



NSM

A Quarterly Journal
of the National Soaring Museum

Winter, 1976

Vol. 1, Number 2



Filling Needs

This column will be reserved for want ads, trading requests and the like. Please address all requests to NSM, c/o The National Soaring Museum, Harris Hill, R.D. 1, Elmira, New York 14903.

J. C. Hocker has recently established the Pratt Read Historical Society and is "collecting plans, specs, manuals, photos, logs, and all the documents possible which pertain to the ship and the Gould Aero Division of the Pratt Read Company. All documents will be photocopied and the copies filed at the National Soaring Museum; the originals will be returned to the owners."

Anyone having such material is requested to get in touch with Mr. Hocker at his address: 9 North Rice Street, Brevard, North Carolina 28712.

* * * *

P. J. Baugh is attempting to complete a set of **Soaring** magazines for the National Soaring Museum. As of January 1, 1976 he needed the following issues:

1937 January through July, Oct. and Dec.
 1938 All
 1939 All
 1940 All
 1941 July-August
 1942 All
 1943 All except Nov.-Dec.
 1944 January-February
 1945 All
 1946 All except January-February
 1947 All except September-October
 1948 January-February, May-June, July-August
 1949 All
 1950 January-February, July-August
 1951 January-February
 1952 September-October, November-December
 1953 March-April, May-June, July-August
 1954 March-April, May-June, September-October
 1955 March-April, July-August, September-October
 1956 January-February, March-April, July-August, November-December

He has the following duplicate copies of **Soaring**:
 1966 June, July, August, Sept., Oct., Nov.
 1968 All issues, including 2 copies of the June and December issues
 1969 February, April, June, November, December
 1970 March, April, May, November
 1975 January, February, March, April, December
 He may be reached at:
 Almahurst Farm, P.O. Box 4237, Lexington, Kentucky 40504

* * * *

Information needed on plans for the Wolf Hirth glider. These used to be sold by SSA. Also, information on Guy Stroner or Gary Bennett from Mississippi State University. These two may have built a Hirth glider.

Stewart Crane, 3300 Barbara Circle, Reno, Nevada 89503. Phone (702) 747-5167.

NSM is a publication of the National Soaring Museum, Harris Hill, RD 1, Elmira, New York 14903. Anyone is invited to contribute material and pictures with identification about historical soaring activities, renovation of old sailplanes, soaring pioneers, unusual uses of sailplanes, etc. Manuscripts are subject to whatever revisions, additions or deletions are necessary to make the material conform to the space limitations and standards of NSM. Material that is to be returned must be accompanied by a stamped, self addressed envelope. No compensation other than credit will be made.

Publisher — National Soaring Museum
 William D. English, Jr., director

Editor — Meta L. Levin

Papers Available

Four papers are available through the National Soaring Museum. The first three are reprints from the 1974 symposium and are \$1.25 each, plus \$.25 for postage and handling, or \$4 for all three including postage and handling. The fourth is \$.50, including postage and handling.

1. Some Light and Ultralight Sailplane Designs, Carmichael.
2. Second Generation Ultralight Sailplanes, S.O. Jenko.
3. Some Thoughts on Ultralight Sailplanes, E. Schweizer.
4. Experiments and Observations in Soaring Flight, Wilber Wright

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The Two Horsepower Glider Launch

Editor's Note: Capt. Ralph S. Barnaby, U.S. Navy, Ret., is honorary vice president of the National Soaring Museum's Board of Trustees, and is a soaring pioneer. The following is an edited transcript of a story he told during the

museum's spring symposium. It first went public when Arthur Godfrey read the story on his radio program from a letter Barnaby wrote him. Godfrey was one of Barnaby's pupils in the early 1930's.

by Capt. Ralph S. Barnaby, USN (Ret.)

This is a story from the first glider school in the country. It was run by a little outfit called the American Motorless Aviation Corporation, which was sponsored by Colonial Airlines. They imported instructors and gliders from Germany to set up this school.

I had tried unsuccessfully to get permission to get a leave of absence from the Navy to go over to Germany to take the course at the Wasserkuppe, but they vetoed that. So when I read that there was to be a glider school established the summer of 1929 at Cape Cod I took my two weeks leave and went to Cape Cod. As a matter of fact, I took a month's leave.

I was fortunate enough to get through the course when we had a spell of good weather. That was where I made my first soaring flight and qualified for my "C" certificate, which happens to benumber one in the United States. It was signed by Orville Wright.

Well, we used for training the German Pruffling, which was the open cockpit glider. We used a typical shock cord launching: rubber braided rope, and had from four to six lusty fellows pulling it to stretch it out. Two men held the tail until it was well stretched out, and off you'd go.

Along towards the end of the summer a few folks began leaving, having to get back to various schools. It came to the point where we didn't have enough of a crew to launch gliders. Some of the late comers wanted to get all their flights in and licenses, if possible. So, we had to look for a way of launching them.

Someone had the bright idea we could rent a couple of farm horses with collar traces and whiffle tree, which was attached at the end of the rope. Then we only needed a boy to ride each of the horses and a couple to hang on the tail and one on each wing tip and that was all you needed more than anything . . . except the victim in the cockpit.

Things went pretty well, but as the day progressed and we made these launchings, somehow or other the horses kept getting in closer together. Then it came to the one launching in which there was a young lady who had her first ride, which was fairly gentle. The launch would just get her off the ground and set her down again. They'd given the signal and the horses started trotting out and the boys were hanging back on the tail. It became evident to some of us standing around that the horses weren't far enough apart to let the glider go between them.

Once you get the cords stretched there is no stopping. So, everyone began screaming when the glider started to move. They let go of the hold back. The boys riding the horses looked back and here was this glider bearing down on them. They both dove off the horses into the sand and the glider went sailing on through, between and just high enough to clip each horse on the back of the head.

I will say this for the young lady, she was unperturbed and landed the glider with no difficulty. But, the two horses ran off in opposite directions stretching the shock cord between them and the further they went the slower they were going. They were going great guns at first. Finally it got to the point where they were just pawing the ground and not going anywhere. At that point the shock cord broke.

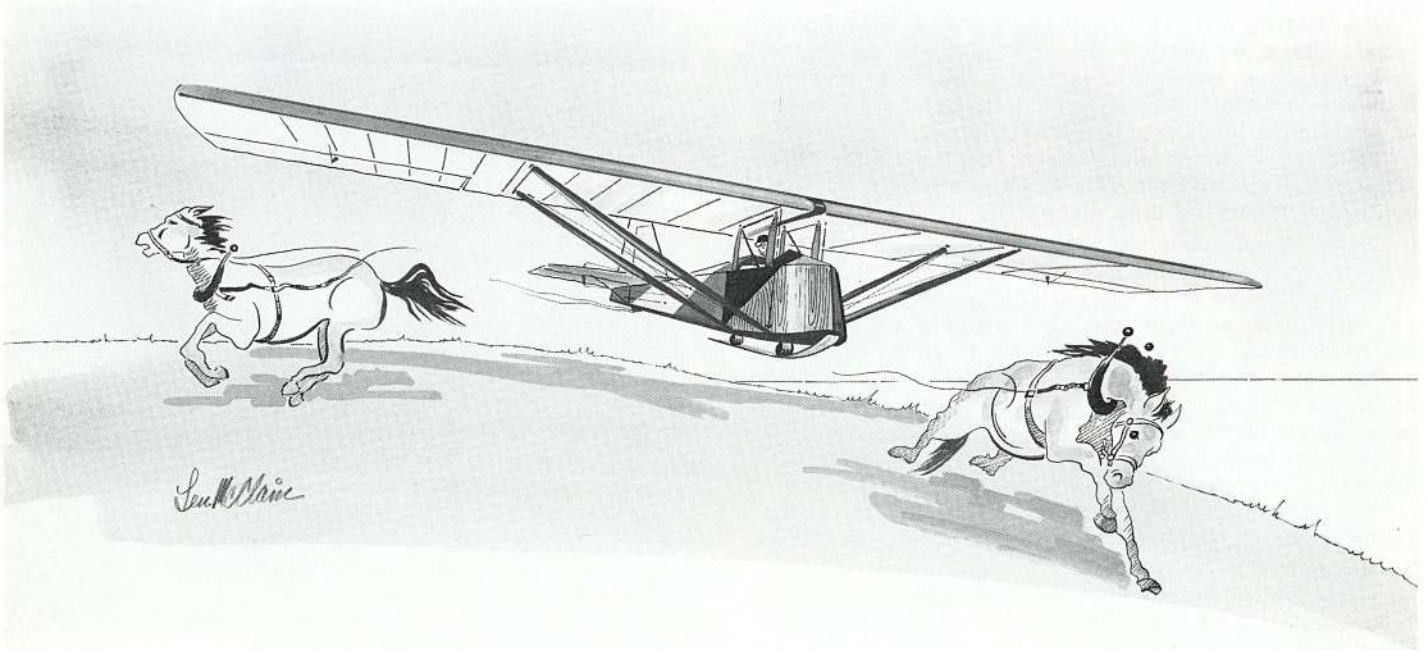
Have you ever seen a horse turn somersaults?

Two of them going end over end!

Finally they got up, shook themselves off and lit out. That was the end of operations because it took the rest of the day to find them. They went straight back to the farm.

One regret was that there was no one around with a movie camera. That would have been a priceless film for the film library.

That was the famous two horsepower glider launch.



Cover photo by The Elmira Star Gazette: Museum director Liam English discussed air foil modification with some of the contestants.

Cubs Test Model Skills During Museum Contest

At the height of Harris Hill's fall foliage display, a little blue and gold mixed with the turning leaves.

Nearly 200 Cub Scouts invaded the museum and adjoining park area on October 11 for the first annual National Soaring Museum-Sullivan Trail Boy Scout Council balsa wood model glider contest. About 100 adults, most of them the scouts' parents, helped keep things running smoothly, while the museum staff answered questions and mixed orange drink in a bathtub.

The boys were given a short orientation which included soaring methods, and let loose. They competed in duration aloft, spot landing, cross country and distance tasks. The four winners received sailplane rides, compliments of Harris Hill Soaring Corporation.

As the meet progressed, the boys developed ingenious ways of beating competition. Museum director Liam English helped alter a few airfoils to account for the windy weather. However, other boys used tape and whatever else was available to change the center of gravity and other factors on the simple models.

Launching methods also varied. Some carefully aimed and gently launched the gliders. Others wound up like a spring and flung the little planes into the air.

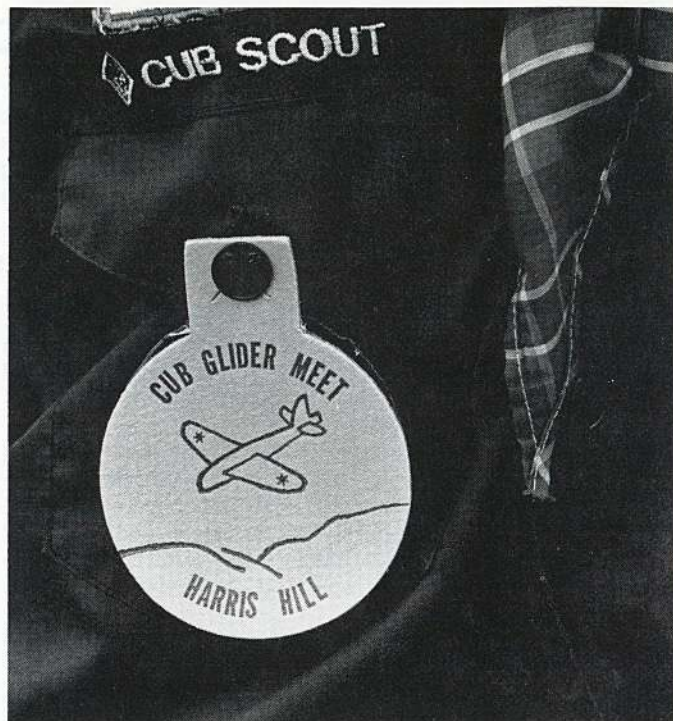
There was tragedy, as well as triumph. Balsa wood breaks easily and a few lost rudders or wing tips.

Meanwhile, the boys took advantage of the museum — running in and out to try the 1-34 cockpit or ask questions about the Hutter H-17 in the main room. They marveled at the strength of the 1-19 frame and demanded explanations of the shock cord launch ("I wonder if a sling shot would work on my model...").

Museum attendants gave up counting, but maintained admirable control.

The contest coincided the HHSC's Fall Foliage Festival, so the meet frequently was interrupted with cries of, "There goes a real one! Look at that!"

The event will be repeated next year with a change: the boys will be required to design and make their own gliders, either from paper or balsa wood.



A REMINDER: Each participating Cub received a leather patch for his uniform.



MY TURN NEXT?



CONCENTRATION:
Cub competes in
distance event.

Photos by Meta Levin



**NOW, IF YOU SHIFT
THE WINGS FOR-
WARD . . .**
Informal education
abounded.

Varied Programs Attract 40,000

by William D. English

In the first issue of **NSM**, I attempted to provide an overview of museum activities during the past five years. Because so many of those activities have been directed at developing a long range plan for museum growth, my article did not deal with any of the things that the National Soaring Museum actually does now.

At the museum, work falls naturally into five general categories: public programs, archival work, fund raising for daily operations, fund raising for our capital development program and planning for the future.

During the past year, the museum's public programs have directly reached approximately 40,000 individuals; 90% of that audience have had little or no prior knowledge of motorless flight, the remainder consisting primarily of soaring enthusiasts. These individuals either toured our present small facility, took part in our various education programs, attended one of our "soaring evening" programs, or witnessed an airshow which we helped organize and stage and which featured a demonstration of sailplane capabilities.

Perhaps I should say a word about our "soaring evening" programs. The museum believes that socializing is an important part of soaring and that it is one of our functions as a museum to promote this sort of activity. Normally, we select an urban location, send invitations to soaring enthusiasts in the area, organize a dinner — after suitable refreshments — and follow up with a talk by some noted soaring person. For example, at a recent such event in the Washington, D. C. area, 200 persons enjoyed a roast beef dinner followed by comments from Lawrence Wood, SSA President, and A. J. Smith, world and national champion soaring pilot.

We hope to put on many "soaring evenings" in the future. If any of our members wish us to put on such an affair in their area, I hope they will get in touch with us.

Because the soaring museum has a small but significant collection of original documents, aircraft and equipment, it seemed clear from the beginning that a priority item for us was to begin recording and cataloging our collection.

In late 1973, the museum obtained a small but crucial grant from the New York State Council on the Arts. With this grant, supplemented by other grants, we were able to begin working with the collection in a professional manner. During the past year, the museum hired its first archivist, Meta Levin, and during the summer was able to obtain additional help through the CETA program.

As more material is turned over to the museum, we anticipate that the museum's archival functions will continue to grow in importance and produce much relevant data on the development of motorless flight and of aviation itself.

It is axiomatic in the museum profession that museums cannot be expected to pay for all activities out of admissions revenue. Indeed, the normal museum earns no more than about 30% of its operating income this way. Recognizing this, the Internal Revenue Service accords museums special exempt status, thus making it advantageous for interested people and foundations to make contributions to them.

Because of its small building, the National Soaring Museum simply cannot increase the number of visitors beyond the present level. This means that the museum can

expect to raise no more than 10-15 percent of its operating budget through visitor generated revenues. Because of this much time must be spent in securing supplemental funds to support museum operations. To date, the discrepancy between visitor generated income and museum expenses has been made up through grants from various sources and the museum's membership program. We do not receive any financial support from the Soaring Society of America.

Our members will be interested to learn that in 1975, they contributed some \$9,500 to the support of the museum and that without them, the museum would not have been able to function. In the years ahead, we hope and trust that we will continue to merit the support of our membership. We plan to expand our membership program greatly in the future.

Of vital importance to the future is the capital development program that is presently being established. The museum was fortunate to have received significant support from the late Joseph C. Lincoln, Phoenix, Arizona. The generous gifts that he gave to the museum have been reserved for the capital building program and form a major portion of our capital fund. The Trustees anticipate a major effort to raise additional capital for a new museum facility will be made in 1976 or 1977.

The National Soaring Museum is far more than just a repository for worn out gliding and soaring equipment. It performs a vital function in preserving and interpreting the past history of motorless flight — something no other organization or institution does — and conducts a vigorous program of activities to expand the public's awareness of motorless flight and its priceless heritage.

I believe that our members can be proud to be an important part of our organization; we certainly value their support and hope that they will feel free to offer suggestions as to how we might improve our services to them, to soaring enthusiasts, and the general public. Above all, we hope to see our members soon and often at the museum. It is, in a real sense, their museum.

The President Speaks

Membership Important To Continuing Programs

by Ted Sprague

Many of our members probably have seen a recent advertisement in the national news weeklies sponsored by the Business Committee of the Arts. Headlined "Suppose the Arts went 'Pay as you Go'", the advertisement shows a number of people visiting a museum gallery; in the foreground is a sign reading:

Museum Admission
\$10.50 General Admission
\$ 5.50 Student Admission

The point, of course, is that such prices are NOT charged because of the philanthropic efforts of many different groups and individuals.

This ad struck home with many of us who are associated with the National Soaring Museum, because we too must bridge the wide gap between operating expenses and the income derived from the visitors. At present, our operating budget stands at \$67,000.00; income from our visitors totals only \$9,000.

Why does this gap exist? How can the museum's board justify such a discrepancy? Why not cut expenses to meet visitor generated income?

Continued on Page 16

The Blue Auk

and other open cockpit stories

Editors Note: Jim Gray, a member of Harris Hill Soaring Corporation, and an active RC sailplane modeler, visited the museum one day in November, 1975, to regale director William English and NSM editor Meta Levin with stories of open cockpit flying. It didn't take much to persuade him to write down some of them for NSM. Here is a sample.

by Jim Gray

It was in 1957 that a Schweizer 1-20 and I became inseparable friends. Art Heavener, Otto Zauner and Hy Gardner of Vineland, New Jersey, had built longer, tapering wooden wings for a little single place machine that started life as a 1-19.

In 1957 they delivered this jaunty little bird to Harris Hill and I became the proud — if somewhat poorer — father of N2708A: THE BLUE AUK.

The AUK was a bit slow, but lovable, and how we enjoyed each other's company. It was comfortable to thermal, sort of like a rocking chair, and climbed like a homesick angel. Not even a light 1-26A could keep up with it. Alas, penetration was another story. Dave Wells — to his everlasting credit — made Gold distance in that bird.

Bill Hoverman and Dale Gustin dubbed my 1-20 the BLUE AUK, and Dale painted the raunchiest big-bellied, web-footed, large-billed ungainly AUK the world has ever seen on either side of its nose. Stan Tombs, of Binghamton and Dave Welles, of Elmira, New York, became my partners — albeit at different times. Dave finally acquired full ownership.

We all flew the 1-20 without its canopy and, for a time, without its windshield as well. The plexiglass had begun to "craze" as it is wont to do after long exposure to sun and wind. We enthusiastically pulled off all of the enclosure before realizing that we had no replacement constructed. Moreover, no "plex" was to be had locally for a time, so we were forced to either fly it without a canopy and windshield, or hangar the little bird until one could be built. If you bet we didn't fly it, you lose.

I remember my first ride sans cockpit enclosure: goggles on bare head, thumbs up to wing man, towhook firm and line taut — here we go! Boy, are my eyes streaming, and mouth-breathing produced gritted teeth, literally. The towplane's prop wash was throwing up a swirling cloud of dust, most of which I managed to avoid by the simple expedient of opening my mouth and swallowing.

Eyes still streaming, we climbed away. The wind flattens one's nose and restricts the nostrils; the cheeks flutter and the hair whips even at a modest sixty miles an hour. By now my tears were being streaked off my cheeks by the wind, but release at 2,000 feet solved that problem.

Slower by 20 miles per hour after release, I could breathe and see at last. In fact, I could smell the air and the odors it carried up from the earth. The wind in the struts was a sigh, and became a rattle as its tiny fingers tore along the center section fairing and went chattering away behind. It used to be said, by the old timers, that you could fly just by listening to the wind and feeling it on your face. That day I learned what a slip, a skid and a coordinated turn feels like as the breeze hits first one side of the face and then the other. You can fly by sound and feel.

But why did my eyes stream tears on that first flight without a canopy or windshield? The answer is a bit embarrassing. When I landed and reached up to raise the goggles from my eyes and push them up on my forehead, I discovered they already were there. Never had them over my eyes in the first place!

That AUK provided us with many memorable flights: one day, after having finished his lunch aloft, Dave allowed the brown paper sack to slip from his grasp. It went whipping out of the cockpit, back past the stabilizer and . . . up! The sack had caught a thermal.

Dave banked around, tightening the turn to center the lift and outclimb that bag, but he couldn't do it. The pesky bag centered the thermal better than Dave and flew right up the core of the lift. In trying to follow, Dave took the AUK to better than six thousand feet over Harris Hill.

But the 1-20 wasn't my only experience with open cockpit flying. Many years before I had owned a PT-19.

I had purchased the PT on the surplus market, still dressed in its shiny yellow and blue Army colors. It had a spot of red here and there to dress it up a bit, but its stars and stripes had been removed.

I flew that delightful old bird winter and summer, in all kinds of weather. My most vivid memory of that total experience was cold: all encompassing, pervading, permeating, biting and permanent cold. In spite of the leather flying jacket, the sweater, the flying suit and the warm underwear, I always was cold. Fun? Oh, yes, it was fun. But I was younger then.

I courted my wife, Peg, in that faithful old PT. In the days before either of us owned a car, we hitch-hiked or took a bus to the airport, then went cross country in the PT.

One fine January day, the outside air was a pleasant, invigorating minus 20 degrees, and I never bothered to find out what the chill factor was in that 100 knot breeze. But, Peg was dressed for the occasion: snowsuit, boots and mittens, plus the usual scarf, helmet and goggles.

Less than an hour out, I glanced into the rear view mirror and saw to my surprise that nobody appeared to be occupying the rear seat.

"She's jumped," I thought. "No wonder. Anybody's a fool to put up with this."

Unfastening my harness, I half-stood and peered over the rear coaming. There she was, huddled in a cold, miserable ball, totally inside the cockpit, with the seat let down as far as possible.

The rear cockpit of a PT-19 is colder than the front, and we soon learned why the Rawdon hatch became so popular for the PTs up north in the wintertime. In summer, close to the ground, it was better, although not much.

Summer, then, was a good time to try my first open cockpit soaring. Six years before the Schweizer 1-20 and I met, I flew an early-model 2-22 with Paul Schweizer.

The sun was bright and warm on that mid-summer afternoon in July, 1951, and the sky was full of cumulus. The gliderport at Harris Hill was weekend busy, and I was fortunate to have Paul Schweizer to introduce me to soaring. He told me to climb into the front, climb over the back seat, turn around facing forward, and slide onto the cushion. Many of you will recall the early 2-22 did not have a rear door for easy access to the passenger seat.

It didn't have any canopy or side windows either. Vision above and to the sides was unobstructed and out in the

(Continued on Page 15)



HONORED: Col. Floyd J. Sweet, McLean, Va., was honored for his contributions to soaring.

200 Join A. J. And Museum In Soaring Evening

Last November, the museum held a "soaring evening" in the Washington, D.C. area featuring films, slides, and talks by Lawrence Wood, SSA President, and A. J. Smith, former World and National Champion. The Mid-Atlantic Soaring Association co-hosted the affair, which drew an overflow crowd of 200 people to the Evans Farm Inn, McLean, Virginia.

After a slide show and discussion by Liam English, museum director, on the National Soaring Museum and its various programs, SSS President Lawrence Wood expressed his pleasure at seeing so many glider enthusiasts gathered in one place and, after answering questions about the SSA, turned the floor over to A. J. Smith.

As expected, A. J. held the audience enthralled as he talked about competitive flying and the spirit of competition.

The evening brought together soaring people from the Washington area who, in many cases, had not previously known each other. The Museum looks forward to hosting other "soaring evenings" in other parts of the country.



COMPETITION:

A. J. Smith (standing), championship pilot, praised the competitive spirit and commented on "Master of the Wind," a short film featuring George Mofat. Contemplating his remarks are Lawrence Wood (left), SSA president, and William English, National Soaring Museum director.



ANOTHER COUPLE?
Dr. Burt Soloman took tickets, counted heads and marvelled at the overflow crowd.

Photos by Gene Wilburn



LISTENING:
The crowd in McLean, Va. listened and questioned until closing time.

GREETINGS:
SSA president Lawrence Wood (standing) praised Mid-Atlantic Soaring Association and brought greetings from SSA. Seated at right is Bill Ebert.



More Pictures of the Soaring Evening

CLOSE CONTACT:
A. J. Smith (right) took time to answer questions from Cal Walker, McLean, Va. Walker flies an LS-1.



Augustus Herring, Aviation Pioneer

Editor's Note: Eugene E. Husting, Long Island, N.Y., has made an intensive study of a little known aviation pioneer, Augustus M. Herring. NSM believes original research such as this is valuable and will continue to present it when possible.

by E. E. Husting

Any study of soaring history brings up the name of Otto Lilienthal (1848-1896) and the date of his first success, 1891, as the practical beginning of proved, successful gliding. What went on before developed theories, but no outdoor results. Lilienthal's story and the unfortunate fatal crash on August 9, 1896 of his final type II monoplane glider is well documented in many sources, but what has largely escaped attention is that an American contemporary of Lilienthal's, Augustus Moore Herring, played an important part in the same field.

Now, because a quantity of his papers and notebooks have been discovered at Cornell University's John M. Odin Library; because several historians have looked critically at some of the bad press which he received, and the extensive record of his relations with Chanute found in correspondence, the extent of his early accomplishments is finally being appreciated.

Herring was born into a Southern family of distinguished lineage, son of a wealthy cotton broker who moved to New York City when Herring was sixteen. Herring studied in Vevey, Switzerland, and later at another boarding school in Germany. He thus had some facility with languages, German and French particularly, which was to help him in his chosen career: aeronautics. In 1884, he entered Stevens Institute of Technology in Hoboken, New Jersey, where he studied mechanical engineering for four years but did not take his degree because he did not submit his thesis on an agreed subject, marine engines. The evidence suggests

that this was not his first choice as he claimed. Interested as he was in manned flight from age thirteen on, he had selected "The Heavier than Air Flying Machine as a Mechanical Engineering Problem", which was rejected as fanciful.

In 1887 and 1888, he built two gliders: one model size and the second designed to carry his weight, then 150 lbs. He revealed that it failed.

When his father died, Herring received the first of three inherited fortunes. He may have traveled to Europe and encountered Lilienthal and others; however, the Lilienthal family has no record of this in Otto Lilienthal's visitor log, nor of any correspondence between the two. They do have a record that he purchased one of the six monoplane "standard gliders" which Lilienthal sold for 600 marks each. William Randolph Hearst purchased the other and sent it to the U.S.A. The Hearst one eventually was given to the Smithsonian Institution.

Whatever Herring did with his imported glider, he built two more of this type, making them very light even to the extent of using bolts made of hollow tubes. One, the only of which pictures both on the ground and in a low glide survive, had small independently-moveable surfaces attached next to the leading edges of the wings. (Lilienthal himself tried this but used full span surfaces of a different shape.) Herring referred to "fore rudders" in a published account, whether there were two more small surfaces on the trailing edges or moveable tail surfaces cannot be ascertained from anything I have unearthed.

In 1894 Herring experimented with these gliders in open country in the West Bronx, now a built-up part of New York City. James Means, Boston publisher of the famous four "Aeronautical Annuals" of that era became aware of what Herring was doing and notified Dr. Samuel P. Langley, Secretary of the Smithsonian Institution, who visited Herring and engaged him to run the model building and experimentation there as of May 1895. This proved to be a short assignment as Herring could not stand Dr. Langley's constant interference; nevertheless, in that short time he is known to have persuaded Langley that the cambered wings Herring designed were superior to the flat ones Langley preferred.

Herring designed and built the small, light steam engines which powered No. 4 and 5 models. No. 4 was rebuilt as No. 6 after Herring left, and this became the successful model which proved beyond doubt that mechanical flight was possible. The cambered wing matter has been corroborated by E. C. Huffaker, who succeeded Herring after having been his assistant.

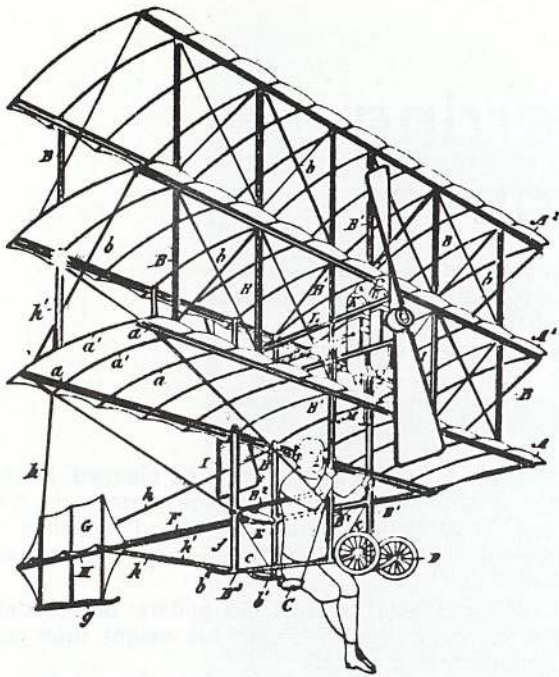
In 1894, a mutual acquaintance of Octave Chanute's and Herring's mentioned Herring to Chanute in New York. Letter exchanges ensued which survive in Chanute's voluminous files.



Augustus Moore Herring
(1867-1926)

Photo compliments of L. W. Flott

(Continued on Page 12)



Patent application drawing used by Herring and Chanute in 1896.

The letters show that Chanute, impressed that Herring had observed birds, tried gliding, and reduced wind effects to engineering terms and formulas, relied on him for information and German translation. Chanute engaged him on a salary to make engineering drawings from sketches Chanute provided and build six model gliders. Chanute saved these, and eventually they were given to the Smithsonian Institution by way of the Museum of Science and Industry in Chicago. Some have been preserved there, with photographs of the complete set.

The Chanute connection was interrupted by Herring's employment at the Smithsonian Institution. However, Chanute continued to refer questions to him during 1895. Herring in turn used Chanute as a sounding board for his complaints about Langley as his employer.

When he resigned as of December 1895 (Langley made no attempt to hold him), Herring went to Chicago and by 1896 was fully engaged with Chanute as the number one member of his team in the famous Indiana Dunes gliding experiments.

The nature of this important activity is imperfectly understood. To the average reader it was a matter of a group of young enthusiasts having built a biplane glider designed by Chanute, practicing in two locations there and establishing records.

The facts are quite different. Chanute wrote Herring who agreed to restore his modified Lilienthal-type glider and bring it to the Indian Dunes for testing. Its performance was disappointing, control difficult.

Chanute had studied the problem of manned flight for years at the same time modestly subsidizing promising young experimenters in return for a half interest in patents generated. He was convinced that automatic control was a necessary principle for a flying machine to be successful. So, he had a multiwing glider built in his Chicago shop with automatic swing action of the top wings to change the effective center of pressure of the whole. As many as twelve wings, or six wing and tail surfaces were provided, but some were removable to vary testing. Nicknamed the "Katydid", this was what Chanute called the "Chanute Glider". Although it flew after a fashion when operated by either Herring or by William Avery, another young assistant, his high hopes for it were never realized even as late as October 1902 when tried at Kitty Hawk.

Chanute and Herring cooperated in the design of a second glider conceived first as a triplane. Chanute contributed the idea of the Pratt truss for wing bracing, a principle he had used many times in designing bridges. It became the standard bracing system for multi-wing aircraft for many years. Herring quite likely constructed it; and Chanute gave him credit for the idea of rails on which the pilot supported himself, enabling much more movement fore and aft in shifting body weight than Lilienthal had. Equally important, Herring mounted the tail flexibly with rubber springs, for a better result in coping with gusts. Chanute always thought that its cruciform rear surfaces were a "Penaud tail", on which point Herring corrected him in an important letter dated January 5, 1902 which is the best evidence surviving of Herring's contributions.

The triplane glider served as the base for patent applications filed in 1896 jointly by Herring and Chanute in England, for a motorized version. This patent was granted. Herring filed a similar application in the U.S. December 11, 1896 where the U.S. Patent Office responded with its standard rejection, "... rests upon a theory which has never been satisfactorily demonstrated." Since Herring had used Chanute's patent attorneys, it is quite possible that wise and experienced Octave Chanute decided not to waste money with the U.S. Patent Office. In 1910 Herring petitioned for reconsideration of the patent after he had successfully flown a powered aircraft, the Herring-Burgess biplane, which he considered met the stated condition for a grant. The commissioner of Patents's rejection is most interesting: He denied the petition but said that there was no reason why it could not have been granted on appeal as for a glider or in 1907 when the results of the Wrights' successful flights became known.

The lower wing of the triplane interfered and would catch on the sand. On whose order the change was made is not recorded; however, it was William Avery who removed it and reconnected the flexible tail. It was only with difficulty that Herring in his letter to Chanute made clear that this did not make Avery the inventor of the tail feature. In that form the gliders, which Chanute referred to in his correspondence as the "Herring Glider", made many long glides under excellent control with only weight-shifting: into the wind, quartering, hovering. In short it was the one successful one at the Dunes in 1896.

These were difficult times again for Herring, who is on record in legal testimony as having considered Chanute prematurely senile at age sixty-four. This attitude of his could well manifest an impatience with associates who actions or performance did not meet his standards. Evidence of this trait exists in other associations before and after. He could be difficult.

Another experimenter who is little known today was at the Indiana Dunes in 1896. Taken seriously by Chanute but not by Herring who considered him an imposter, William Paul Butusov, alias William Paul, an ex-sailor from Russia, had observed the soaring of albatrosses, particularly while at sea. Impressed, he said that he had constructed a large glider modeled after the albatross, and in 1889 in it had soared for 45 minutes at Eden's Pond, south of Mammoth Cave, Kentucky. He built a similar large albatross glider which Chanute had his group help with in the fall of 1896, much to Herring's dismay.

Herring considered the large craft dangerous, certain to kill Butusov, and the diversion of effort to it a waste. It was tried, placed on a specially built greased ramp, which required eight men, and sent off with sand ballast, going 20 feet before falling, damaged. But not before Herring had quit in disgust.

Some have described Herring's departure as "pique" or "jealousy". But in support of his view, the large "albatross idea" was promptly abandoned. Butusov, like others,

1897 Herring-Arnot or Chanute-Herring-Arnot glider at Indiana Dunes.

Photo compliments of
Chloe Herring Mason



stayed in contact with Chanute and conceived a smaller biplane design. Eventually in 1902 after spectacular exhibitions both indoors and out, he crashed while gliding at the Chicago Drainage Canal, and spent much of his life paralyzed and given up for dead by old associates.

After exhausting his first inheritance in 1897, Herring turned to Elmira, New York, for financial backing. Matthias C. Arnot, son of a prominent banking family, was known to have tried gliding, keeping the information of "such hare-brained activities" from his family. Herring joined Arnot, who provided a monthly allowance for him. Now married, Herring lived in St. Joseph, Mich., near the Indiana Dunes and, by overnight boat, to Chicago.

As Arnot's part-time employee, Herring built what was almost a duplicate of the 1896 biplane glider, differing mainly in having the trusses for the pilot's support rails angled in, not vertical as the 1896 glider. Herring's relations with Chanute were still cordial if not friendly, contrary to the impression of some historians; and the tests of this new Herring-Arnot glider were carried out with Chanute present. Good photographs were obtained of the excellent performance of this machine, whereas those taken of the previous biplane gliding in 1896 were evidently not very good. In illustrating lectures and for his published articles thereafter, Chanute chose to use the 1897 photographs without explaining the substitution, to which both Herring and Arnot objected. This and Chanute's later glossing over of Herring's contributions in an article for which Arnot, without Herring's knowledge, wrote a critical letter to the publisher, caused a decided cooling of the Herring-Chanute relationship which surfaced in 1901 and was not buried until early 1902. Arnot died of appendicitis in July, 1901.

Before Arnot's death, working under an employment contract which provided that Arnot could be the second to try the machine, Herring in 1898 began the construction of a powered biplane along the lines of the triplane illustrated in his patent drawings. In 1895 he had demonstrated a rubber-band powered model bi-plane which flew well. This was the start of a new direction in his aeronautical work. He

claims to have hoped for no more than eight or ten seconds, with Arnot present, and only to have proved powered flight "solvable". (These claims were not taken seriously until investigated by the late Sherwin Murphy in the early 1960's.) A powered hang glider, the machine was not a practical airplane, and Herring knew that, but served its purpose in continuing Arnot's backing.

Before 1900 Herring had investigated European experimenters and had written extensively for publication. Part of his effort had been directed towards perfecting light steam and gasoline engines. He placed his "mobikes" on the market, assembling and selling sixteen according to his testimony. These light weight motorcycles may have been the first offered commercially in the U.S.A. He also designed and built light bolt-on engines for bicycles. He had hoped to shift from aeronautics to automobile manufacture but nothing came of this idea. In fact, Arnot's sudden death in 1901 found Herring financially embarrassed and for the first time working at whatever job he could find.

Thus in 1902, as the result of his letter to Chanute in which he described his circumstances, Chanute gave him a paid assignment to take the old "Chanute" or "Katydid" glider and restore it for testing at Kitty Hawk, North Carolina. This he did, making a few modifications in the wing shape. Though hardly welcomed by the Wrights, he accompanied Chanute to Kitty Hawk in late September, 1902, when as pilot he made a number of glides with the "Katydid" and a second glider built for Chanute in California by Charles H. Lamson. Neither performed well and for the "Katydid" Chanute blamed Herring. The two men had many opportunities there to observe the excellent performance of the Wrights' glider; and Herring, though apparently not Chanute, seemed to grasp the significance of the manual control system which in April 1903 became the subject of the application the Wrights filed for their famous patent.

After a ten-day stay with the Wrights and Dr. George Spratt, another young Chanute associate, Chanute and Herring went to Washington, D.C., where Chanute had a

Continued on Page 14

brief meeting with Langley whose appointment schedule was full. Herring had arranged to meet his mother and aunt, then on their way back to New York from a vacation in the South, obviously to get some money. After seeking, without success, to see Langley about re-employment at the Smithsonian on the "aerodrome" project, he arranged for the job, with good pay, through a Langley assistant. Before he started, however, Langley rescinded the agreement and then tried by a letter to Chanute to learn about the Wright control system. Chanute merely sent the letter to Wilbur Wright with the comment, "He has cheek."

The Kitty Hawk expedition, which the Wrights came to resent, marked the end of Herring's connection with gliders with one exception: in the Bell-Curtiss-Selfridge-McCurdy "Aerial Experiment Association", Lt. Thomas H. Selfridge, U.S. Army, was friendly with Herring and an admirer of his work. Selfridge strongly urged his associates to become proficient in gliders before attempting to fly the powered aircraft they would build. He was over-ruled, although they did build one biplane glider with odd "humped" wings and had some limited practice with it. Herring helped Selfridge with the project, which raises the question whether or not the "Chanute" biplane glider (as this "Herring" or "Chanute-Herring" type came to be called) now in the National Soaring Museum's administration building is, in fact, a second "standard" type used by the A.E.A. in 1908. Even more interesting is the possibility that it may be the

much-pictured "Herring-Arnot" glider used at the Indiana Dunes in 1897, in which case it is indeed one of the rarest of all aeronautical relics. Certainly Arnot and his family could have preserved that one.

Acknowledgements

Many sources have been consulted over a period of years, and conversations had with authorities, some very early fliers and especially Herring's descendants and a nephew, all most cooperative. The list would be a long one. Most useful were the following references:

Octave Chanute correspondence in bound volumes of transcripts by the late Pearl L. Young, in the Aero Library of the Smithsonian Institution, Washington, D. C.

"Augustus Moore Herring Papers", John M. Olin Library at Cornell University, Ithaca, New York.

Sherwin Murphy microfilm of Herring material, provided by Mr. L. W. Flott, Wabash, Indiana.

Charles H. Gibbs-Smith: Aviation, Science Museum, London, England 1970.

Octave Chanute Papers, Library of Congress, Washington, D.C.

Marvin W. McFarland: The papers of Wilbur and Orville Wright. U.S. Government Printing Office, 1953.

Langley Memoir on Mechanical Flight, Smithsonian Institution, Washington, D.C. 1911.

In Memory Joe Lincoln

1975 was a year of major achievement and growth for the National Soaring Museum, but it was also a year of sadness and loss as one of the museum's greatest friends and supporters, Joseph Colville Lincoln, died in May.

As a pilot, Joe Lincoln achieved lasting respect and recognition for his many achievements. He flew his sailplane, Cibola, over many miles of difficult country, setting records that helped inspire soaring pilots everywhere.

As a writer on soaring, Joe Lincoln had no peers. **Soaring for Diamonds**, his classic account of his own successful quest for the diamond badge, is required reading for all who love soaring. His many articles in **Soaring**, the journal of the Soaring Society of America, helped make that publication the distinguished magazine that it is.

Joe Lincoln was also an editor of great sensitivity and skill, producing **On Silent Wings, A Soaring Anthology** and **Soaring on the Wind**, a photographic essay on silent flight. At the time of his death, he was working on an important book about World Soaring Championships. It is our great loss that he never had the chance to finish this work.

Joe Lincoln was an early supporter of the National Soaring Museum, contributing freely of his time, energy, resources and wisdom to help make the museum come to pass. Indeed, in a resolution passed just prior to his death, the museum's trustees commended Joe Lincoln and attributed most of the progress that had been made in developing the museum to his enthusiasm and support.

All associated with the museum know that Joe Lincoln has been a vital element in its success. We intend that this institution live up to the high expectations that he had for it.



Joseph Colville Lincoln

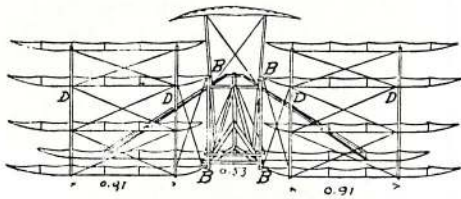


Fig. 2. - Vue de front

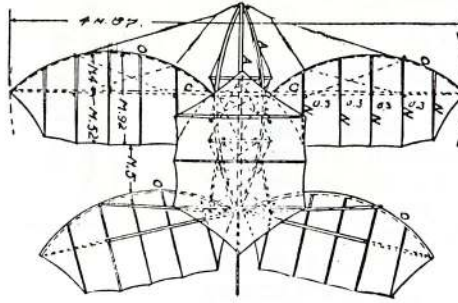


Fig. 3. - Vue en plan

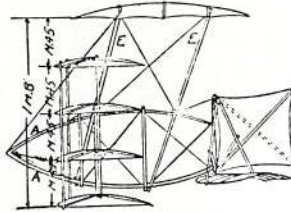


Fig. 4. - Vue de côté

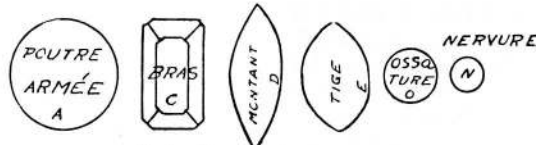


Fig. 5. - Pièces principales (grandeur nature)

Top: The 1896 Chanutte Glider dubbed the Katydid.

Bottom: Second biplane glider tested in 1897 at the Indiana Dunes. These drawings were first published in 1903 in France.

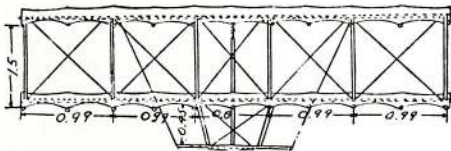


Fig. 7. - Vue de front

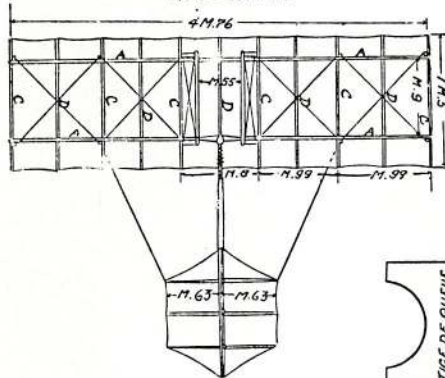


Fig. 8. - Vue en plan

MACHINE A DEUX SURFACES CHANUTE ET HERRING, TYPE 1896-1897
Echelle de 1/32

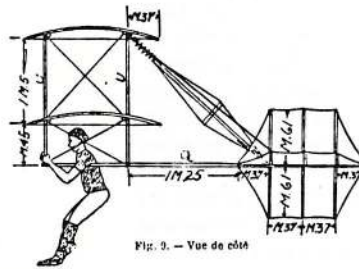


Fig. 9. - Vue de côté

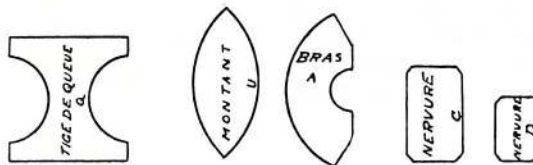


Fig. 10. - Pièces principales (grandeur nature)

Open Cockpit Stories

Continued from Page 7

open.

Paul snugged the harness and cinched the seat belt. Everything dissolved in a blur of impressions, still vivid, as the wing was raised level and the slack towline became taut. The towplane engine seemed unnaturally loud — much more so than when one sits within a plastic cocoon. I remember the sharp banging down of the tailwheel as the quick acceleration took hold before our forward motion could begin: the bumping and grinding of the skid and wheel, then lift off.

By the time we were at 2,000 feet, when Paul announced the imminent snap of towline release, my impressions and

senses were beginning to catch up in real time. Suddenly, and for the first anticipated moment in my flying career, there was relative silence. I still could hear the wind — but not loud, and I could hear a train whistle as clearly as if we were travelling on the same track. Looking over the side, I saw it sliding along the Chemung Valley.

I heard voices — persistent voices. I abandoned the idea that my over-active imagination was playing tricks when I saw, 1,500 feet below, a softball game in full progress. I actually heard the shouts of the players. The absence of a thrashing, roaring, vibrating engine made the flight seem unreal. It was nothing like that PT-19.

The President Speaks

(Continued from Page 6)

The gap exists because the museum is committed to providing several unique services that are either partially or not at all met by other organizations. These include the protection and preservation of significant artifacts and documents relating to motorless flight, the development and delivery of aviation education programs for adults and children, soaring enthusiasts and the general public, and the development and execution of exhibits and displays that are effective in telling the story of gliding and soaring in the United States.

All of these services cost money, and the number of visitors who tour the museum each year is limited by our present building which operates at capacity during the peak summer months. We charge our adult visitors \$1.00 for admission, while students (ages 12-21) are admitted for \$.50. In the interests of maximizing the number of children exposed to soaring, the museum admits them for free.

It is encouraging that independently developed attendance projections indicate that once we are in our new facility on Harris Hill, the major portion of our expenses will be covered by visitor generated income, the remainder coming from memberships and foundation grants.

Why not cut expenses to meet visitor-generated income? We believe it is possible to generate other income to make ends meet. Liam English and his staff are capable not only of developing displays, working in the archives, and staging successful events of one sort or another, but have proven themselves willing and able to go out and get grant support from public and private sources. During 1975 alone, over \$16,000 was raised in grant support, while an additional \$25,000 worth of services were also garnered.

The National Soaring Museum's membership program also has proven to be a vital factor in making ends meet. We are certain that it will be possible to expand the number of museum members enough in the months and years ahead to enable the museum to continue its expansion of services, both to its members and to the public. Increased membership also will help the museum staff be even more successful in their pursuit of foundation support.

In order to expand our membership program, we will need the help of all soaring enthusiasts. I hope that those who are members at the present time will want to aid us in this major effort by telling others about the benefits of belonging to the museum and the services that are made possible by our membership program.

See you at the museum!

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