.S. Air Force Academy ordered a 1-26, in 1957.

In February, 1961, Paul Bikle set two world records in a Schweizer 1-23E. He reached an absolute altitude of 46,267 feet. Bikle made an altitude gain of 42,300 feet in the lee of the Sierra-Nevada Mountain Range, between Mohave and Inyokern, California. "To date, no one has bettered his altitude gain record," Schweizer said.

The Schweizer Corporation determined that a market existed for a high performance multi-place sailplane, and in 1967, the SGS 2-32 was born. At that time it was the highest performing sailplane in its class. Seating two in the rear cockpit bench/seat, plus the pilot up front, the 2-32 is widely used for the commercial rides business. "New, it sold for $8,000, Schweizer said, adding, "Today it goes for $50,000, used."

Schweizer SGS 2-33 two-place

To attract new students to soaring, in 1965, the Schweizer Brothers came up with the SGS 2-33. Put into production in 1967, 579 have been sold here and abroad. Since it was introduced, the 2-33 has been the mainstay in U.S. glider pilot training.

Th popular SGS 1-34 was presented to the soaring community in 1969. It was designed to Standard Class sailplane specifications,

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and with emphasis on handling for the low-time pilot. A total of 93 of these all-metal ships were built and most of them are still flying. "We'd paint them any color you want," Schweizer laughed.

Wally Scott, flying a high performance Schweizer SGS 1-35 won the Smirnoff Derby Transcontinental Sailplane Race in 1976. Inaugurated in 1971, the race consisted of a series of speed tasks to declared goals along a 2,900-mile path, from Los Angeles to Baltimore, MD.

In 1987, the Schweizer Aircraft Corporation built the SGM 2-37

Schweizer SGS 1-35

powerglider. The Air Force Academy ordered 10, 2-37's, which were to be delivered to Boulder, CO, by air. Schweizer said that they were flown there at between five and six thousand feet. The 2-37's had 60-foot wingspans, so some taxiways along the way were too narrow and the ships had no radios. They were like old-time barnstormers.

To celebrate the company's 50th anniversary in 1989, Ernie, Paul and Bill flew a reproduction of their first ship, the SGP 1-1, "...very carefully," Paul noted with a smile.

The Air Cadet League of Canada took Paul Schweizer for a flight honoring their millionth flight in Calgary, Alberta. He made the first hop of the second million.

The SGM 2-37 was converted into a quiet surveillance aircraft, one of which was used in the recent hostage situation in Peru.

The foremost American sailplane builder closed by saying, "the Schweizer Aircraft Corporation eventually built 38 different models, a total of 2,130 gliders."

Following the talk, a trophy for "The Aviation Historian of the Year 1997" was awarded to H.H. Fred Short, Curator Emeritus of the Ottawa's National Aviation Museum of Canada. William G. Marshall, South Amboy, NJ, and Irving Rosenberg, Albany, NY, were recognized for having attended every meeting of the Northeast Aero-Historians since its inception. Discussions of the possibility of such

Schweizer SGM 2-37 powerglider

an organization began in 1961. Its first meeting was in New Haven, CT, in 1964.

The conference ended Sunday morning, with a tour of the Schweizer Aircraft Corporation in Big Flats or a tour of the Christmas House in Elmira. Sunday afternoon was reserved for discounted sailplane rides. Harris Hill Soaring Corporation pilots flew passengers in their SGS 2-33's and Schleicher ASK-21's off historic Harris Hill and over the brilliant Fall foliage of New York's Chemung Valley.

Henry Combs Delivers the 25th Annual Ralph S. Barnaby Lecture "195 and Counting"

Henry Combs

NSM President Jeff Byard when introducing Henry G. Combs, asked Barnaby Lecture attendees, "How many of you check your SOARING Magazine each month to see how many Diamond flights Henry Combs has made?" About a dozen hands went up... Jeff stated that Henry has been making soaring history for 35 years and continues to make soaring history today.

Henry G. Combs, Canyon Country, CA, the 25th Annual Ralph Stanton Barnaby Lecturer, is a pilot who made 195 straight-out Diamond Distance (500 km) flights over the past 30 years.

"I suspect the reason I was chosen to speak was because of my persistence, perhaps stubbornness," he said.

But those present soon learned that there was considerably more than that to recommend him.

Henry Combs leaning on the wing strut of his Luscombe with his mother at the Yoder, CO farm. (Combs photo)

The Barnaby Lecture this year was held in conjunction with the PASCO (Pacific Soaring Council) Annual Banquet, Saturday evening, November 15, in Dublin, CA.

The lectures, delivered annually since 1973, are named in honor of the late Capt. Ralph Stanton Barnaby, USN. They are given by outstanding personalities in soaring, and recall historical and noteworthy achievements in motorless flight. Barnaby held U.S. glider license #1. He was the first American to break Orville Wright's 1911 record duration flight at Kitty Hawk, NC. In 1929, Barnaby flew a German-made Pruefling glider 15 minutes and 6 seconds over the Cape Cod dunes at Corn Hill.

Combs, the son of Wyoming farmers, said that for as long as he could remember, his primary interest was in airplanes and flying, starting with Lindbergh's "Spirit of St.Louis."

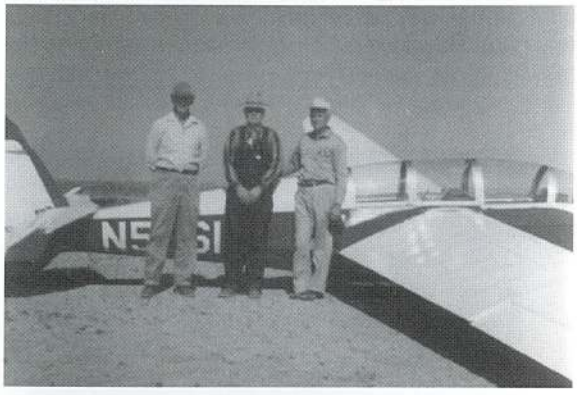
Combs finished high school during the depression. He attended undergraduate schools in Oklahoma and Colorado, with the help of his Uncle Paul and by fill-in jobs. He wound up as an aeronautical engineer, completing post graduate work at The Curtiss-Wright Technical Institute, in Glendale, CA, where he became an instructor.

"In May 1941, I was hired at Lockheed as an engineer," he said, "I was on top of the world, a dream come true." He joined a flying club and made the last flight in the club's Taylorcraft, Dec. 7, 1941. All civil flying for 100 miles inland was prohibited for the duration of WWII.

During those years, Combs was totally involved in Aircraft Design Engineering on Lockheed's Hudson Bomber, the P-38, the Military Constellation, the Navy Constitution and others.

Postwar, he earned his single engine, land, commercial and instrument ratings. Many of his family trips were across the country, into Canada, Alaska, and Mexico.

In 1953 he joined a part of Lockheed known as "The Skonk Works," where security was so tight that he couldn't even tell his wife where he was going on various field trips. He said that they designed, built and flew the U-2 spy plane in eight months during 1955. "But I didn't get hooked on sailplanes until seven years later," he said. The U-2's first operational recon mission was in June, 1956. They continued untouched until May, 1960, when Francis Gary Powers was shot down over Russia," he said. The U-2R (TR-1) is a larger version and still in use today. "I'm proud to have played a



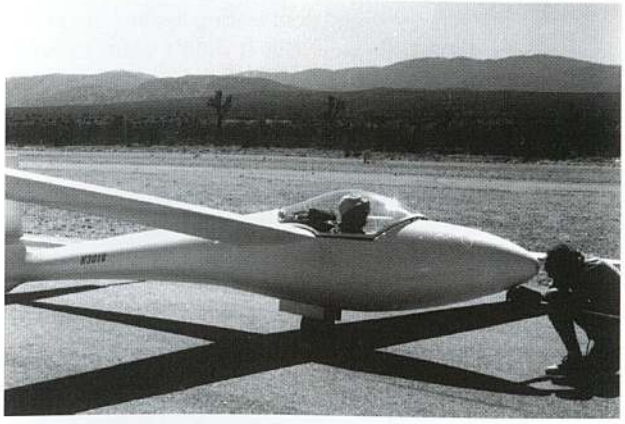
Left to right, Barney Switzer, Comb's father, and Henry assemble his LK-10A glider.

significant part in the U-2 program," he said.

Then he spoke about the Blackbird, and of Kelly Johnson, the one-man genius behind the "Skonk Works." Combs, who was in charge of the aircraft structure, said, "He inspired all of us to accomplish the near impossible: To design and build an airplane capable of speeds greater than the muzzle velocity of a 30-06 hunting rifle and to fly for a range of almost 4,000 nautical miles."

Combs retired from Lockheed in January, 1981. The "Skonk Works" was within six months of making the first F-117 Stealth fighter flight.

After a "give-it-a-try" sailplane hop at Fred Robinson and Gene Hamm's Agua Dulce, CA, soaring school in 1962, the super-secret airplane designer was snared. By 1963, he had added a glider rating to his license. "Climbing without an engine is like the effect of a double martini, and a lot better for your health," he laughed.



Combs in his Zero One Quebec Libelle at Crystal Aire, east of Palmdale, CA.

His first ship in 1963, was Dick Lyon's beautifully restored Laister-Kauffmann, LK-10A (Military TG-4A). N53619 is presently owned by Vintage Sailplane Association's Doug Fronius.

In 1967, he moved to a brand new Glasflugel, H301 Libelle, (N301Q, Zero One Quebec) which he still flies. "By this time cross-country flying was in my blood," he said.

The stats support him:

First diamond distance, May 1968

Six point five diamond distance flights a year for 30 years.

11 diamond distances so far in 1997.

Covered 116,620 statute miles, in 472 flights, averaging 247 miles per flight.

Total diamond flight distance, 73,080 miles, averaging 375 miles per flight, all in the Libelle.

Longest flight, 525 miles; three flights over 500 miles.

Total of 3,500 hours in Zero One Quebec, 762 flights that average 4.6 hours per flight.

"I don't get much landing practice," he laughed. "I prefer to go straight out as far as I can safely go, and then land."

Combs said that when he goes straight out, the final destination is unknown to both him and his crew. After the retrieval, they 'hangar-fly' and do some sightseeing all the way back. "I love to fly until I run out of daylight and altitude," and added, "if you go out and return you have to decide when to turn around."

"I cannot remember any two flights that were identical -- always a new experience." He said that he likes to have a two-member crew, a different one each Saturday. Each crew will be with him once or twice a season.

Assuming a four months soaring season, Combs said he will have about 18 weekends to schedule attempts. He tries to complete

Combs' 1970 Plymouth wagon crew car with 500,000 miles on it.

his scheduling for the entire season before starting cross-country flying in late April.

Most of his X-country flights were from Crystal Aire, east of Palmdale, CA. "It's not unusual to have a dozen ships launch on Saturday for cross-countrys," he said. Whether it's east towards Arizona, northeast towards Las Vegas and Utah, or north towards Bishop, Reno, Oregon and Idaho, he briefs the pilots on the weather and his decision. Then they're on their own.

Combs said that his glider (best L/D, 41 to 1) marked the beginning of the composite sailplane era. Hansjorg Streifender in Germany sent Combs a comprehensive schedule for the 3,000 hour inspection to extend the Libelle's legal life for another 1,000 hours. Combs said that he still holds the 15-meter record to a declared goal (513.6 statute miles) in N301Q, set in February, 1984.

He discussed the impact of Mountain Wave flying on the potential for cross country soaring, and Mike Koerner's April, 1984, 906-statute mile, U.S. open class record flight. Combs decided the winds aloft were too strong for him to work. "If I flew into the wind with enough airspeed to hold position over the ground, I could not climb. When I slowed down enough to climb, I was backing out of the lift area. After landing in Barstow in blowing dirt, you can imag-

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Combs, August 1993, after landing at Jean, Nevada.

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ine my amazement when I learned that Mike had gotten to Gaines County in Texas."

The lecturer explained some of the serious cross-country, wave flying handicaps such as:

FAA approval for flights above 18,000 feet (Positive Control Area). Accurate weather predictions far enough in advance for

1996 picture of Combs, left with Irv Prue.

preparations. Very adverse surface windy and cold weather conditions. Alpine preparation for the high altitude cold, with ample oxygen, battery power and Instrument Flight Rules equipment.

Combs has negotiated Letters of Agreement with many of the major area centers, but they do not guarantee that there will be clearance if there are traffic problems. "In spite of all, I think that there is great potential for downwind wave flying. With today's planes our pilots are becoming increasingly expert in cross-country flying without circling," he said.

He said that in 1994 the so-called Crystal Squadron paid him a great honor by establishing the "Henry Combs Perpetual Trophy." It is awarded annually to the U.S. pilot making the greatest number of straight-out Diamond flights. The three winners to date are 1995-Combs; 1996-Hank Marlow, and 1997-Norm Page.

After an enthusiastic ovation, Combs invited questions from his audience.

When someone asked him to describe in detail one particular flight, he said that: on the record flight to Idaho he landed as night fell. After approaching a number of people sitting around a campfire, and telling them he had landed in a glider, one man instructed another to hurry and get the cook "because they got a hold of one." Apparently, the group had earlier been discussing the existence of extraterrestrials and UFO's. After the very long day of flying and a

Delivering the 25th Barnaby Lecture at the Pacific Soaring Council Annual Banquet in Dublin, CA.

short night of sleep, Henry was treated to a 4:30 a.m. breakfast on the ranch.

Nuggets of Soaring

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loaded with the survivors and some of the medics. A pick-up C-47 nicknamed, "Leaking Louise," piloted by Maj. Williams Samuels, skimmed in for the snatch and engaged the towline.

"Fanless," was lurching up at about 200-feet-a-minute when its pilot, Capt. George R. Allen discovered that one of the glider's wheels had snagged a chute that had been laid out to mark the towplane's approach. Its risers were tearing against the glider, ripping out the underside fabric. "But it didn't seem to affect the controls too much," he said.

During the snatch, "Louise," was slowed to 105 mph, which at that altitude was perilously close to a stall, but Samuels managed to keep tug and tow flying. The combination's pilots coaxed and churned their way up the 9,500 feet they needed to squeeze through the only available notch in the mountains. Then on June 28, 1945, "Fanless Fosdick," whooshed down to a safe landing at Hollandia.

Samuels was later recommended for the Distinguished Flying Cross. "I wouldn't do it again for a dozen of them," he was later quoted.

Subsequently, Walters and his paratroopers were also glider-snatched out of Hidden Valley. In 1958 the remains of the crash victims were retrieved by an Army Search and Recovery Team. They were interred at the Jefferson Barracks National Cemetery in St. Louis, MO, and the Punchbowel Cemetery, Honolulu, HI.

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