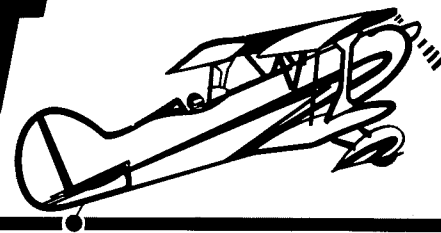


# ACRO SPORT Newsletter



NO. 41

Printed by: TIMES PRINTING, INC.

MARCH,

## Gypsy Major Acro II Flies!



Frank Langdon's Gypsy Major powered Acro Sport II.

Dear Bill,

CFIEN has indeed flown; I did the initial flight on September 25, 1992, which proved to be quite uneventful, which is of course what we all hope for on a maiden voyage! To date I have flown it 19 hours; unfortunately that will be it until April. The aircraft is parked outside, and the weather has been terrible.

I haven't really much done in testing as the aforementioned weather has been limiting. The Acro does however, cruise at 110 MPH, (timed accurately), at economy setting of 2050 RPM and 20" manifold pressure. (Maximum HP is 140 at 2400 RPM). The power off stall is approximately 60 MPH which seems to compare with others of the same weight, (1046 pounds empty). I have applied for and received a gross weight rating of 1700 pounds. Generally the aircraft flies very well and is all that I had hoped for.

With regard to construction, I had very few problems that were not of my own making. One major problem I had, and I mention it because there may be someone out there as dumb as me. I meticulously laid out the cabane struts, tack welded them, and then read the foot note "level fuselage — and wing center section chord line," etc. I misinterpreted the note to mean parallel, forgetting about the angle of incidence. Many hours later I arrived back at the correct measurements after much reworking; (I did not use adjustable forks).

The bungee cords #1380 HD were not enough with one

pair, so another pair was added, and they work well. I made no structural change, although many other changes were made such as in the cowlings and fairings, firewall shape, etc. to accommodate the deeper, longer Gypsy Major engine. A canopy was added and the rear instrument panel deleted, (inspired by the Christen Eagle). I used galvanized steel for the fuel tank with "J" seams which were then soft soldered. This obviated the need to weld aluminum, which I cannot do.

One modification to the fuel system I intend to do is install a return line to the fuel tank to prevent vapour lock. (I use two engine driven fuel pumps because the carburetor is too high on the engine for gravity feed. I use auto gas because of price and the fact that 100 LL has much too much lead for this old style engine. Incidentally, the RV6 Newsletter gives the details of a return system.

About a month ago, I sent Ben Owen a picture and a brief note on my Acro as he has been very helpful when questions arose. I am enclosing a similar photograph for your use.

Thank you for writing and your ongoing interest in a great airplane.

Yours sincerely,  
Frank Landon  
26 Jill Crescent  
Islington, Ontario  
M9B 6B3 Canada

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# Monroe Squadron Flies The Acro II

*Neil Sidders, 235 Rowland Road, Monroe, LA 71203*

I can't believe it has been a full year since our Acro Sport Builders group was visiting Bud Judy and flying the prototype Acro II. The memory seems no more than a week old. But it was a year ago when four Acro II builders, Bruce Owens, his brother Robert, Mike Smith, and myself along with prospective builder Roger Lowery, loaded into Bruce's van for the 300 mile journey to Hidden Valley Air Park north of Dallas, Texas. Our 3:00 A.M. departure put us in Bud's driveway by 9:00 A.M. on a day perfect for flying, with a few high clouds decorating an otherwise crystal blue sky; the temperature in the low 70's, a real Acro Sport day!

There were two purposes for this trip. The first was a motivation flight to keep the spirits fueled for Bruce, Robert, and Mike, and to motivate Roger into an Acro II instead of the Sportsman 2+2 he was considering. (It worked, he now has a set of plans!) The second purpose was: I needed the confidence boost that only a flight in an airplane of the same design as you are building can give. I am a bit farther along on my Acro than the other builders, and being the only one with any tailwheel time, I know I will be teaching the other guys in my airplane to the point where they can be competent to do their own test flights.

The day started with a lot of good ol' boy humor, fresh coffee, and a very light hearted, but extensive pre-flight briefing along with particulars about the Acro II.

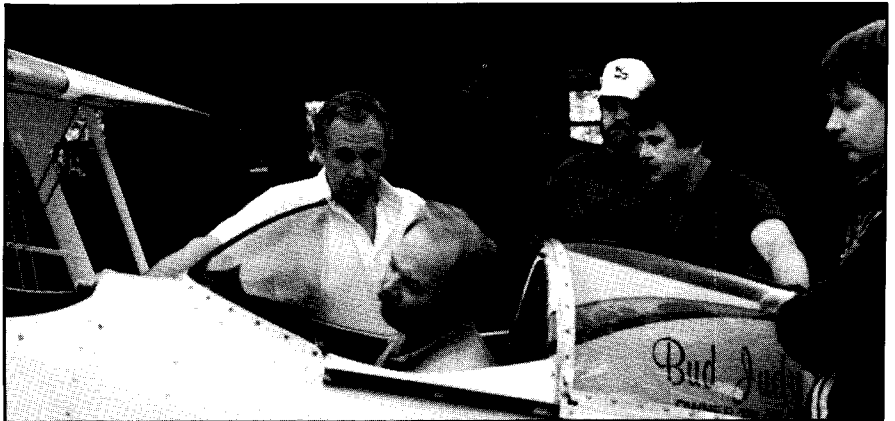
The number one "Don't Never" is Don't Never Fly Without First Sticking the Tank — Yes Sir! Otherwise, the pre-flight is pretty basic stuff.

The plan was for Bud to fly with each of us to an old airfield that was much like those of days gone by — a huge field with a windsock in the center, so you can always land into the wind. I was starting to wonder if Bud had doubts about any of us being able to hit a standard runway. Somehow, I was chosen to show my inability to fly first. I was elated and nervous all at the same time. I had sold my Sonerai, (Cover, March '89 Sport Aerobatics), about two years prior to this flight and had not been off

the ground since.

I climbed into the front hole and Bud in the rear. (The rear seat had a canopy — I guess Bud didn't want his hair messed up). Bud fired the Lyc and we began to taxi. My first thoughts were, "I hope you can see better from the back seat". (You can). Once lined up on the runway, I was to follow through on the controls during the takeoff and climb, then fly on to our training field. The rudder became effective immediately, and with less than 500 feet of pavement used, we were climbing. My personal weight is about 215, Bud at 190, and the tank was full. I was impressed.

We didn't plan any aerobatics for the



Left to right: Bud Judy, Robert Owens, and Roger Lowery. Tom Dansby was not able to make the trip to Dallas, but his airplane is also on the gear now, making five Acro IIs sprouting in northeast Louisiana.

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## From the Designer

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*by Paul Poberezny*

On my wall in my shop, next to my drawing board, I have a side view drawing depicting the structure of a two-place, open cockpit, tandem, low-wing airplane. The drawing is in India ink — popular in mechanical drawing classes of that era; the date, 1936. I was a freshman at West Milwaukee High School.

Often I wish I had more time to devote to putting imagination and hands to work. And I've long learned that there is not much new in the world; airplanes still have wings and tails, and bodies to hold the pilot and passengers. Having an extensive aviation library, one would be in awe in seeing the many types and models of aircraft that have been built

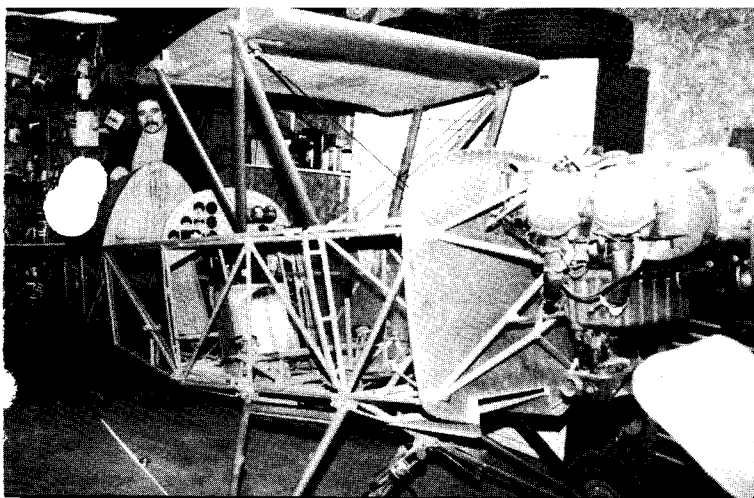
since the Wright Brothers' first flight in 1903. And I would state the number and type built far outweigh those numbers an automobile makes and models to date.

I must give credit to my long-time friend, Curtis Pitts, with taking some time with me in answering questions on the design of the Acro Sport I single place. Not only is he a wonderful person, but a practical and natural designer. Much of what many of us learn is from comparison of the many aircraft that are available for study, especially when one has been involved in repairs and able to study various structures and components. Having had the opportunity to have so many types of airplanes, I've found that if an airplane looks good

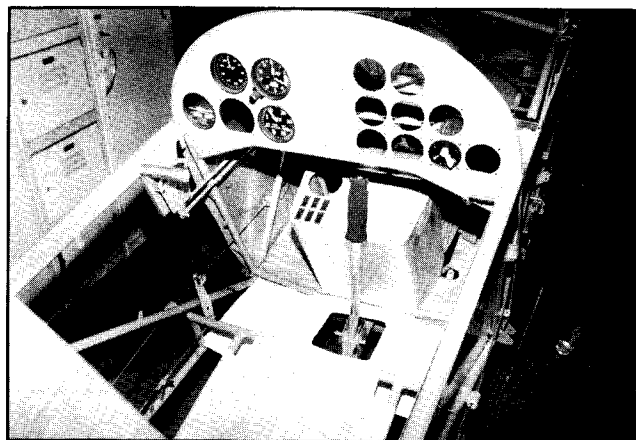
— pleasing, lines, balanced in proportion — it most often is a good flying airplane.

I would like to welcome onboard as Assistant Editor, William H. Berrick of Omaha, Nebraska. Bill, a builder and owner of an Acro Sport I, is also President of EAA Chapter 80 of Omaha. His address is 11803 Hunters Cove, Omaha, NE 68123-1119; phone number, 402/292-6832. He would sure like to hear from you builders with ideas, photos, etc.

Send address changes and renewals to Acro Sport, Hales Corners, WI. The Newsletter will keep getting better with each issue. And plan on attending the Acro forums at EAA OSHKOSH '93.



The firewall on Neil Sidders Acro Sport II is widened to eliminate the "eyebrows". It is also extended downward and tunneled to reduce cooling drag and smooth the cowling-firewall transition.



Aluminum side panels are installed in the rear cockpit only. Note control stick grip which leans 5° left. Custom made throttle unit will include a push-to-talk switch.

flight, but I did investigate control forces and response. We leveled off at about 1500 feet enroute to the training field. Bud set the trim for level flight and let me take over. I did all the usual "first time in type" sort of stuff — steep turns, stalls, "S" turns and 360s. By now I had

a good feel for the airplane, and had begun to relax. The thing I had liked most about my Sonerai was its ability to fly as if it were on rails. The Acro proved to have similar qualities and very soon I was quite at home in the Acro II.

Before I talk any more about flying the Acro II, let me tell you a little story that may help some of the newer, low-time pilots building this design. I got my license in a 150 Cessna like most folks do nowadays. A friend used to tell me, "you go on and get your license in that thing and then I'll teach you how to fly". Well, I got my license and my friend made good on his offer. He says, "I know a guy with an ol' J-3 that still runs — keeps it at a grass strip by his house and will rent it for 20 bucks an hour. You still wanna learn to fly? What would you say?"

Lesson #1: The student pulls on the prop while the instructor sits in the front

seat and shouts commands. Well, the experiences I had while flying that old Cub would make a lot of humorous reading, but it is what I learned about how to fly that is important here. Fly the airplane, not the instruments; (none of them worked). What did work in the Cub worked well in the Acro II.

Takeoff: Try to carry the tail wheel just a couple of inches off the ground and let the airplane fly off when it is ready. After it flies off on its own, lower the nose and let the airplane accelerate until the controls "take a set". Count to five, then start a pull into a climb until the acceleration stops. Whatever the airspeed is then is the safe climb speed for that airplane that day in its present mechanical condition.

Landings are almost the exact undoing of a take-off. Fly the approach at minimum drag airspeed. Find this by pulling the power off from cruise speed and push the nose over until the image

### *Editor*

Paul H. Poberezny  
Oshkosh, WI

### *Assistant Editor*

Bill Berrick  
11803 Hunters Cove  
Omaha, NE 68128  
402/292-6832

## EDITORIAL

by Bill Berrick, Assistant Editor

I had flown my Acro Sport 100 hours when I made the most recent flight just before Christmas. I find that I need an outside temperature of at least 45 degrees to tolerate more than a half hour of flight. That is not the fault of the Acro, but rather it is due to my insistence on enjoying the thrill of an open cockpit, and the struggle of my circulation to keep up with my enthusiasm for aerobatics! I try to fly it at least a couple of times a month during the winter for the good of the engine and my own morale. I think it helps the engine, and I know it helps me!

The Newsletter was a great help to me while I was building my Acro Sport I. It is not only a required supplement

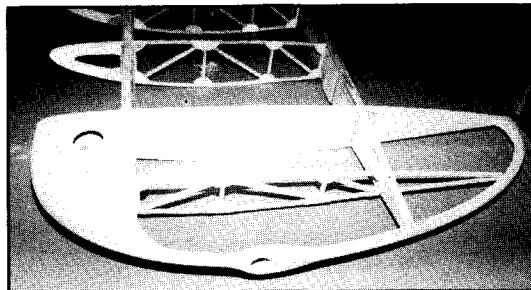
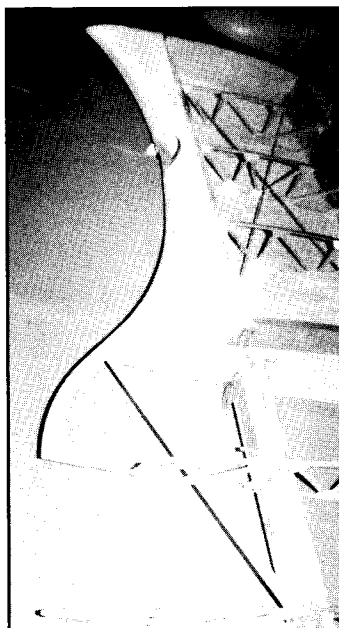
to the plans, but was a constant encouragement to keep pressing on, and a very frequent real help with specific information, photos, and ideas. I have made an index for the first 40 issues; it would have been a real time saver for me when I was building, and I hope it will be helpful to you.

This Newsletter can continue to be an inspiration and right hand to builders and flyers of Acro Sports, Pixies, Nesmith Cougars, and the Aces, but that will depend on you. Some of our faithful contributors have come through again for this issue, but we need to hear from you too!

Please send me articles or letters

with photos or drawings concerning construction and flying of your home-built. I would also welcome hearing about any problems that developed or changes you made after flying your plane.

While I was building, I felt that I was unproven and not an expert, and was hesitant to send in suggestions. Now that my AcroSport is flying well, I find that I am still not an expert, and have forgotten many of the things that might have been useful to others! Please send me anything you would care to submit from your own experience, comparisons or comments on Newsletter articles, or whatever you feel might be of interest.



Neil Sidders ordered extra long spars to accommodate laminated wing tip bows making the wing span 18" longer than on the prototype. The inspection hole is stepped to make a flush fit. Note provision for tip lights on the top wing.

Neil's center section bow is re-curved to eliminate sharp corners. Balsa wood was used as filler, (he hates foam). The rib spacing on the inboard ends of the top wing was equalized, thus narrowing the center section cut-out.

you see at the base of the wind screen is fixed, that is, not moving up or down. The point you see at the base of the wind screen is as far as you will get with the power off. If the end of the runway is above this point, you ain't gonna make it! That's what my crusty ol' J-3 instructor taught, and it has worked in every airplane I've flown. I think Bud must have flown with the same guy, because he made sure to drive home just how to fly an approach in a biplane. The glide angle at minimum drag airspeed is unbelievably steep! Minimum drag airspeed, (actually, glide speed), works really well in a high drag condition such as a biplane. There is just enough speed to flatten the glide, pick up your

ground reference and flare.

The Acro II proved its landing qualities in short order. On my first attempt, I used my "Cub Rules". Minimum drag airspeed on final, round out, look out the side, and SLOWLY raise the nose to a 3-point attitude. The airplane will settle as it slows and if you get it right, the controls begin to soften or "lose their set" about two counts before all three wheels touch. My old instructor would say, "if the controls are soft in the flare, and you are up to five counts, add power and try again. I chickened out at four counts and went around. My next two landings were perfect 3-pointers.

By now it was time to return so the others could all have their flights. I re-

luctantly gave up my seat, then kicked back and enjoyed the expressions and enthusiasm as each one returned.

All too soon the day was done and good byes exchanged as we loaded into the van for the return trip to Monroe, LA. While driving home we all reflected on what we had learned. One of the more interesting things noted was the lack of need to make trim changes between take off, cruise, and landing. Once the airplane was trimmed for level flight for a given load, you just didn't need to change it. While all were satisfied with the flight characteristics, climbing in and out of the prototype revealed things unique to each individual. For Mike and me the rear seat was too cramped. I cured this problem in my airplane by moving the rudder pedals as far forward as possible, which was easy because I am using heel brakes. Mike is over six feet tall, and like me, it's mostly in his legs. He has no problem in any airplane until you strap a chute to his back. The end result was to stretch the fuselage two inches in the rear seat bay. His airplane is on the gear now, and it is unbelievable how much difference it makes having just two more inches between your nose and the instrument panel. Everyone agreed on the need for a handhold in the top wing center section. I used a single grip in the center and it greatly aids getting in and out of both seats.

Later on during the trip home I realized that three of the guys in the van had never met before this day, and only Bruce and I had known Bud previously. Yet upon their meeting, it was as if we had known each other for years. EAA people are just that way!

## Letters To The Editor

Dear Paul,

Robert J. McQuirk, 9336 Loma Vista Dr., Dallas, TX, 75243-7412 called the other day regarding an Acro Sport II suggestion.

Bob was having some difficulty in touching down in a full stall and was always getting a bounce or a skip. To increase the angle of attack on the ground and get it closer to the stall at touch down, he heated the spring and bent it up so that the tail is about 2.5" lower than it normally would be. This solved his bounce and skip problem. Caster angle is about 2 degrees, (top

of the axle forward in trail), which he says works out "just fine" for him.

Bob's aircraft has a 1167 lb. empty weight and is N790RR. It uses a 200 HP Lycoming with a constant speed prop; it is IFR equipped. It has a top center tank of 17 gallons that he finds quite useful. He said this is somewhat of a hard job to install as the way he built it, he put aluminum tubes through the tanks so the drag, anti-drag wires could be in their usual place. The skin of his tank is the outer skin of the center section, both top and bottom, and he has welded flanges into the corner that bolt directly to the center section fitting. He found that you can't weld in the center of the tank without it distorting out of shape, so he (on his second try), riveted and sealed aluminum ribs inside the tank to stop the sloshing. All in all he is quite pleased with the center section tank modification and the change to the tail wheel spring.

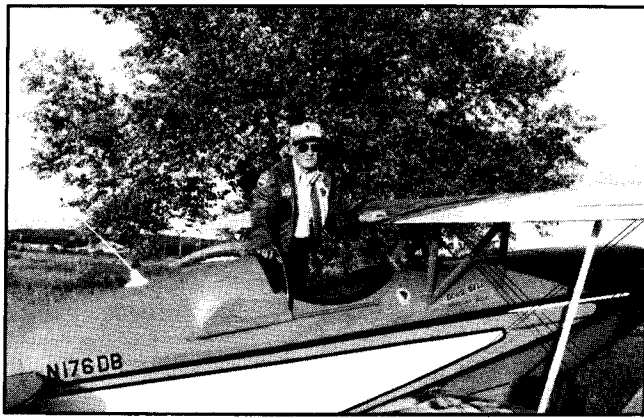
Best regards,  
Ben Owen

Dear Paul:

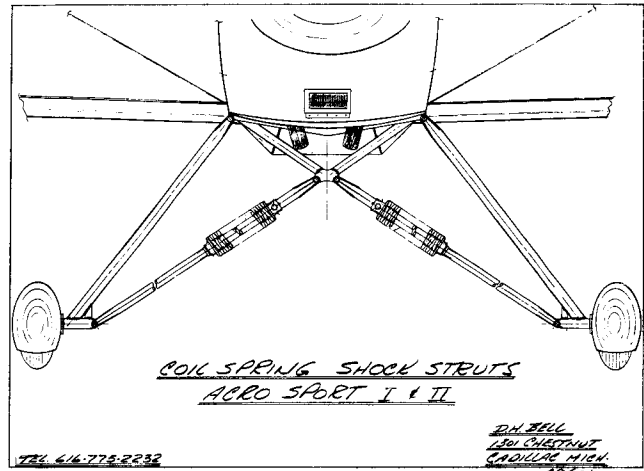
I started my Acro Sport I, (N176DB), from plans and raw material January 6, 1976, and had my first flight September 6, 1979. All went very well, and I'm still flying it 13 years later. An excellent airplane, but a bit hot on landings. I picked up 1st place for Acro I at Oshkosh on two different occasions, plus the "Lindy" award for Outstanding Workmanship in 1986.

I spent considerable time designing, building, changing, trying, and correcting a set of good spring shock struts which I use on my own bird. I then completed a set of working drawings and have had them for sale since 1984. Several have been built for both Acro I & II; one set is on a Christavia, and I'm currently helping a friend build a set for his Baby Ace. This is a cover sheet from the set of five drawings which include easy instructions.

Doug Bell  
1301 Chestnut St.  
Cadillac, MI 49601



Doug Bell and his N176DB still going strong after 13 years of flight!



Dear Bill:

Thanks for writing and good luck on the newsletter. I finished my Acro Sport about two years ago after about nine years of work, mostly in the winters. I really can't remember having too many problems; I did have the early plans and had to do some major work on the ailerons. Perhaps, I can best be of help to those still building by pointing out things that I have noticed after flying it for more than 100 hours, things that could have been changed whilst I was constructing the plane. One area that could be corrected is an area about mid-span on the leading edge of the wing that is "oil canning"; I have observed this on two other aircraft. It is a big dimple on both sides of the bottom wing. It's no biggie, just looks unsightly.

My lower cowling had to be remade after about 50 hours, it was not made properly, and started to crack where it wraps around the bottom of the cowl. It turns out that the original cowling was also not letting the air exit properly out of the bottom of the cowling. This was caused by not bellying out the bottom of the cowl. The new cowl is constructed correctly, and my cylinder head temps really cooled down. There really wasn't any information in the plans about this, so it may help someone else. Also, my ailerons were binding at the point where the barrel of the hinge is sandwiched between the mount and the barrel. This was solved by putting washers on either side of the bearing; they work fine now. I have a Lycoming O-360 with a Bendix PS5 pressure carb; seems to work fine. I have a wooden Sensinich prop which really looks great! I went through three spinners before I finally put a front bulkhead plate on it. I have 85 lbs. on the tail which is a bit heavy; doesn't really affect the flight characteristics, but it's heavy to lift. The battery is behind the seat. Probably a lot of my problems stem from the relatively light wooden prop; if it were metal it would get some of that weight off of the tail, but it just looks so

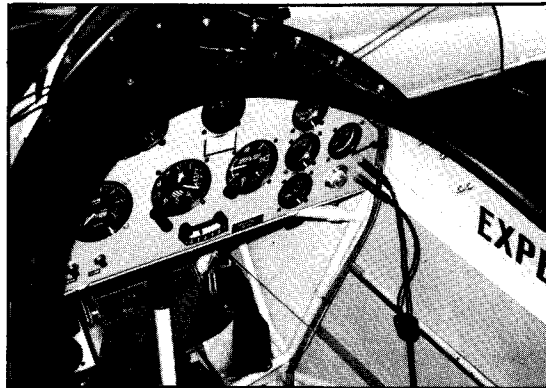
darn pretty, that I am not going to change it! The airplane cruises about 125 MPH and lands around 65 MPH. It is by far the easiest tail dragger I have ever flown or landed. I put individual brake reservoirs at the brake pedals, and they work great; saves a lot of hose routing and eliminates the one main fluid reservoir.

Another area that, if I had to do over, I'd do differently, is the landing gear leg covering. Instead of covering them with fabric, I would and plan to cover them

with metal. The covering is starting to crack, and looks bad. Back at the tail-wheel, I used a Piper horn for steering instead of the one called out for in the plans. It works great and can be bought rather cheaply.

That's about all I can think of right now, but I will keep you informed about any other anomalies as they appear that may help others building.

Ron Adams  
8032 Rocky Hollow Cv.  
Germantown, TN 38138



Neat instrument panel of Ron Adams' Acro Sport II. Aircraft took to the air two years ago and sports a very attractive paint scheme. Ron says it's by far the easiest tail dragger he has ever flown or landed.





Dear Bill,

Enclosed are some pictures of the construction of my Acro II fuselage. This was all done this past summer (92). I think that you can see the methods that I used to keep the sides square while the upper and lower cross pieces and diagonals were being fitted. The picture of the fuselage sitting right side up on the table was taken after everything was tack welded together. I leveled the fuselage and clamped it in position like this in order to install the tailpost.

I used a 4½" hand held high speed cutter to rough cut the ends of my tubing. Files were then used to get the final fit. I don't know if this is any faster or slower than a bench grinder, but it worked well for me.

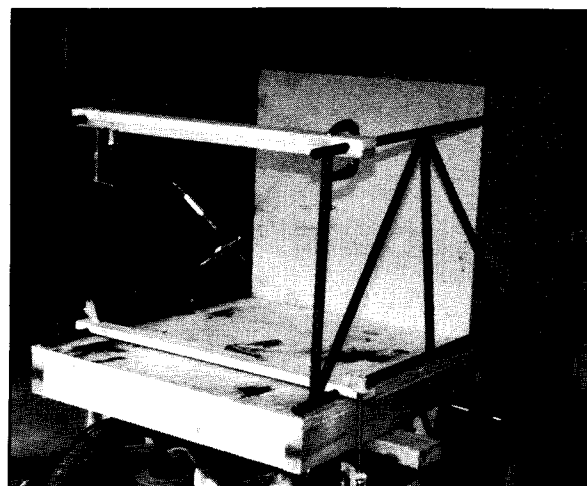
Final welding of the basic fuselage was done this fall when the temperatures were in the 50s and 60s. I had no warpage of the fuselage. It could be that welding during these cooler temperatures helped.

Now that it's much colder, I've moved inside to the basement and started making all the fittings, brackets, etc. that will get installed next spring.

I did get to fly an Acro II this past October. It was a little windy, but otherwise a perfect fall day. We did some stalls, 720s and some other basic air work. Charlie Knight, the owner/builder of this Acro II did all of the takeoffs and landings, as my tail dragger time is very low. The Acro II is an absolute gem to fly, and I loved every second of the flight. This was my first flight in an open cockpit biplane, and I know now that the Acro II was the right choice to build! It only took about three days to get the big grin off of my face. Can't wait until mine is done!

Ron Palascak  
57 Woodview Lane  
Algonquin, IL 60102-3043  
(708) 658-7963

**Above — Acro Sport II fuselage taking shape in workshop/garage of Ron Palascak, Algonquin, IL. Construction started in the summer of 1992. Right shows jigs used to square the basic fuselage structure prior to welding.**



**Plan to attend EAA Oshkosh '93  
July 29-August 4  
Wittman Regional Airport, Oshkosh, WI**



**Assistant Acro Sport Newsletter editor Bill Berrick and his beautiful Acro Sport I, N9WB. Photo was taken August 1991 by Jim Fix at EAA Chapter 80s annual fly-in and steak fry event.**



Dear Paul,

I have finally obtained the long awaited photographs of the PIXIE II. The delay was mostly due to my inability to complete the fuselage sand-blasting work. We had a really wet spring, and combined with other schedule conflicts, it took several months to complete the work. I do appreciate your patience.

Stephen and my father, Clem have both helped a lot on the project. Dad has done all the metal machining work for me, as well as help solve "thinking problems". As you can see, detail work is important to us. We have been storing the work overhead in the garage as shown. This method makes it convenient to access the structure for measurement without having to take it all down. I am about to dedicate one stall of the garage entirely to the project. Shop work is done at a separate bench in the basement — not too many of these in Texas! The wood structure supporting the wings is a jig that will be used to align and permit welding of the cabane struts. It's adjustable for wing location, as we are still working on weight and balance.

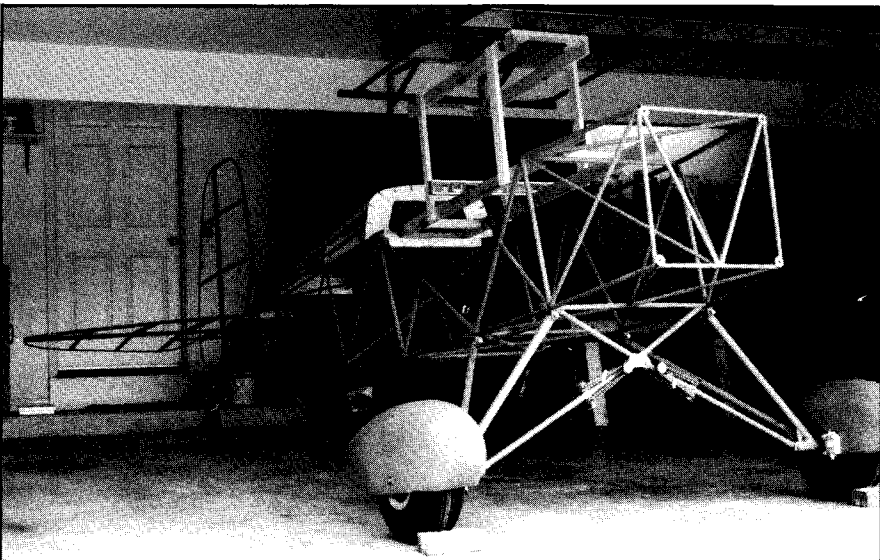
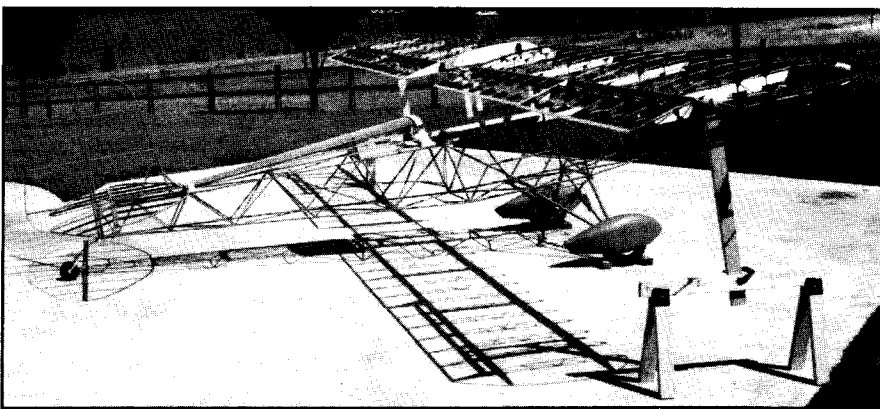
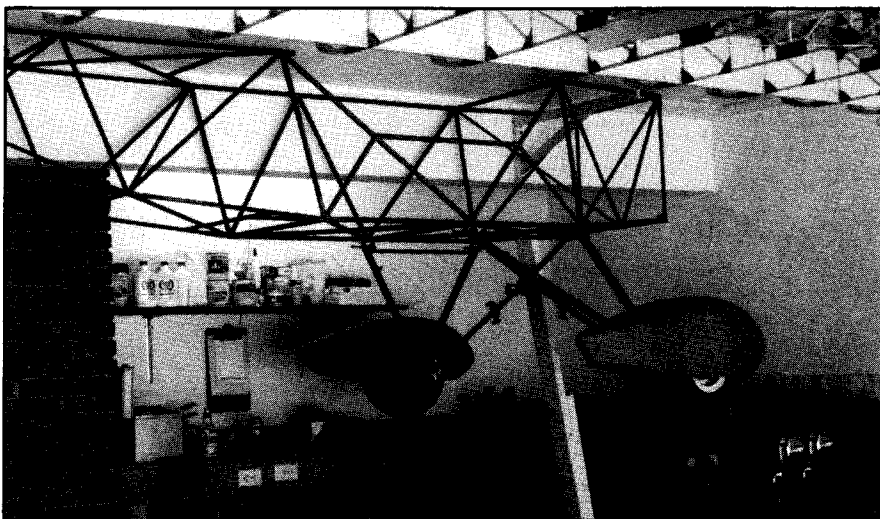
We have a slight problem with CG, as the O-235 and aluminum propeller seem to be a little heavy for the original configuration. I have weighed the basic engine at 215 lbs., and firewall forward calculates at about 287 lbs. If located 18" forward of the firewall, the CG is right under the forward spar with the battery located under the baggage deck. According to the Clark Y performance curves, this is about 11" forward of ideal with the original cabane set-up. We have built a computer spread sheet to play with the variables in order to work out a compromise. I'll keep you posted; if you have ideas, please let me know.

We really appreciate the help you provided, Paul.

Sincerely,  
Michael B. Hoye



Michael, Steve and Clem Hoye and the assembled Pixie II. Photos below show convenient overhead storage of components, and the beautiful, precision workmanship of the Hoye family Pixie.



## ADVERTISING NOW AVAILABLE

To help with postage and printing of the Acro Sport Newsletter, we are now offering classified ads at 12 cents a word.

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William Batson, New Lenox, IL says the Acro Sport II is the most enjoyable, most forgiving airplane he has flown in the past 27 years!

Dear Paul:

Thank you very much for your letter. Due to work required travel and some unusual weather, I have not been able to get you some fresh pictures of my Acro Sport II until now. I have enclosed several and have many more if you would like.

I could not be happier with the Acro. It's probably the most enjoyable and forgiving airplane I have flown in 27 years. I am 6 ft. 1 in. and 200 pounds, but the cockpit is very comfortable.

I had originally bought a flying Acro Sport, but upon the first condition inspection, found serious problems that led to a complete rebuild. The present aircraft as seen in the pictures contains only the original fuselage tubing structure, tail feathers, engine and prop. Everything else was built new.

Thanks Paul, for a great design and a top rate organization. Hope to see you at the convention.

Sincerely,  
C. William Batson  
305 Keithland Court  
New Lenox, IL 60451

### Plan to attend these Forums at EAA Oshkosh '93.

**Acro Sport I & II**, Monday, August 2  
11:30 a.m.-12:45 p.m. - Forum Tent #8  
**Pober Super Ace - Pober Jr. Ace -  
Pober Pixie**, Tuesday, August 3  
11:30 a.m.-12:45 p.m. - Forum Tent #8



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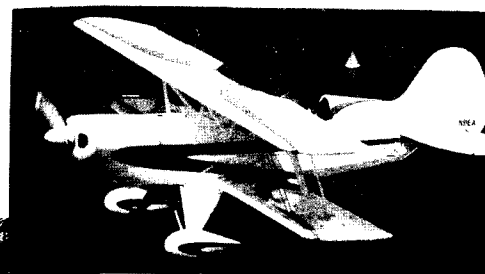
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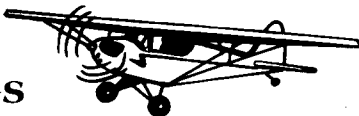
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