

The Newsletter of the Portland RVators; Builders and Fliers of Van's RV Series Aircraft



March Meeting

Dan Benua hosted the meeting this month, and we all got a chance to look at his prepunched wing skins and other recent improvements to the wing kit. One improvement was noticeable right off the bat -- how nice and SHINY his skins are, due to the fact that the prepunched skins come with a thin plastic sheet that protects the skin while drilling. There were also several custom touches that Dan has added, including reinforcement of the pitot-tube/access hole area, a steel mast for a heated pitot-tube, an Isspro fuel sender mounted in the second bay with provision for a flop tube in the inboard bay, and of course the cut-out for a Duckworks landing light.

There was lively discussion on several topics, including the upcoming fly-in, Blackie's "crash-and-go", and of course all the improvements to the RV-6 wing kit. Bob Neuner brought some samples of his experiments with "home anodizing" and passed them around.

Several milestones were announced as well. Mike Wilson finished his RV-4 wings, and took home a fuselage kit. Blackie took home a *third* set of RV-4 plans, and Brent Anderson reached the all-important "sat in my fuselage and made airplane noises" milestone. And this just in -- Blackie finished his RV-4 and flew it on March 16. And Don Wentz finished the modifications and partial repaint of his RV-6 and flew it on March 25. Way to go guys!

Meeting Notice

Frank Justice, Meeting Coordinator

Place: Bob Neuner's 5950 S.E. Tibbetts, Portland
Date: April 13 (Second Thursday of the Month)
Time: 7:00 PM

The next meeting will be held at Bob Neuner's place in east Portland on Thursday April 13. Bob is building an RV-6. The directions are relatively simple. For those on the West side, Take the Ross Island Bridge (US 26) East to Powell Blvd. Make a left (or turn North) on S.E. 59th. Go (4) blocks to Tibbetts Street. Turn right into the cul-de-sac. Bob's is the light blue house on the right. The address is 5950 S.E. Tibbetts. The telephone number is 771-6361 for those of you who get lost easily.

Looking ahead, the May meeting will be held at Scappoose Airport so we can have a look at the site for the June 11 fly-in as well as look at some airplanes.

General Business

Randall Henderson, Editor

Will you miss me?

Don Wentz will be chairing the April meeting, as I will be gone. Where to, you ask? Oh, just to Sun-n-Fun, with Bill in the factory RV-6T. Ho hum... ☺

Back Issues

From time to time someone asks me if they can get back issues of the newsletter. I've always declined as I don't keep more than one copy of most issues once they've been mailed, and it's enough work just doing the newsletter without having to make extra copies of old ones. But there's really no reason why someone *else* can't take those old issues and make copies of them if they want. If there's someone who wants to do this, and maybe make copies for anyone else who wants them, let me know and I'll loan you the binder. I have *most* issues back through December 1992.

T-Shirts, Patches, Decals

Yes, I STILL have some of those "Portland RVators" T-shirts left -- a couple of XXLs as well as one Medium. I also have a couple of "Van's Air Force" T-shirts in XL. Of course Van's is selling those too now

Issue 95.4

so you should be able to get any other size through them.

We have about 25 takers so far for 12" x 7" "Portland RVators" decals for \$15 each. I'll be passing the sign-up sheet around again at the next meeting or two, but I figure we'll probably have enough, so I plan on ordering them soon.

Top Ten List

As some people have already pointed out, I've gotten a lot of mileage out of the "Portland RVators" emblem, what with the T-shirts, newsletter header, and now the "Van's Air Force" variations. At the last couple of meetings I passed around a sign-up sheet for people interested in a "Portland RVators" decal, and one person asked just what would such a decal be used for? I told him he'd have to wait for the

TOP TEN USES FOR THE PORTLAND RVATORS "SQUADRON EMBLEM"

10. Big decal to cover up those unsightly N-numbers when buzzing your friend's house
9. Put it on a T-shirt and sell enough to be able to buy a decent printer to do a newsletter on
8. Whine about the fact that it shows an RV-4 instead of *your* RV-6, -6A, or -3
7. Parade it in front of those plastic airplane guys to show them yet *another* reason RVs are better
6. Sell out your local group for profit by changing the text and coming out with a full line of "Van's Air Force" apparel and gift items
5. "Portland RVators" Band-Aids
4. Fill space at the top of an otherwise lame newsletter
3. Use as a model for *your* RV's paint scheme
2. Oh come on, there must be *someone* who wants a Portland RVators tattoo....
1. Stick it on the next Lancair you see -- then *run!*

Subscriptions Due:

Look at the date under your address on the cover. **THAT IS THE DATE YOUR \$10 IS DUE.** Mail to me or give it to me at the next meeting (my address is the return address on the cover). If you are paid up but the date doesn't reflect this, please give me a call so I can correct it.



EVENTS CALENDAR

EAA Chapter 105 Meeting Thursday April 20, (third Thursday of every month), 7pm at Twin Oaks Airpark. Good programs, don't miss em.

EAA Chapter 105 "Breakfast at the Aileron Cafe" " - Saturday May 6, (first Saturday of every month) at Twin Oaks Airpark, 8am.

EAA Sun-N-Fun Lakeland Fla. April 9-15

Fourth Annual Northwest RV Fly-In - Saturday June 10, at Scappoose Airport, 10:00am, Lunch at 12 noon. Don Wentz, Fly-in leader -- (503) 543-2298.

Salmon Arm BC Air Fair - Sunday June 18 (Spaghetti dinner Saturday evening, June 17). Mark Kilba, (604) 832-6743.

EAA Oshkosh July 27-Aug. 2. Carl Hay (297-3091) is looking for anyone interested in making a "group flight" of RVs.

Vernonia Jamboree Fly-In - Camping, dance band, breakfast. August 4, 5, 6. Mike Seager 429-5103



Fly-In Update

Don Wentz, Fly-In Leader

Based on discussions at the last meeting, here is where we are so far:

Things we need help with:

- **Flyers:** Randall has made up a flyer, and Mike Seager has agreed to mail them again. We will spend part of one meeting doing the folding and stapling as a group, and mail to some portion of the 3-state list that Van's can supply. Randall has contacted Western Flyer to get it in their schedule. Other distribution ideas? Not a big deal, we mainly want to do what we can to get plenty of RVs to attend.
- **Food:** Janet Wentz has volunteered to handle this again this year (she did great last year!). Hiring the teenagers from a local church worked well, and we agreed to try them again this year. We'll see what Janet proposes for a menu for this year. Rion has agreed to handle the sodas again.
- **Set-up:** The group will be responsible for getting necessary equipment to airport (tables, tents, signs, etc.) and getting volunteers to help do the set-up. This is a large effort, mostly done the day of the event, and needs lots of volunteers! Try to show-up around 8am and it won't take long.

- **Parking:** We need volunteers to run "Scappoose Ground" and park aircraft. Norm Rainey will be running the show, so contact him to sign-up to do 1/2 to 1 hour shifts, 3 people at a time. We'll have 1 on the radio, and 2 to direct each arrival to a parking spot and personally welcome them to the Fly-in.
- **T-Shirts:** Randall plans to design a new Fly-in T-shirt, and we'll need people to take 1 hour shifts (or 1/2 hour if enough people sign up) to sell them. Proceeds will go to the group fund.
- **Clean-up:** We need some bodies to help after everyone leaves, mostly just hang-around and it doesn't take long.

Again, things generally go very smoothly, just BE SURE that you participate so a few of us don't get stuck doing it all!



Do Your Own Anodizing!

by Bob Neuner

A few months back someone posted a message on the internet rv-list mentioning an article they saw on the "rec.aviation.homebuilt" news group. It was about doing your own anodizing at home. This sounded pretty interesting. I have always been curious about how anodizing aluminum is done.

The mailing list posting gave no specific information, but suggested that I write to the "American Radio Relay League" (ARRL). Their Magazine *QST* ran an article in the May 1950 issue on the subject of Home Anodizing. A later 1967 article elaborated on the one written in 1950. I couldn't resist the temptation to see if they still had old copies of their publication so I wrote them. To my surprise, copies of the articles were in my mailbox a few days later.

The process of anodizing is actually relatively simple. The most common type of anodizing can be done with common chemicals and a low voltage power supply or a battery. There are four basic steps. I'll give a brief summary of them here, and encourage you to write or FAX the ARRL for all of the details contained in the articles.

Step #1

The first step is to choose the desired finish and make sure the surface is clean. I have tried two different finishes on my first couple of samples. The first was to try "graining" the aluminum. Graining is just the scratching the metal giving it that "brushed metal" look. Commonly a light machine oil is poured on the surface and the material is lightly sanded with emery cloth. Long strokes are used to give the surface a

uniform look. On my first attempt I used a medium grit Scotchbrite pad on a dry surface with fair results.

The second finish I tried was to just carefully clean a small piece of Alclad aluminum. The object was to retain the smooth shiny surface. This had the most attractive finish when the process was done, and was the easiest to do.

In both cases, the final cleaning was done with just plain dish soap and lots of clean water. Acetone or MEK could be used as well, but why go to the expense. As long as it is rinsed thoroughly soap and water seems to work just fine.

The articles also mention a third method which is to "etch" the surface. This is accomplished by devolving Lye in water and dipping the aluminum until the surface has a "velvety, matte" finish. Although this may produce a nice surface for anodizing, handling caustic lye is more than I wanted to try on my first attempts.

Step #2

The next step is to set up for doing the actual anodizing. This process is actually the easiest. What we are trying to do is to change a very thin layer on the surface of our metal from a corrosive prone aluminum or aluminum alloy to a highly corrosive resistant "*Aluminum Oxide*" (Al₂O₃). Chemicals can do a similar job of creating a layer of Oxide nodules on the surface of our part. By anodizing, we will end up with a Ruby hard glaze that seals the surface from moisture, and the possibility of corrosion getting a foothold on our material.

To do this, we will be using a DC electric current to release a highly reactive "Nascent Oxygen" gas from an electrolytic solution on the surface of our aluminum. This will change the aluminum to crystals of Aluminum Oxide. (By the way, this is the same aluminum oxide used to make the grinding wheel on your work bench. It's hard!)

We will need a container that is either non-metal like plastic or one that is made of aluminum itself. An enameled pan or bucket would be OK too. We will also need an electrolytic solution. In this case dilute **sulfuric acid** or battery acid. It can be purchased from many auto parts stores or distributors. We will need a 20% solution of Acid to water. I don't have the time to go into the details of determining what is a precise 20% solution, but remember that concentrated Sulfuric Acid (H₂SO₄) will weigh more than Water. Calculate the ratio by weight. You don't have to be as precise as you think. If the Solution is a little weak it will just take a little longer to do a good job. A stronger solution may take longer as well.

Warning: Know what you are doing! Never pour water into the acid. Always pour the acid into the water. An explosion could result. Always pour slowly!

Step #3

Step three will be to run a current through the electrolyte to crack the H₂O into hydrogen and Oxygen. We want the Oxygen to be formed on the working piece, and unwanted Hydrogen will be formed on a sacrificial piece on aluminum. (If the container is aluminum, it can become the sacrificial material.) A little bit of high school chemistry tells us that the Oxygen will form on the *Positive* side of a DC current, and the Hydrogen will form on the *Negative* pole of a DC current. The Positive pole of a DC current is called the "Anode" hence the term "Anodized".

For this type of anodizing all we need is about a 12 volt DC power source of at least a few Amps. Small pieces may only draw a couple of Amps where larger pieces could draw 30 or more Amps. The current density is from 8 to 20 Amps per square foot. If your power source doesn't supply enough current, you can compensate by merely leaving the parts in the solution a little longer. The current need not be "clean" either. A half wave works nearly as well full wave power source. For small pieces, a regular battery charger will work fine. Actually, a 12 volt car battery works great according the article.

The test pieces I tried only took about 20 minutes to complete. It's easy to tell when you have been successful with this process. One of the properties of aluminum oxide, unlike aluminum, is that it is "non-conductive". To test to see if the anodizing has worked correctly all you need is a cheap multimeter, or even a test light. Set to the Megaohm range and touch either side of the part. If you see a change in the meter, or the test light lights, you're not done. No problem, just put the part back in the bath for a little longer. When the surface is non-conductive, you've just "anodized" your first part!

Step #4

The final step in the process is optional, but well worth the effort. The anodized coating you have just made is still somewhat porous. This means that it will absorb colored dyes. As a matter of fact, nearly any water soluble dye will do. I have experimented with "Rit" fabric dyes with some pretty good success. The best results so far have been with a concentration of about 3X what the package calls out. Any color will work.

The only thing left is to seal in the molecules of dye within the oxide layer and we're done. This is easily done by bring the part up to at least 206^o F in the presence of plain water. Steam does nicely. We are now filling the pores with AL₂O₃.H₂O, which will seal them with the color inside.

The best way to do this is to place the part in a pot on the stove suspended above about an inch of water. Next throw a towel over the pot to hold in the steam. DON'T put a lid over the pot. I did on my first few attempts, only to find that the steam condensed on the lid of the pot, dripped on the freshly dyed aluminum before it was completely sealed. This left big blotches all over it. Be careful not to let the towel get too close to the burner and catch fire!

Anodizing isn't for all parts of my RV6. There are several distinct disadvantages to this process. Parts which are anodized loose a little of there strength due to the fact that a small layer of material has been changed from very *tough* aluminum to a very *hard*, but *brittle* aluminum oxide. If you sharply bend a part that has been anodized, you can actually hear the oxide "*crunch*". The second problem comes if the anodized surface is damaged. The only way to repair it is to protect the exposed surface with chemicals like "alodine", or primer paints.

Some of the advantages are the fact that the anodized surface is very hard and very resistant to abrasion. It is also nearly impervious to corrosion. As long as the surface isn't breached, it won't corrode under most circumstances. The finish is also very attractive. Colors can be very deep and rich. The surface can be as smooth and shiny as glass, or have a soft matte finish. Anodized material also takes paint very well. Even after it has been sealed, there is still enough "*tooth*" to permit most primers and paints to stick very well.

Most structural parts are much more easily primed and painted than *anodized* (although paint adds weight). My main desire for teaching myself this skill is for things in the cockpit like the instrument panel, seat backs, arm rests, battery box, etc... I plan to just use Van's unheated pitot tube and will probably anodize it.

If you are interested in this process, write the American Radio Relay League, at 225 Main Street, Newington CT 06111. Ask for copies of the May 1950 issue of QST magazine, pages 54,55,116,118,120,122 - October 1967 pages 33,34,35,38. It'll cost you about \$9, but it's well worth it. You can also FAX them at (203) 665-7531.

Give it a try!



Van's Air Force

To the Editor:

In response to Rash Limbo's article "What's Really going on Here" [Portland RVators, December 1994], I thought your readers might want to note this excerpt from *The B-2 Pocket Fact Book*, published by Northrop Grumman:

"The National Defense Authorization Act for fiscal year 1994 limits the total B-2 program cost to 28.968 billion fiscal year 1981 constant dollars. Escalation to then-year dollars using revised Department of Defense inflation factors results in a total B-2 program cost of 44.656 billion dollars."

That's \$44,656,000,000.00 for twenty B-2 Bombers.

Now consider this: if a mass-production effort were to be launched, a fleet of RV-4s, with basic IFR and hard-points for "stores" could probably be built for under \$40,000 a copy. 44 billion would buy a lot of those -- specifically 1,100,000 of them!

Hang armament appropriate to the mission on each one, send them off to the "theatre", and imagine the scene in some enemy command center when a wall of tiny blips appeared on their screens, heading their way at 200 mph! Seems to me it would be a lot more effective than NOT seeing 20 stealth bombers.

I know, I know, it'd cost a lot to train all those pilots, but as Rash pointed out in his letter, there's a lot of RV pilots already self-trained. And most of them dumb enough and full of delusions of glory to do such a thing.

Yours truly,

Pat Loos Cannon

I welcome letters to the editor, but please refrain from tying them to bricks and throwing them through my window -- Ed.

□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □

Internet Stuff

Randall Henderson

Van's now has a technical support address on the internet. The address is 76455.1602@compuserve.com. This can be a good way to communicate with Van's on technical support issues, since you don't have to try for the morning and afternoon phone support "window". Just be sure to post the answers to the rv-list (see below) so we can all benefit!

And if you haven't subscribed to the RV e-mail distribution list, you should! Send e-mail to rv-list-request@matronics.com, with your name, address, phone, and project, and prepare to be flooded with questions, answers, opinions, and general BS about RVs. Best of all, your boss will see you typing away and will think that you're really working!

I have started an e-mail list of my own -- the pdxrv-list. I set it up primarily for the purpose of communicating on issues that are of local (to the Portland Oregon area) concern only. Examples include what's

hot at the tool or supply stores, jigs/tools to exchange or loan, and of course, newsletter input! Send mail to me (randall@edt.com) to subscribe.

If you have an internet account and access to the World Wide Web (through shareware such as Mosaic, Netscape or Lynx), you should check out "John Hovan's RV Web Page". John started his web page up about a year ago and has received a lot of contributions from various sources. You can access Frank Justice's supplemental instructions, the Rocky Mountain RVators' "Tools Needed" and "Vendor List", my own "RVators Index", and a whole article about Don Wentz's RV-6 (with pictures!). The address is:

<http://atlantis.austin.apple.com/people.pages/jhovan/home.html>

If you would like to have a picture of your project, plane or yourself on this web page, you can mail your photo to

John Hovan
1205 Felsmere Drive
Pflugerville, TX 78660

If you are not familiar with the internet or the World Wide Web, stop by your local bookstore and buy a copy of Internet magazine. It is a very good starting point. There's a whole other world out there waiting for you! Did you know you can mail the White House at <http://www.whitehouse.gov/> or view the CIA World Factbook at <http://www.ic.gov/> ? Check it out!

□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □

Builder's Tips *...Thanks to all who share them with us!*

Proseal in a Tube

I did some checking on that in-the-tube proseal. It turns out that it can be had from Flightcraft. It comes in a tube that is similar to regular caulk. In the spout of the tube is a handle that one pumps back and forth to mix the two compounds. After its been pumped about fifty times, one may apply it like regular caulk. The only hang-up is that the tube is slightly smaller in diameter than regular caulk tubes. The fellow at Flightcraft told me that I would just have to put a 1.5 inch plunger on my caulk gun to use it. It costs \$28 for a 6 oz tube. - Brent and Mike Baxter

Oil Cooler

Last week while I was out at Columbia Airmotive in Troutdale I noticed a very nice looking oil cooler on the shelf and inquired about the price and found it to be very competitive at \$69.95. They have been used in the racing scene and are just now being used in experimentals. The information is as follows:

Setrab Oil Coolers, All aluminum construction. 8 1/4" x ?? (looks like about 5") x 2". Your choice of connections: Part #113 AN 8 (Male AN-8), or Part # 113 3/8 NPT (Female 3/8" NPT). - Norm Rainey

Fuel Sender Notice

Recently VAN's aircraft has been shipping a new design (better) of Stewart-Warner fuel senders under the old part #'s F-385B and F-385C.

The most significant difference is in how the device's float arm must be bent in order to be used in the confines of the RV wing tanks.

First, the units need to be mounted in the wing tanks with the plastic lever arm in the UP position, that is the pivot point of the arm will be below the lever.

Second, it should be noted that the axle point has a hole through it and this is to be used for retention of the float arm.

Finally, the best way to fit the supplied float to the sender is to mock it up with some easily bent wire, like a coat hanger or copper wire, so as to get it correct before bending the actual float arm. My experience is that it first takes a bend through the axle hole to fix the pivot point then a straight run of about 3",

then a right angle bend (down) and a final 3" run to the float.

This results in the float excursion being pretty much from the bottom to top of the tank without actually hitting the top or bottom tank skins.

Another tip is that the resistance of the sender should be low (20-30 ohms) when the tank is full and high (240 or so ohms) when empty. This can easily be measured with an ohmmeter. - Tom Green @ VAN's
When I first heard about the new senders I thought "naah, I've already bought the old ones and have installed one of them." But when I was out at Van's the other day I asked to see one and ended up buying two and taking them home, they looked so nice. They have been completely redesigned, with a brass float and more of a conventional potentiometer instead of a wire wound resistor, and include an installation diagram and instructions from Van's -- quite an improvement over the old ones. And the hole pattern is the same so they're retrofittable - ed



Project Status

I stopped by **Jerry Springer's & Jim Anglin's** hangar the other day -- a beautiful sunny Sunday it was too, but they both had their RV-6s all torn apart! Jerry was replacing the thermostatic bypass valve on his oil filter system as it has an AD note out on it, he's probably back in the air by now. Jim may take a bit longer -- he had the seats and center console removed, and wires were hanging out everywhere. There was a trim cable hanging out the wing tip and I chided him about whether wing tip trim was really a useful item. It turns out he was using it as "fish tape" to pull wiring for the new Whelen wingtip nav/strobe lights he's installing. He's also removing the center console altogether to provide more leg room on those long cross-countries. Jim had the following tip: before you even *start* your wiring, get a *high quality* wire stripper/crimp tool. (He didn't actually say this in so many words, but I could tell what he meant by the way he flung his el-cheapo "Alltrade" across the hangar when he finally got fed up with it.) -rh



New Members & Guests

New member **Clarence Potts** said he "made the \$30,000 mistake" of going up for a demo ride -- he now has a set of RV-4 plans and is signed up for the next class at Van's.

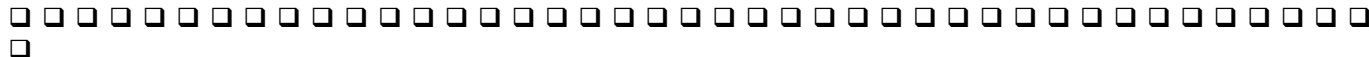
Richard Chandler attended one meeting about a year ago, and finally came to another one and signed up to the group,. He says he's interested in building an RV-6 but is currently in the "saving up to buy a garage to build it in" stage.

New member **Dell Auer** found out about this group from the internet. Dell learned to fly while in the Navy, but hasn't flown since 1974. He recently visited an RV project in Venetia, OR and was hooked. Dell plans to build an RV-6 or -6A.

Other new members include **Brian Freeman** (RV-6), **Jeffrey Bowers**, **Gary Dunfee**, and **John Richards**.

Marshall Dues, an EAA member and RV builder from Houston, was at the meeting and passed around some pictures of the hangar their chapter has down there in which no less than *sixteen* RVs are being built. He invited anyone going to Sun-N-Fun to stop by the David Wayne Hooks (DWH) airport and have a look at their operation.

My old buddy and C-175 partner **Todd Stewart** showed up -- he's not planning on building an RV but figured it might be fun just to see what this group of wacky homebuilders was like. I'm not sure what he thought of the whole thing, but I know he wasn't bored!



The Tool Exchange

This section is devoted to listing any tools, jigs, shop space, specialized machines, etc. that are available for loan, or "group property" that is available to pass on to the next builder. Please give me a call (Randall Henderson, 297-5045) to let me know if you have jigs, tools, shop space, etc. to loan, exchange, or otherwise provide, 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. Items for rent or sell should still go in the "Don't Want Ads".

Surveyor's transit level -- makes fast, accurate work of leveling your wing spars in the 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. Rion Bourgeois, 579-8800, 646-8763.

Wing Jigs (2). Bob Neuner 771-6361

Two airfoil templates, useful for mounting the flaps and ailerons on RV-6 wings. Will bring to meeting. Frank Justice 590-3991



Don't Want Ads

Let us know what you got but don't want, or vice-versa. Ads are

FREE.

40 #8 closed end nutplates for fuel tank access covers - \$44 (my cost). Note that the rivet spacing is different than the standard nutplates supplied with the kits, so if you have already drilled your access plate-reinforcing ring-root ribs like I did, you will have to fabricate new ones to use these nut plates. Also: two brand new old style (steel pot) Stewart-Warner fuel gauge sending units -\$20 for the pair. Rion Bourgeois, 579-8800, 646-8763.

Two not-quite new, old-style (steel pot) Stewart-Warner fuel sending units -- \$10 for the pair. The arms have been bent to fit the RV-6 fuel tank, but they're otherwise unused.

Avionics Work, \$20/hr. Experienced, will work with you. Tim Steele 452-2575

Heated Pitot-tube (Piper blade style), missing heater element, \$35. Brent Anderson 646-6380

Std RV-6 elevator trim control knob/cable. Slightly used, sell for \$\$ less than new, Evert Eyres, 648-3564.

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

Looking for any of the following: good quality floor mounted band saw, bending brake, sheet metal shear. Or just let me know if you've seen a good deal somewhere on one of these items. Randall Henderson 297-5045.

Before you order a rivet set for your gun, check out Wacky Willy's, they have all shapes and sizes, new surplus, for \$5 each. Also squeezer sets but beware! The shanks are "industrial size" and won't fit most of our squeezers. Also jewelers file sets (handy for deburring tight corners, etc.) for \$5. The number for their west side store is 642-5111.

