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THE LONGEST QUEST... HUMAN-POWERED FLIGHT

The drafty corridors of air history are littered with the detritus of those visionaries who dared to fly utilizing human muscle energy alone. Time and again they were admonished by gravity conscious engineers, anatomists and scripture - quoting clerics. Through the ages, in myth, song and fact, the wing-flappers and tower jumpers crashed on, regardless.

By the eighth decade of the twentieth century, winged pedalers had churned their way over the English Channel and partially retraced the legendary flight of Daedalus.

The poet Ovid tells us of the attempted escape of the great Athenian architect Daedalus and his son, Icarus, from the isle of Crete. (1) On completion of a labyrinth for the imprisonment of the fearsome Minotaur, Daedalus petitioned King Minos for permission to return home, and was denied.

Ovid tells us that the great engineer planned an escape, fashioning two sets of wings made of feathers, linen fastenings and wax. Father and son leapt miraculously off the Cretan bluffs seaward, passing the islands of Samos, Delos, Maxos and Pros without incident. Then Icarus, consumed by the ecstasy of his new-found freedom, and despite the warnings of his father, soared higher and higher. As he rose close to the sun, the wax on his wings began to melt, and he fell to his death in the sea.

Aghast, Daedalus watched helplessly as his son disappeared beneath the waves. He flew on to Naples and an embittered old age. To this day the area where the boy fell is known as the Icarian Sea, between the Cyclades and Asia Minor.

Speculation by cultural anthropologists and writers on the Daedalus/Icarus story vary from "...a dimly remembered attempt at gliding by a man of ancient times who expressed one of humankind's oldest desires." (12) to a suggestion of something quite different from flight, such as the introduction of sails into sea navigation.

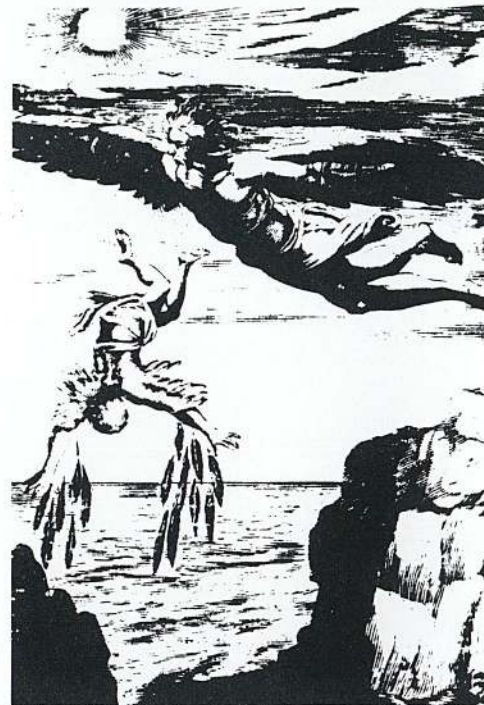
The experiments of Chinese Emperor Shun (approx. 2258-2206 B.C.) are given some credence by researchers. According to "Annals of Bamboo Books" Shun jumped from a tower suspended beneath two large reed hats that acted as a primitive parachute and landed unhurt.

Probably the best known western jumper was the legendary "neckromanticke," a magician. M.B.J. Davy believes that this may be interpreted as possessing scientific knowledge of the time. (1) Bladud, the father of Shakespeare's King Lear, was convinced that he could fly with the aid of the attached wings. He made his terminal flight from the temple of Apollo in Trinaventum, now London.

Fabyn, in his 1516 "Chronicle" says: "This Bladyd taught the lore of Necrimacy through his Realme. And finally toke it in such pryde and presumcion, that he toke upon him to flie into the ayer, but he fell upon the temple of his god Appolyn and thereon was all to torne, when he had ruled Brytayne by the space of XX (20) yeres lauyng after hym a sone named Leyr."

Glances at notable wing-flapping, leg-pedaling birdmen appear in some of the more detailed flight histories: Eilmer of Maimesbury, the eleventh century "Birdman Monk," broken legs; The Flying Saracen (from Constantinople's Hippodrome in 1162 A.D.) terminal; and John Damian who survived an unseemly landing in a dunghill in the early sixteenth century. There were other memorable "flying witches" and

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Icarus falls into the sea after the wax on his wings began to melt.

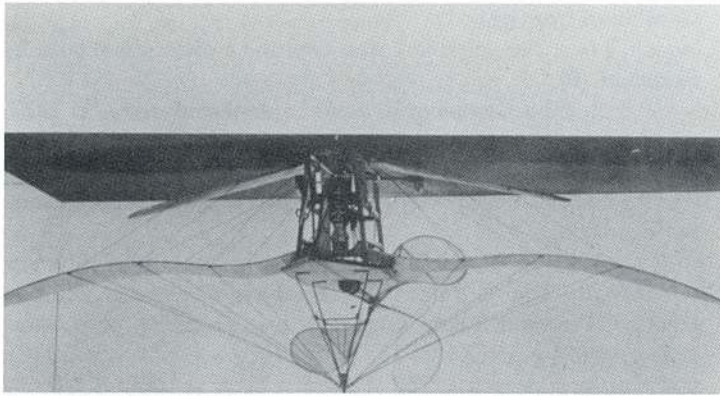


A medieval tower jumper prepares for flight.

Bladud, an early English king, was killed when he cracked into the Temple of Appollo in the city of Trinavantum (London)



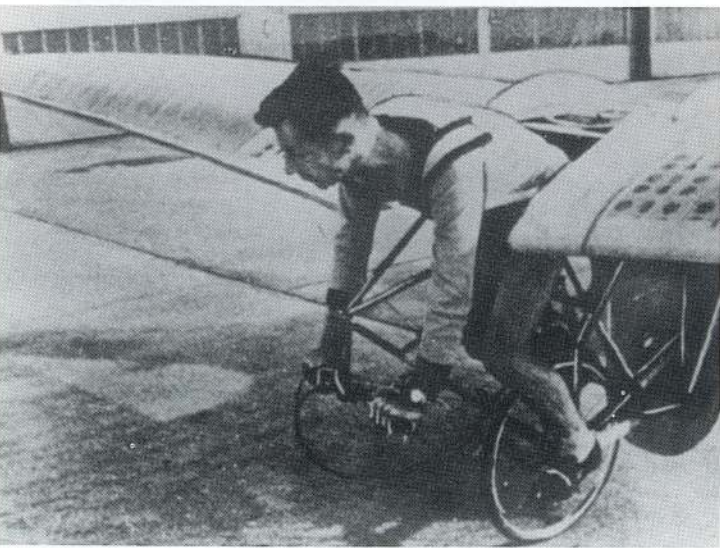
Professor Harry LaVerne Twining's unsuccessful wing-flapping glider device, in the 1900's.



A model of one of Japanese inventor Chuchachi Ninimiya's several human-powered flying machines. He apparently abandoned experimentation after word of the Wright Brothers' successes reached Japan.



Pedaling a rigid glider-wing bicycle along a Paris park in the early 1900's.



Some aero-historians believe Italian-born Enea Bossi as having made history's first successful human-powered take-off (not flight) near New York in 1937.

Continued from page 2

levitators, some of whom were merely badly shaken. Some were put to death.

Leonardo DaVinci (1452-1519) compiled 500 sketches and 3,500 words describing the parachute, a human-powered ornithopter, a finned projectile, and a helicopter.

"The Father of Aeronautics," Sir George Cayley (NSM, Fall/Winter 1992-93, Vol. 15, No. 1) progressed from glider models to the 1849 "boy glider" using flappers for propulsion.

An abbreviated glance back through aero-time, "From BC to Soaring 'C'," appeared in the Winter 1988-89 NSM Quarterly Journal, Vol. 11, No. 3.

Fast-forwarding to the twentieth century, Harry LaVerne Twining, a professor of physics at Los Angeles Polytechnic High School, built two man-powered ornithopters, the first in 1909 and another in 1910. The latter was a frail-looking tricycle with articulated eagle-like wings measuring 27 feet tip to tip that were flapped by attached foot stirrups. Dubbed "Twining's Flip Flop," by the L.A. Daily Times, the device was furiously pedaled and pumped by the enterprising professor along a Los Angeles street but rose only an inch or so. Professor Twining's more successful venture was in organizing America's first aviation meet at nearby Dominguez Field in 1910. (3)

Around the turn of the century, half a world away in Japan, Chuchachi Ninimiya built a series of man-powered flyers. In "The Compleat Birdman" Peter Haining said, "He is one specific example of just how universal the desire to fly was at this time; and though a model of one of his designs indicates the potential of his ideas, Ninimiya apparently abandoned all his experimentation once word of the Wright Brothers' successes reached Japan." (4)

In 1912, Peugeot, the French auto firm, offered a prize of 10,000 francs for a man-powered flight of 10 meters (32 3/4 feet). Although French boulevards and country lanes were subjected to a blizzard of winged unicycles, bicycles and quadracycles, the prize was not won until 1921 by Gabriel Pulain. He made two dawn flights on his "aerocycle" at Lonchamps racetrack, traveling to 10.6 meters (35 feet) at a height of 1 meter (39.37 inches).

A Ralph Barnaby article, "Man Powered Flight - or there must be some easier way," appearing in the Nov. 1, 1973 FOOTE NOTES, mentions that many of the French operators pedaling with wings at a no-lift altitude, would attempt to attain sufficient speed so that when the wing angle was suddenly increased, a "jump take-off" and short glide would be achieved. As there was no means of propulsion when the aircraft became airborne, only short hops were possible on level ground.

The famous German inventor and glider pioneer, Alexander Lippisch, built a man-powered flapping wing glider in 1929. The wing movement was operated by the pilot's legs in a manner similar to that of a fitness rowing machine. Lippisch's machine managed to cover distances up to 300 yards with a man-assisted bungee cord launch. (5)

In 1933 Oskar Ursinus, an editor of Flugsport and sponsor of the Wasserkuppe soaring meetings in the Rhon Mountains of Germany, offered a 500 mark prize for the first man-powered flight of 1 kilometer (0.6 mile) around two pylons. The Italian Government followed with a similar prize. Neither was ever won.

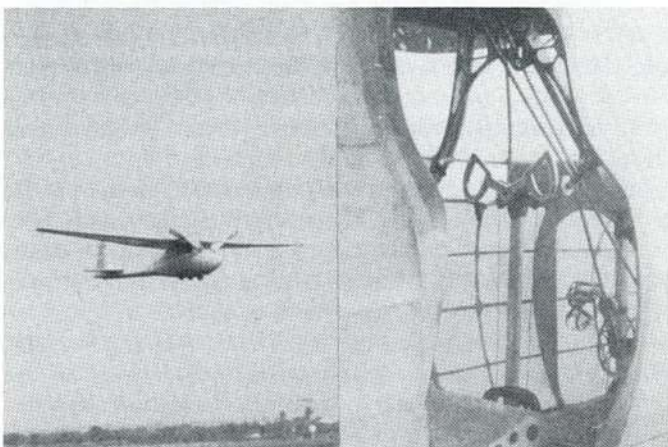
Enea Bossi and Vittorio Bonomi's ship, "Pedaliente," with two chain-driven contra-rotating props, flew a 990-yard circuit at Cinisello, Italy, after a catapult launch in 1936. (7)

Two German engineers from the Junkers company, Haessler and Villinger, built a sailplane-like ship called "Mufti" in 1937. It had a foot-cranked pusher prop. With an elastic-aided

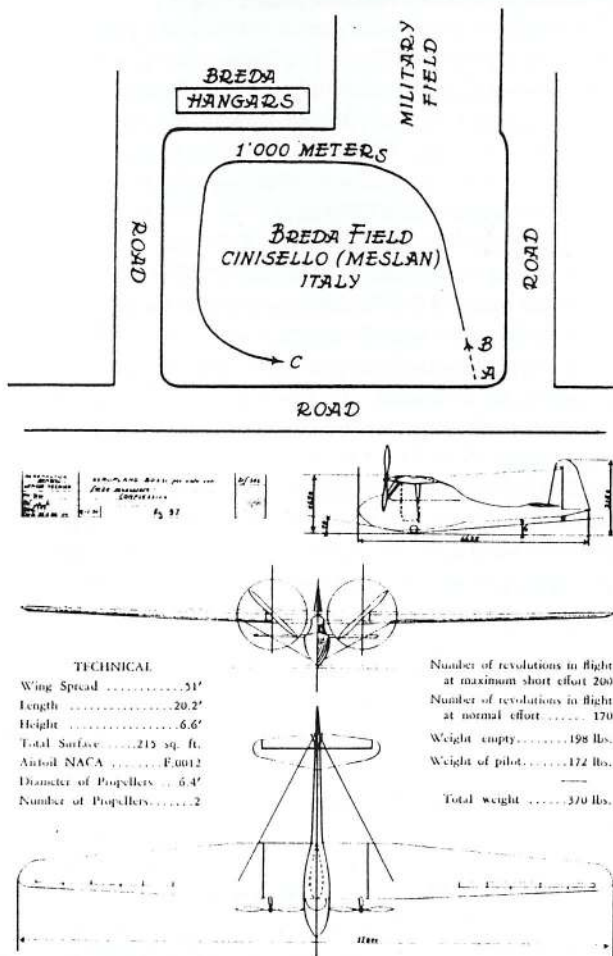
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The Bossi "Aerocycle" from a feature that appeared in the March 1937 SOARING.



Left: The "Aerocycle" in flight. Right: Cockpit view of the "Aerocycle". Below: "Aerocycle's" 1937 flight.



A 3-view and specs of the Bossi "Aerocycle".

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launch, it flew 790 yards and was awarded a consolation prize by Flugsport. (8)

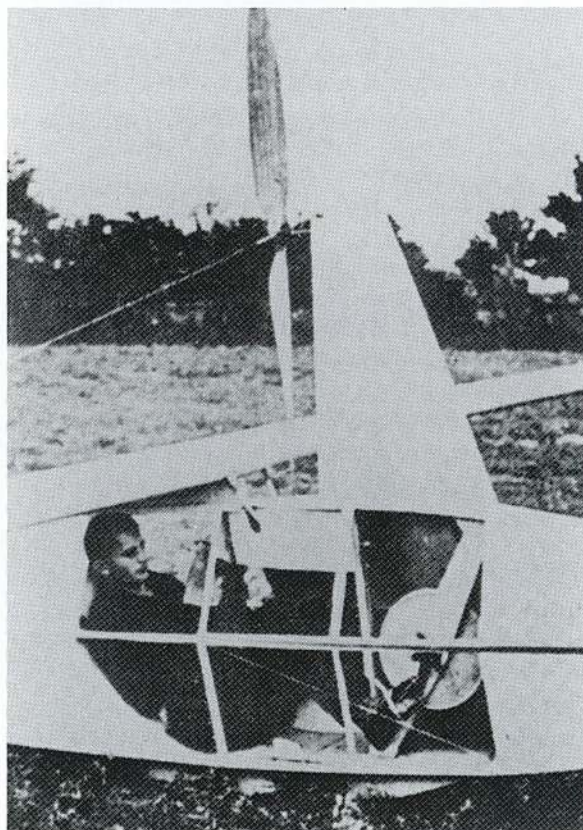
In "The Compleat Birdman" Henning states , "In 1937, however, an Italian immigrant named Enea Bossi did pedal himself into the air near New York and achieved what some experts claim was the first ever man-powered takeoff (not flight, I must underline,, but takeoff)."

In a paper published in the May/June 1952 Soaring, "Unsolved...The Problem of Leonardo Da Vinci...Human Muscle***Powered Flight," August Raspet, concluded that recent advances in aerodynamics and structures give definite indication that human muscle-powered flight should be possible within 500 years of the birth of its inventor, DaVinci. The late Dr. Raspet (U.S. Soaring Hall of Fame - 1956) was head of the Aerophysics Department at Mississippi State College and an internationally recognized soaring authority.

The real spurt of MPA (man-powered aircraft) enthusiasm came in 1959 when a millionaire English industrialist, Henry Kremer, offered 5,000 pounds sterling to the first man who pedaled or otherwise propelled an aircraft over a one-mile figure-eight course. Both the start and finish line had to be crossed at an altitude of not less than 10 feet...and the winner had to be a citizen of the British Commonwealth.

The announcement was followed by some wildly conceived aerodynes. Donald Partridge leapt off London's Hammersmith bridge while furiously beating a pair of wings. He flew 50 feet - straight down into the muddy Thames River. Another stout-hearted venturer crafted a beautifully designed man-powered helicopter in his garage, but couldn't squeeze it through the doors. (9)

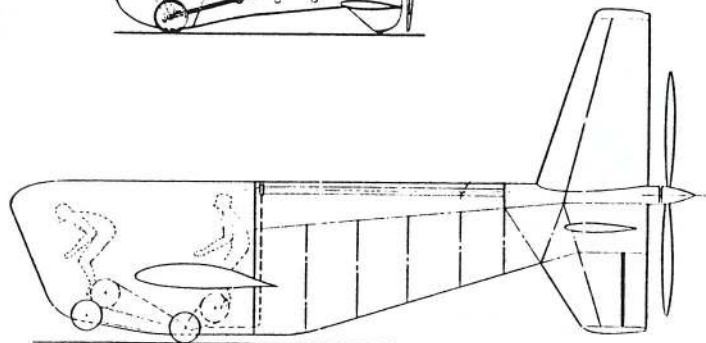
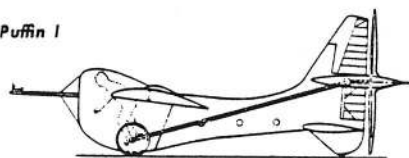
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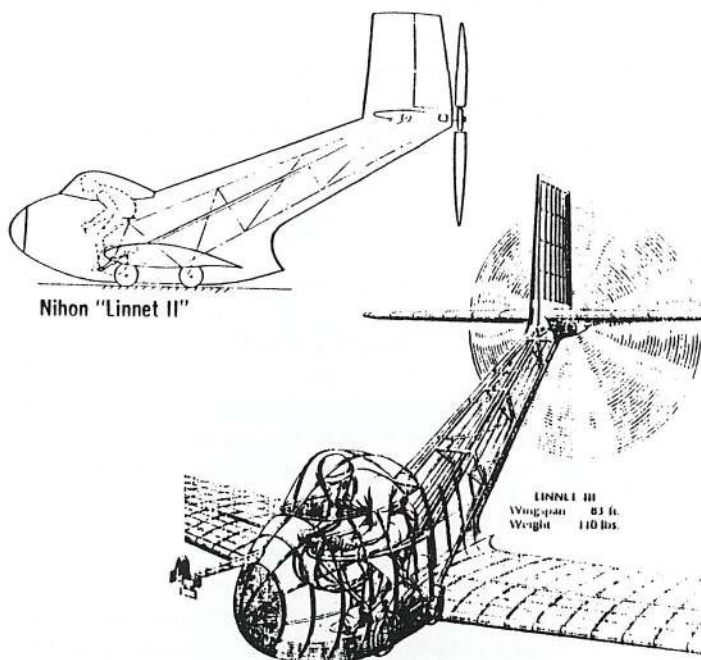
The German-built Haessler-Villinger "Mufti," was a bungee-launched man-powered ship of the 1930's. It had a 40-foot wing span and was said to be designed for conversion to a motor glider.

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Puffin I



Hertfordshire "Toucan"



Nihon "Linnet II"

The first serious Kremer contender was the 1961 SUMPAC (Southampton Man-Powered Air Craft). It was designed by students at Southampton University and had an 80-foot wingspan with a parachute nylon-covered fuselage made of spruce and balsa wood. It was test-flown by Derek Piggott, an internationally-known glider pilot, instructor and author. He flew about 50 yards at six feet off the ground. Later, 880-yard flights were made in SUMAC.

The fever was contagious. The employees of the prestigious deHavilland Aircraft Company built "Puffin" a short time later. ("Puffin"?...because it took a lot of puffin' to get it in the air.) By May of 1962, "Puffin", with its 84-foot wingspan, had logged flights of 993 yards and had executed 80 degree turns.

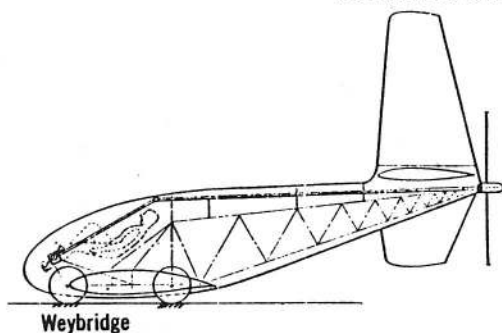
Kremer raised the ante to 10,000 pounds in 1967 and opened the prize to all nationalities.

In 1966 Professor Hidemasa Kimura and students from Tokyo's Nihon University built a series of MPA's named "Linnet," I through IV. In January of 1977, one of the Nihon University ships made a straight line flight of 2,290 yards. (10)

Britain's Royal Aeronautical Society financed four MPA's including the Hertfordshire Pedal Aeronauts' "Toucan," the world's first two-man MPA to fly. ("Tou-can" fly better than one). In December 1972, "Toucan," with its 120-foot wings flexing from droop to happy face, its all-up weight of 446 lbs. and its crew pedalling like fury, became airborne for 670 yards.

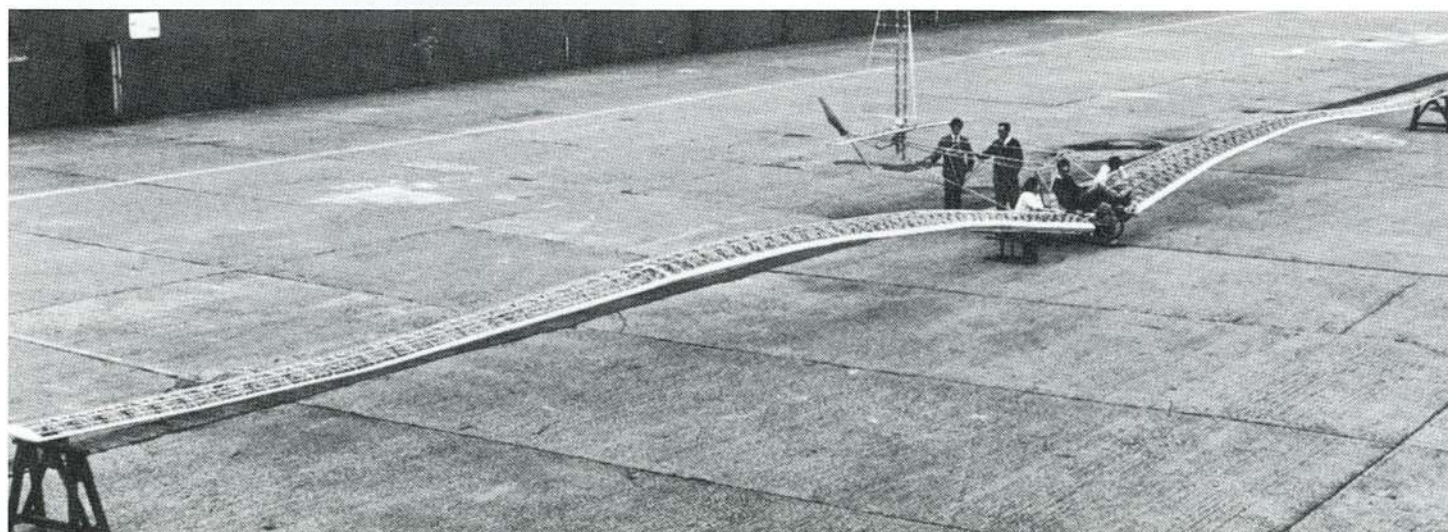
By now, even donor Kremer wondered whether he would ever live long enough to see his prize claimed, and increased the award to 50,000 pounds.

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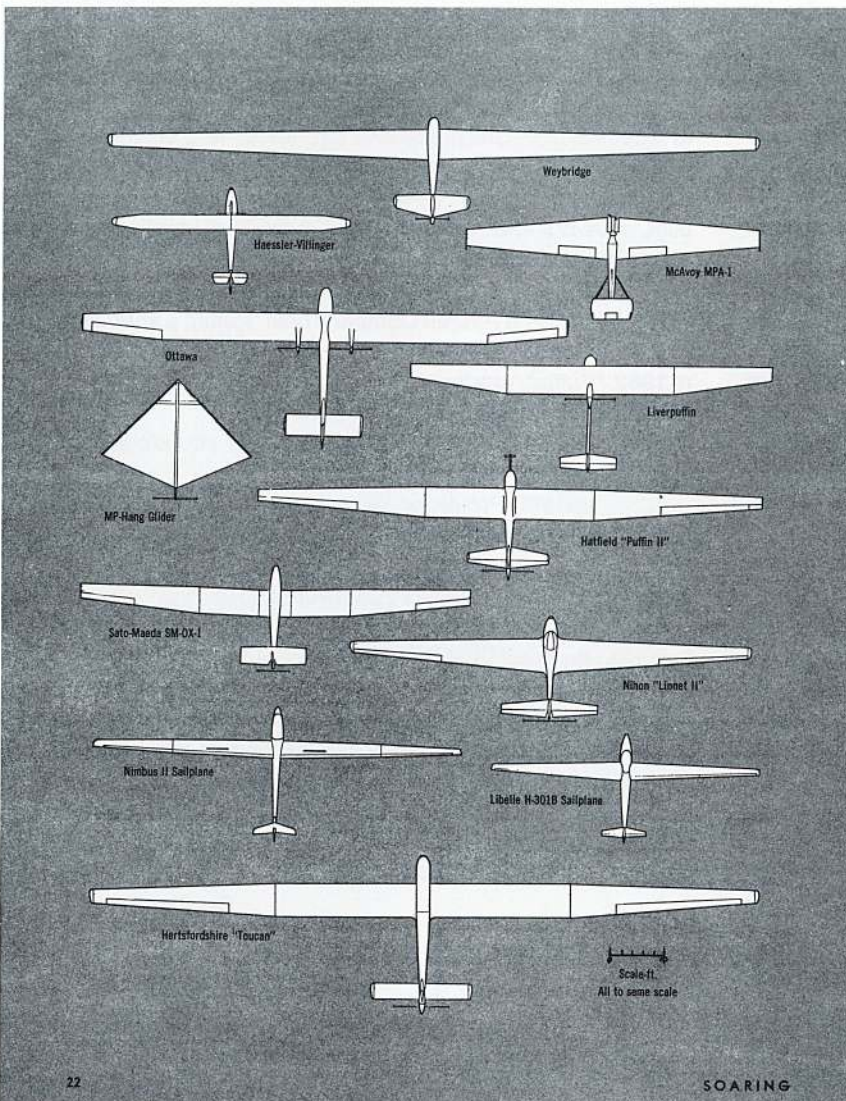


Weybridge

Illustrations from "Man-Powered Flight - A Review and a Status Report" by Curits J. Cole & John H. Masters in the February 1972 SOARING.



British European Airways photo of the 1971 Weybridge man-powered aircraft. The Weybridge had a 120-foot wingspan.



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Enter the Americans:

In his book, "Incredible Flying Machines," Michael Jerram mentions that up to this point, Kremer entrants stressed aerodynamic efficiency resulting in exquisitely streamlined airframes. Californian Dr. Paul MacCready Jr., meteorologist, author, inventor and former world championship soaring pilot (U.S. Soaring Hall of Fame - 1954), took a different approach. MacCready, along with Dr. Peter Lissaman, computerized the aerodynamic parameters for the most efficient airfoils for ultra low speed flight. Author Jerram said that this was the first time that anyone had felt the need to investigate this area. With the resultant engineering proven, the "Gossamer Condor" evolved. A canard, The Condor had a 96-foot Mylar covered wingspan, with an outrigger mounted foreplane that could be banked and its angle of incidence increased to start a turn. Wrapping the innermost wing added lift and provided the balance needed to complete the maneuver.

Racing cyclist and licensed pilot Bryan Allen climbed onto the Condor's saddle on August 23, 1977, for his 223rd flight. He lifted off at California's Shafter-Kern Airport and pumped for 500 feet before he cleared the 10-foot starting bar. Seven minutes later after a flawless figure eight flight he landed as the Kermer prize winner. (11)

Henry Kermer was quick to offer another challenge: 100,000 pounds for the first human-powered flight across the English Channel!

The Channel offered the MacCready team a completely different set of problems. Back in California the Kermer prize was won in a predictable 2.4 mile-per-hour whisp; the fog and mist-shrouded Channel was a different venue. Here, fickle winds always varied in intensity and direction; turbulence from passing ships could easily upset and dunk a fragile MPA.

The challenger was the "Gossamer Albatross," three of which were built in California (two for back-up). In May 1979, all were airlifted to England by an RAF C-130 Hercules stuffed to the bulkheads with spares, piles of foam sheets, mylar covering, and rolls of plastic. The "Albatrosses" had four-section, 93-96 foot wings, innovative electric airspeed readout, sonic altimeter instrumentation, and a designed weight of 55 pounds. (After several changes nearer 70 lbs.)

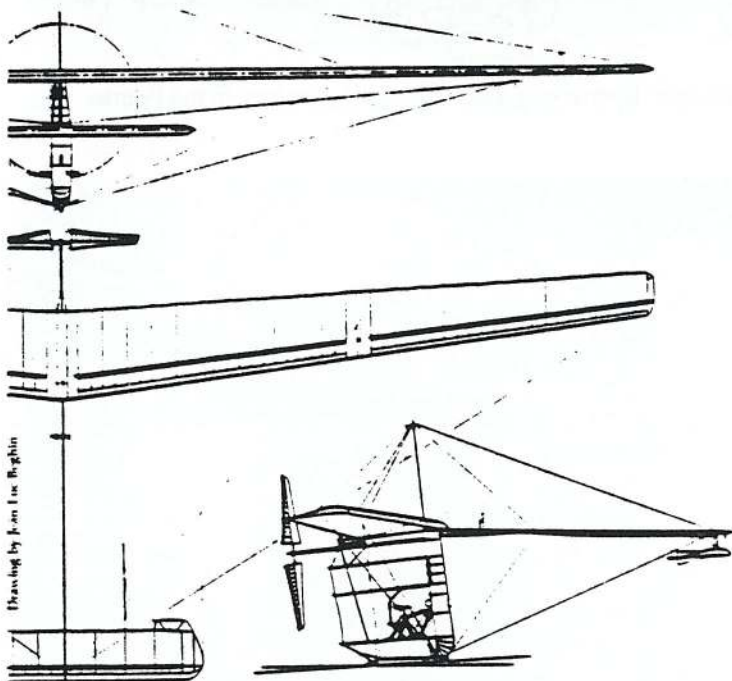
Days and weeks went by while the MacCready cadre practiced, adjusted and extensively re-worked the Albatrosses, waiting for exactly the right conditions.

At dawn Tuesday, June 12, Bryan Allen lifted off from Folkstone, England. Two hours and forty-nine minutes later, sometimes dropping within a half foot of the rolling ocean surface, an exhausted Allen eased the "Albatross" onto the wet sand fronting a WWII fortification at Cap Griz-Nez, France, (12) 22.5 miles. The English Channel had been conquered!

Now back to the 3,500-year-old myth of Daedalus, the Greek who started it all...

Around 1987 a team of engineers and students at the Massachusetts Institute of Technology began investigating the possibility of duplicating Daedalus' mythical flight escaping from the battlements of the Cretan

From "Man-Powered Flight - A Review and a Status Report" by Curtis J. Cole and John H. Masters, in the February 1972 SOARING.



A Jean-Luc Beghin drawing from "The Triumph of Paul MacCready's Gossamer Albatross" by Jack Lambie, August 1979 SOARING. 6

ΔΑΙΔΑΛΟΣ

Daedalus, the human-powered aircraft that Hanellos Kanellopolus flew 73 miles from Crete to the Greek Island of Santorini (Thera), April 23, 1988. Photo is from the NSM Quarterly Winter 1987-'88 and shows Daedalus as it appeared after its test flights in the U.S. before the record flight.



labyrinth. (See NSM Quarterly, Winter 1987-88, "From Myth to Reality: The Daedalus Human Flight Project" by Dr. Steven Bussolari).

Daedalus Project director John S. Langford said the flight would be a breakthrough, "not because of any revolutionary technical development, but rather because of a combination of evolutionary improvements that add up to a revolutionary capability." (13)

Besides MIT, the joint million dollar venture included the Smithsonian Institution, United Technologies Corp., the Hellenic Industrial Development Bank of Athens and smaller donors of cash, materials and services. Olympic-class cyclists, Glenn Tremmi, Kanellos Kanellopoulos, Francis Scioscia and Fred Zack trained for months. Some sharpened their flight skills at the Schweizer Soaring School and later visited the National Soaring Museum before leaving for Crete. The training regime was so intense that no one pilot could maintain peak condition for more than two days. The one chosen would be the one ready when wind and weather permitted the flight.

After four weeks of waiting for just the right mix, a three to four knot southerly tailwind, temperature under 70 degrees and visibility to the horizon, the 36-member Daedalus 88 team finally gave the go-ahead to Kanellopoulos, who took off at 7 a.m., Apr. 23, 1988, from Crete's Heraklion military airfield.

Just under four hours later, the spindly airborne wraith with a slowly turning prop, whispered its anguish as the tail boom broke and its 112-foot wings folded back and gently settled into the Aegean surf, 30 feet off the black sands of Perissa beach on the Greek island of Santorini (Thera). The 72-pound 'Daedalus 88', piloted by Kanellos Kanellopoulos, had made it. Skimming the 74-mile distance from Crete, the Greek Olympian and his mount broke three world records: straight-line flight, distance and duration aloft.

Daedalus, the ancient oracle of flight would have regarded Kanellopoulos' flight as a triumph of human endurance. Steve Bussolari, professor in charge of the operation, called it "an unparalleled combination of theoretical, computational and experimental research in aerodynamic capabilities." (14)

And the quest goes on...

A long standing prize that a short time ago seemed unattainable is the Igor I. Sikorsky Award of \$25,000 for the first human-powered helicopter to hover for one minute at an altitude of at least three meters. Hovering at all is worth \$100,000 from the Smithsonian

(15) So far the prizes have been unclaimed (1988) but given the advancements of aerospace technology, materials and the exploration of human endurance, it's only a matter of time.

References:

(1.) "The Compleat Birdman, an illustrated history of man-powered flight", Peter Haining, Robert Hale Ltd, London, WOE Catalog Card #76-26718

(2.) "Airship", Patrick Abbat, 1973

(3.) "Adventures in Flight ON SILENT WINGS", Don Wiggins pp 29-3

(4.) See (1.) p 119

(5.) "Incredible Flying Machines," An Anthology of Eccentric Aircraft, p 136

(7.) SOARING, March 1937, The Bossi Aerocycle

(8.) SOARING, February 1972, p 20

(9.) See 5, p 140

(10.) See 5, p 141

(11.) MSM Quarterly Fall Winter 1977-78 - "A Technical Overview of the Gossamer Condor" by Jack Greene

(12.) "The Triumph of Paul MacCready's Gossamer Albatross" by Jack Lambie, SOARING, August 1979.

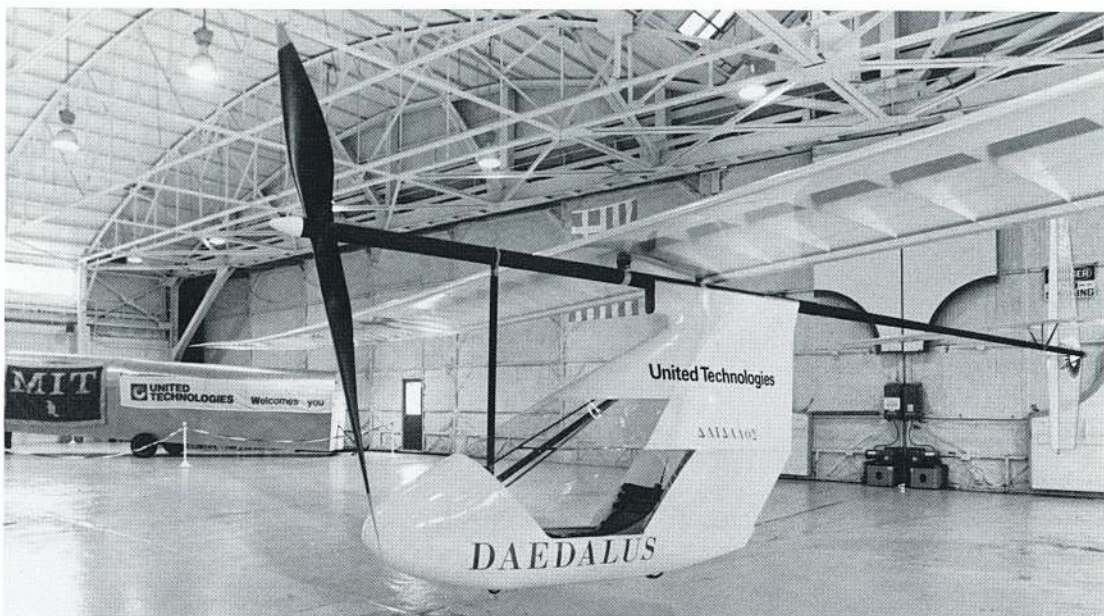
(13.) New York Times, April 12, 1988, c 4

(14.) New York Times, April 24, 1988, p 16

(15.) See 13

ΔΑΙΔΑΛΟΣ

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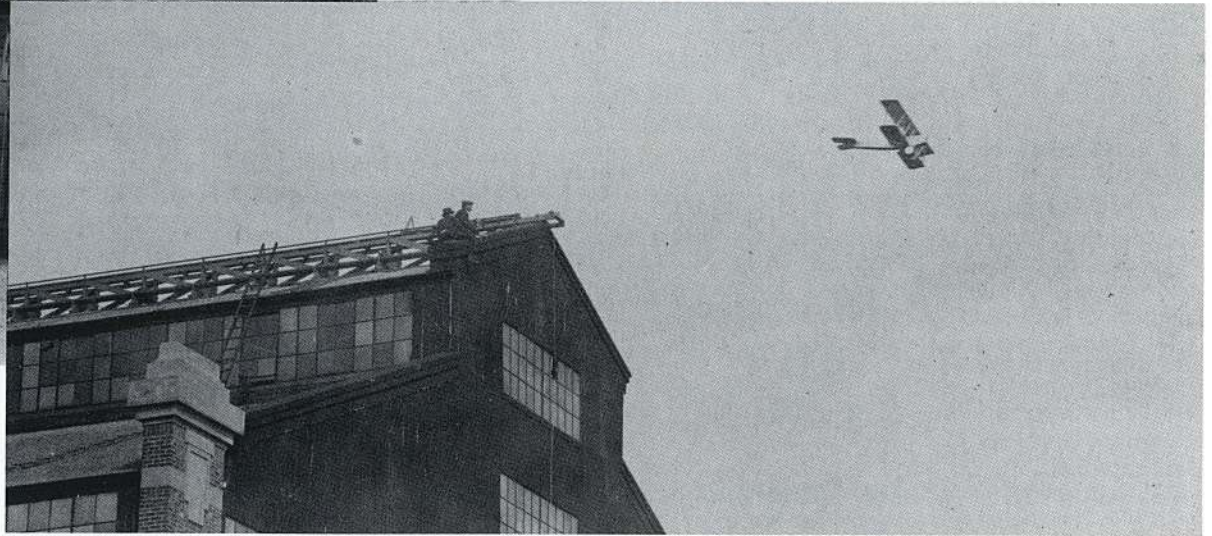
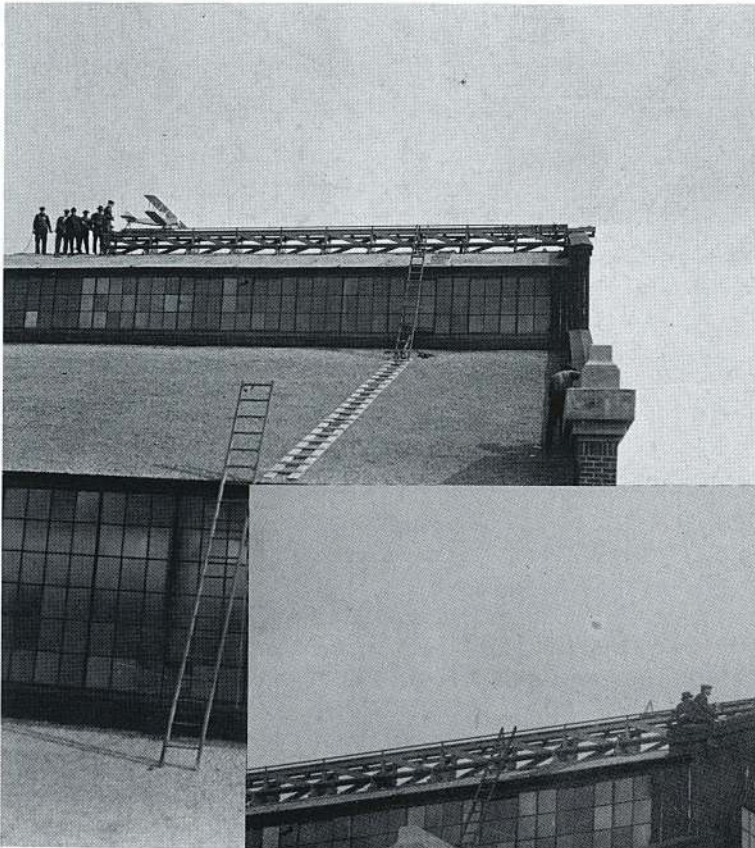
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AMERICA'S FIRST MILITARY GLIDERS



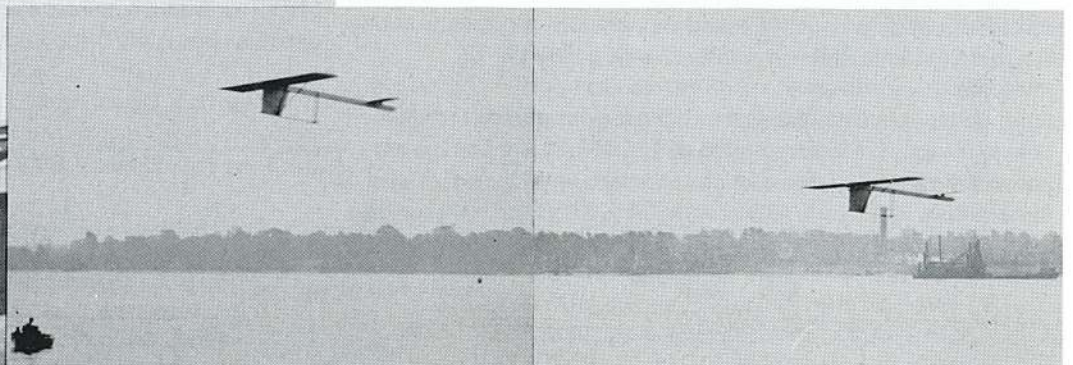
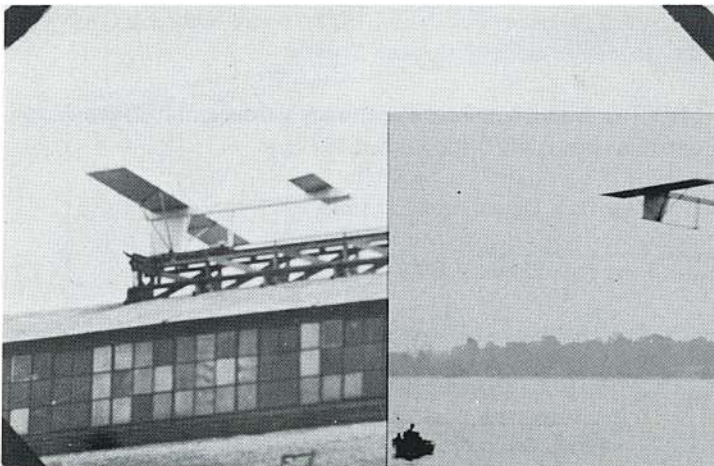
The accompanying rare official Navy graphics are from the Ralph S. Barnaby collection of the NSM's multi-media archives. Barnaby was Project Engineer for the Navy's 1921 target glider experiments and was at the Hampton Roads, VA, Naval Air Station during the Billy Mitchell "Osterfriesland" aerial bombing experiments held in that area.

The combat-battered WACO CG-4A, the massive CG-10A "Trojan Horse," along with the doughty Schweizer TG-3A and Laister-Kauffmann TG-4A trainers, are all familiar marques to WWII glider buffs.

But what did the U.S. military have in motorless aircraft before (then) Major General Henry "Hap" Arnold issued his March 4, 1941 urgent classified memorandum to the Air Corps experimental aircraft test center at Wright Field, Ohio? The Air Corps chief wanted a team of flight engineers to design a glider capable of "transporting personnel and material and seizing objectives that cannot normally be reached by conventional ground units." (1)

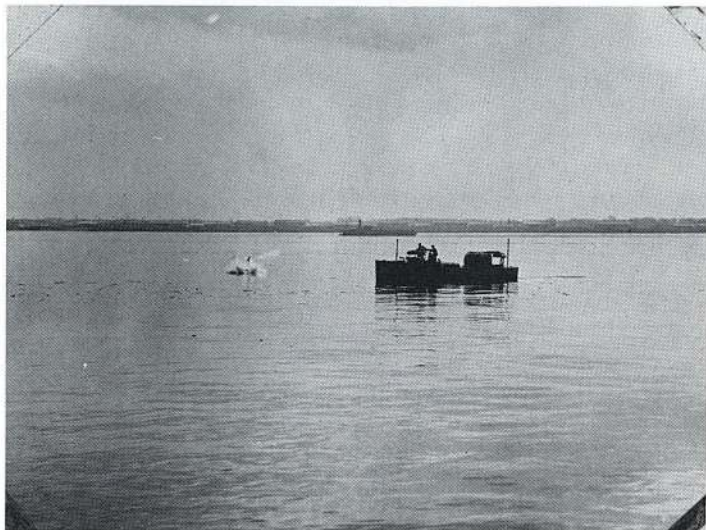
Almost from the beginning of the glider movement in the United States, the military had discouraged its personnel from participation in this emerging and exhilarating mode of flight.

Continued on page 9



The top photo sequence shows the one-quarter scale Curtiss JN-4 (Jenny) glider being launched from a catapult mounted on the roof of plant #2 of the Naval Aircraft Factory and plunging into the Delaware River.

The bottom series shows the Barnaby-designed canard glider begin launched from the same place and flying in a stable glide over the river.



Continued from page 8

Flying gliders became a popular sport for off-duty servicemen stationed at remote and isolated military bases where recreational opportunities were limited. They and their friends would chip in and buy relatively cheap primary training glider kits and with no gliding experience or instruction, try to learn how to fly these flimsy assemblies. The result was an ever increasing number of seriously injured U.S. servicemen. In 1931 Secretary of War, Patrick J. Hurley issued an order forbidding all forms of motorless flight to off-duty personnel.

The following is from the Capt. Ralph S. Barnaby collection of the NSM's archives. It is an excerpted Barnaby letter dated June 15, 1965, responding to an inquiry from Lee M. Patterson, Bureau of Naval Weapons, Navy Dept. Wash. D.C. detailing one of the first uses of gliders by the military.

"...As to whether I have any recollection of it,...I surely do! I was

the Project Engineer on the job; -designed, built and flight tested it. The story is as follows.

"Some time previously, back in 1920, BuOrd (Navy Bureau of Ordnance) expressed a need for targets for AA (Anti-Aircraft) and fighter aircraft gunnery practice. Someone suggested target gliders which could be taken aloft and dropped from airships (dirigibles, blimps). In due course, NAF (Naval Aircraft Factory) received a project to build a few for test. BuAer (Navy Bureau of Aeronautics) sent to us a design developed by Clark, who was Chief Designer at BuAer at that time, which was really a 1/4 scale copy of the (Curtiss) JN-4 'Jenny'. It was complete with landing gear, but with a Warren truss wing structure instead of the conventional stick and wire Pratt truss. As an NAF Project Engineer known to be interested in gliders, the job was dumped in my lap.

"The first thing I did was to try and get BuAer to let me design a glider for the job. I proposed one which would be more stable, much simpler to build and assemble, and very much cheaper. We built three of the 'Jenny' models to the BuAer design and two to my design; the canard glider shown in the plans you sent me. (A canard glider is one in which the horizontal stabilizer is located forward of the wing. It is pictured with this article.)

"...When the gliders were completed we rigged up a falling weight type catapult on the roof of plant No. 2, aiming toward the river, and tested one of each type. The 'Jenny' was either nose heavy or didn't have enough 'up' elevator. It plunged into the water not far from the shore and was demolished. The canard flew beautifully.

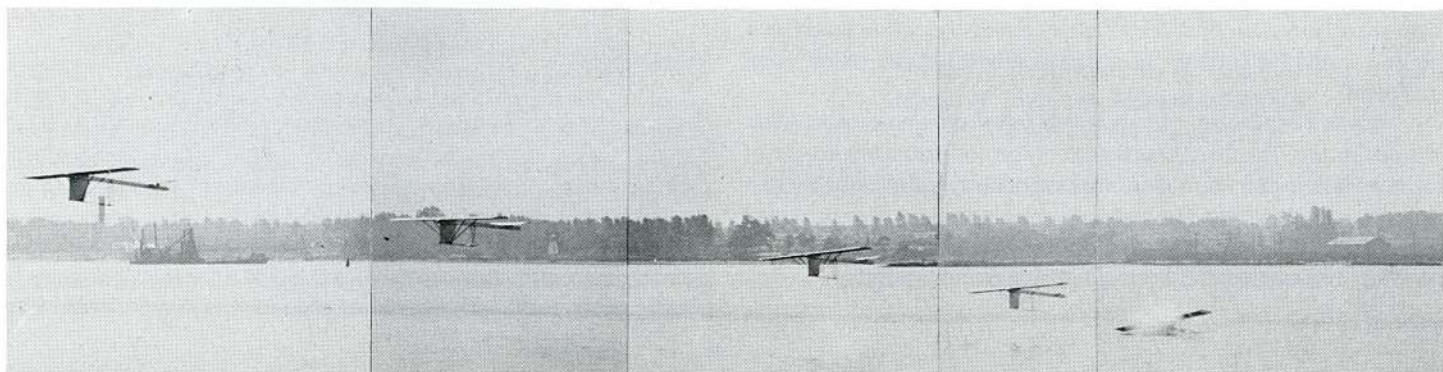
"The next step was to ship the remaining models down to the NAS (Naval Air Station) Hampton Roads for test. At that time there was a blimp unit stationed there...June, 1921...

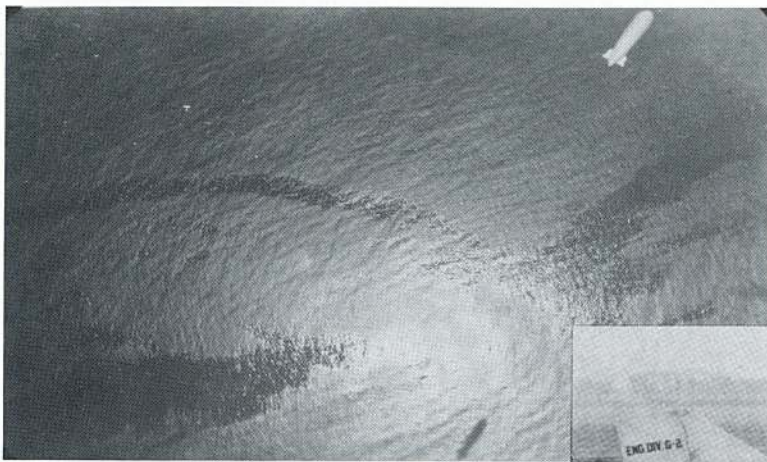
"A mounting and release mechanism was installed under the gondola of the dirigible 'O-1.' (Italian built) On July 7th, we dropped the canard glider from about 3,200 feet out over the Chesapeake north of Willoughby Spit. It flew beautifully and was later retrieved by sea-sled crash boat. On July 8th and 9th we dropped the two 'Jenny' models. One spun in; the other did a series of dives and stalls and finally plunged into the bay in a steep dive.

"This ended the experiment. It was decided...that there must be some quicker, easier and less costly and time-consuming way of getting targets out onto the range. As far as I know nothing further was done with it.

"In the Fall of 1928, while I was stationed at Wright Field, I assisted Major Gerald Brower...in developing a system of carrying target gliders on a rack above the wings of an Army Douglas observation plane. I believe this system was used by the Army for a while."

Continued on page 10





Left, The Barnaby canard target glider (small white T, upper left) after release from the gondola of the Navy's Italian-built dirigible "O-1" over Chesapeake Bay, 1921.



Right, The 1922 GL-2 America's and possibly the world's first piloted military glider - from Peter Bowers' "Interesting Gliders" in the May-June 1958 SOARING.

Continued from page 9

In the letter's closing, Barnaby mentions that during his tour at Hampton Roads, General "Billy" Mitchell, flying America's first twin engine bomber, the Martin MB-2, conducted the aerial assault on five battleships including the captured German "unsinkable" Ostfriesland. (2)

The GL-2, America's and possibly the world's first piloted military glider, was developed in 1922 by the Engineering Division of the U.S. Army Air Service (forerunner of the U.S. Air Force.) The full-size, single-place glider was designed by French-born Jean A. Roche, the Service's Senior Aeronautical Engineer. In 1929, the Aeronca C-2 (Aeronautical Corporation of America), the first successful light plane produced in the United States, was based on Roche's design. (3)

In the 1950's and 60's aviation author and sailplane builder Peter M. Bowers wrote *Interesting Gliders*, a series on rare and unique gliders for *Soaring* magazine. In the May-June 1958 issue he reviewed the GL-2, 'A.S., 23-2.'

"It was built purely as a research model at McCook Field, Dayton, OH" (present Wright-Patterson AFB) Bowers said, and was not intended as a prototype for a series of glider designs. The number 23-2 indicates that it was the second aircraft procured by the Army in the year 1923, which began for the Army on July 1, 1922.

"The design was developed as the result of information available from the early post WWI glider meets held in Germany, at the famous Wasserkuppe and at one of the earliest international meets held at Itford, England. The report that summarized this information...said among other things, that the glider would make an excellent observation post under windy conditions when flown as a kite and would be superior to an observation balloon under such conditions."

Bowers continued, "Whether this suggestion was followed up on is not known. The GL-2 was flown only on short auto tows on level McCook Field. In carrying out a further suggestion that gliders dropped from altitudes would make good anti-aircraft gunnery targets, small gliders, one of which was the GL-1 were dropped from balloons or released from airplanes after being adjusted to fly in circles."

Bowers described the tiny ship's construction, "The man-carrying GL-2 was quite conventional by the standards of the times. Since it was built to determine glider characteristics, as such, and not to develop a better glider, it was a 'quickie' design. The construction was wood and fabric for fuselage and tail, with plywood nose skin. The wing was the upper wing of a Curtiss JN-4, 'Jenny,' minus the center section, which gave it a span of 41 feet 3 inches and an area of 191 square feet. Gross weight was 387 pounds, resulting in a wing loading of two pounds per square foot.

"The landing gear was convertible from two wheel airplane type to single skid, a practice that was later used by Hawley Bowlus with his early 'Albatross' models and trainers. This gave a stable running gear for preliminary ground runs and low tow hops without handicapping the design for soaring flight..."

"The wing was wire-braced from the lower longerons (main structural members along the length of the glider fuselage) and from a cabane strut on top of the fuselage. The wires were attached to the wings at the normal airplane strut fittings. The wing skids were standard 'Jenny' skids attached to the point where the overhand brace wires normally attach to the upper wing."

It is interesting to note that the report referred to in Bowers story also mentioned that, "Gliding should be studied and encouraged in this country because of its value as a means of popularizing and advancing aeronautics. Gliding as a sport will give young men preliminary training in the handling of aircraft at small expense; such training should be properly supervised to minimize accidents..." The report was written over 70 years ago.

References:

- (1) "Silent Wings" Gerald M. Devlin, St. Martin's Press, NY, p. 39
- (2) "The International Encyclopedia of Aviation," General Edition, David Mondey, Crown Publishers, NY, p.148
- (3) "Aircraft of the National Air and Space Museum," Smithsonian Institution Press, Third Edition.

At the 1951 18th Nationals, left to right, Elmira Mayor Edward A. Mooers, Catherine P. Jones, at extreme right, Earl R. Southee, one of the SSA's founders. (Photo: Fred T. Loomis, NSM Multi Media Archive.) Inset: a 1955 photo of Katy at the 22nd Nationals from September-October SOARING.

KATY JONES

By Paul A. Schweizer

Long before "Women's Lib," a young lady, Catherine P. Jones, graduated from the University of Michigan eager for a professional career. She preferred to be called "Katy" and soon got a position as a secretary with the Elmira Association of Commerce. During that time the Assoc. of Commerce was the key agent for promoting, financing and operating the National Soaring Contest that had started in Elmira in 1930.

In 1938 she was assigned to Harris Hill, during the Nationals, to be in charge of the contest office. She quickly became indispensable and a regular at the National contests. In 1941 when Floyd Sweet was elected SSA Secretary and Editor of **Soaring**, Katy assisted Floyd and his wife Frances in getting out **Soaring** and running the SSA. This carried on into early 1942 when Sweet was called to military service and Parker Leonard took over as Secretary and Editor. When the build-up for World War II started and the Elmira Area Soaring Corporation became involved in training military glider pilots, she was assigned to the EASC and when they moved to Mobile, Alabama, she went along as secretary to the general manager.

When the military glider school phased out in 1944 she returned to the Assoc. of Commerce. With the start of the post WWII Nationals again in 1946, she regularly handled the office work at the Nationals. As the contest grew in size the Chamber's involvement grew and then they moved much of their staff to Harris Hill during the contests.

In 1951 when Dick Comey resigned as SSA General Manager, the SSA office was moved to the Elmira Assoc. of Commerce where Katy handled the memberships, made the mailing labels for **Soaring**, which was published in Dallas, and did the routine clerical operations, all under the direction of the SSA Secretary, Paul A. Schweizer. The Association of Commerce only charged \$50/month for this service which was a great bargain, for Katy saw that the SSA's needs were met. This carried on until 1957 when Lloyd Licher was appointed Executive Secretary and the SSA's office was moved to Santa Monica.



Katy continued to carry out the EASC's office work at the Nationals and, at the 1951 National, she received a special award for her long service to soaring. She retired from the Chamber in the early 1960's and continued her activity with the American Association of University Women. She passed away at the age of 88 on February 23, 1993. Katy never married and when asked about her marital status she would say that she was an "unclaimed blessing." She certainly was a "blessing" to the SSA, the soaring movement and to those who worked with her in the early days of soaring.

You can help in preserving America's soaring heritage

If you have historic memorabilia and excess or duplicate publications, please contact the National Soaring Museum to discuss contribution to the Museum's collections and archives.

Share your collection of Soaring artifacts and reminiscences with interested succeeding generations.

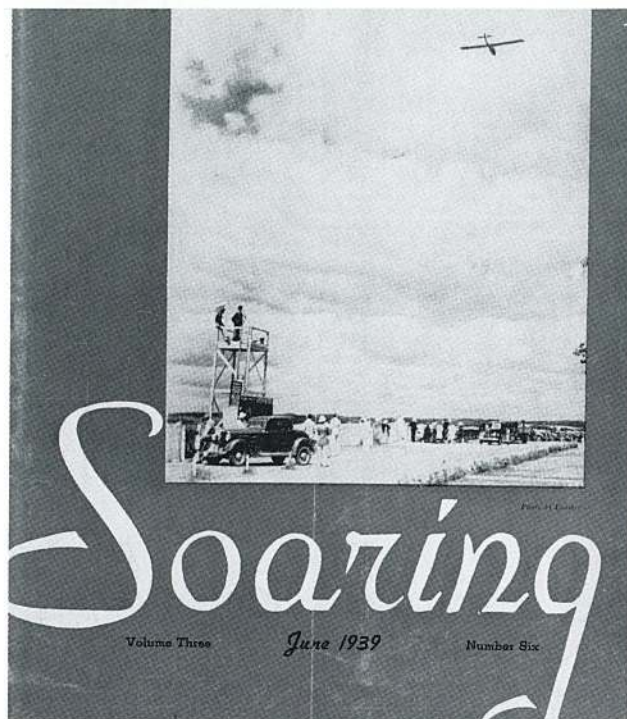
Address: James W. Swinnich, Executive Director
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Harris Hill, RD#3, Elmira, NY 14903

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James W. Swinnich, Executive Director
Editor - Bill Gallagher

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



ON THE COVER

The June 1939 **Soaring** cover, "Preparation for the Decennial Celebration" heralding the 10th Nationals. A Fred T. Loomis photo of Harris Hill with a Franklin PS-2 soaring over the ridge. "The best one yet," Arthur L. Lawrence, one of the SSA founders called it with 9 Silver "C's", 3 Gold "C's". The altitude record was broken 3 times and Bob Stanley topped out at 17,264 feet. (over 20,000 feet above sea level). The meet record distance was broken by Chet Decker in a Minimoa with a goal flight of 233 miles to Atlantic City, N.J. 36 ships and 88 pilots entered.



Bob Stanley's homebuilt "Nomad" the first American plane to use a 'V tail'. Stanley was a Bell Aircraft Co. test pilot.

1993 Calendar of Events

DATE	EVENT	LOCATION
May 20-22	EOGASE Model Designer/ Builder/Sponsor Symposium and Dedication	NSM
	Board of Trustees Annual Meeting	
	U.S. Soaring Hall of Fame Induction Ceremony/Banquet	
July 9-10	50th Anniversary - WWII Glider Pilots	NSM/ Harris Hill
	Annual Vintage Sailplane Assoc. Regatta & Membership Meeting	
July 15-18	Sailplane Homebuilders Ass'n Eastern Workshop	NSM
Sept. 11	Annual Community Soaring Day/KiteCitement	NSM/ Harris Hill
Sept. 18-19	National Soaring Landmark Dedication - Richard C. DuPont Flight	Waynesboro, VA
Oct. 23	20th Annual Ralph S. Barnaby Lecture/Banquet	Santa Monica, CA

For further information contact:
Paul Prunier, Curator of Education
National Soaring Museum
Harris Hill, RD#3, Elmira, NY 14903
607-734-3128

As of June 1, 1993 the National Soaring Museum will no longer be a participating member of the Association of Science Technology Centers (ASTC) and our reciprocal free admission program will be discontinued.

For Your Information — F. Y. I. —



The altitude record for a bird is held by a **RUYPELL'S GRIFFON VULTURE** (*Gyps rueppellii*) that collided with an airliner at 37,000 feet over the Ivory Coast in West Africa. This species soars higher than most Old World vultures, and often locates food by watching other, lower flying species.

From the February 1992 "BIRDSEED"
of the
COLORADO SOARING ASSOCIATION
OWL CANYON GLIDERPORT
Cantrall, PA