

Portland RVators

Issue 94.3

March 1994

The February meeting was at Randall Henderson's in his "Big Ugly" (garage addition, that is). Randall is just finishing his spars and did a demo of how to set the large spar rivets using the Avery dimpling tool and a BIG hammer. Nothing to it, from what I saw. Randall tapered and prepped his spars himself, then sent them out (thru Phlogiston) to get anodized. They look extremely good. Now that the mtg is over he will proceed to set-up his jigs and tear into those wings.

Once again we ate like kings, as Jeanne made a large assortment of home-made eats & goodies, dips, desserts, etc. While we have no problems making pigs of ourselves and chowing on this great food, I hope the rest of our potential hosts understand that chips and drinks is certainly adequate and all that is recommended. Of course, for those of you that enjoy allowing us to stuff ourselves on delectable delights, we certainly won't complain!

I didn't take a count, but that one car garage with the 12 x 12 add-on was stuffed to the gills! We didn't need any additional heat, with all the bodies in there. As usual we had the BS session for at least an hour, then a chance to discuss the last nltr or any current 'business', the great riveting demo, and ended the evening with more BS until everyone headed for home. I sure enjoy these mtgs, always a great opportunity to catch-up on where the rest of the gang is on their projects. Thanks for hosting, Randall.

Next Meeting:
Place: Van's Aircraft
433 NW Main St
North Plains, OR
Date: March 10, 1994
Time: 7 pm

The next meeting of the group will be at Van's factory in "downtown" North Plains on Thursday March 10. By now everybody should know where the factory is so I won't do a map. The address is 433 NW Main Street. Take hwy 26 west to North Plains exit. Right to the 4-way stop. Left, a few blocks to Main, right 1/2 block and Van's is just across the tracks.

They are going to give us an overview of options you can get for your RVs, so this should be of great interest to everybody.

General Business:

Prototype RV-3 Project:

Bill Benedict has been talking to us about this at the last couple of meetings. Basically, this is Van's first RV-3 that is being rebuilt to "display condition" (non-flying) and will be donated to the EAA museum for display in their new wing.

Portland RVator Gary Standley has volunteered to be project coordinator for the balance of the rebuild. Van has completed some of the work so far and is providing all parts and supplies needed to finish the rebuild. For the most part, there is a wing leading-edge to be rebuilt and some fuselage work to be done, as the aircraft was somewhat damaged in an accident.

For those of you just starting or not yet working on your own projects, this is a great opportunity to get some hands-on time on a project. For *all* of us, this is a chance to be a part of aviation history! The Van's RV series of aircraft is now, and will increasingly be, a MAJOR part of light aircraft history in the United States, and around the world. I expect that all who participate will get great personal satisfaction from having been a part of this restoration.

So, when you think of the opportunity we have, it would be a shame to miss-out on it. Call Gary or Bill (at Van's) and stay tuned to our newsletter and the Chapter 105 newsletter for details.

Next Meeting at Van's Factory

Gary Standley

591-9040

T-shirts:

Randall is progressing on a "logo" to put on our¹ T-shirt. He is now in touch with a graphic artist to help with the design who is a friend of Chris Lund. I don't know about you, but I am anxiously looking forward to what they end up with.

Calendars:

Van's 1994 RV calendar is not selling like we thought it might, however, we had a great second effort at the mtg and moved over 20 more. So, out of the original 100, we are down to about 20 left. Remember, you may have family and friends that would enjoy having one, and at 6 bucks, it is an easy way to score some points.

If you haven't gotten yours yet or need some more, get them at the next mtg, or call and we will send them out.

I expect now that whatever we have left we will be able to fire-sale at this year's Portland RVators 3rd Annual Northwest RV Fly-in.

RV 6-6A FLOATS January 10-94

Eustace (Bus) Bowhay Jim Rowe

As you may have heard (RVator Oct/93) an RV-6 was successfully flown on floats for the first time on Oct. 15/93. I would like to take this opportunity to give some of the background leading up to this happy occasion.

With the development of several quality homebuilt aircraft kits during the 1980's I decided to try one. After much research and soul searching settled on VAN'S RV6. My main interest in flying after nearly 50 years as a commercial pilot was basically cross-country. I liked the simplicity and metal construction of the RV and the performance figures and handling qualities were what I was looking for. The stall speed was low enough to make the installation of floats a possibility.

Construction was started in 1989 and with the help of a couple of friends first flight was in May of 1992. After having flown it for 100 plus hours the decision was made to put it on floats. The Zenair model 1650 seemed the best suited to this application. Jim Rowe, a long time acquaintance in the aviation industry recently retired from Imperial Oil's aviation division, and myself, decided to joint venture the building and development of the RV float installation.

A model 1650 Zenair kit was ordered and an engineering contract was made with a professional aviation company. Work started on Feb 1/93 and as mentioned the first flight was on Oct. 15.

The performance was very impressive, out of the water (glassy) in 14 seconds at gross weight, 1100 ft.

per min. initial rate of climb and cruising at 145 mph at 65% power. We feel we can improve on these figures somewhat with some detail clean up. We are flying the aircraft at a gross weight of 1800 lbs. approved by Van's Aircraft and Transport Canada. The design and engineering was done to comply with the requirements laid down by Transport Canada for an installation on a certified aircraft.

After some further testing it was decided to make this float installation available to other RV builders. A company was formed, COPPER ISLAND AVIATION INC. with Jim and I as equal partners. Between the two of us we have 85 years experience in aviation, Jim in the maintenance and overhaul end and myself as pilot.

We are currently working on the first production set and working closely with Zenair and Van's Aircraft and planning on having RV floats available by March 15/94. Kits will be available for the RV-4 and 6 initially with the 6A to follow at a later date. Prices will be available on completion of the first production set.

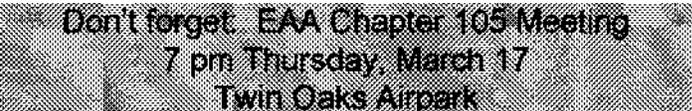
It is our plan to supply the floats in kit form, fast build kit or complete and will also give help on the initial installation and test flights.

For further information please contact us at:

COPPER ISLAND AVIATION INC
P.O. Box 282 Blind Bay, B.C. VOE1HO

604 675-4428
604 675-4264

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Builder's Tips:

Note - There are a lot of good tips this month. Thanks to all who shared-them with us!

Horizontal Stabilizer Skins:

Randall Henderson

Several people I've talked to at the meetings lately have mentioned that they ran into trouble when they were drilling their horizontal stabilizer skins to the

spar. Specifically, it can be very easy to drill too close to, or even IN to, the flange strips.

So the tip? It's simple: DON'T DO THAT. Draw a line on the outside of the spar and/or the skin that shows exactly where the flange strip is and give it as much clearance as you can without violating minimum edge distance. I know, easier said than done, as there's not much room there, but do your best. Either way, you still probably won't have clearance to get a dimpler in there even if you grind off one side, so if you're dimpling your skin, it's a good idea to go ahead and countersink those rivets that are adjacent to the flange strips.

Scratched Skins:

Randall Henderson

Ever notice that no matter how careful you are, scratches and scuffs inevitably show up on your skins as you move them around on the bench? Laying some carpeting down works ok but it tends to collect aluminum shavings that can still scratch the skin. I bought a large door mat that's made out of fairly soft rubber and is molded into a mat of small 'cones' which provide a surface for the part you are working on while letting shavings and such fall down between the cones where they can't hurt anything. Got it at Home Base for \$14.95 or so.

3M Abrasive Wheel:

Randall Henderson

How's your 3M Abrasive Wheel holding up? Mine developed all kinds of grooves and irregularities as the project progressed. I heard about a tool you could buy to 'dress' the surface but could never find out where to get one, and I don't have a file that I want to sacrifice. Then I realized I have this spare grinding wheel that used to be where my 3M wheel is. I just turned on the grinder and held the grinding wheel against the spinning Scotch-brite wheel, and viola -nice and smooth and flat again (albeit a bit smaller in diameter).

Cleaning edges perpendicular to the wheel once in a while, rather than in-line with it will also help to even-out the surface so the grooves don't get too deep.

Saw blade for tapering soar straps:

From local RV-4 builder, Mike Wilson

Just finished riveting my *third* right elevator. Getting pretty good at elevators.

The Saw Blade I used on my spar straps was:

Sears Craftsman

SN9_32019

10"-60 tooth

Metal (non-ferrous) Cutting, up to 3/8" thick

It did a great job! Clean up was quick (two nights to polished parts). (Mike brought one of the straps to the last mtg. He hadn't cleaned-it yet and it hardly looked like it needed it.)

Chrome Plating:

This item from RV-6 builder Bill Drake:

Bill found another place to get chrome plating done. Located just behind Dave Locke's shop out in Clackamas, this place charged Bill less than 1/2 what I paid somewhere else.

Technical Finishes & Coatings Inc.

15648 SE 114th Suite #107 Clackamas,

OR 97015 503-656-4229 503-656-5998

FAX

Yet Another Prop Test:

RV-6 builder Don Wentz:

Recently I got my prop from Bernie Warnke. I had asked Bernie to make a prop with more chord, like his older prop that he was making before he changed to the new 'skinny' prop design.

Jerry Springer has an RV-6 with 180hp, which is very similar to my project, and was interested in comparing my new prop to his 'skinny' Warnke prop. So the other Saturday, the sky was blue and after meeting for breakfast with with Jerry, Jim Anglin and son, and a local Lancair builder, we went over to Hillsboro airport to do a fly-off between the props.

Now, this was a very casual affair, so don't be expecting any large amount of facts and figures or elongated formulae and calculati (?), but this is what we found-out:

Prop	Jerry's	Don's
Prop size	72x74	73x72
Static Runup	2400 rpm	2200 rpm
Climb @105mph 1300f pm	2350 rpm	2100 rpm
Cruise @3300'	2500 rpm 185mph	2300 (24" mp) 185mph
Max Speed @3300'	2750 197mph	2500 (27" mp) 200 mph

Notes: Speeds were taken from Jerry's RMI True Air-speed readings. Prop size listed as length x pitch. Notice that we *forgot* to get Manifold Pressures for most readings.

Jerry's perceptions: Don's prop felt a little sluggish in take-off and climb, felt it would burn gobs of fuel if pushed to high MP ratings as the engine would be lugging. 2500 rpm is all he could get out of it. The

only thing it did well was lope-along at 185 mph at 2300 rpm and 24" mp. Too much bite. He did say that he thought Don's prop was smoother through-out the rpm range.

I agree with Jerry that my prop has too much length and/or pitch. He felt that since his engine has a lot more hours than mine and I have fuel injection compared to his carburetion, I might be able to spin that prop faster. I have my doubts that I will be able to get 2700 out of it, which is my engine's max hp/rpm rating. We will just have to wait and see what it does on my RV-6, which will be a very interesting comparison in itself. If it still is not allowing enough rpm, I'll check with Bernie about whether to cut-off some length or re-pitch it.

I had been kidding Jerry that one of us would end-up disappointed in their prop after this test. Well, he isn't because his prop worked better. I'm not either, yet, because I still think there is some easy adjustment to be made to my prop. In the end, will it be as good or better? Guess we just have to wait and see...

Back-riveting Wing Skins:

By local RV-6 builder Frank Justice

One of the items I have heard discussed but never described in great detail is back-riveting the wing topskins. Based on encouragement from local as well as out-of-town builders plus the fact that my first wing didn't go well with conventional riveting, I decided to try it. I am using the one-piece 0.032" top skins, so I countersunk all the holes. The results were amazing. No dings at all, and only two rivets had to be drilled out. There is so little distortion at the ribs you would almost think there weren't any. It is even smoother than my Cheetah wing, and that has the skin glued rather than riveted to the ribs. Using the same helper to do my first wing I had to drill out over 100 rivets and was left with several noticeable dings. I did have a good helper to do some of those rivets, but those still did not look as good as the back-riveted ones.

If you decide to back-rivet the top skins, it forces the answer to another old question; which side to do first. It is true that it is slightly easier to rivet on the top skin rather than the bottom skin last, but the difference to a good builder is almost negligible. There are no severe obstacles if the right sequence is followed.

To do this you need a long rivet set with an offset. A flat face will probably work, but you can get a special set from some of the mail-order houses that has a shallow hole in the face especially for this. You should use a 3x rivet gun; the set is so heavy that a 2x gun will not move it properly. Some people have said to use a flat plate as a bucking bar, but I used a medium-sized bar with a 1 1/2-inch square face on it. With a smaller surface it would be difficult to feel whether or not you have it flat against the skin. A great big bolt with a polished head would work well also.

To drive the rivets, have the person operating the bar lean into it hard to keep the head from coming up. Don't push hard on the gun; just put the set lightly against the rivet and let the gun do the work. Use just enough air pressure to form the rivet in a reasonable number of hits. With the hole in the tip of the set it will not slip off the rivet. Also, it will keep you from overdriving the rivet. When the shop head is about the right size the flat part of the set will begin to hit the rib and you will notice the difference in the sound.

Countersinking the 0.032 top skin is worth the small extra effort for the final appearance. Since all of the surface has the same curve and rigidity, you can consistently countersink every hole. This avoids the slight depression you get over a large area around countersunk holes unless you have exactly the right dimple dies and technique. If there is any trick to countersinking here it's to run the countersink longer in each hole than what you think it should take.

Project Status:

Randall Henderson

The group has sure swelled the last couple of meetings. Don counted 30+ people in Franks garage, and the walls were bulging at my place last month with close to 40. So it seems appropriate to welcome the newer members by focusing on some projects that are in the earlier stages this month.

Robert Bailey has his RV-4 empennage mostly completed. The horizontal and vertical stabilizers and the rudder are done and he's working on the elevators now. Robert has a couple of friends who are building/have built RV-4s, and says the opportunity to help out on those projects prior to starting his has been a big help. He says that after finishing his stabilizers he was pretty nervous about approaching the much thinner skins of the control surfaces, but it wasn't long before he found out how easy it is to back-rivet the stiffeners. He used electricians tape instead of the recommended riveting tape and says it worked great.

Robert has a hangar at Aurora where he keeps his "other airplane" - a C-1 75 that he recently purchased, and working on it has kind of pre-empted work on the RV-4 project for a couple of months. Why anyone would want to spend valuable building time working on a different plane just because it happens to already be airworthy is beyond me©. (Just kidding - actually I didn't learn too much more about his RV project once we started trading GO-300 stories!)

Welcome to the group Robert!

As you probably know if you've been going to the meetings, **Chris Lund and Dave Locke** are building an RV-6 together in Dave's well-appointed machine shop. They say they are "almost finished" with their empennage, just have to finish the rudder, then build the elevators. Hah! I said that too, and a couple of months later I really was done!

While we all know that Van's kits are designed to be built without sophisticated brakes, shears, etc., it sounds like it sure doesn't hurt to have the stuff anyway. Dave says his shear made quick work of cutting the skin stiffeners, the skin stiffeners, and a brake made it easy to do the final trailing edge bend on the rudder. But the thing I'm most jealous of is the milling machine, which ought to make short work of the task of tapering the wing spar flange strips. Dave also noted that the "golf club bucking bars" they made have been extremely useful.

Theirs sounds like an interesting partnership - Chris has experience doing body work and has a degree in Automotive Technology, while Dave has a lot of experience in advanced machine design and assembly. Chris says that Dave has more patience and is more methodical, while he (Chris) is more likely to just jump in and go for it ("just give me a couple of rocks, and I'll get it together.... nothing a little bondo can't fix!")

The odd couple?

How are the rest of you doing on your projects? (Thanks for the updates Randall.)

Don't Want Ads:

Let us know what you got but don't want. Ads are **FREE**.

Rion Bourgeois has a LARGE pneumatic squeezer that he used on his spars. Available for loan or sale. 646-8763.

1965 Champion citabria - 1/4 partnership interest, \$2000. Hangared at HIO. O-200 Cont. Build taildraggertime inexpensively while uilding your RV.

Call Rion Bourgeois, 222-7466 or 646-8763.

Duckworks Landing Lights. Retro-fittable, light, easy installation. Kits start at \$69 (discount for Ptl'd RVators). Don Wentz, 503-696-7185 for info.

Engine stand - I'm not using mine anymore (yay!) so if one of you wants to, borrow it! Don Wentz, 503-696-7185.

2 new RMD Wingtip (in the fiberglass tip) landing light kits. Nice kit if you want to put a light in the tip. Sell for less than new cost.

Also, RV-4 jigs no longer in use - Aileron, flap, rudder, elevator - all available for loan. Brent Anderson 503-646-6380

Looking for Tools that are no longer needed or partially completed kits. Dexter Kincaid - 538-9535.

Standard RV-6 elevator trim control knob/cable. Only slightly used, sell for \$\$ less than new, Evert Eyres, 503-648-3564.

DON'T MISS THIS! Several RV building tools, including an Avery Dimpler (no RV builder should be without one of these). Call Steve Ferrell, 503-640-2397, or Bob DeVore, 503-647-5717.