



# EAA. Technical Counselor News

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## Technical Counselor Bill Rodgers' Aeronca Chief Project

Technical Counselor Bill Rodgers, Route 1, Box 179, McAlpin, Florida 32062. Aircraft was completed by Bill and his partner, Carlton Cole and was flown on Friday the 13th at 8:15 in May, 1988. He has since painted large numbers on the wings and installed wheel pants. The photo is in front of his hangar on the Little River Airport. The Cherokee in the background is also his and he is currently refinishing it.

## Victor Peres' 5151

This 5151 is being built by Chapter 160 member, Victor Peres. Victor has been working on his project for about two years.



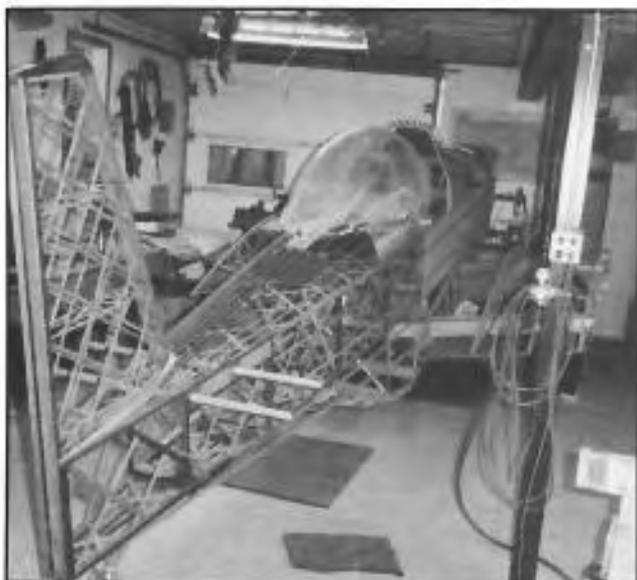
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# Photo Gallery

## Victor Peres' 5151

Technical Counselor Fred Shyler has visited the project in Fairview, Pennsylvania.



Vic has done an excellent job and his skill as a pattern maker certainly shows.



Detail in the area of the wheel retraction mechanism.



This photo shows the spartan instrument panel and the clean workmanship. Victor, at one time, was one of the best sailplane pilots in the area and also has several ultralights which he flies from his own field. The crank under the throttle retracts the gear and works very well.



The gear retracts into fiberglass wheel wells made on wood molds Vic built himself.



## Christen Eagle II by Dan McCan



Dan McCan of 122 Bon Highland, Corapolis, Pennsylvania 15108.

Dear Ben:

Thank you for the information sent and your help on the telephone. I plan to fly my Eagle II next month after a good check out with Bill Thomas down in Florida.

Editor's Note: Dan should have flown the aircraft by now but this shows how it looked in January 1989.

## KR-1 by Lester Newman



Technical Counselor Lester E. Newman, 4722 W. Placita de Suerte, Tucson, Arizona 85745 has completed his own KR-1 which is not yet flying.

## Kitfox by Charles Durham



Technical Counselor Odbert H. Cornwell, 907 E. Rich Avenue, DeLand, Florida 32724 reports on Charles Durham's Kitfox. He says the plane looks good; approaching DAR inspection - few details to complete (antenna). Has complete pictorial and descriptive record of building procedure, weight and balance comp. and has a complete operator's manual.

### FLYING WING BY LEWIS DEWART

Lewis Dewart, Laboratory Coordinator at Bucknell University at the Department of Mechanical Engineering, Lewisburg, Pennsylvania. His wing is used for a variety of projects at the school. A group of students taking a machine design course are designing a retractable nose gear. He will be assigning the group to improve the combination of engine and propeller so they can move from the present 8 horsepower output to the full rated (breathtaking!) 9.5 horsepower. Next semester they may be using the design in the Airplane Aerodynamics course to have students predict, then measure performance of an aircraft which is available for "hands on" work. He states, "Ben, I just don't go for canned engineering material. As promised, I am enclosing two pictures of the bird during takeoff. Being so short on available horsepower, we do not leave the confines of the runway. That comes later. Briefly, some of the statistics are:

Empty weight — 227 pounds  
Wing Area — 98 square feet  
Fuel Capacity — 1.3 gallons  
Airfoil — modified NACA M-6  
Max. Velocity — 43 mph  
Rotate — 35 mph  
Land — near 28 mph

The present ugly landing gear is just temporary. I started out with an enclosed, central gear without riggers, but like Al Backstrom, got the axle too far aft of the c.g. A redesign of the interior will find the gear back where it belongs. A bubble canopy would help tremendously. Again, thank you for your assistance." Yours truly, Lewis



# Garry Fancy & His Super "Husky CUBy"

## GARRY FANCY AND HIS SUPER "HUSKY CUBy"

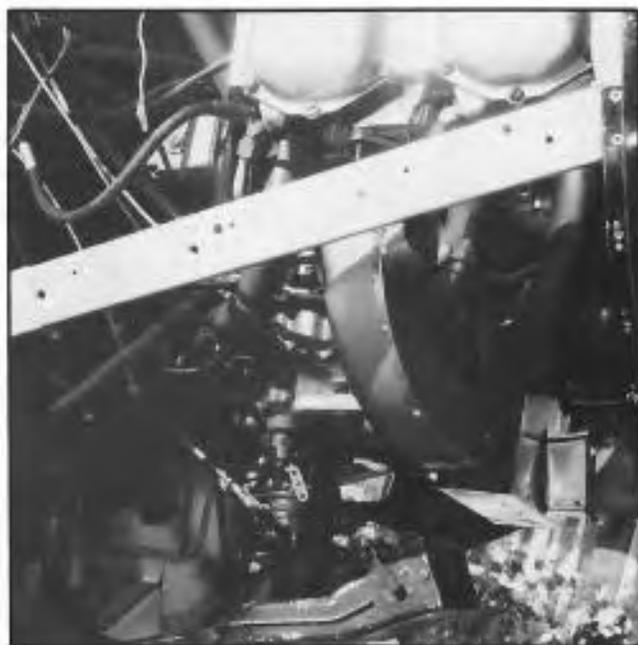
Showing the side view. The main landing gear legs are about 3 inches longer and a little closer together so the aircraft sits higher from the ground. The panel behind the rear window gives access to the battery mounted on the lower longerons and also gives good access to the interior of the fuselage. I am still looking for a larger tailwheel at a reasonable price. Hope to have skis on it and then floats!



Main heat exchanger. Air first goes through the oil cooler. The exhaust pipe with the rope is only temporary to jig it with polyester resin so I can take it off the engine to make a jig and then cut and reweld. The parallel exhaust tubes running inside the heat exchanger are mild steel automotive, but the rest is stainless.



No. 2 heat exchanger for cabin is made of stainless steel. The engine is a Lycoming O-320 (150 hp) from a twin Apache swinging a Hartzell constant speed HC82XL2C propeller. He made the nose bowl.



The complete interior of the cabin will be lined with the same naugahyde as is on the door. The fuselage is 4 inches wider than the Super Cub, hence I shall call it the "Husky CUBy".

Regarding bending tubing. I would like to try it. However, I tried a similar method with sand (i.e. plug both ends, leave a threaded hole in one end, keep tapping and adding sand again and again — sounds good, finally screw in the bolt to the threaded hole. I took it to a welding muffler shop where they bent it — the photo shows the result. Beautiful wrinkles, perfectly shaped and symmetrical as you can see in the photo. In the event I cut out the wrinkles and had a patch welded in (see photo).



Beautiful wrinkles in our homemade exhaust system.

In any case, I found out about the material Cerrobend. I found a source for it. It is also called Wood's metal. It is available from Canada Metal Co., 721 Eastern Avenue, Toronto, Ontario, Canada M4M 1E6, telephone (416) 465-4684. It sells for \$10.87/pound (Canadian) and is sold in 10 pound increments only. The density is 0.339 lbs./cubic inch.

On my aircraft I added two separate heat muffers. I also have another one for carburetor heat which was not installed in the photo. I also want to thank all of the EAA staff for making our November meeting so hospitable and productive (Garry represents the Canadian government for amateur built aircraft). I also considered it a privilege to meet Paul Poberezny for the first time. His dedication to our type of aviation and flying seems to touch all around him. How fortunate we all are. Please pass my sincere thanks to him. Sincerely, Garry



Lester Newman also visits the Stolp V-Star built by M.R. Shurtz of Tucson, completed but not yet flying.

## Roger Conklin's J-3

Technical Counselor George "Bud" Shanks, 507 S. Goodyear Street, Oregon, Ohio 43616 reports on Roger and Gary Conklin's Piper J-3 Cub.



The wings are all zinc chromated ready to go.



The engine hangs from its A-frame while they work on the aileron preparatory to silver dopping.



This shows the fuselage with plexiglass temporarily clamped in place.

Roger reports this Cub was a real basket case with many parts missing. It's a father and son project and it looks like they work well together.

# Technical Tips

## Spark Plugs



Plugs graphically demonstrate what can happen to jugs in normal usage. The one on the right has had the center electrode blown completely out. The one on the left has a loose center electrode that is sliding back and forth.



This shows the electrode the way it is slipped down into the core. A slight blow by past the plug on one cylinder can cause a rough running engine and it is very difficult to locate the cause.

## Aircraft Pushing Grip



Technical Counselor Glenn Tuttle, 682 West 3800 South, Bountiful, Utah 84010-8425. This is a design that Bob Barney came up with after his first Starduster I was completed and he was building his second Starduster I. In moving his plane around, Bob did not like the idea of having to push or pull on the streamline wires of the tail group. So he came up with the design of welding a piece of streamline tubing (about 8 inches long) onto the vertical stabilizer rear spar. It was welded so that about 3-1/2 inches protruded out from each side of the stabilizer spar, then pinched down (tapered) and rounded off on the ends and then welded closed. The normal filing and sanding will finish it off. This makes a great handle to move your biplane around with and it's very easy to install on an already completed aircraft, particularly if you have access to a heliarc welder.

## Seal The Gap!

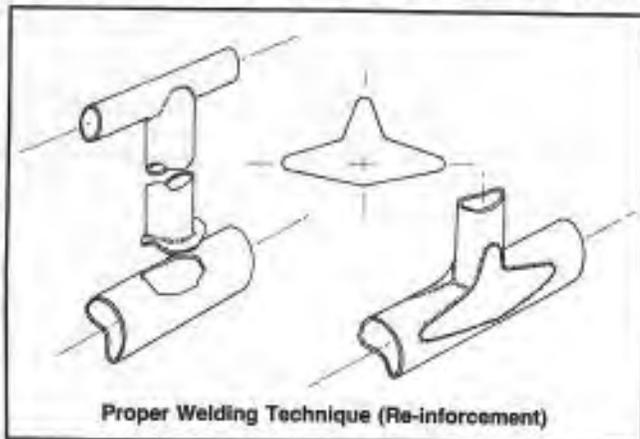


This unidentified biplane at the Oshkosh convention has a great need for a filler strip between the fuselage and wing. As there is always high pressure on the bottom of the wing and low pressure on the top, this tends to go through any cracks and reduce the effective wing span. A slot as great as this one will reduce the effective span right in half.

# Steel Tube Welding

SAFETY NOTE from Ralph Korngold, 385 Wilton Avenue, Palo Alto, California 94306.

Ralph reports he is currently operating a Wittman Tailwind W-8. (The second one he's built.) The first problem he had involved a rudder pedal failure and was the second failure experienced on the second Tailwind. The rudder attach pedal broke near the conclusion of a cross country flight. The pilot attempted to stretch his legs to sharpen up for the approach and landing, reared back in the seat, pushed hard with both feet against the rudder pedals when "WHAM"! The left one went right to the firewall. Experimentation revealed availability of brake only on the left side, but with close attention, the landing was uneventful. Inspection revealed that the torque tube wall had fatigued at the edge of the weld as a result of repetitive localized bending. The repair consisted of rewelding the brake, plus the application of a finger patch on each side. With a little ingenuity and careful measurement, the rudder assembly can be cut from the fuselage and all welding done at the bench. A stub is welded in at the hacksaw cut, and the assembly can then be slipped back into the bearings and secured with 2 each AN3 bolts through the stub. The drawing shows the patch repair. He mentioned this to a fellow



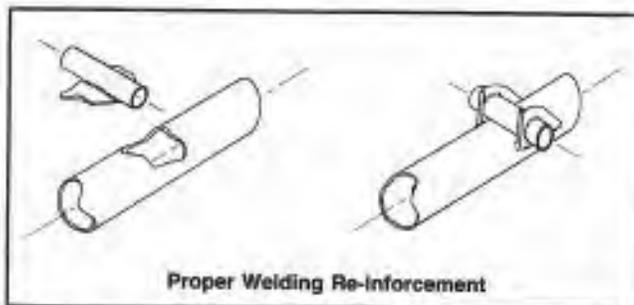
Proper Welding Technique (Re-inforcement)

builder/pilot and learned that he had this same experience. It happened at the first correction after touch down. The aircraft departed the runway into unimproved terrain. Like the good sized ditch that wiped out the gear and did other damage! I hasten to dispell any such image that the W-8 is a fragile machine. I have flown mine over 2000 hours. It's an exceptionally strong aircraft, one example having registered 8.3 "G's" in an emergency pull out during flight test and another survived a high speed stall during a pull up following a low approach at over 180 mph. A truly fine and forgiving airplane. However, I would also like to bring to your attention a failure of the control stick at the attach point to the torque tube. I was flying with a lady passenger who I was trying to impress. I was flying at very low altitude following a winding road through the foothills. All I can say in defense of the operation is that I had thoroughly checked the route for obstructions previously from a safe altitude. The nature of the terrain required some pretty violent rolling maneuvers. One severe application of aileron resulted only in the stick smartly banging my knee with no corresponding roll. A gentle pull on what was left of the stick cleared the next hill. With further application of the elevator bungee, we continued to climb. Experimenting with throttle and trim it looked like we would at least be able to walk away from the landing. I only wished for a big pair of vise-grip pliers!

Actually the landing wasn't that bad. I've made worse and the aircraft wasn't broken. I think the element of surprise makes the difference. A friend of mine experienced a similar

failure as he started to flare for a landing at the Big Reading Fly-In. In front of 10,000 people, he wiped out the gear and went skating down the runway on his belly. Everyone said it was the best act of the day!

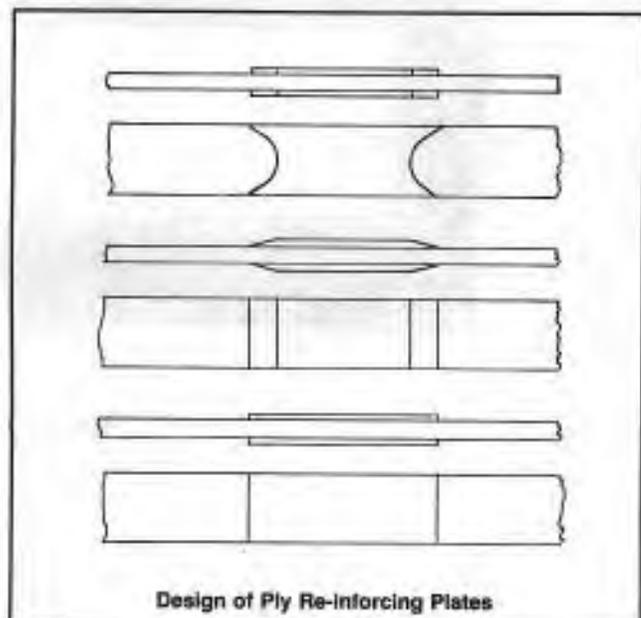
The problem was failure of the basic tube structure in localized bending with resultant fatigue immediately adjacent to the weld bead. The obvious cure is the addition of a flanged triangular gusset to each side of the torque tube after welding the cross tube back in place. A further refinement is the incorporation of 2 each ball bearings, which eliminate 100 percent of annoying play at this point. Even a few thousandths clearance in this hinge can result in considerable lash at the stick grip. The drawing on the left shows the broken part and the drawing on the right shows the correction with gussets.



Proper Welding Re-inforcement

## Design Of Reinforcing

The design of reinforcing plates always requires some tapering of material of reinforcing plates near the outer edges to eliminate stress risers. The bottom example in the drawing shows sharp edges that are simply not acceptable that precipitate very high stress areas. The middle one is the usual tapered block and the top one shows another method of rounding cutouts to reduce stress concentration.



Design of Ply Re-inforcing Plates

# Cri Cri by George Wiggins

Carl Hansen reports on George Wiggins Cri Cri N712W built from a kit by George Wiggin of Epsom, New Hampshire. Building time 800 hours, flight time 55 hours. Excellent workmanship and attention to all details in construction. A few modifications were made after approval from designer. Note canopy is hinged and moves forward instead of being hinged on the side. Enclosed fit is perfect with no gap.



# Sonerai IIL - 1st Flight

Technical Counselor Joseph W. Hillebrand, 26429 S. New Town Drive, Sun Lakes, Arizona 85248 reports: Hope you like the picture of my newly constructed highly modified Sonerai IIL on its first flight in January. Note the Arizona winter clouded sky! I have a pair of Formula V wheel pants finished and fitted but I've left them off for initial flight tests due to previous failure of the initial Monnett landing gear. I have redesigned the gear and the new one performs beyond expectations. The airplane performs well but I'm going through some engine heat and carburetor growing pains which I am working on. I also caught the error about landing behind large aircraft. The correct procedure is to follow the transport or preceding aircraft on a glide slope above his and to land "beyond the point" at which he landed. This will keep you above and out of his wake. I used to fly my Bonanza regularly into Detroit Metro Airport mixed with heavy transports using this approach and departure and never had any "jumping up". I approached every landing and departure like two porcupines making love, however I also know that Curtis Pitts recommends solid shaft engines for aerobatic applications. With regards, Jo.



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