1979 — YEAR OF THE REPLICA?

Notice a trend in the air? I have! A definite leaning towards full size replica antique airplanes. The sentiment or nostalgia or prestige or whatever, is pushing more and more people into the construction of full size — equal to or better than — original reproductions, is beginning to show.

The scarcity of rebuildable antique airframes, the high cost of inflation, the Depression Era, limited production of these sporty machines, and the desire to see if they really were that great, add up to a bottom line that says, "build".

With better construction techniques, modern materials, more reliable engines and the benefits of experience, there is no reason a replica can't be built, and flown. After adequate, diligent research of its construction, detail and equally important research of its flight characteristics, the decision can be made. Don't just dream about it, though, be certain. Was it a hotter than average "Bear"? Did the name pilots give it reflect its true nature (Cactus Kitten)? Discounting the old hangar flyer's tales of flat spinning, killer stalls and vicious never-do maneuvers, what was it really like? Did it fly well in the hands of an experienced pilot? Remember, experience level in "those" days was at a very low ebb, often inexperience culminated in a crash and the airplane was saddled with a bad reputation. Sometimes it was the only one available and there was no money to build another. Human nature being what it is, and our tendency to blame something or someone for our frailties, maybe put a hex on further development of an otherwise very desirable flying machine.

Keep in mind too, that what was a "Bear" for the pilots, might be a "Kitten" for today's pilots. We are fortunate to benefit from the experience of all those who have gone before us. They built a "foundation" that has passed on to us a much higher experience level by comparison. Don't slight those guys, though. There was a lot more "horse sense" approach in their day, something slightly lacking in today's way of life.

Being fortunate enough to travel a bit, and seeing some of these machines under construction has really fired me up. I've got my eye on a couple of these projects in which I am vicariously participating and sincerely hoping I get the chance to fly them. And I'm even giving serious thought to starting one of my own. Mr. Laird, take note!

75 YEARS OF POWERED FLIGHT!

Incredible!
What happened to all those grand plans and forecasts?
Where's the post-war boom?
Where are all those sport pilot's dream amphibians?
Where's the helicopter for every garage?
Where are the roadables?
Where have all the airports gone?
How come we can't get "80"?
Why are costs so high?
Will Bede rise again?
Will hang gliders take over?
What will EAA's Air recreation vehicle look like?
Will they allow it in T.C.A.?
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One of a kind

Returning to the dock after another enjoyable flight.
The sight of a modern float plane in Pacific Northwest skies is not an unusual occurrence; however, the appearance of a 1930 open cockpit Waco UBF-2 fitted with a set of 1930 Edo floats is definitely extraordinary.

This is a story about an immaculate white/red Waco UBF-2, NC13075, serial No. 3692, one of eight remaining examples of this remarkable F-2 series and the meticulous restoration that brought the aircraft and floats together again after a lapse of twenty-seven years.

According to information provided by the Edo Corporation, the 1930 model No. 2665 floats manufactured August 20, 1930, now on this aircraft, are the oldest known set of Edo floats in active service today.

Waco company records indicate that NC13075 rolled out of the Troy, Ohio, factory May 3, 1933. It came equipped with a seven cylinder Continental 210 hp engine, Hartzell wooden propeller, speed ring cowl, 6:50x10 Warner wheels, 7:50x10 Firestone tires, metal front cockpit cover and wing root fairings.

The UBF-2 was noted for its exceptional flying characteristics and was extremely popular with the sportsman pilot of the day, living up to the Waco motto "Ask Any Pilot". It had the capability of carrying two passengers in the front cockpit or utilizing this space as an extra luggage compartment.

NC13075's flying career began with the original owner in Auburn, Maine, and acquired six additional owners in the following thirteen years. The Waco was flown in the east coast states of New York, South Carolina, Pennsylvania, New Hampshire and Massachusetts.

The early years of World War II must have been very active for the Waco as log book entries for 1941 indicate numerous flights of short duration. Two ground loop incidents are recorded and this was probably due to the narrow landing gear, which could prove troublesome to the student pilot.

The aircraft was owned and operated by a civilian flight service during this time and no doubt was affiliated with the government's C.P.T. (Civilian Pilot Training) program, whereby the fledgling U.S.A.A.F. cadet was given his primary flight instruction.

1946 marks the year that NC13075 changed ownership again and departed Westboro, Massachusetts, for the Pacific Coast and a new owner in Milwaukee, Oregon. The transcontinental flight was accomplished with conventional undercarriage. The set of 1930 Edo floats were installed upon arrival by the new owner and the Waco was placed into service as an instructional/cross country training aircraft.

The circumstances that finally led to the ultimate purchase of the Waco by its present owner, Mr. Henry Strauch of Junction City, Oregon, are unique; they form the basis for this story.

Henry became aware of the Waco in 1980 while working at Lake Union Air Service, Seattle, Washington. The Waco was used as a cross country float aircraft by Loney's Aero Marine Service based at Swan Island, near Portland, Oregon, and was a frequent visitor to Lake Union.

Henry used to take cross country students down to Oregon and always made a point to swing by Swan Island and make sure that the Waco was still there. He really admired the UBF and made this known to Loney on many occasions. He had a secret desire to own the aircraft, but didn't have enough money to even approach the subject.

One day Loney flew into Lake Union with a student and contacted Henry. Loney asked Henry point blank if he would like to purchase the Waco, knowing full well that Henry would probably jump at the chance. Henry was at a loss for words and managed to reply with an affirmative response, but had to admit that he didn't have much cash on hand. That didn't seem to bother Loney and he said that the Waco was for sale "real cheap that day". Henry was somewhat puzzled and asked him what he meant by cheap! The reply to Henry's question was fast and direct, "How does $600.00 sound to you?" After recovering from the initial shock Henry still had to say that he didn't even have that much money, but the deal seemed too good to be true. Then the obvious question came to Henry's mind, realizing that Loney had not arrived in the Waco. "What's wrong with the Waco?" Loney grinned at Henry and said, "Nothing much Henry. It's just lying at the bottom of the Willamette River." The details of the accident are not clear; however, the Waco had not been under water for a great length of time.

Henry simply couldn't resist this temptation and he badgered his boss at Lake Union Air Service until he finally relented and agreed to purchase what was left of the Waco for the $600.00 and furnish repair materials with the stipulation that Henry would invest his own time in the repair work.

Henry, a flying associate, Ralph Williamson, and their mutual boss left for Oregon to retrieve the water-logged aircraft. By the time they had arrived at the scene the Waco was in the process of being raised from the river. Examination revealed that the right float was almost totally destroyed and the left float was in much better condition.

The working end of this beautiful Waco, a Continental 220 hp engine with a Curtiss Reed propeller.

By Jack H. Mitchell
2564 7th Avenue West
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(Photographs by the Author)
Aside from the float damage, the only other structural failure was the vertical fin and this damage took place while the Waco was being removed from the river. As a result, the fin was a total loss. Generally speaking, the fuselage and wings sustained moderate damage.

The three of them disassembled the Waco and loaded the assortment of parts which included a set of wheels and the undercarriage on a truck for the trip back to Seattle. Upon their return the Waco was stored in the back of the Lake Union Hangar. The battered floats also made the trip to Seattle and were set to one side.

Henry was anxious to commence repair work, but for one reason or another his boss never found the way to purchase the materials. Weeks passed and the project never got off the ground, much to Henry’s disappointment.

Henry was determined to get the repair work under way somehow and contacted an acquaintance that was interested in airplanes and also had the financial resources to start the project. Henry made a business proposition with him that if he would purchase the Waco from Henry’s boss and furnish funds for the required materials, Henry would do all the work himself.

The acquaintance agreed to purchase the Waco and the sale was finalized. The aircraft and floats were moved from Lake Union to a rented garage in Seattle. Repair materials were obtained and Henry made preparations for the work to begin at his home. As the months passed and the materials dwindled the benefactor’s interest in the Waco project began to decline. Henry could see the problem coming and managed to accumulate enough money to cash out his friend’s initial investment and thus at long last became the sole owner of NC13075 in 1955.

Henry’s first decision as new owner was to terminate the garage rental, as he could not justify the expense, and move the Waco to his home. Once at this new location the inevitable question arose, “Where do you store a Waco biplane in a single story home?”

Using the fine art of persuasion, Henry convinced his wife to let him remove the siding from one side of their home and place the large sections into the attic. The remaining small parts filled every available closet.

Work first commenced with rebuilding the wing bays. Henry instructed his wife in the use of “C” clamps, glue, hammer and nails and between the two of them the project moved ahead. New Sitka spruce replaced the old and damaged wood. Mrs. Strauch will never forget the fourteen ribs required to complete each wing bay. Their living room became the workshop and the center of activity. They eventually rebuilt three wing bays and the center section in the confines of their home.

Always on the lookout for another challenge, Henry accepted a flying position in the Middle East and planned to reside there for an indefinite period of time. The decision was made to sell their home in Seattle and the Waco was carefully removed from the attic prior to the home being listed on the local market. Henry’s brother who lived in Oregon agreed to store the Waco for the duration of Henry’s employment overseas.

With the Waco in good hands the Strauchs departed Seattle on their new adventure. As luck would have it, the position didn’t last as long as they had originally planned and they returned to Seattle in 1957.

Henry contacted Ralph Williamson shortly after his arrival and they combined their talents and formed a partnership operating a flight service located in Snohomish, Washington, a picturesque rural community with a grass landing strip. Henry operated the maintenance shop and Ralph assumed responsibility for the flight school. For the first time in many years Henry finally had a logical place to store the Waco. After yet another trip to Oregon, the aircraft was returned to its new home.

Business was good to them during the following two years and the Waco was set aside. The floats were stacked outside the shop and were considered more or less unusable.

1959 was a very important year for NC13075. Henry and Ralph came to terms with the dusty Waco and agreed that the only way to get the aircraft back into the air was to stop playing around and run it through their shop and do a first class job.
Excellent view of ventral fin, floats and general arrangement of the aircraft.

The aircraft was rebuilt in stages because it had been over nine years since any serious work had been completed and many of the small details had been forgotten. Three new wing bays and center section were already finished. They chose to use the fourth wing bay, the right upper, as it was. This wing was a combination of old and new wood and even retained the original spars from 1933.

The fuselage was completely stripped and subsequently sandblasted. Every foot of tubing was examined and first flushed out with rust remover, then followed up with a flushing of hot linseed oil. This also included the tail surfaces. All of the tubing is 1933 original with the exception of the vertical fin.

After this process, the fuselage tubing was coated with epoxy paint. It didn’t give him the finish that he really wanted. The elaborate white/red paint scheme came from his experience with sport parachute jumping. The resulting effect is to create the image of a deployed parachute.

After weeks of hard work the Waco in its new paint job finally sat outside the shop ready for the important first test flight. Henry and Ralph were like a couple of kids and couldn’t wait to lift it off the grass field. NC13075 made the successful flight one afternoon and was back into the air as a landplane for the first time in nearly nine years.

Although some of their work involved installing floats on various aircraft the thought of putting the Waco back on floats was never seriously considered. The remnants of the floats remained stacked outside the shop gathering birds nests. A fellow dropped by the shop one day and asked if he could buy the floats. He was told that if he would simply move them out of the way he could have them without any charge. To this day Henry and Ralph joke about this and are not really too sure which one of them made that statement. In any case, the floats left Snohomish for parts unknown.

Individual interests and goals changed over the years and the partnership in the flight service was dissolved in the mid 1960’s. Ralph settled in Seattle where he is now an independent insurance broker. His business still keeps him in touch with the private aviation industry. Henry and the Waco moved to Oregon where he is now employed by a private firm heading their aircraft maintenance program. Once in Oregon and settled into his new routine, Henry discovered that he had more spare time on his hands than he liked and the thought of the “give away” floats began to prey on his mind. He called Ralph and asked him if he could remember the name of the fellow who had taken the floats. Ralph did remember and promised Henry that he would try to locate the individual if possible. Henry needed another project and was convinced that rebuilding the damaged floats would serve the purpose and possibly put the Waco back on floats.

After numerous phone calls, Ralph located the floats and found much to his surprise that nothing had been done with the floats. They were in the same condition as he had seen them years ago. Ralph met the fellow and indicated Henry’s desire to retrieve them with purpose of putting the Waco back into the water. The fellow was more than glad to dispose of the floats and returned them to Henry with his best wishes.

The task of rebuilding the floats began in 1968 and was completed in 1972. Henry designed a special jig to rebuild the floats and modified the original keel design to accommodate grass field take off and landings if ever required. The original keel was of two piece construction and 3/8 inch width. This would not give the support required for a grass field operation so Henry manufactured a one piece keel ¾ inches wide using 60-61 aluminum.

Each float has nine cells. The left float has the original bulkheads with the exception of three rear units that were beyond repair. The right float has all of the original bulkheads and Henry strengthened specific bulkheads by splicing them where corrosion had taken its toll.

The original intent was to put the Waco on the rebuilt floats for the summer of 1972; however, Henry discovered areas of dry rot in the lower wing bays near the trailing edges. Rather than quickly patch these areas and enjoy the summer with the floats he elected to strip down the entire aircraft and do a thorough job.
Henry had always toyed with the idea of doing the
time tested classic recover job using grade “A” cotton
fabric with butyrate dope as the finish. To accomplish
this traditional procedure would entail the sanding of
all the tape edges so that no trace of the tapes would
be visible to the naked eye. The ultimate goal being a
mirror-like finish.

The woodwork was tackled first using the best
sitka spruce obtained from the Posey Company
of Hoquiam, Washington. The partially rebuilt right
upper wing bay was completely rebuilt at this time
and with the completion of this last wing bay none of
the original wood remained in the Waco.

Henry and his wife made all of the fabric
envelopes for the wings and fuselage by themselves
using an old household Singer sewing machine. Mrs.
Stauch remembers quite vividly how awkward the
heavy grade “A” cotton fabric was to handle. She also
did all of the hand stitching of the seams. With the
fabric secured on the Waco’s surfaces, the finishing
process was begun.

Two coats of clear butyrate dope were applied by
hand brushing to the fabric, followed by two spray
coats of clear dope. The rib stitching and tapes were
built up with hand brushing so that they would have
the same amount of dope on them as the fabric.

The next step involved the mixing of clear dope
with aluminum powder to create the silver dope.
Henry sprayed 20 coats of the silver dope on all the
surfaces. The silver dope acts in two ways. It makes
the dope much easier to sand and also becomes an
opaqueing agent for the sun rays. The main reason
for the 20 coats of silver is that it gave them the op­
portunity to sand down all of the edges and imperfec­
tions. They used both wet sanding and an air pow­
ered orbital sander to accomplish the job.

At one point Henry ran into a bad batch of dope
deposit and had to remove the entire fuselage fabric
and start over again, much to his disgust.

The final four coats of white pigment dope were
applied and after the last coat of white was dry it was
passed with flying colors.

The Strauchs are fortunate to have their present
home located on a section of property that affords
them the use of their own private grass strip. A per­
mament hangar less than 100 feet from their front
door provides secure storage for the Waco. With the
rebuild completed sometime in early May, 1977, this
brought the overall project to a close after five years
of painstaking work. NC13075 made its test flight
from Henry’s grass field late that same month and
passed with flying colors.

The next month, June, 1977, Henry transferred the
Waco to his employer’s landing strip, Daniel’s field,
Oregon, which is a short distance from Henry’s grass
strip. The undercarriage was removed and the floats
were attached to the Waco. Daniel’s Field is conve­
niently located adjacent to a 1000 foot shallow pond
and the highpoint occurred when the Waco was
moved to the pond, introduced to its familiar habitat
and gracefully flown off the water. After an absence
of twenty-seven years the UBF-2 was returned to its
original set of floats.

Mrs. Stauch considered the summer of 1977 a fit­
ting “playtime” after all the years of restoration. The
Waco was flown to Lake Chelan, Washington, where
the couple maintains a summer cabin. Mrs. Stauch
was raised in this area and well remembers Henry
“courting” her via seaplane prior to their marriage.
The balance of the summer was simply a pure delight
for the Strauchs enjoying their newfound water
wings.

The Strauchs are a very open and generous couple
they are always on the go and never seem to stop
working. They have traveled extensively in their
airplane “on floats tied up to one of their docks.
One last telephone call to Kenmore Air Harbor on
Lake Washington confirmed the presence of an “old
airplane” on floats tied up to one of their docks.
After another series of telephone calls, contact was
made with Ralph Williamson and arrangements were
made to obtain the photographs for this article. This
was accomplished on two separate occasions in Oc­
tober and November of 1977, prior to the time the
plane returned to Oregon.

PERFORMANCE ON FLOATS

The Edo floats of 1930 incorporated a design fea­
ture that produced a float that was long, wide and
flat. The step is located far to the rear of the float
creating a situation that places the aircraft up on the
step in relatively short time, yet not allowing the
floats to break the water easily.

The Waco usually cruises around 100 mph on
floats and stalls gently at 30 mph. Henry regards the
performance on floats as a matter of time rather than
distance; however, distance becomes a key factor
when operating from Daniel’s Pond. He knows this
from personal experience that the Waco can get off
the water within 700-800 feet because the pond only
has 1000 feet available to use.

The Waco’s fixed ventral fin was part of Henry’s
original purchase and gives the aircraft greater direc­
tional stability. The comfortable range on floats is
generally around 300 miles. Henry says with a slight smile that
“You’d better start looking for open water and have a
place to land after 300 miles.”

POWERPLANT

Several engines were obtained with the Waco, one
of which was a Continental W-670, 220 hp (W desig­
nates the civilian production model). Henry sent this
engine to a Seattle vocational school for a complete
overhaul and rebuild. The work was completed in
1954 and the engine was picked at this time for pos­sible future use.

Another W-670 came into his possession while
operating the shop at Snohomish. This particular en­
gine was a -23 series that had a provision for a con­
trollable pitch propeller and he wanted this type of
engine installed on the Waco; however, preliminary
work on this engine revealed a crack in the nose
cone. In the interest of time this powerplant was re­
placed with the standard W-670 that had been stored
for five years. This same engine powers the Waco
today and is equipped with a Curtiss Reed propeller.
**FUEL SUPPLY**

The two upper wing fuel tanks provide a total capacity of 40 gallons and give the Waco a comfortable cruising range of approximately three hours. This breaks down to a fuel consumption rate of 12 gallons per hour.

**INSTRUMENTATION**

The aircraft is equipped with a basic set of primary instruments for each cockpit and is flown under VFR conditions. The only piece of electronic equipment that Henry has installed consists of a single 1960 model King KY-90 radio. The forward cockpit’s control stick can be easily removed when two passengers occupy this space.

**WINDSHIELDS**

The five piece split windscreen is original equipment and is reminiscent of the popular open cockpit Lockheed Sirius. The only major disadvantage with this type of windscreen is that it tends to deflect the air down the neck of the pilot necessitating a somewhat hunched down flying position.

**MISCELLANEOUS**

The storage compartment aft of the rear cockpit has more than adequate space for personal luggage, sleeping bags, etc.

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**FUTURE USE OF THE WACO**

Due to the inability to hangar the Waco on floats, Henry plans to install the floats only for the summer months and put the aircraft back on its regular undercarriage for the remainder of the year. The choice was made after this last rebuild to limit the flying to regular maneuvers and no longer perform aerobatics.

The Strauchs plan to start another summer adventure and contemplate an aerial tour of the beautiful San Juan Islands in the state of Washington which will offer them innumerable landing sites.

Mr. & Mrs. Strauch are obviously very proud of their Waco restoration over the years and are especially proud that all of the work was completed with the labors of their own hands. Reflecting on the various stages of the rebuilding, both agree that the seemingly unending task of hand sanding was the most difficult.

Henry can claim a record of sorts in that he has owned the aircraft over one-half of its life from 1933 to the present date. The Waco has occupied much of their married life and Mrs. Strauch says with a gleam in her eyes that she loves the Waco almost as much as Henry. By Henry’s own admission the Waco is strictly an expensive toy.

NC13075 is now starting its forty-fifth year bestowing flying pleasure and more than ever emphasizes the time proven adage that “Life begins at 40!”
I had always wondered, if a pilot were to fly the Wright Flyer if he would actually feel as if he had taken a step back in time. Certainly flying some of the older airplanes gives you the feeling that you have taken a step back to another era.

There is no doubt that a fabric covered Piper Cub (J-3) gives a pilot different sensations and a different feel for flight than a brand new, all metal airplane; to this degree an older antique/classic airplane would be like using an airplane in the same manner as one would use a science fiction "time machine"!

The 1909 Hang Glider project I became involved in a while back got its original name from the manner in which the pilot hung out of the bottom wing while it was in flight. (A good second guess might be that it obtained its name from hanging up in trees and cliffs ...)

It was biwing, with lots of wire bracing, and it had a 12" opening in the bottom wing for the pilot to hang out of. While in flight the pilot controlled the glider by weight shifting. The method of "wing warping", which led to the use of ailerons. In addition to
using his legs for weight shifting the pilot also used his legs as the landing gear!

The wing span of the 1909 "hang glider pictured here was 20 feet, with a total of 65 square feet of wing area. The "tail sticks" (as the fuselage was called in 1909) and empennage were also braced with wire.

I originally found the sketches of the glider in an excerpt from a 1909 Popular Mechanics, and my partner, Gary Alonso, drew up plans in greater detail so that the glider could be constructed.

Many people helped in obtaining the building materials. A carpenter living nearby hand-picked the straight-grained spruce. The saleslady where I purchased the lightweight 65 percent Dacron fabric, to be used for the wing and empennage covering, ran out of material after she had unrolled 155 ft. of the 160 ft. needed for the wings! Everywhere materials were purchased people helped.

I made a telephone call to the FAA and obtained an "Aircraft Project File" listing, and had a FAA inspector assigned to the 1909 'glider project.

As the inspector was sitting at his desk, asking the necessary questions, and filling out the information pertaining to the glider, he came to the question: "How do you intend to launch this glider?" There was a silence as I remembered the 1909 launching procedures that accompanied the original drawings. Again he asked, "Will you launch the glider by airplane-towing?" In reply, I explained that, in the true 1909 fashion, both wings would only have covering over their top sides and it might be disastrous using an aero-tow.

At this point he stated, "If you don't intend to use an aero-tow, how do you intend to launch it?" "Well, the only methods established for a Hang Glider launch, as published with the sketches, were to 'run and leap into the air, or jump off of a cliff,'" I replied.

Well, for the next few minutes the inspector was speechless, and I suspect that the silence may have been the "hold" button on his telephone while he relayed his newly acquired knowledge to the rest of his staff, saving a chuckle or two for himself.

Regaining his composure, he then humored me along by telling me to give him a call before covering the airframe with fabric.

Finally, the airframe was approved and the Dacron fabric was applied to both wings and the tail surfaces. Only one coat of clear dope was applied to seal the fabric because we wanted to keep the weight as light as possible.

The glider was given a final inspection by the F.A.A. and issued an Airworthiness Certificate.

The glider now had a Registration Certificate, Aircraft Log Book, and the Airworthiness Certificate that was just issued. The assigned registration number applied to the vertical stabilizer was N2579; and a flag with red, white, and blue vertical stripes was painted just above and in front of the registration numbers.

With the antique gold registration numbers, outlined in black; red, white and blue flag on the empennage; the translucent Dacron covering on the surfaces that were covered, and all of those flying and bracing wires; it certainly looked as if aviation had stepped back into the year of 1909!

At this stage of the project, just about everyone who saw the glider started laughing and thinking about the funny little movies with "early aviators" leaping off of cliffs, bridges, etc., as they made their mark in history . . . or on the ground, which ever came first!

Then a strange thing would happen. These same people would suddenly start talking about the proper way to launch the glider, and the fact that they might even like to try their hands (and feet) at flying it!

Of course, there were one or two people who continued to run across my living room, flapping their arms like a bird and making a noise like a chicken, trying to emulate what they thought a 1909 glider was all about . . .

Trying the glider on by climbing into the twelve inch opening in the bottom wing, provides a wonderful sensation of wearing an authentic antique replica. Looking over the leading edge of the wing gives the pilot a feeling that he is standing on the edge of a cliff; this is due to the long wings and the pilot being the farthest point forward in the glider.

During the first try at launching the glider, we worked up a good sweat running back and forth in an open field, "leaping into the air!" We generated enough lift to be able to tell that there was lift, but not enough to "lift off" of the ground for any length of time. We were getting tired of running, so we decided to use an auto tow by rigging a bridle under the glider with a quick-release tow line attached.

Rigged like a kite, the glider obtained approximately 20 ft. of altitude and produced a fairly good free flight. A steep angle of attack, not unlike that of a kite, was obtained during the tow; and was countered, upon release of the tow, by "forward weight shifting" by the pilot. I must add that directional control left something to be desired.

For the last part of the project, just to keep it authentically 1909, it would be necessary to find a cliff for the "cliff launch".

Now, to find any elevation over nine feet in South Florida is quite a good trick. After two days, we found a medium size man-made hill, with a "cliff" on it's highest side. Several of the people who had been following the project took one look at the cliff, remembering the trail 1909 Hang Glider, and suggested that we invite the Press to our cliff launchsite on the morning of the launch.

Early on the morning of the launch as I looked out of my bedroom window, remembering my commitment, it looked like the start of a beautiful South Florida day.

To the East, three golden elongated swirled clouds were visible. The clouds were stretched out over a pale blue morning sky, and resembled the skeleton of a huge prehistoric animal's rib cage . . . once again giving me a strange premonition about the day's schedule.

To the left of the clouds was a huge orange sun, just breaking ground and looking much like a fried egg. After the sun had burned through the light haze near the ground, the clouds turned into puffy white altocumulus as they climbed skyward. By this time I was on my way, driving to the launch sight, with the Hang Glider lodged in the back of a pick-up truck; the tail pointing toward the sky and the nose toward the ground . . . another premonition.

Arriving at the launch site we found one newspaper reporter, a local television station camera and reporter, and seventeen close following spectators standing by the cliff to return with us to the beginning of aviation and the year 1909!

The first take-off "run" was beautiful. I cleared the edge of the cliff, and had obtained lift from the glider's airfoils. As I got ready to maneuver the glider, by weight shifting, I heard the sharp sound of wood cracking and felt the glider's positive feeling of lift deteriorate . . . the landing left a lot to be desired!

In effect, what had happened was that the tail had not cleared the edge of the cliff. As the tail hit the cliff it forced the relative wind to come from a greater angle of attack, from under the wing, causing a stall/spin condition.

We checked the glider for damage, completed a preflight, and headed for a slightly higher portion of the hill.

Consulting my preflight check list once again, I read through the required items: 1) All nuts and bolts secure; 2) No damage to fabric; 3) No warps in structures; 4) All flying and bracing wires secure and rig-
ged properly; 5) Pilot's boots tied (this last item suggesting that somewhere in early childhood I had started my "pilot training skills"); 6) Area below "clear".

Television camera-rolling, silence, action! The take-off "run" became a reality. Once again I was hanging in space with plenty of lift, the wind starting to hum around the wings and wires, then ... CRACK!

Once again, loss of lift into a mush; the feeling of flight stopped; here comes the ground with all of those jagged coral rock protrusions looking up at me!

My right foot hit the ground first and the glider assumed a graceful position. The leading edge of both wings were where my feet should have been and the tail pointed skyward like a buzzard in heat.

That night on television there I was, crawling out from the twelve inch opening in the bottom wing, all dust covered and holding on to my right ankle.

It was obvious that the cliff had been in the way of the descending empennage again. Later, when the glider, complete with "landing" photographs, appeared on the front page of the local newspaper, it was obvious that a ten knot headwind might have held the tail up long enough to clear the edge of the cliff. We had assumed calm wind conditions would be best for the launch because of the difficulty we had in handling the wings during construction in only the slightest winds.

The 1909 'Glider was a great project. I am sure that some aircraft building techniques which were used in 1909 and that have long since been forgotten, were rediscovered. The crutches and the severe sprain that I developed in my right ankle during that last landing would help me to remember for some time to come, how it really was in 1909: Since my flight with the hang glider, many hang glider flights with improved modern designs have been made.

What our project was primarily concerned with, was why does a person want to strap on a fifty-two pound set of wings and jump off a cliff?

Is it the childhood dream of flight? Is it a death wish? Is it possibly man's nature to explore what has not been done before successfully? Could it be a combination of all of these factors?

The visual and mental effect of looking over the leading edge of those twenty foot wings was truly an adventure.

Watching the seemingly magical modern hang gliders around the country has been like a page from aviation history, with the famous legend of Icarus and Daedalus, actually happening before your very eyes! They sure are like a time machine.
CONTEMPLATING A STAGGERING REBUILD

Story and Photos by John Swing
Casilla 713
Santa Cruz, Bolivia

Staggerwing D-17S, SN 4902, was built in 1943 for the U.S. Army (UC-43, #43-10854) and was later registered as N51120. In 1955 it was purchased by an air taxi firm in Santa Cruz, Bolivia, and was licensed as CP-613. In 1962 it was again brought State-side where it was given metal skin on the fuselage in Tyler, Texas. It was returned and continued to fly in Bolivia until 1970 when it had a power failure and landed short, going through a fence and causing major damage to the lower wings and right wing root section on the fuselage. In 1975 I couldn't believe my eyes when I arrived in Cochabamba, Bolivia. There she was sitting in the weeds. Little by little I found out more about her and the possibilities of getting her out of there.

It took about a year with paperwork and much help from friends to finally clear the craft for exportation. This is something I would never do again, even if I had to do it over. During this time I built a platform for the fuselage. It was done in Mahogany, plentiful in Bolivia, a fitting throne for a queen. Later, we found the craft wouldn't fit in the Boeing 707 Cargo ship that goes almost empty to Miami several times a month. The engine had to come off. With some borrowed tools, a pliers, a crescent wrench and a screwdriver and an occasional helping hand from a passer-by, she reluctantly gave up her 600 pound, 450 horsepower, 9' cylinder, heart. The Pratt & Whitney R-985-AN-12 seems to be intact, even the propel­ler had survived unscathed.

April 27, 1978, all was ready. Before dawn the giant Boeing was towed to the ramp. The D-17S was scattered around the area with its motor secured to a shipping skid along with a shipment of Bolivian Beer. There was still some apprehension as to whether the fuselage would fit. It was going to be close. After much pushing, pulling, whistles and shouts from the loading crew, 4902 was in her place and ready to go. After an exciting flight at about 550 mph indicated we arrived in Miami and just as the sun was setting she was unloaded and once again touched her wheels on the land of her birth.

The next day 4902 was loaded on a flatbed truck and she and I began the long drive north to La Crosse, Wisconsin, her new home. Of course, how could any respectable Staggerwing pass near Tullahoma, Tennessee without visiting the bunch at the Staggerwing Museum. We were received with great hospitality and about half a day was spent by several members there readjusting the load for the rest of her journey north.

As the weather got quite a bit cooler and we neared Wisconsin, EAA Headquarters was on our mind. The staff there was very interested in this ap­parition from the South and were very informative as to where to begin or what to do next.

She's now resting in a barn, after a 5000 mile Odyssey. It will be some time before she'll get the tender love and care that she deserves. I'll be going South again for another three years. Meanwhile, there will be many books read and plans made to begin her resurrection to life.
1931 - PCA2 taking off from the White House lawn after award of the Collier Trophy to Harold F. Pitcair by President Hoover.

1926.

1930 - PCA1 and PCA2 Pitcairn Autogiros over New York City.

1930-1931 - PA-7 Pitcairn Super Mailwing.

PA-3 OROWING
1930 – PA-7 Pitcairn Sport Mailwing.

1936 – PA-36 Pitcairn Autogiro two-place jump take-off as shown.

1926-1927 – PA-4 Pitcairn Fleetwing.

1927-1929.
once upon a

better time

L. A. Barnaby (teacher of chemistry and physics at Negaunee High School 1925-36) supervised this early “Project Schoolflight” and joined his students in flying the project.

By David Gustafson, Editor

(Photos by Rollin Thoren)
undiminished zest Rollin transported me back through time to the days when young men sought out useful projects to amuse themselves instead of filling up their hours with a lot of vacuous television programs or movies. Living in the small town of Negaunee in Upper Michigan in 1929 would have tested the resourcefulness of any young person. Being thrown back on their own wits for entertainment that year had already resulted in some successful, prop driven snow sleds. One of the Thoren Brothers even designed a sled with a belt drive system that pre-dates all the modern snowmobiles.

Someone struck on the idea that a good way to pass the winter of '29 would be to build a primary glider. They found an advertisement for a Northrup Primary Glider Kit in one of the aviation publications of the day and soon found themselves eagerly awaiting a sizeable delivery. “It surprised us when it arrived,” said Rollin. “It wasn’t like a model kit where everything is pre-cut. All you got was a bunch of rough boards, some wire, and a set of plans. The plans were detailed and very thorough... easy to follow.”

The task of building the glider fell on Rollin’s younger colleagues: Rudy Thoren (his brother), Hartley Haines, Lloyd Heininen, Oscar Leynanen, and Larry Anderson. Lorraine A. Barnaby (L.A.B.), who ran the Negaunee High School Physics Lab, made his room available (to the delight of all) for construction of the glider. It was strictly an extra curricular activity, but rarely a school day went by without something getting done during class time hours. Slowly and patiently the boys cut cap strips and gussets and pieced together the light ribs of the glider wings. First the Physics Lab, then the whole school was permeated with the intense odor of dope as the newly formed Negaunee Glider Club forged ahead with their project.

No one knew how to fly. They’d read about it, watched closely at the local grass strip on the rare occasions someone flew in, and they’d come up the obligatory route of model building and rubber band flying, but no one had been up as a pilot in command in a real plane. So, feeling a sense of obligation to the boys’ safety and future, Barnaby set off on his own to learn the art of flying. He went down into

As a freshman in high school, twenty three years ago, aviation meant little more to me than an occasional balsa kit, some rubber bands, and a messy encounter with a tube of glue. I’d never ridden in a plane, hadn’t even been to an airport. It was difficult relating to something you couldn’t at least get to look at up close.

Then one day in General Science Class Rollin Thoren told a story about his experience with aviation and my sense of involvement changed as a result. Rollin was an unforgettable teacher, as well as a very special kind of person. His energy and warmth enhanced his outstanding talent to make everything including shark anatomy sound like the most fascinating source of excitement man had ever thought of. Learning in Rollin’s class was not only pleasant, it was an adventure.

Rollin’s flying days made such an unforgettable impression that I made use of a recent trip home to look him up and listen to the whole tale again. With
Wisconsin where he found another group that was using a Northrup Glider. He found out that the kit being assembled in Negaunee was complete in all but one respect: they hadn’t received the 200 feet of shock cord that was intended for launching. However, when he saw how the Wisconsin group was using it he didn’t really care anymore. What they did was to attach the center of the cord to a release ring on the glider. The cord was then laid down on a line 45° to the right and left of the glider’s flight path. When the pilot was ready, several people would grab hold of the tail group. A larger number of people then picked up the ends of the shock cord and ran as hard as they could ‘till those hanging onto the tail couldn’t hang on any longer. The pilot was then ‘sling shot’ catapulted into the air. Barnaby learned to fly with the shock cord, but decided his boys would be better off with tow launching.

Upon his return, Barnaby was surprised to see that the shock cord due the Negaunee Glider Club had arrived. “We’ll use a tow line,” said Barnaby. “It’s safer.”

Prior to their involvement with the glider, the Thoren brothers were active with their own version of snowmobiles. The one on the right has the Harley 74 that was later mounted on the glider.

Work on the glider was pretty steady right up to completion, and after some initial test hopping, the dust was given little chance to settle. In the summers they launched from Cascade Junction. When the winters set in the Thoren Brothers nagged their father to use his connections with City Hall (he was City Attorney) to get a municipal snow plow out on Teale Lake to clear off a strip of bare ice.

For the new student pilots, the method of flight instruction was simple but effective. Using a clothesline tow rope between a car and glider, the initiate worked first to clear the ground by only a few inches. On the second flight he’d go up a foot in altitude, and so the process continued until the pilot could overfly the tow car. The boys couldn’t get much over 700 feet with maximum climb in launch, and from there it was always downhill. Free lift from thermals never materialized for the heavy craft. To provide them with some sense of how high they actually were, Barnaby had attached an altimeter from his Physics Lab — it was their only instrument.

They also learned that when flying off frozen Teale Lake they’d have to rock the wings if the glider had been allowed to sit for a few moments, otherwise the tow line would surely break. The glider would freeze in place.
At this point the Harley 74 had been removed, but the engine mount was left on and used for balance weight so the pilot could ride under the wing and be fared in. Note the windshield.

After a couple of seasons' worth of serious gliding, with an expected rising level of confidence in the pilots, it was decided that flying would be more fun with an engine. They sent off $50 for a Lawrence Kiwi engine. It was a World War I surplus item with two cylinders opposed and it was big. When they uncrated their brand new Lawrence they wanted to see what kind of practical power it could develop. An engine mount was rigged at the back end of a trailer which was hooked to a car. With apparent ease, the Lawrence pulled the trailer, car and several occupants quickly out into the street. "Oh boy, that's for us," they cried. They figured out a way to attach the engine to the cabane structure above the wing in a tractor position, and they ran brace wires from the cylinders out to the wings. The new engine and resulting shift in C.G. meant that the pilot would have to move from his up-front position to a location somewhere under the wing. To find out exactly where, they placed a piece of pipe under the glider's runner at a point they considered appropriate. The pilot's seat was moved back and forth until the glider balanced on the pipe!

It was winter. They took the glider out to Teale Lake and Barnaby decided to fly the first hop. He opened the throttle and had rattled down the ice about a hundred yards, when he aborted his take-off and shut down the engine. When the excited observers caught up to him, he exclaimed, "You can't fly with this thing on, it nearly shook the daylights out of me."

So much for the Lawrence. They dismantled the engine to find the source of vibrations and discovered that both pistons were attached to the same throw of the crank.

They sold their Lawrence to some other eager aviators and for $35 bought a Gnome Rotary. "As soon as it arrived we knew we'd made a mistake ... it was beautiful and new and HUGE!" Rollin said. No effort was made to mount the big rotary, they simply turned around and sold it in its can.

They took the Harley 61 motorcycle engine off one of their snow sleds and bolted it on the glider. Finding it underpowered, they moved up to the Harley 74 on another sled and found they could fly quite handily as long as they stayed in ground effect. Actually, they had no choice. Rollin recalls there were two long flights over Teale Lake about five miles each; the rest were considerably shorter. But it was a form of pioneer flight, it was an activity they could all cheer and how lucky they were compared to those who couldn't fly at all.

Apparently it was a fairly simple operation to mount and remove the Harley 74. The sex change from glider to airplane or back to glider was made several times.

At the beginning of 1932 the Negaunee Glider Club had a glider (the Harley was off). It was at this point that Rollin became actively involved. His diary for 1932 helps recreate some of the fascination he felt for flying:

May 8, 1932
Finished assembling glider. All set to fly now.

May 9

May 10
Very spring like at eventide. Rudy and Barnaby each had a flight.

May 11
Real summer weather today, tree buds are coming right along. P.K., Heinenen, Terry and Thorens glided from 7:30 to 9:00. Terry has a big bump on his spine from riding the glider on the ground so long. Glider kept busy all day. Flew after supper a while (I mean taxied). That rudder is a sonuvagun.

May 12
Gliding started at 6:30 this a.m. Robert and I have reached a very fair stage of ground flying proficiency. My prat and back are very sore. Glider working perfectly. Flies well at 30 mph more or less.

May 13
Flew from 7 - 8:30. That is, Rudy flew and I taxied. Terry hopped today.

May 14
Flew from 5:00 - 6:30 p.m. I made my first few hops, but came down as fast as I went up. Terry now flies the length of the field at about 4 feet altitude.

May 15
Terrific south wind turned glider over on its back notwithstanding being firmly tied at both wing tips. Right leading edge of stabilizer and rib broken necessitating repairs.
May 29
Glider Club convened at Marquette Airport to see the air show which started yesterday. Wally Arntzen attempted outside loop twice in Tauch’s Great Lakes but motor would not work upside down. He got around the bottom and was coming up once, but motor pooped. Did some dandy stunting.

May 30
Airport again. Some stunting by Arntzen and Frank Schoblaska of Manitowoc. Dog fight between Moth and Great Lakes. Lieutenant Shelly dropped in with his Scarab powered Waco. Barnstormer from Ontonagon with land biplane and OX-5 with maximum of 1325 rpm’s struggled off field and headed home.

May 31
Sikorsky landed in Marquette harbor this afternoon. Isle Royale Plane. Heininen reports glider ready to fly again.

June 1
Up at 6:00. Flying at 6:30. Filthy crosswind but got in several good hops.

June 2
Flying again early. Made my first flight the length of the field. Made one difficult flight tho that scared the others . . . but merely pancaked.

June 3
Terry and Heinie were both up at 6:00 a.m. waiting for us so we could fly but signals were crossed and we didn’t arrive.

June 4
Flying again. I ripped off half the metal skid . . .

And so it went . . . day after day, through the summer. The simplicity of it all makes it highly attractive. For a brief period that summer the Harley 74 was reinstalled. Then one day the boys went by Marquette Airport on their way to Cascade Junction, where they did all their flying. The FBO tipped them off to something they had feared for a long time: a C.A.A. Inspector was looking for them. They went out to their plane where “we found this big red tag attached to the prop spinner,” recalls Rollin. “It said this airplane is grounded in very large letters. It is not to be flown under penalty of $500 or six months in jail. He listed eight reasons including things like no identification number, and using a rubber gas line, but the worst, most scathing remark was: unairworthy design and construction throughout. In other words, there was not a single thing good about it.” The engine was removed. There seemed to be no objection to flying it as a glider, so that’s exactly what they did. On December 31, 1932 Rollin recorded his best flight: 4 minutes, 15 seconds.

Mag Ranguette, a barnstormer from Nahma, Michigan was one of many distractions for the Negaunee Glider Club.

Shortly after that, sometime in 1933, the glider dis-integrated from heavy use. It marked the end of Rollins’ flying days, but had only served as a beginning for three of the group. Rudy Thoren and Lloyd Heininen went on for Masters Degrees in engineering, became licensed pilots, and went to work for Lockheed. Rudy became their Chief Test Pilot. Hartley Haines became a CFI and is still active in his native Negaunee at Northern Airmotive.

That was one glider kit that sure went the distance in providing an educational and entertaining experience.
Oshkosh B'Gosh made a couple landings in Negaunee before its fatal journey out over the Atlantic.

Front view of the fared glider . . . those cold upper Michigan winters undoubtedly had some influence.

Some of the members of the Glider Club decided it would be fun to move onto something a little more sophisticated. They graduated to this Curtiss-Wright Junior.

Rudy Thoren and Ol' Jennie.
The Northrop Primary was a copy of the very successful German Zoegling. Many were built from kits, priced at $85, and countless more were built and flown with varying degrees of success from magazine plans.

These machines were mostly bungee launched from hills and had no instruments other than the senses of the pilot. In flat areas, launching was done by auto towing. As can be imagined, learning to fly solo with little guidance was not the best way to ensure longevity, so many of these gliders were soon destroyed. The low and slow nature of most of these crashes meant that what few injuries occurred consisted mostly of cuts and bruises.

Construction was simple and results varied greatly with the skills of the builder. The wings had two wood spars with built-up truss type ribs. Drag loads were handled with wire bracing. Flight and landing loads were carried by ¾ inch cable. Skids of steel tubing protected the wingtips from the inevitable abuse of student landings. The leading edge was covered with plywood or aluminum.

Tail surfaces were fabricated of spruce with plywood gussets and wire braced. All flying surfaces were covered with lightweight linen and doped. Long life of the covering was not important as the glider was usually covered with patches very soon.

The fuselage runner was of spruce with plywood sides and a skid of ash, often with a steel shoe. The seat was a piece of plywood which did not encourage hard landings. Unlike many primaries of the time, the Northrop was equipped with a seatbelt. The aft fuselage was of 1½ inch square spruce with plywood gussets and was wire-braced. Spares were often kept handy because they were frequently broken. Rigging was tedious due to the many connections required; there was a lot of wire bracing to hook up and adjust to keep it in proper alignment.

Flying qualities of the Northrop Primary were average for the type. The advertised glide angle of 11/1 was undoubtedly a little optimistic. Aileron reversal was a common problem if the rigging wires were not kept tight. If the rigging was right and an experienced pilot was aboard, the Northrop was capable of handling and performance characteristics somewhat better than most of today's hang gliders. Pods to enclose the pilot and instruments were added to many of those ships that survived training. These gliders were called secondaries, but were not as good in performance as the Franklins and Baker McMillan Cadets that soon replaced them.

Additional information on the Northrop and other primaries can be found in "Air Progress Homebuilt Aircraft" Fall-Winter 1966-67. Included is a cutaway of a modified version of the Northrop. These articles could be a big help to anyone contemplating a replica of the Northrop Primary.
Some antiques want to use shielded sparkplugs because of radio interference but cannot because of too close cowlings. The following idea which solves this problem may have been used before but I am not aware of having seen it published.

The standard C-26 sparkplug is considerably shorter than the regular shielded plug so it lends itself well to building a shield.

Using .030 or .040 mild steel, I first constructed a loose cylinder around my deep socket that fit the C-26 plug. I removed the socket and then welded the seam so that I had a closed cylinder. (Figure 1). Using the same material, I next made a washer with an inside diameter the same as the spark plug copper gasket and an outside diameter slightly larger than the previously constructed cylinder. This washer was welded to one end of the cylinder. (Figure 2).

A cap was next made to fit over the cylinder. I cut a disk slightly larger in diameter than the cylinder and I also cut a piece of metal one-fourth inch wide just long enough to go around the outside of the cylinder. This piece was welded as a skirt to the disk so that the completed unit formed a cap to fit over the outside of the cylinder. The cylinder was trimmed to extend approximately \( \frac{1}{4} \) to \( \frac{3}{6} \) inches higher than the C-26 plug. Two short number 4 sheet metal screws hold the cap on. (Figure 3).

I next went to the local airport and begged several discarded shielded plugs. I cut the next of one of these off \( \frac{3}{4} " \) from the end. (Figure 4).

I carefully cut the porcelain inside so it could be used as an insulator. A triangular file works well for this cutting.

The C-26 spark plug has a rounded terminal on top. I put the plug in the shield and opposite the center of this rounded terminal I drilled a hole the same outside diameter as the porcelain.

The cut-off neck was then brazed to the cylinder side thus: (Figure 5).

The cut off porcelain was then slipped into the neck by inserting it from the inside of the shield. This porcelain does double duty as insulation and also support for the "cigarette".

The next problem to be considered was that of heat. From my ham radio experience I knew that the maximum hole size recommended for ventilation was one-fourth inch, so I drilled three or four \( \frac{3}{4} " \) holes in the cap and eight or nine in the body.

I got field approval from our local FAA GADO office to use it on an 85 horse Taylorcraft with an electrical system.

There may be shorter shielded plugs on the market but for price you can't beat a $1.00 C-26 plug and some scrap material!
This is the last series of the famous Staggerwing Beech. It was built in 1946 and sold new for $29,000. The “G” differs from earlier models in the following respects:

1) Enclosed gear fairings
2) Cowl flaps
3) Engine moved forward 12"
4) Longer windshield
5) Larger vertical fin
6) Modern “Puck” brakes
7) Twin Beech type cowling

A total of 781 Staggerwings were built from 1933 to 1948, of which 353 were commercial models and 428 were for the military. 20 “G” models were built in 1946-1948. About 250 Staggerwings exist today, with around 150 licensed and flying. Over 50% of the airplanes are owned by airline pilots.

The Staggerwing is a docile airplane in the air. Landing is not much different than any other early tailwheel airplane — you have not landed until you turn off the runway.

I have been asked many times if it is a 200 mph airplane as claimed. Yes, it is at 9,700’, pulling 65% power. Most of the time, 80305 is flown at 53% which gives a true air speed of 185 mph (9,500’), burning 22-23 gph with the Pratt & Whitney 450 hp engine.

The “G” model has 6 fuel tanks (one in each wing, one forward fuselage tank, one rear fuselage tank) for a total of 170 U.S. gallons, which gives 7 hours’ duration or a 1,300 statute mile range.

**Beechcraft Model G-17-S Staggerwing**

**Engine Designations**

<table>
<thead>
<tr>
<th>Model</th>
<th>Engine Type</th>
<th>HP</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Wright R760-E-2</td>
<td>350</td>
</tr>
<tr>
<td>B</td>
<td>Jacobs L-5</td>
<td>285</td>
</tr>
<tr>
<td>D</td>
<td>Jacobs L-6</td>
<td>330</td>
</tr>
<tr>
<td>E</td>
<td>Wright R760-E-1</td>
<td>285</td>
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<tr>
<td>F</td>
<td>Wright R1820</td>
<td>690</td>
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<tr>
<td>L</td>
<td>Jacobs L-4</td>
<td>225</td>
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<tr>
<td>R</td>
<td>Wright R-975</td>
<td>420</td>
</tr>
<tr>
<td>S</td>
<td>Pratt &amp; Whitney R-985</td>
<td>450</td>
</tr>
<tr>
<td>W</td>
<td>Pratt &amp; Whitney R-985-SC-G</td>
<td>600</td>
</tr>
</tbody>
</table>

Not all engines were installed in each model. The breakdown of commercial production by model was:

- Model 17: C17L - 6
- Model B17: C17L - 17
- Model C17: E17L - 1
- Model D17: D17L - 3
- Model E17: D17L - 8
- Model F17: D17L - 51
- Model G17: D17W - 3

The rest were D17S, D17R, E17B, and F17D. Most were military models, with the larger quantity being Model D17S.

**General Specifications of NC 80305 G-17-S**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
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<tbody>
<tr>
<td>Wingspan</td>
<td>32'</td>
</tr>
<tr>
<td>Length</td>
<td>26'9&quot;</td>
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<tr>
<td>Height</td>
<td>8'</td>
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<tr>
<td>Weight (empty)</td>
<td>2,800 lbs.</td>
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<tr>
<td>Weight (gross)</td>
<td>4,250 lbs.</td>
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<tr>
<td>Engine</td>
<td>Pratt &amp; Whitney R985-14B, 450 hp at 2300 rpm</td>
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<tr>
<td>Propeller</td>
<td>Hamilton Standard 2D30 constant speed</td>
</tr>
<tr>
<td>Fuel Capacity</td>
<td>170 U.S. gallons</td>
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<tr>
<td>Performance:</td>
<td></td>
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<tr>
<td>Maximum speed</td>
<td>212 mph</td>
</tr>
<tr>
<td>Cruising speed</td>
<td>201 mph at 9,700'</td>
</tr>
<tr>
<td>Landing speed</td>
<td>60 mph</td>
</tr>
<tr>
<td>Seating Capacity</td>
<td>5</td>
</tr>
</tbody>
</table>

Most owners of Model 17 have banded together in the Staggerwing Club. Dues are $7.50 per year, which includes four newsletters per year. We would welcome you as a member. Write George York, P.O. Box 111, Mansfield, Ohio 44901.

There is also a Museum of Staggerwings and other interesting articles located at Tullahoma, Tennessee. You can taxi from the Municipal Airport (William Northern Field) directly to the Museum. If interested, write Dub Yarbrough, P. O. Box 550, Tullahoma, Tennessee 37388.

Hope you enjoyed this short history of Staggerwings.
E. P. Lott brought the flying bug to Norwalk, Ohio in 1919 aboard a Curtiss JN4D "Jenny" and it bit me. He and his mechanic set down in Fred Ward's hay field and in short order was making more money, off the field, than Fred ever made. Fifteen dollars for fifteen minutes was the first asking price and many of the local and nearby sport grabbed the chance to fly. My first chance to touch this beautiful thing was when I asked the "grease monkey" as the mechanics were known, if I could help him oil the exposed rocker-arms on the OX5 engine. I had noticed that he had to do this operation after every third flight and it wasn't long before I became assistant mechanic, in charge of lubrication.

Later on I was promoted to "tail lifter", because of the short field, E.P. would taxi clear up into the fence corner and then we would lift the tail and turn the plane around, to take-off position. The tail lifter's job was also, to hold back on the plane while the pilot wound-up some of the engine's 1400 revolutions per minute. I jumped aside, at his hand signal, after a while and two-thirds of the field had been passed, this 90 horse wonder began, more or less to fly.

E. P. with his passenger always cleared the maple trees on East Main Street, much to the surprise of everyone.

On Armistice Day of 1919; E. P. proved to be a "Hot Dog Pilot" by the present day definition, when he flew down Main Street just over the trolley wires and below the tops of the taller buildings. Note: The Air Commerce Act went into effect May 1, 1926.

Believe it or not, E. P. Lott lived to be an old man, and for all I know, might still be living. Wherever he is, he's not worrying about water pumps and rocker arms on OX5's.

After WWI there were thousands of unused aircraft engines, in storage, all over the United States. The largest quantity was probably, the Curtiss OX5 and OXX6 series engine.

I recall one surplus sale, in Dayton, where these engines sold for $90.00 each in their original crates, during the 1920's. One company bought several hundred of these and stored them in a distillery warehouse, which was not being used because of Mister Volstead's Act.

In 1928 to 1930 I helped build several hundred aircraft to accommodate these powerplants, but by 1930 the aircraft industry was scraping the bottom of the barrel for engines and parts. I know, "I was there".
THE SCRATCH

Then, after what seemed like twenty years, I could begin to see the end of my High Schooling and I soon would be ready to take the big jump. Each summer I had been working at highway construction until the last two weeks before school started. I was using this time to locate a good place to begin what, by now, I was positive, was the way for me to go. My first destination was the Advance Aircraft Company at Troy, Ohio, then McCook Field at Dayton, Fokker at Wheeling, Bristol, Pennsylvania and Lakehurst, New Jersey, etc.

"Come back later" was the standard reply. Public transportation gained little from my movements, but my thumb got a good work out. In February of 1928, I hit Stout-Ford in Dearborn, Michigan, and Meyers in Tecumseh, Michigan. On this trip I did get a ride in a new Ford Tri-Motor with three J-5's, piloted by test pilot, John Collings. Lindbergh used a Wright Whirlwind J-5.

AT LAST RELIEF

On March 17, 1928 I got the word from a man, who knew a man, who knew a man that could get me on at the Advance Aircraft Company. Man number three owned the field they were flying from. Shortly after this the industry started to boom. Then jobs became plentiful, until the fire. An OX-5 powered plane sold for about a dollar a pound, in those days, therefore, a 3300 pound plane sold for about $3300. At that time, the aircraft industry would hire pretty-fair young mechanics, at thirty-five cents an hour, for a forty-four hour week. Few could expect to get beyond the cent-a-minute rate. Nevertheless, after paying for our room and board, in advance, we were still able to hit the Winter Garden or the Roof Garden at Piqua, Ohio every Saturday night, where we could prance half the night. Then we went to the Spot of the Dog House in Troy to eat completely decorated and big hot dogs for a nickel. Once after winning a dollar bet, I spent the whole buck on a plank steak, which was, actually served on a short plank of oak. Transportation was usually accomplished by the use of our thumb, assisted by a red big lettered sweater, from my school days. Clothes and shoes were trading stock, and at times we got to looking pretty ragged, but we always had our hair cut and got our shoes shined at Johnny's Shine Parlor. I can still see Johnny's big fat hand reaching out for the dime after a complete spit and polish job. Once I bought a suit, and because of the fifty cents a week, I had to pay on it, my social activities were reduced for some time. From 1900 to 1920 every farm in the United States had one or more farm wagons. Most of them were either Studebakers, made in Indiana, or by the Troy Wagon Works, at Troy, Ohio. In about 1920 the wagon business was discontinued and the young Weaver Aircraft Company moved into the old Wagon Works, sometime later. After the death of two of the members of the original Weaver Company, including Weaver himself, the company reorganized under the name of Advance Aircraft Company. Line production was just nicely getting underway when a fire, in the dope room, stopped operations. A new factory was rushed to completion with much better facilities, including, their own flying field. Everything seemed to be going well, by the middle of the summer, following the fire. Since the planes being manufactured were known as "Waco" after the Weaver Aircraft Company, the Advance Aircraft Company changed the name to Waco Aircraft Company. By 1930, any field with two or three planes based thereon, at least one would be a "Waco". Production was about five planes a day, and my pay got up to the cent-a-minute mark.

Then the time came for me to move to the next step, which is another story. By this time, because of my occupation and associates, my family were certain that, eventually, I would return to Norwalk, horizontal in a pine enclosure. Today, I possess many small reminders of my days at "Waco", which includes a complete set of the special tools, supplied with every OX5 and OXX6 engine. I also possess a million fond memories of people, places and things in Troy, Ohio.
Oshkosh ’78 Antique-Classic Parking Committee —
Front row, left to right, Tom Landrith, Ed Lachendro, Lise Markl, Eric Markl, Darrell Jorgensen and John Gingras (on motorcycle). Standing, left to right, Allen Hemminger, Scott Boyer, Dutch Brafford, Tom Rowland, Bob Kesel, Art Morgan, Al Gingras. A large number were not present when photo was taken.
The 1944 Howard DGA-15P of Scott Petagna, Fredricksburg, VA.

(Photo by Chris Sorensen)