

ACRO SPORT NEWS #15

& Project Schoolflight

March 1986

P.O. Box 462

Hales Corners,

Wisconsin 53130

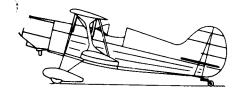


PROTOTYPE PIXIE ON SKIS

Pictured here is Designer Paul Poberezny taxiing out with the prototype Pixie on skis. The skis were made from reinforced water skis. Pedestals were built and attached to the plywood double plate. After doing this, the finish was removed and ½" birch plywood was glued to the skis. The pedestal was made out of 4130.049 steel. ½" bungee cord was used to keep the skis in position. Limiting cables were rigged to the ski nose and tail. This Pixie has had no problems and handles beautifully. This prototype Pixie (without the specially made skis) is now on display in the EAA Air Museum.

EDITORIAL

Enthusiasm for the two place Acro Sport continues to grow. Since the design of the aircraft, over 1,000 sets of drawings are in the hands of builders (or potential builders), including high schools, colleges and other educational institutions. Although any design is susceptible to mishap, intentional or unintentional, the safety record of those in operation has been good.







Today, in the world of legal liability, it would not be appropriate to claim anyone's product is safe . . . whether it be a completed one or a design. For out of any advertising claims or otherwise, the legal profession could put together words to pry from a supplier, a designer, a builder or an owner, financial benefit for those who accepted the risk in the operation of an airplane . . . so it behooves all designer and/or builders not to claim that their machines are not affected by gravity or fault of any kind. It certa is unfortunate that in the last few years society has moved in that direction. Although safety is certa something we all want to achieve, I don't believe any of us know someone who's going to have an accident, but we certainly know a number of us who already have had them.

Interest in the two place Acro certainly has exceeded the single place Acro. For the minimal additional cost in tubing and materials, it certainly is a good decision to be able to build a fine airplane that can carry an additional person . . . your helper, friend or member of the family. Of course, the resale value is something one must also consider. The original single place Acro Sport was designed for Project Schoolflight . . . to provide an educational set of drawings of aeronautical quality to put hand and mind to work, not necessarily in the educational or school system to make airplane mechanics out of young men and women, but to teach them the higher standards that aviation is known for, quality in craftsmanship that can be carried on into life's future work, and, of course, bring to America as many people as possible with an appreciation for quality and craftsmanship.

Often I've been asked if a Continental O-200 would be an adequate powerplant for the two place Acro II. Yes, it would be; however, weight and balance consideration should be made because of the lighter engine, and also recognition that of lower horsepower, a longer take-off run would be needed, and a slower rate of climb as compared to, say, a 150 or 180 hp engine. It certainly would make an ideal fun airplane, and with the additional center section fuel tank, a good cross-country airplane . . . giving a range of some six or seven hundred miles.

On display at the EAA Air Museum, in the Homebuilders section, is a complete Acro II, uncovered, with a new 180 hp Lycoming attached. This particular airplane that we started some years ago has a center section fuel tank and should be of great educational value to visitors here to the museum to see what is underneath the fabric.

At this year's EAA convention, Headquarters for Acro Sport builders, Pixie, single place, two place are the Corben modified models will be in the workshop area in the Acro/Stits tent. An evening dinner prog for builders and enthusiasts is also planned for either Monday evening, August 4th, or Wednesday even August 6th. More details on this prior to the convention.

A number of workshops are planned on building the Acro II fuselage, covering of Acro II wings and Pixie wings, building of wing ribs and fuselage for the Corben Junior Ace. On display will be the prototype two place, side by side modified Corben Junior Ace, and, hopefully, a modified Corben Super Ace. LIGHT PLANE WORLD, EAA's homebuilder publication, will be carrying an article and photos (three views) on the Corben Pober Super Ace in the March issue. If you have not already subscribed to the publication as an EAA member (and it's only available to members), I would recommend you do so.

From time to time, builders have recommended a fly-in separate from Oshkosh of the various Acro Sport models, Pixies and single and two place Acros . . . however, until such time that there are sufficient to make it worthwhile (possibly 1987), it has been decided to hold off. We'd certainly like to receive any comments to Acro Sport relative to this idea. Two single place Acro Sports, with sporting original paint jobs, have been donated to the EAA Air Museum. That brings the total to four single place Acro Sports at EAA Headquarters.

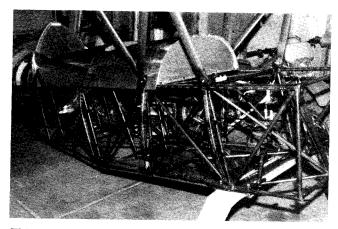
Recently, during a trip to Denton, Texas, I had the opportunity to visit nearby Justin, Texas and Mr. Alex Whitmore, owner and builder of a Corben Super Ace powered by a Model A (also see March issue of LIGHT PLANE WORLD), and was pleased with his demonstration of his original Corben, painting it up in the same original yellow and black colors that adorned the **Popular Aviation** cover April 1935 issue. The aircraft certainly performs well in cool weather, and as Mr. Whitmore said, the best flying is early in the morning and late in the evening to keep the engine from over-heating, even though he has a larger radiator than the original.

One might consider subscribing to the **Corben Courier**, a Corben newsletter sponsored by the Antique Airplane Association, P. O. Box 127, Blakesburg, Iowa 52536 (515/938-2773). (The newsletter is a quarterly at \$7.50 per year.) This togetherness, enthusiasm and newsletters certainly are the bonds that hold f flying and sport aviation together . . . whether it's a homebuilt, a restored antique, or just a dreamer. Bob Taylor, President and founder of the Antique Airplane Association so often has said . . . "Let's kee, 'em flying!"

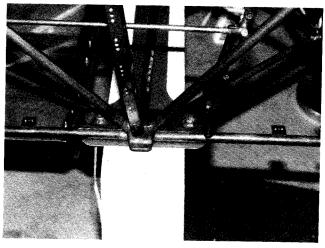
SPRING ALUMINUM GEAR FOR THE ACRO II?

Many thanks to Herb Williamson who sent us these photos of his Acro Sport II project which has been modified for spring aluminum gears. Herb has used .125 plate under the longeron and .065 plate on top it. He uses .250 x 1½ as a clamp under the gear to hold it in place. Also, a ½" tube extends down to p the gear in place, with 3%" bolts. At all of the points where the gear contacts steel, Herb has installed J aluminum between the gear and the steel contact.

We are not aware of any other Acro II which has been modified to accept spring aluminum gear. However, we are familiar with some of the problems of spring aluminum gear, especially as they relate to the Eagle II.



This is a photo of Herb Williamson's Acro Sport II project which he has modified for spring aluminum gear. The aircraft may need some additional strengthening of the lower longeron forward to the fire wall to preclude the bending of that member (see following Product Letter provided by Christen Industries).



This photo shows the shim on top of the gear which prevents damage to the tubing. For more information on Herb Williamson's modifications of his Acro II, contact him at 17908 E. Loyala Drive, Aurora, CO 80013.

Frank Christensen, of Christen Industries, advised all Eagle II owners and builders of a necessary modification to the landing gear strut mounted on the Eagle II aircraft in a Product Letter (#364). Since his letter contained information that could be critical for flight safety, we reprinted a portion of it in the August issue of SPORT AEROBATICS and would also like to share it with you. According to Frank, the design change described in this letter is the first to the structure of the Eagle II aircraft since its introduction in 1977. He said that although the problem which resulted in the issuance of the letter was experienced by only a few Eagle owners, Christen Industries feels that any conditions relating to the structural integrity of the aircraft should be communicated to anyone concerned. A portion of the Product Letter #364 follows:

"The spring aluminum landing gear strut on the Eagle II aircraft is mounted on the fuselage structure with a shackle-type clamping system composed of flat plates which holds the strut to the structure with bolts and nuts. During heavy landings the strut legs deflect upward and the central portion of the strut deflects downward. This imposes torsional loads on the lower fuselage longerons when the strut legs are deflected beyond a certain point. The deflection of the strut and the resulting torsional loads are illustrated in the upper portion of Page 1 of the enclosed Engineering Sketch X-90191.

"Fatigue cracks in the lower longerons have been discovered on several Eagle II aircraft in the area immediately forward of the strut clamping area on the bottom of the longerons. Although most of the aircraft on which cracks were found had been subjected to repeated heaving landings, a few had very low time and few, if any, heavy landings. It therefore seems that the cracks might develop in normal use over a sufficient period of time.

"The strut clamping system has been modified to eliminate transfer of torsional loads from the strut to the fuselage longerons. The 30877-001 strut clamping plates have been replaced with new 31362-001 plates with radiused clamping surfaces, and 31362-002 spacer plates with radiused bearing surfaces have an added. The radiused surfaces on the plates allow the strut to flex without transferring loads to the errors. The new clamping system is shown in the lower area of Page 1 of Engineering Sketch X-90191.

"The new plates will be a standard part of all 905 Landing Gear Kits beginning with Serial 0356, and ALL EAGLE II AIRCRAFT BUILDERS AND OWNERS SHOULD ORDER AND INSTALL THE PLATES AS SOON AS POSSIBLE in accordance with the instructions in Engineering Sketch X-90191. Full warranty credit for the new parts will be issued upon return of the original clamping plates. (Continued)

(Continued from Page 3)

"Eagle II builders or owners who may have become aware of the strut clamping change and who may have fabricated their own radiused plates should verify that the radii are five inches on both the spacers and clamping plates. Careful testing has shown that ANY OTHER RADIUS SIZE IS NOT SUITAB' Earlier radiused plates which may have been supplied to a few Eagle II builders by Christen prior to date should also be replaced.

"The landing gear clamp modification provides a set of curved-surface clamps to reduce torsional loads on the lower longerons during landing. Repeated heavy landings using the original flat-surface clamps have occasionally caused cracking of structural members near the clamps. The curved-surface clamps permit the landing gear strut to roll slightly at the clamping points, thus reducing torsional loads during hard landings.

"During the retrofit procedure for the curved clamps, the structural members of the fuselage are annealed to relieve any stresses which may have developed, an inspection is performed for any possible cracking, the wheel axle alignment is adjusted for optimum ground handling characteristics.

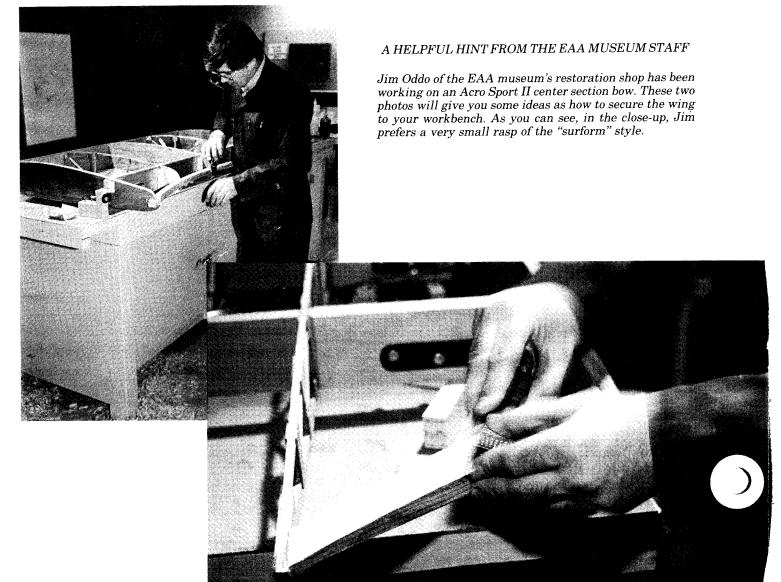
"Although simple in concept, considerable disassembly is required for retrofit. Total working time for performing this modification is about 40 hours."

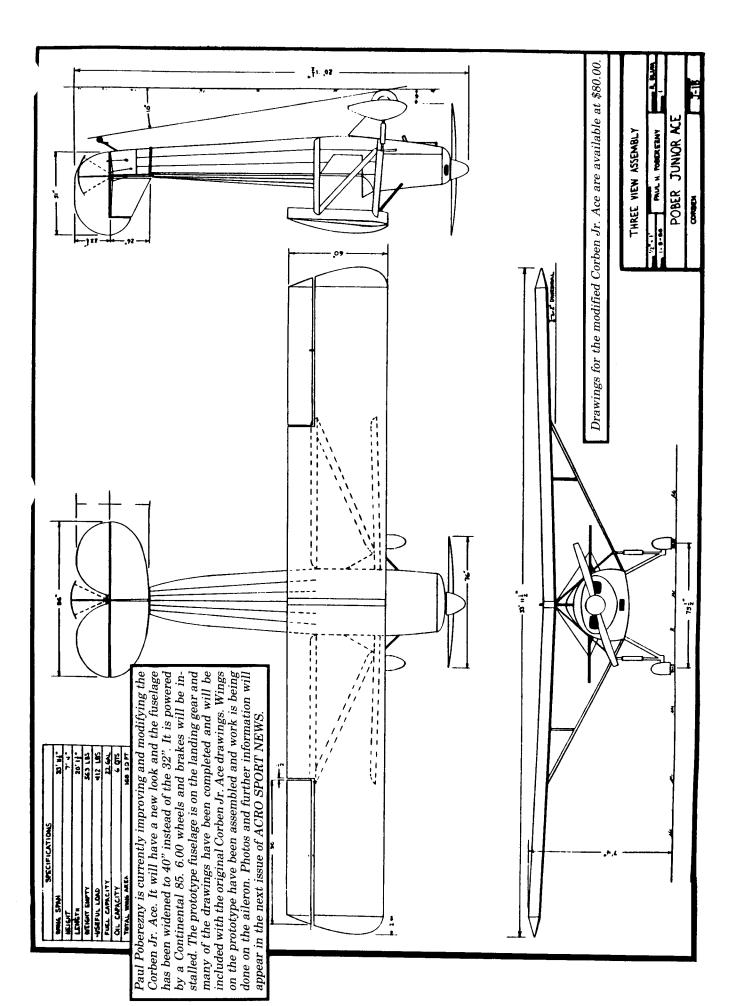
If you are an Eagle II owner or if you know of an Eagle II owner who has not received Product Letter #364, contact Christen Industries, Inc. at P. O. Box 547-S, Afton, WY 83110; telephone (307) 886-3151.

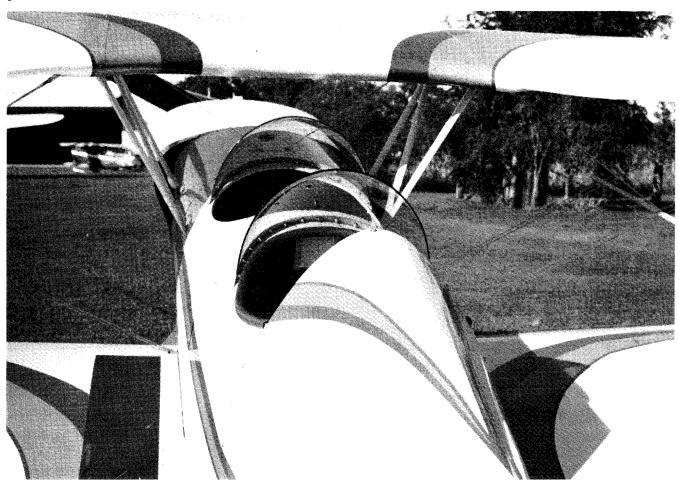
We sincerely appreciate Frank Christensen's overall concern and input regarding the sport of aerobatics and strongly encourage all builders to follow his example and report any items relating to technical safety information as it regards the aircraft we are building.





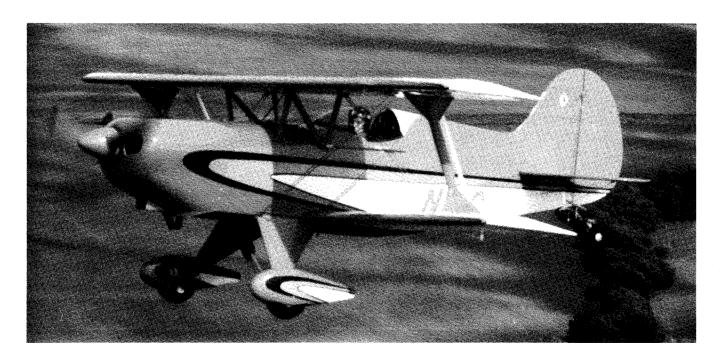






This view of the Acro Sport II gives the pilot the over the nose view of the Acro Sport II in landing position. The prototype Acro Sport II is becoming very popular as an open cockpit trainer. Its docile landing characteristics have been well recognized by many who have flown it. Some have questioned if a Continental O-200 would be a satisfactory powerplant. It is felt that it would be and proved to be a reasonable and economic powerplant; though the take off would be lengthened compared to a higher horsepower powerplant used. It's amazing how much horsepower is used to carry the weight of heavier engines. For example, the O-200 horsepower, single place Acro Sport when flown by several pilots in knowing the powerplant comment that there was at least a 125 - 135 hp engine under the cowling.

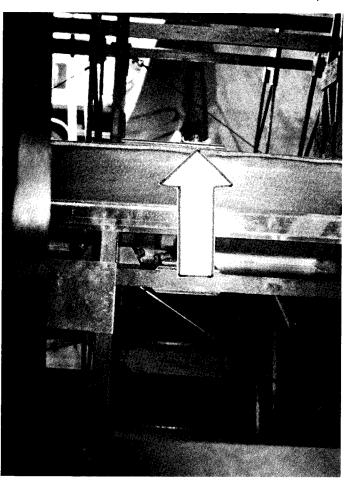
This prototype Acro Sport I is being flown by Tom Poberezny.



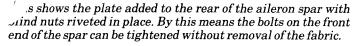
ANOTHER HELPFUL HINT FROM EAA HQ STAFF

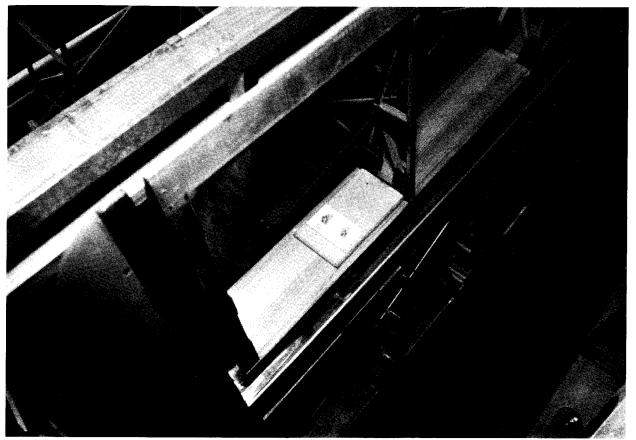
Bauken Noack of the EAA Aviation Foundation Restoration staff has come up with this helpful hint for aileron plates on the Acro Sport. He developed this method so that the bolts on the front end of the spar could be tightened without removing the fabric. A partially uncovered Acro Sport will be part of a new EAA museum display. Since it will be uncovered on one side, visitors will be able to view and appreciate the high quality materials and high standards of craftsmanship involved in amateur built aircraft building.

Photos by Ben Owen



This photograph shows the same aileron plate on the rear spar, showing how the edges were bent up slightly. The plate is not held in place on the spar, it is there only for the purpose of being able to tighten up the nuts from the front side.





A TIP FROM ACRO SPORT II BUILDER, AL SMITH OF MACON, GEORGIA

Al has an Acro Sport II that has some special features and can keep up with or outperform a grenumber of other similar airplanes. He has a source for the 15 psi AC fuel pump stock #41272. He sugge you contact San-Val Aircraft Parts at 1-800-423-3281.

He was also working on another Acro Sport II the other day that had a problem with binding in the elevator. The horizontal stabilizer spar was not perfectly horizontal from end to end. It seemed that the elevator tips were slightly up from the roots. The way he corrected this was to loosen all the wires and make the elevator move freely. He checked to see that the horizontal stabilizer was in fact horizontal on both sides, tightened the wires up slowly, checking the movement during the entire process. By doing it this way, he was able to eliminate a tendency to porpoise. This aircraft had a sensitive elevator that tended to stick in one position due to the horizontal stabilizer spar not being straight. He has done this before on other aircraft where he has had to use a reamer. His suggestion in cases like this is to leave the two outboard hinge pins in and to ream the inboard pins by hand, taking approximately .003" - .004" off the inside with the reamer to give free travel. Al is happy to give advice and has completed a prize winning Acro Sport II. He can be contacted in the evenings in Macon, Georgia at (912) 784-9729.



WHAT SOME OF OUR ACRO SPORT NEWSLETTER SUBSCRIBERS ARE SAYING...

Dear Jean:

We were glad to hear that the Acro Sport Newsletter is still going to be published. We have found in the past, the newsletter was of great help in the construction of our planes.

Enclosed are some pictures of our Acro Sport. We have 80 hours of pure fun so far! The engine is Lycoming O-320, 150 hp with a Sensenig 74/58 wood prop. Our empty weight is 1004 lbs. We cruise 2500 rpm, about 125 mph indicated. As you can see in the pictures, we have put a full bubble canopy c for a much more enjoyable flight, as our East Coast winters are a bit cold.

An indication of our enthusiasm for your plane and EAA in general, my wife's license tag number on the car she drives is ACRO-2. When my truck tags expire, I plan to use N50MD, which is our N number.





My wife, Nancie, and I enjoyed last year's banquet very much and are looking forward to this year's get-together.

Enclosed please find our check for \$12 subscription. Keep up the great work. Be seeing you at Oshkosh 1986.

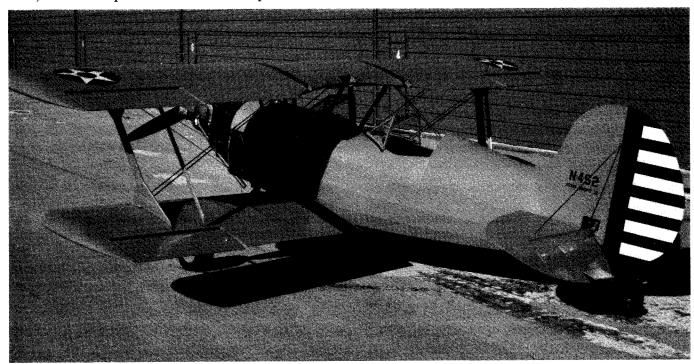
Most sincerely, Maynard and Doug Engel (& Nancie) 317 S. Black Horse Road Parkesburg, PA 19365

Dear Acro Sport, Inc.:

I was pleased to hear that the newsletter will continue. I feel it is a good way to exchange information and ideas. If costs get out of hand, I suggest raising the dues rather than discontinuing the letter.

My Acro Sport II is built as a fun, sport aircraft rather than one for aerobatics. I am using a Lycoming 320E2D from a Cessna 172 and the prop that came with it. I am not using an inverted fuel or oil system as I don't plan on any outside maneuvers. I have tried to keep the cost as low as possible and have built most everything from scratch. I did buy leading edges for the sings and also the prebent tail group ribs. The only other pre-made parts are the fiberglass wingtips and nosebowl.

I bought the plans (#632) at Oshkosh in 1982 and have been working quite steadily. This is my second homebuilt after completing a Pietenpol back in 1979. I am using used parts such as instruments, wheels, brakes, etc. to keep the costs as low as possible.



I am very pleased with the planes and feel they are great for even an inexperienced builder. I didn't change much, except I did bring the fabric farther forward along the sides of the fuselage, and did use flat, three-piece windshields (similar to those on a Stearman). I also mounted the fuel shut-off valve forward behind the firewall and use a remote handle to operate the valve. I mounted the battery forward just behind the fuel tank on the front cockpit floor. My electrical system is only for the starter, a back electric fuel pump and a basic radio. I tried to keep the extras as few as possible. The finish is Randon Butyrate Dope and enamel on the metal parts. No show finish, but it is lighter that way.

I would be glad to talk with other builders and would appreciate the list you are going to publish.

Sincerely, Steve Chase 1413 Dallas Bloomington

Bloomington, IL 61701-2321 Telephone: (309) 663-5938

Dear Ms. Kinnaman:

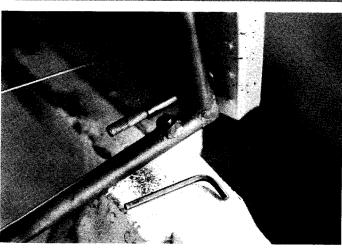
Very glad to hear the newsletter will continue as I enjoy it very much.

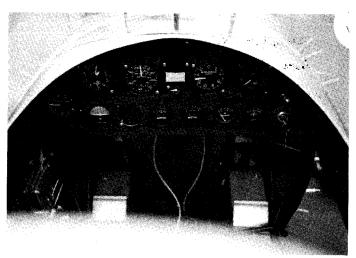
I am presently constructing Acro II serial number 653, pictures enclosed. I installed oil filler parts on all your longerons. They provide a place to add tube oil and also a way to relieve pressure if any additional welding needs to be done. I also installed Cessna type rudder pedals and they feel great but they restrict the girth of the front seat passenger. I am presently majoring a Lycoming IO-320 160 HP engine and hope to install it soon.

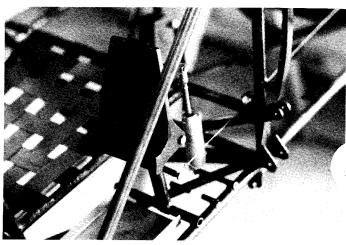
Will keep you advised of progress on 653 and thanks again for continuing the newsletter.

Sincerely, John Flanagan 317 Rilla Street Elmira Heights, NY 14903









Many builders have written to us asking for more information on Acro Sport designs that may be under construction in various areas around the country. In an effort to enhance greater communication between builders, ACRO SPORT NEWS will carry regular updates on airplanes under construction and those that ave been completed. If you have an airplane under construction or have completed one and are willing whare information with other builders, please forward your name, address and aircraft you are building.

ACRO SPORT II UNDER CONSTRUCTION

Ron Adams 8032 Rocky Hollow Cove Germantown, TN 38138

David Anderson 4 Ciola Avenue Prestwick, Ayrshire Scotland KAO 2BW

Charles Barnes 3400 Lake Harney Circle Oviedo, FL 32765

Bob Bell 14 Maple Place Needham, MA 02192

Steve Chase 1413 Dallas Bloomington, IL 61701

Don Colchin #92 St. Cloud Place Wichita, KS 67230

arl Eighmy 12, Box 211 arksville, TN 37040

Richard Evans 1722 Genesee Road Elmira, NY 14905

John Flanagan 317 Rilla Street Elmira Heights, NY 14903 Lindsay Hayes 53494 Lynnham Rochester, MI 48064

C. Eric Hoagland

Box 44

Port Wing, WI 54865

Tom Kelly

344 Hedgelawn Court Hampton, VA 23669

David Lijewski

4323 S. Pennsylvania Avenue

St. Francis, WI 53207

Mike Lutz 14989 Twp 45 Findlay, OH 45840 Edward Mannle

P.O. Box 21 Moosomin, Sask. Canada SOG 3N0

Kenneth Mathews 61 Hawthorn Street Roslindale, MA 02131

Paul Muhle Rt. 1, Box 49A Richland, NE 68657

John Nations 2629 N.W. 41st Street Boca Raton, FL 33434 Malcolm Rea
Box 2723
Amarillo TX 7910

Amarillo, TX 79106

Carl Rivait 3300 Fifth Street Twin Lake, MI 49457

Robert Rowley 647 Gum Creek Road Roopville, GA 30170

Col. F. R. Schroeder 17 Dunn Street

Thomaston, ME 04861

Albert Spencer, Jr. 23 Galloping Hill Circle Holmdel, NJ 07733

John Steele 105 Lycoming Drive Caraopolis, PA 15108

Robert Tredway 7980 Farindon Drive Germantown, TN 38138

James Triplett P.O. Box 101 Ames, IA 50010

Herbert Williamson 17908 E. Loyola Drive Aurora, CO 80013

ACRO SPORT II COMPLETED

Steve Blake 410 Spring Ridge Trace Roswell, GA 30076 Maynard and Doug Engel 317 S. Black Horse Road Parkesburg, PA 19365 Albert Gores 125 Hillcrest Drive Burlington, WI 53105 Bill Neelin 139 Westridge Road Edmonton, Alberta Canada T5T 1B5

Lloyd Thompson 2151 White Pine Place Boise, ID 83706

POBER PIXIES UNDER CONSTRUCTION

George Jennings 460 West Broomfield Road Mt. Pleasant, MI 48858

POBER PIXIES COMPLETED

John Leitis 817 Roosevelt Avenue Roaring Spring, PA 16673 Richard McDaniel 12101 Potter Road Davison, MI 48423 **CUSTOM FUEL TANK SERVICE:** Have your fuel tank built to your custom specifications for approximately \$250 per tank. Builder is experienced in the construction of custom tanks for amateur built aircraft over several years. Contact Danny Davis, Route 2, Corydon, IA 50060; telephone (515) 872-2032.

FOR SALE: Set of Acro Sport II wings with controls installed, inspected and ready to cover. Contact Elmer Farris, Jr., 142 Preston Avenue, Lexington, KY 40502; telephone (606) 266-5781.

CORRECTION: In the last issue of ACRO SPORT NEWS we inadvertently listed the incorrect price for the modified Corben Jr. Ace. The modified Corben Jr. Ace plans are available at \$80.00.

CORBEN SUPER ACE DRAWINGS. Original factory drawings for Model A powered Super Ace. \$60.00. Includes full size wing rib drawings. Acro Sport, Inc., Box 462, Hales Corners, WI 53130, 414/529-2609.

POBER PIXIE — VW powered parasol — unlimited in low-cost pleasure flying. Big, roomy cockpit for the over six foot pilot. VW power insures hard to beat 3½ gph at cruise setting. 15 large instruction sheets. Plans — \$60.00. Info pack — \$5.00. Send check or money order to: Acro Sport, Inc., Box 462, Hales Corners. WI 53130. 414/529-2609.

Modified Corben Junior Ace — Two-place side-by-side aircraft. Plans — \$80.00. Original factory drawings. Very detailed. Includes full size wing rib drawings. Acro Sport, Inc., Box 462, Hales Corners, WI 53130, 414/529-2609.

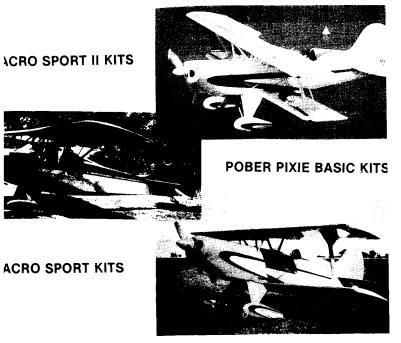
COUGAR DRAWINGS — Two-place side-by-side aircraft — \$60.00. Very similar to Tailwind. Acro Sport, Inc., Box 462, Hales Corners, WI 53130, phone 414/529-2609

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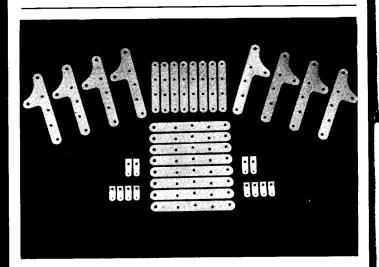
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