

The Newsletter of the Home Wing of Van's Air Force; Builders and Fliers of Van's RV Series Aircraft

### **AUGUST MEETING**

*by Rion Bourgeois who graciously ran the meeting*

Last month's (August) meeting was held at Brent Anderson's large shop (as contrasted to his small shop, which only holds two people at once). There was a larger than usual turnout of RV-4 builders, including Denny Jackson and Gary Graham who recently completed theirs. Denny has one of the most notable paint jobs in the VAF, and Gary has a turtle deck RV-4 with a two digit serial number. Denny had photos of his recent Oshkosh adventure.

Brent is vice-president of EAA Chapter 105, and does his flying with the Tektronix Flying Club stable of planes. This was the third time he has hosted a meeting. His RV-4 project has been under construction about a decade, and now has the engine mounted (new O-320 from Van's with constant speed prop) and the instruments in and is nearing completion. Aside from very high quality workmanship, his project has several innovations, including spring loaded tie-down rings in his wings, and CMC rudder pedal brackets of 4130 chromoly of his own design which support the pedals at three points instead of two and place the mounting bolts in the same plane. His brake lines are covered with braided stainless and a continuous run from slave to master cylinders: very neat and with fewer connections that might develop leaks. He has mounted fancy composite low drag gear leg fairings from a builder/supplier in California. His interior was painted prior to final riveting with a light gray acrylic enamel of his own custom mix from Quality Paints in Hillsboro. He has also designed and built his own throttle/mixture/prop quadrant with trim wheel. Brent's project would no doubt have been finished long ago if he were not so meticulous and innovative. He is now mounting the cowl and working on his baffling system. One thing Brent decided early on was NOT to make any changes in the STRUCTURE of the

airframe, and to try to devote at least all day Sunday to his project. This formula is obviously working.

Brent offered to share his rudder pedal brackets design. Rion Bourgeois is having two sets cut and formed by a local metal fabrication shop. Anyone interested in purchasing the second set should call Rion at 646-8763.

Brent's wife, Kathleen, prepared a fine spread of hors d'ouvres, supported by a fine amber ale. A good time was had by all.

MEETING NOTICE - Frank Justice, Meeting Coordinator  
(503) 590-3991 Frank\_K\_Justice@ccm.ssd.intel.com

Place: Flight Dynamics

16600 SW 72nd Ave; Bldg 10; Tigard

Date; September 11th (2nd Thurs of the month)

Time: 7:00 PM

This month's meeting is being held at Flight Dynamics in Tigard. Make sure you take these directions with you, since they're pretty tricky.

Take I-5 south to the Carmen Drive/King City exit. Go Right. At the 2nd light, turn left (where the road ends). At the next light, turn left onto SW 72nd Avenue. Go 1/4 mile until you see a Precision Interconnect sign on your left side. Turn left into the driveway just past that sign. Go all the way to the back of the building and turn left again. Go to the Flight Dynamics sign.

Their phone number is 684-5384.

**SUBSCRIPTIONS DUE**

Look at the date under your address on the cover. THAT IS THE DATE YOUR \$10 IS DUE, Use the form at the back of this newsletter to subscribe or renew. If you are paid up but the date doesn't reflect this, please give the Editors a call so they can correct it.

**EVENTS CALENDAR**

**EAA Chapter 105 Monthly Meeting**

Thursday, September 18th (third Thursday of every month), 7:00 pm at the EAA 105 Hangar/Clubhouse, Twin Oaks Airpark.

**EAA Chapter 105 "Breakfast at the Aileron Cafe"**

Saturday, October 4th (first Saturday of every month) at Twin Oaks Airpark, 8:00 am.

**AeroElectric Connection Seminar**

September 27th & 28th. Best Western Hallmark Inn, Hillsboro. For reservations, call 316-685-8617 or visit [www.aeroelectric.com](http://www.aeroelectric.com) on the web.

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**FROM THE "BIG MESS"**

*by Kathy Hall, Co-Editor*

Unfortunately, we missed the two big events this last month, the August meeting (thanks to Rion for running it on such short notice) and the Van's Homecoming (thanks to Don and those who handled the parking). As usual, I hear the homecoming was great! Every year, we seem to have family stuff going on Labor Day weekend, so we have yet to fully attend a Homecoming (we were able to drop by for a couple hours last year).

Well, it's time for me to take the big jump.. .the plane is nearing completion (well, relatively), so I'm going to start taking flying lessons. I've been talking to Marcy Lange about the 99's club at PDX and am working on figuring out who to get as an instructor. If there are any other ladies out there that are thinking of taking the plunge, let me know and maybe we can give each other help and support through it.

Wish me luck!

**FULL-SWIVEL TAILWHEEL UPDATE**

*by Don Wentz*

I installed the new Van's swiveling tailwheel shortly before our trip to Oshkosh. I also installed the fairing on it, which I have had for some time but never had gotten around to installing. I have to say that I really like it. It makes moving the RV-6 way easier than before, especially when pushing the thing backwards in grass to park it. The fairing gives it a finished look as well. I landed in a very stiff crosswind in Wyoming and didn't notice any problem with it versus the old one.

One advantage is that this design has much greater leverage over the tailwheel than the old one did, so the steering seems a little more positive. Remember how I liked the springs loose on the old tailwheel? Mike Wilson had found some smaller diameter, longer springs to try on his tailwheel, and gave me a set. These work quite well, the softness allowing me to tighten them a little and remove the 'flopping' that the old spring/chains did. They also look a little cleaner and are about 1/2 the weight.

Speaking of weight, that is a drawback to the new swivel tailwheel. The parts I removed weighed a little over a pound, while the new weighed about 11 ounces more. I drilled the crap out of it and got about 9 ounces out, which of course was more than replaced by the fairing. There is a lot of weight that can be removed though, which is worth the effort being that far back from the CG.

I'm glad I made the change, the wheel is much more user friendly, in several ways. BTW, I now have a real nice tailwheel towbar for an RV-4/6 that I would like to sell for \$20!

While at Oshkosh, I told a Skytronics rep that I thought one of my plug wires was going bad. He said to send in the mag harness. I did and they rebuilt the WHOLE harness to like new, for FREE! How's that for service? Even though they found no actual problem with the wires. So, I guess I would recommend Skytronics mag harnesses. They were not real expensive to begin with either.

The Duck

## **THE TOOLAHOLIC**

*by Randall Henderson*

Hi, my name is Randall, and I'm a toolaholic.

Man I do like tools. Can't get enough of them. So I'm going to go out on a limb and take a stab at a new column. We'll see how long it lasts.

In this column I plan to discuss some of the tools that aren't necessarily on Van's list of needed tools or in Avery's "starter" tool package. I expect to cover things like techniques for use, optional attachments, availability, and possibly most important, how to justify (to your spouse, or yourself) buying one. If you're one of those "stone knives and bearskins" builders, who dimples all your holes with a gun and considers a bandsaw to be a luxury, then you probably won't be interested. But if you're like me and can never have too many tools, then read on.

### **Sheet Metal Brake**

I have wished for a long time that I had access to a bending brake, and the further I get into my project, the more things I find that I have to bend myself. And there's a limit to what you can do (and how well you can do it) with a bench vice, hand seamers, and blocks of wood.

The problem is, at \$500 and up, it just doesn't make sense to buy an industrial brake for the small number and size of bends we need to do. For a long time, the only alternative to the industrial brakes I could find was an 18" hobbyist's brake, sold by Aircraft Spruce and Specialty. But I tried one of those once, and found that due to its lightweight aluminum construction, it just wasn't quite up to the task.

After more searching, I finally found what I was looking for, at Aircraft Tool Supply (ATS). These guys don't have a very good reputation with a lot of RV builders, but they are the only place where I was able to find hobbyist's bending brakes made out of STEEL. The brakes are available in 18", 24" and 36" lengths, for \$34.95, \$49.95, and \$69.95 respectively, and are just the ticket for those times when you have to make some custom part. I bought the 24" one, but I think I would have been just as happy with the 18" model (especially since it takes up less precious bench space). The brakes are available from Aircraft Tool Supply, 1-800-248-0638, P/Ns 144ST (18"), 244ST (24"), and 364ST (36").

Once I found out about this tool, I really didn't have to think too long about whether or not I should spring for one. First off, they're not that expensive -- an 18" model only costs a few bucks more than a hand seamer. And since I've had it, it's nearly paid for itself just on a couple of parts that I had screwed up, but was able to re-make from scrap instead of going back and buying the parts new from Van's.

These brakes are designed to be bolted to a workbench, and the work is clamped to the brake using a thick strip of aluminum (provided) and c-clamps (not provided). If you are like me and have never bent metal with a brake before, be prepared for some trial and error to figure out how to control the bend radius. I have been able to do an adequate job of this by varying the distance between the clamping piece and the fence, and/or adding a thickness of material under the work.

I've managed to bend up to .040 thickness with it, and you might be able to go as far as .063, but that's probably pushing it.

You might want to pick up the book "Aircraft Sheet Metal", published by IAP, Inc. This is a good reference and has information on applied forming and bending of sheet metal, among other things. Not that you can be all that precise with a little hobbyist's brake, but it doesn't hurt to learn about proper bend radii, setback, etc. The book is available through EAA and Aircraft Spruce and Specialty.

### **"THE" TRIP**

*by Jerald Hall*

This was the year. After more than 6 years in the "aircraft manufacturing" business, Kathy and I were finally going to make the trip to Mecca. Of course a few things had changed since we first started our project. We no longer lived in south Florida, we now had a three car garage to build in, but most importantly for this story, we were no longer childless.

As the fateful day of departure approached, the planning and packing grew to a furious frenzy, [hmmm, I don't recall Jerald getting very frenzied when the packing had to be done. In fact I don't think he was around at all. -Kathy] At last we stood in the doorway making those final double checks (using a checklist like any good pilot...):

**"THE" TRIP – Continued**

*by Jerald Hall*

1 small duffel bag for the two adults to share  
1 stroller for the baby  
2 large suitcases for the baby supplies 1  
small cooler for the baby formula 1 carseat  
for the baby 1 baby

Yep, everything ready to go. Surprisingly, the trip to Oshkosh was fairly uneventful. Unlike the poor slobs that actually had to fly their own planes to Oshkosh, we had a chauffeur driven airplane compliments of Trans World Airlines. I hear even Van himself got Aced by the weather.

We arrived in Chicago about 11pm Saturday night. Knowing that we would be arriving at 9pm west coast time, we didn't bother calling ahead for a reservation. After all, if Chicago didn't have a place to stay, we could always head north toward Oshkosh and find something along the way. Sure enough, after calling a few places, Kathy found us a place to stay in a hotel downtown for \$65. Being typical RV builders, we declined the exorbitant \$65 rate and decided to head out of the big city where rates would be more reasonable. Half an hour later we pulled off the freeway and started looking into vacancies. Hmmm, slight problem. Seems there was some sort of football game going on in Greenbay. A few of the places mentioned that the closest vacancy was in Chicago, but we couldn't see losing the half hour toward Oshkosh so we pushed onward. We tried this a few more times and finally, after an hour and a half drive out of Chicago, we stopped and began calling 800 numbers of all the hotel chains. After thirty minutes of calling, we finally located a place to stay... in Chicago. Boy a hotel bed sure feels good at 3:30am.... and it was only \$85.

Having a few days to kill before the fly-in began, we headed North with no particular destination in mind. The further we went, the more frequent the advertising for the Wisconsin "Dells". Being Northwesterners, we hadn't a clue what a "Dell" was, but figuring they might have cheap hotel rooms we decided to check it out. Turns out the "Dells" is a conglomeration of amusement parks, thrill shows, miniature golf courses, go-kart tracks, and some of the nation's largest water parks. Being less than two hours from Oshkosh, we'd highly recommend the Dells to anyone taking their family to Oshkosh.

Tuesday afternoon we arrived at Oshkosh. After quickly dumping our bags at the house we were staying in, we headed to the airport to get the "lay of the land" prior to the fly-in opening on Wednesday. After an hour of walking past the closed tents and exhibition buildings we started having our first doubts on whether the trip would prove worthwhile. After all, we had dedicated five days to exploring Oshkosh and here we had toured most of it in an hour. Well, maybe things would be different tomorrow.

Yep, things were different, starting with the traffic. Luckily, we were staying only 2 miles from the airport and arrived before Sam so the traffic jam was only 15 minutes long. We had also purchased our tickets the day before, thus avoiding what looked like >30 minute lines to purchase tickets. We decided to hit the exhibition halls first and get them out of the way the first morning. Yeah, right. After two hours in the first of four buildings we needed a change of pace and decided to do the RV flight line. Yeah, right. After an hour or two we hadn't begun to make a dent in the flight line. Hmmm, maybe this trip was going to be worthwhile after all....

With our -6A fuselage about ready to come out of the jig, it was time to start thinking about instrument panels, engines, and cockpit interiors. So the mission for this Oshkosh was to get answers to all of our questions in these areas. OshKosh is one of the few places where you can try out all of the radios, instruments, switches! etc., in person rather than relying on black and white catalog pictures. Kathy is too organized of a person to head off to Oshkosh with a goal of "getting answers to our questions", so she insisted on creating a list of each system we were investigating and the questions that needed to be answered at Oshkosh. The magnitude of the problem became apparent when the three page list was finished. Wow, that's a lot of questions to get answered. The list, however, proved invaluable as we scampered from booth to booth able to focus on the questions we needed answered.

Between combing through the 4 vendor booth hangars, studying the 6/6A's on the flightline, and wandering through the fly market, we hardly had time for much else. We never did get to the flight lines of other planes. And we never really sat and watched one of the daily airshows. We did have a chance to spend 2 hours at the EAA Air Museum - what a remarkable achievement that is. You could spend an entire day there and still not read/look at/listen to everything. We were very impressed with the quality and thoroughness of it.

At Van's banquet on Sunday night it was announced that at least 287 RV's had flown in, well over the goal of 250. Congratulations Van! We had a very enjoyable time.

sleeves inside the engine mount tubes. I got the nylon tube from Falk Hardware in Beaverton.

**BUILDER'S TIP**

**Drilling Your Engine Mount**

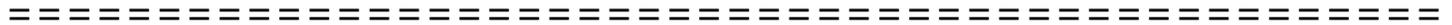
*by Randall Henderson*

If you're building a taildragger, you should remember that the engine mount alignment will determine whether the plane sits level on the gear. A very small error — either in the construction of the mount or in how it's drilled to the firewall, can translate to a lot at the wing-tips. Add this here to a little skew in the fuselage center section and maybe a low tire, and you could end up with a real list once it's sitting out there on the ramp. With that in mind, here's a method for drilling the engine mount that should eliminate most chances for error and will help ensure that your plane will sit nice and level when you're all done.

Start by clamping the mount to the firewall using the pilot holes in the firewall and/or large clamps across the top (forward top skin off). I used 3/16" bolts, with nylon

Find a piece of thinwall brass tube that will just fit inside the engine mount tube, and use these as a guide to drill out (slightly undersized of course) one of the top corner holes. Then remove the mount, and drill or ream the hole out full size.

Put the landing gear legs in their sockets, line them up and pin them in place with bolts through the holes at the tops of the sockets. Put the mount back on the plane, with a bolt through the one hole you've drilled in the firewall. Use blocks of wood to level the landing gear across the bottoms of the axles. Using the first engine mount hole as a pivot, adjust the plane until it is sitting level across the longerons, and clamp the mount firmly to the firewall. At this point, the plane is actually sitting on the gear (wow!), the axles should be level with respect to each other, and the plane should be level across the longerons. The engine mount tubes should be pretty close to being centered on the pilot holes on the firewall. Using the brass tube method, drill the remaining holes undersized, then remove the mount and drill or ream them out to full size.



**HANGAR HUMOR**

*by Randall Henderson*

We all know about the warning placard we have to put on our planes, which reads: This Aircraft is amateur built and does not comply with the federal safety regulations for "standard aircraft".

I have seen some "improvements" to this (generally in the form of a postscript), in planes on the flightline, as well as on placards advertised in catalogs. Plus I made some up myself. Here then are the

**Top Ten Improvements to the "Passenger Warning" Placard**

- 10. ...And if it did, it might go 130mph on 12 gallons of gas.
- 9. ...That's right, this airplane was built without any of the FAA's "help".
- 8. ...It won't carry two hundred passengers. But it's never had an engine fall off either.
- 7. ...I'd like to see a factory that builds production airplanes as nice as this one.
- 6. ..."Amateur" -- like, for example, Olympic athletes.
- 5. ...Fortunately, I don't have to be held to such low standards.
- 4. ...So don't you let me hear you calling this a "Standard Aircraft"!
- 3. ..."Amateur" - like, for example, the Wright Brothers.
- 2. ...It's a whole lot better.

and the number one "improvement" to the "Passenger Warning" Placard....

- 1. ...Get in, sit down, shut up and hang on!

**WANTED**     *Ads are FREE*

Glastar Builder looking to purchase Sheet Metal Tools. Gary Clay 503-653-6897. 10/97

Desperately seeking workspace for RV project. Please call Don Wert at 503-295-6455. 8/97

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**THE TOOL EXCHANGE**

The club Toolmeister is Brent Ohlgren, 288-8197. Let him know if you have jigs, tools, shop space, etc. to loan, exchange, or otherwise provide - at NO COST - or if you are looking for something specific to borrow. And whether your item is listed here or not, go ahead and bring it to the meeting.

Home Wing Tools available: HVLP Paint Sprayer, Hole template for instrument panel, Wire crimping tool and die, Brake lining rivet set tool, and Tune-up and Annual Equipment (Compression check, Mag timing light, Timing dial, Mag adjustment tool, Plug gapper, high voltage cable tester, and Plug vibrator cleaner). Brent Ohlgren 288-8197.

Packaging for a Lycoming Engine - cast styrofoam case and shipping stand. Ken Scott 503-648-1594.

Cutting wheel mandrel, custom made by Stan VanGrunsven to use for cutting your canopy. Knob on the outside makes it much easier to hold steady and not screw up that expensive piece of Plexiglas. WHO HAS THIS? Call Brent Ohlgren 288-8197.

Joggle tool. Rion Bourgeois 646-8763.

PropTactf (optical electronic tach, use to calibrate your tachometer). Butch Walters 360-636-2483.

Engine Stand. Don Wentz 503-696-7185.

Engine Hoist. Norm Rainey 360-256-6192.

Precision chemical scale, for measuring pro-seal. Brent Anderson 646-6380.

Surveyor's transit level - handy way to level wing and fuselage jigs. Bill Kenny 590-8011.

Back Riveting Contraption - large, counterweighted bucking bar and suspension system, and offset back rivet sets. (See "Back Riveting Wing Skins, December 1994 issue). Bob Neuner 771-6361.

Lead crucible with electric heating element for melting lead for the elevator counterweights. Doug Stenger 324-6993. Table saw

taper jig, for tapering wing spar flange strips. Carl Weston 649-8830.

**FOR SALE/ RENT** Ads are FREE.

FYI. Prop inc is having a, 30% off summer sale on all RV series propellers. Sale price only \$(575. For more into call 541-265-3032. Whirl Wind Propellers Corp. 8/97

New MA-4-5 carburetor, Model A1 0-3878, removed from new Lyc O-360, \$600. New engine driven fuel pump, Model LW 15472, 4-6 psi, \$80. Dan Benua 503-297-4045. 8/97

I was just in Costco Beaverton the other day and saw that they were selling a Delta bench top bandsaw for \$110. This looks like a really good deal. This is exactly the same saw I've used throughout most of my project (after I returned the %\$#@! Sears one). It's a 10" throat, single speed. The regular price in HW stores is around \$179. Since it's single speed, it's not much good for steel, but works fine for aluminum. Randall Henderson. 8/97

RV-4 tail and wings. I have made the decision to sell my RV-4 project to start the RV-8. The tail is finished except for the fiberglass. I assembled the spar from the kit. James Baker 541-884-5900 bakerv4@kfalls.net 8/97

O-360-B1A 180 hp, overhauled by A&P-IA and Premier in Troutdale. Conical mounts, constant speed capable, now fuel pump, new Slick mags (AD), new oil pump gears (AD). Engine looks great. 0-SMOH. Includes starter, alternator, MA4-5 carburetor. Everything signed off and yellow tagged. \$15,250. Also have IO-360 200 hp engine 0-SMOH. Same quality workmanship, out of Mooney. Call Jim at (503) 637-6621 or email at RV6Jim@juno.com. 5/97

Duckworks Landing Lights. Retro-fittable, light, easy installation. Kits start at \$69 (discount for Rid RVators). Don Wentz 503-696-71 85.

**"Home Wing" Newsletter Subscription/Renewal**

Please fill out and mail to **Jerald & Kathy Hall, 32034 J.P. West Rd., Scappoose, OR 97056-2300**, along with \$10 for renewals or new subscriptions. Please make checks payable to Kathv Hall. If you are renewing, you only need to give your name, date, payment method, and any other information that has changed. Use this form for address changes too.

Name \_\_\_\_\_ Spouse's Name \_\_\_\_\_

Address \_\_\_\_\_ Home Phone \_\_\_\_\_

City, State, Zip \_\_\_\_\_ Work Phone \_\_\_\_\_

Pmt (\$10/yr) Check  Cash  Info change only \_\_\_\_\_ E-mail Address . \_\_\_\_\_

Project (RV-3, 4, 6, 6A, 8) \_\_\_\_\_ Comments? \_\_\_\_\_

Progress:

Tail In Progress  Finished

Wings In Progress  Finished

Fuselage In Progress  Finished