RECREATIONAL FLYER

May - June 2009

Recreational Aircraft Association Canada www.raa.ca
The Voice of Canadian Amateur Aircraft Builders $6.95

Ken Lehman's Subaru-Powered Rebel

RAA
RECREATIONAL AIRCRAFT ASSOCIATION
RÉSEAU AÉRONEFS AMATEUR CANADA

from the president's desk

Gary Wolf

New Format Pilot License

Pilots flying on a Private ticket must obtain their new format licenses this calendar year. You will be required to have passport style photos for this new document. If you are soon due for your medical it would be better to get the new format license beforehand so that the doctor may stamp it for you. Contact you local TC office for details on making the change-over.

Importing Amateur Aircraft

The Americans are selling their planes and projects on Barnstormers at fire sale prices these days and Canadians are snapping them up. There are a few cautions when doing this.

First is that if the project has already had its box spar, wings, or other surfaces closed it may not be eligible for our Amateur category, because in Canada there is a requirement for a precover inspection.

Second caution is that if the plane has major components that were factory built you had better check with MD-RA before placing a deposit. 1-877-419-2111 .

If the project has been completed and registered it must have logged 100 hours of verifiable air time to be eligible for our Amateur category. This 100 hours is in lieu of the precover inspection that Americans do not receive.

Upon entry into Canada there will be GST and PST payable in most provinces, so make certain that you have a receipt and perhaps a cancelled cheque to substantiate the price you paid.

The plane must undergo an MD-RA inspection equal to the Canadian final inspection and it must fly 25 hours within a 25 nm radius of the field at which it was inspected. Then the owner must apply for an amendment to the restricted flight authority to allow Day VFR non-aerobatic flight outside the 25 nm radius. This document costs $35 and is administered by an TC office, usually a one hour inspection of your climb test paperwork, snag sheet, and log entries, then a rubber stamp and you are on your way.

There is certainly no reason for pilots and builders to accept being victimized.

Hamilton TC Office –Avoid at all costs

In the past several years RAA has been approached by many members to complain about their dealings with the Maintenance and Manufacturing inspectors at the Hamilton Transport Canada office. The complaints always involve inspectors Bill Hayes and Wayne Juniper, and if you are unlucky enough to draw one of these two inspectors you will likely have a long wait for your paperwork.

On one occasion Wayne Juniper successfully avoided inspecting a member's damaged project for over two years, and it took a call from the members Member of Parliament to get Mr. Juniper out to see the plane that was less than ten miles from his office.

Bill Hayes seems to enjoy a day out of the office now and then, and he does not appear mind holding up builders from receiving their unrestricted flight authorities at the end of the 25 hours test period. At most TC offices the release from restrictions takes half an hour at the counter but last Fall Bill held up a Searey owner for months. The owner finally designated me as his representative in his dealings with Mr. Hayes, and a week later he was grudgingly granted his release from restrictions so that he could finally take his wife for a ride in their new airplane. Bill Hayes is also the fellow who spent a day inspecting paperwork in a member's hangar and finally released the plane, noting that that the hyphen had incorrect proportions. The chargeout rate for an inspector is over $750 per

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The Recreational Aircraft Association Canada
13691 MCLAUGHLIN ROAD, R R 1,
Caledon, Ontario L7C 2B2
Telephone: 905-838-1357
Fax: 905-838-1359
Member's Toll Free line: 1-800-387-1028

email: raa@zing-net.ca
www.raa.ca

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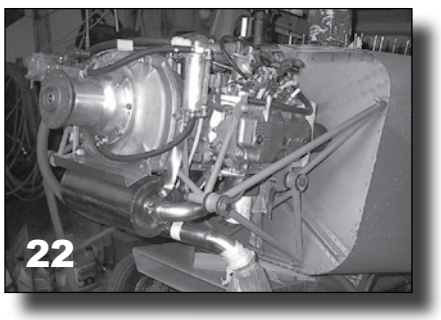
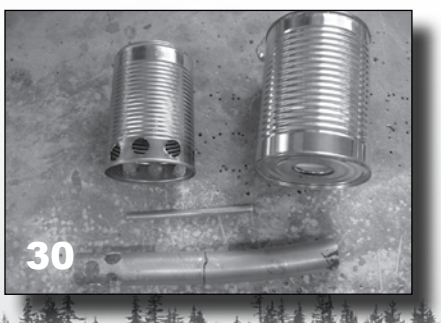
features

On the Cover: Ken Lehman's Subaru Powered Rebel.





We're Going To Go BIG

Building a Fairchild 51 Replica

Part one of a series by David Stroud

RAA Chapter 4928, Ottawa

About five years ago an idea hatched in my head that I had enough steam left in me to build another airplane. The Fountain of Youth curve seemed to be somewhat in sync with the funds available ....not flush in either regard but it looked manageable.

Another good reason to build something larger was the fact that I have a sympathetic spouse who enjoys flying with me but when it's time to head out to those overnight fly-ins, there's just not enough room for her and all that camping equipment and stuff that goes along with it with my two place Christavia.

I learned long ago to avoid a trap whereby the plane got done or at least seriously committed to before consideration was given to a suitable power plant. I was keen to look at radial engines but was very wary of the possible costs involved and even scarcity of parts. I can't remember which came first, the engine find or the Fairchild idea but the good 'ol internet provided the answer. A general Google search on Canadian Bush planes probably brought me to the Fairchild line of airplanes and by some stroke of luck a non flying replica of a Fairchild FC2 was being built in Montreal by the Canadian Aircraft Heritage Centre. A quick visit and introduction to this nice collection of people had me convinced on the FC2 and, they were willing to lend me whatever plans they had to copy for my self. So, we have a high wing monoplane, welded tube fuselage, wood wing and hey, the wings even fold. Empty weight of 1,790 and gross of 3,225 lbs. Wingspan of 44' with a chord of 7'. It flew on a 220 hp Wright J5 radial. A very early bushplane right out of 1927.

Now what about that engine?

Many have heard of the Yak two place trainers and most of them have a 360 hp M14P Russian radial engine. Some people confuse the Nanchang CJ6 with the Yak and perhaps for good reason. The Nanchang has a 285 hp Huosai Chinese radial engine and the two engines are the very same size physically. One can literally take one out and bolt in the other without even changing the mount and nicely enough, quite often the Nanchang engine winds up sitting on the hangar floor all by itself as the owner has swapped it out in favour of the 360 hp Russian engine. The Huosais are all over the place with low hours and quite often dirt cheap. I paid $7K US for a 300 hour engine, two blade cockpit adjustable metal prop and a full stainless exhaust system.

So, a very compatible combination of engine and airframe are at my fingertips but a little more research on the net led me to a very convenient set of mods to the Fairchild FC2 that I was looking at. Here's a brief, historical look into the fast paced lineage of Sherman Fairchild's brainchild starting in about 1926. Sherman was a camera buff and was keen to develop a very good camera system suitable for survey work but few suitable aircraft were available. He had the FC2 designed with arial photography in mind. FC just means Fairchild Cabin and that was rather unique for the time as most pilots had the top parts of their bodies out in the slipstream. The FC2 was totally enclosed and had a very effective heater. It was a razor back model though and that part needed improving. Many of the FC2's came back for refit and were converted to a four longeron model, Frieze style ailerons were fitted, the elevators were balanced and a 300 hp radial was fitted. This became the Fairchild 51. In all, only about thirty 51's ever existed. In fact, it was really just an in between model of sorts because they soon fitted a 450 hp engine on the front, increased the wingspan to 50', lengthened the fuselage by two feet and it became the Fairchild FC2W2. With a few iterations over the years, the 2W2 was streamlined and refined a bit and the design was frozen as the Fairchild 71, of which about 180 units were built. One of the most famous 51's was that of Bob Reeve (Glacier Pilot) who founded Reeve Aleutian Airways. One of the most famous 2W2's was flown to the Antarctic by Admiral Byrd, nicely enough on Canadian skis made in Sioux Lookout, Ontario. The RCAF had some 51's and 2W2's on strength in the '30's and my replica will clone RCAF ser. No. 626 which flew out of Borden, Ontario and was used for bombing practice by the BCATP. Many of these examples were built in Longueil, Quebec under licence from Fairchild under the eye of Hubert Pasmore who became known as Mr. Fairchild of Canada.

I paid $7K US for a 300 hour engine, two blade cockpit adjustable metal prop and a full stainless exhaust system

So, what'll it take to build one? Money, space, steel, wood and a host of other bits. But..the main thing needed is more space. The Chirstavia was built in the mid '90's in a one car garage and I had more guts, more energy but less cash then. So, we built a new home just at the South end of Ottawa with a 24 x 36 foot attached garage and the only stipulation on space sharing was that the Bride gets to overnight her car during the winter months on one side. It works.

To test my determination, a load of steel was brought up from Dillsburg, Pa. on a return trip from Sun n Fun and we got started on the front half of the fuselage. I didn't have a flyable Huosai back then to do the integral engine mount so an eBay deal got me a dead one on the cheap which later got sold to a lad who somehow cracked a case. Wow...the rear spar carry through piece is made of 2" diameter, .065" 4130. This will be a big one for sure and for that matter it might be the biggest one ever built as a true homebuilt.

As an aside, Fairchild did develop a side by side seating iteration and it was called the Fairchild 42, or the Fairchild Foursome. It is essentially the same size as my 51 and there is only one of seven ever built but still flying in Wasilla, Alaska . You can search Fairchild 42 on YouTube and see it fly. It's a neat piece of bush flying history. Of all the 71's and 2W2's produced, there are a handful in various museums in the US and Canada, only two in flying condition and one nearly restored and ready to fly by a friend in Pennsylvania. Herb Harcomb restored an FC2 decades ago and it hangs in the EAA museum in Oshkosh. The Smithsonian has an FC2 hanging in the ceiling from Panagra, the forerunner of PanAm (Pan America Grace Airlines). My Fairchild 51 will be the only one on the planet...albeit only a replica, but flying soon and hopefully will rest in some Canadian museum when the time is right.

The next installment will feature pictures of the fuselage including engine mount, landing gear, some flight control parts and the wing folding system. I've got to get back into spar building right now. Stay tuned. RAA

WINGS OVER AUSTRALIA: MR. CORBY'S WONDERFUL starlet

"276 Starlet Squadron" – Kyneton, Australia

CORBY STARLET CJ-1: "An all wood, ply and fabric covered single seat low-wing cantilever monoplane. The design has established a reputation for exceptional performance/horsepower capability, being both a very practical cross-country machine and a first class aerobatic type." That's the quote from John Corby's notes that come with the plans.

The Starlet, first flown in 1966, is still a very popular amateur built aeroplane 43 years later. Starlets have been built and flown world-wide and many are under construction right now. So let's introduce the Squadron and its members:

Aircraft #1 – VH-NEZ aka "Red Alert" built over a period of 6 ½ years and flown by Norm Edmunds. Jabiru 2200 powered, cruise 105 knots, climb rate around 1500 FPM.

Aircraft # 2 – VH-KLK aka "BuzzBox" built over a similar period and flown by QANTAS pilot Frank Deeth. Also Jabiru powered, 105 knot cruise and a similar climb rate.

Aircraft # 3 – VH-LDD aka "Bug Catcher", now owned and flown by retired pharmacist Colin Gamble. Built in the late 80's by Don Dennett, this past prize winning aircraft is powered by an Australian AEROPOWER 1835cc VW conversion, cruises around 100 knots and climbs at around 600-700 FPM.

Aircraft #4 – 19-7015 (ex VH-CSX) and as yet, unnamed. Also now owned by Colin, this one was built more recently by another retired pharmacist, Peter Laurantus and has the Jabiru engine.

All are long standing members of SAAA – the Sport Aircraft Association of Australia. SAAA is the organization which assists builders of Experimental Aircraft in Australia. SAAA can guide a member right through from getting started, right up to aircraft certification upon completion, then on to test flying and

ongoing maintenance. About the only thing SAAA doesn't do is issue pilot licences.

You'll note the strange registration number "19-7015" of aircraft #4. Well this one is now registered with RAAus - Recreational Aviation Australia, the organization which looks after all manner of recreational aircraft - previously known here as "ultralights". Pilots of these craft must hold an RAAus "Pilot Certificate", but don't need to hold an aviation medical certificate. It is, for many, a cheaper way to fly.

VH-NEZ was built by Norm in his home garage. Norm had around 33 years of model building experience behind him, so this was just the next step in a life long interest in aviation. Norm actually works in aviation too, as an ATC Simulator Shift Supervisor at Melbourne International Airport. Construction of the aircraft began with the tail feathers – stabilizer, elevators, fin & rudder, then followed the wing ribs – after first making all the required timber jigs. Next, the wings were made via a very unproven and unconventional assembly process right on the workbench. It worked brilliantly as Norm fully expected. Then on to the fuselage, engine and instruments, covering and painting – all done by Norm. The covering is all Polyfiber and was absolutely foolproof. Paint is Polytone, again done by Norm who, by his own admission, is not a spray painter. The results? "Outstanding" The name "Red Alert" comes from the Russian theme employed throughout, from the bright "splinter" camo pattern, to the standard Yak red stars, colored rudder bars and tail serial number. Red Alert first flew in July 2005 and is now approaching 200 hours in service.

VH-KLK was the next ship to fly in

Opposite: "Buzzbox" built and flown by QANTAS pilot Frank Deeth; Norm Edwards VH-NEZ "Red Alert" peels off for attack. Above, clockwise from top left: another shot of Norm's ride; VH-LDD "Bug Catcher" built by Colin Gamble; Colin's front office. Bottom left, the assembled squadron prepares for another sortie, perhaps to a distant airport beanery. Pie, anyone?

Yes, plans built aircraft like the Starlet are still popular, ranging from Rutan designs (still), Jodels, aluminium designs (T18's etc) and many others.

the Squadron, built in the home garage of Frank, in his spare time from being a jet jockey for QANTAS. Frank built the tail feathers first, the fuselage, and the wings last. Frank employed the more conventional method of assembling the wings using a large timber frame arrangement mounted on the workshop floor. Frank too did all his own Polyfiber covering and painting after a brief lesson from Norm and the results there were equally spectacular. Frank did his own first flight (as did Norm) and all went without a hitch. So what's with the name "BuzzBox"? Well, while it was getting built at home, a friend of Frank's wife Lynn came to visit, and she asked him "how's that little buzz box coming along out in the shed Frank?" Voila! A name is born!

Number three in the Squadron (well get to "the Squadron" in a minute folks…) is VH-LDD. Owner Colin Gamble was able to purchase this bird during a time when construction of his own Starlet at home was barely proceeding. LDD won first prize for its builder Don Dennett at the SAAA annual event in 1991. Some time after that, Don took the wings off and took the plane home to do an engine change from an unreliable VW to the Australian AEROPOWER, but 15 odd years later the changeover never got completed and Don reluctantly decided to sell – but it had to go to a good home. 276 Starlet Squadron to the rescue and Colin became owner number two. Well it took Colin and Norm the best part of 18 months work to get everything fitted, rectified and sorted. There was a lot to do, mainly with an incomplete engine installation, new cowls to be fitted and painted, instruments and radio reworks, canopy repairs, and finally wing repainting. Here's where the name comes from… Many days delay waiting for just the right calm conditions to repaint the orange on the wing leading edge. Calm day arrives – just perfect, no wind, good temperature and a bright sunny day. Wing outside the hangar, spraying begins, all going well… wait a minute… what's that… BUGS!!!!!!! AHHHHHHHHHHHHH!! Either the shiny paint or the fumes attracted them – by the hundreds! QUICK! Get the wings inside!!! Oh man!!! What are we going to do now? Look at all those bloody bugs! Can't wipe them off while the paint is wet – just can't. So we wait until the paint tacks off and have a go at flicking a tack rag lightly at them, and it works, taking 99% of the bugs out of the paint with no visible remains, apart from one small place. Whew! So, about five minutes later the aircraft was duly christened "Bug Catcher"

When all jobs were completed and LDD had a new Certificate to fly, Colin took her up for the first time in over 15 years – and HIS first flight in a Corby Starlet! Now we must mention that it is somewhat of a tradition in Australia upon flying a Starlet for the first time, to call "the Boss" – designer Mr. John Corby who lives in Sydney. John is thrilled to speak to aviators who have just flown one of his babies for the first time.

Okay, so "the Squadron" – what's the story there? Well "276" is our hangar number at Kyneton airfield in country Victoria, about 80 kilometres north-west of Melbourne. And "Starlet Squadron"? Well- rather obvious by now huh? There's also a Tyabb Squadron (two aircraft) and a Latrobe Valley Squadron (about five aircraft).

So why do we all love the Corby Starlet so much? I dunno, we just do. We always have, we always will. It's our own personal little fighter plane. It's relatively easy to build, easy to fly and maintain, and inexpensive to run. In these days of RV kits taking the world by storm, we still like to admire those who have the determination to actually BUILD their own aircraft from scratch, not just shake the box and add fuel.

The Starlet is an affordable aircraft to build – you can "pay as you go". That is to say, there's no kit available to buy, so you don't have to outlay a large bag of cash up front. Learning how to do each part is tremendously rewarding too. Many before us did it quite successfully, why couldn't we? So we did. And so do many more following in our footsteps.

There's a world-wide email build-

ers group hosted by Yahoo, under the guidance of Dave King, Board Member of RAA Canada. Builders from around the world share ideas, photos, construction hints and tips, as well as flight stories of the latest missions flown and bandits shot down. (Doing 125+knots at "combat power" past an unsuspecting C172 or PA28 is pretty satisfying!) One group member in New Zealand has just completed and flown the first "metal Starlet" – a model CM-2 designed by John many years ago. Plans for this one are not generally available, but… one never knows…

So what else are the Aussies up to with Experimental and Recreational aircraft? Lot's of RV's of all sorts of course, lots of Australian Jabirus (composite kit), lots of very expensive imported European factory built "LSA" type aircraft, and all sorts of things in between. Yes, plans built aircraft like the Starlet are still popular, ranging from Rutan designs (still), Jodels, aluminium designs (T18's etc) and many others. Engines in use are largely Lycoming (or experimental equivalents), Jabiru, VW, Rotax 914 and Subaru, though at least one RV owner in OZ is on his fourth Subaru engine and getting good at doing forced landings with fried engines. The Aussie made ROTEC radials are rarely seen here, but believed to be selling like hot cakes in USA. They are indeed a good item, but there aren't many aircraft designs suitable for them here in Australia. The Murphy Rebel variations would suit them.

Australia faces, like the rest of the world, the situation known here and elsewhere as "check-book building" – whereby a person pays someone else to build the kit for them, then falsifies the declarations needed to have it certified to fly as a 51% amateur built aircraft. It goes on, the regulators know it goes on, everyone in the game knows it goes on *and* who's doing it, but those doing the building are clever in how they disguise it. There's no easy answer. The reality of it is this – it is not in any way illegal to build an aircraft for someone. It *is* however, illegal for the owner to declare that he himself built it and should have all the maintenance privileges that go with it. That is the true problem. Oh well….

Well thanks for reading, Canada! If you want to know more about Experimental and Recreational Aircraft in Australia, here are some websites:

www.saaa.com
www.auf.asn.au
www.jabiru.net.au
www.rotecradialengines.com

What do builders do in the off-season? Well, sometimes they miniatures. Gerry Younger has just completed machining the crankshaft for a scale model Merlin engine, complete with supercharger and reduction box. He says that the difficult bit is making the spark plugs and ignition system. Previously Gerry built a running model of the Bentley rotary which he displays at fly-ins. For that one he even rolled his own valve springs.

Above: The Bentley is a rotary (*not* the Wankel type) and the engine is a blur at running speed.

Density of Humid Air: THE FACTS

by Joe Foster RAA 1849

So often we have been told that hot and humid air degrades aircraft performance. My personal question is *"How much does humidity matter?"*. Certainly pilots notice how quickly we can climb out on a cold day, compared with the flatter climb of a summer time take-off. Hot Air balloons are apparently successful machines, and we all do believe that air density decreases with increasing temperature.

The following table shows the figures for air density at various temperatures, at a sea level pressure of 760 mm. temp.

temp(Celsius)	dry air density (gm/litre)
+30	1.1649
+22.5	1.1945
+20	1.2047
+18	1.2130
+10	1.2472
0	1.2929
-10	1.3420

I searched out these numbers from the CRC Handbook of Chemistry and Physics, a common scientific reference. Note that the above table is for DRY air, and that density increases 15% from +30 C to -10 C. What are the numbers for HUMID air? The same Handbook offered some equations, which required some number crunching to arrive at the next table. Again we are at a pressure of 760 mm. The table reveals that, indeed, humid air is less dense than dry air, but not by much.

temp (Celsius)	humidity (%)	density (gm/litre)
+40	100	1.0966
+40	0	1.1277
+30	100	1.1493
+30	0	1.1649
+20	100	1.1942
+20	0	1.2047

AT +20 C, the difference in air density (between 100% and 0% humidity) is 1%. For the corresponding +30 C it is 2%, and at +40 C it is 3%. For temperatures colder than +20 C, the difference decreases to less than 1%.

Those are the scientific facts. Increasing humidity does lower air density, but the effect is far less than that of temperature change. A temperature change of 2.5 Celsius degrees will cause a 2% change in density, around the same as a 100% change in humidity. Realistically, of course, humidity rarely goes from zero to 100% in Canadian climates. Perhaps flying from the Sahara to the Congo one could traverse a change of humidity of 100% ....

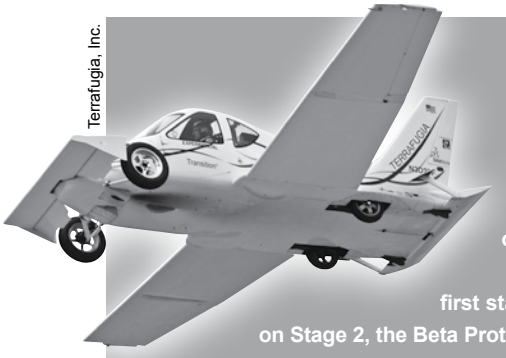
On a related topic, did you know that the Viscosity of Gases increases with temperature? When I first learned of that, it seemed wrong. Liquids get 'thinner' as they warm up, but gases do the reverse! Have a look at one more table, from the CRC Handbook:

Opposite: Joe and his Osprey II; right, obviously Joe tinkers with more than airplanes: a lovely Lotus 7.

Temperature (Celsius) viscosity (micropoise)

-31.6	153.9
0	170.8
+18	182.7
+40	190.4

In going from zero C to +40 C there is an 11% increase in viscosity. Asthmatics feel this effect in hot weather, causing difficulty breathing. It seems that airplanes should perform less well in viscous air, but how much is beyond my ken. Overall, high temperatures and flying are not a good mix. I like Canada -- it is a cool place to fly. RAA



Terrafugia, Inc.

Transition POC Completes Flight Testing

Woburn, MA – June 3, 2009: Terrafugia, Inc. has successfully completed the flight testing program designed for its Transition® Roadable Aircraft Proof of Concept. Having been dubbed "The Flying Car", the Transition® completed its historic first flight on March 5, 2009 with 27 additional flights completed over the next several weeks.

The successful completion of flight-testing with the Proof of Concept concludes the first stage of a four stage process to bring the Transition® into production. Work is underway on Stage 2, the Beta Prototype. First delivery is expected in 2011.

The Proof of Concept vehicle is the first and only Transition® to be built thus far. It has now achieved its goals by demonstrating driving, flying, and automated transformation between the two in one integrated aircraft. The flights conducted a plan set specifically for the Transition®: characteristics such as handling, performance, and take-off and landing, stability and stall were evaluated. B-Roll footage is available of representative flights. The flight-testing program demonstrated the safety of the vehicle in the air while identifying modifications that will be incorporated into the next Transition® model to be built, the Beta Prototype.

Test Pilot Colonel (Retired) Phil Meteer had a positive review of flying the POC: "I would like to keep flying this Proof of Concept vehicle, but it makes sense to move on to the Beta Prototype."

Categorized as a Light Sport Aircraft, the Transition® requires a Sport Pilot certificate to fly. It is a two-seat aircraft designed to take off and land at local airports and drive on any road. Transforming from plane to car takes the pilot less than 30 seconds. The Transition® will cruise up to 450 miles at over 115 mph, will drive at highway speeds on the road, and fits in a standard household garage. The vehicle has front wheel drive on the road and a propeller for flight. Both modes are powered by unleaded automotive gasoline. By giving pilots a convenient ground transportation option, the Transition® reduces the cost, inconvenience, and weather sensitivity of personal aviation. It also increases safety by incorporating automotive crash structures and allowing pilots to drive under bad weather. Refundable airframe reservations are currently being accepted.

Terrafugia (ter-ra-FOO-gee-ah), based in Woburn, MA, is comprised of a team of award-winning engineers who have been advancing the state of personal aircraft since 2006. Founded by five pilots who are graduates of MIT and supported by a world-class network of advisors and private investors, Terrafugia's mission is the innovative expansion of personal mobility. "Terrafugia" is Latin for "escape from land."

Terrafugia would like to acknowledge and thank its corporate sponsors: Ansys, Nor-Tech, SolidWorks Corporation, and CableOrganizer.com. Additionally, the following business partners have contributed to a successful flight testing program by furnishing equipment and services: SpaceAge Controls, Garmin International, Dynon Avionics, CO Guardian, David Clark Company, Bose Corporation, Telex Communications, Aloft Technologies, Icom Inc., JH Audio, and Air Graphics LLC.

For more information or to schedule an interview, contact Richard Gersh at Terrafugia +1-781-491-0812, visit www.terrafugia.com, or e-mail: press@terrafugia.com Images and broadcast-quality video of flight testing may be obtained by e-mailing press@terrafugia.com.

Rust Removal With Science

I was tearing my hair out and getting desperate to secure lift strut material for the Fairchild project and going around in large circles to no avail.

Text and Photos by David Stroud

Lift strut material is simply no longer made anywhere on the planet in sizes suitable for my 4,000 pound gross project. There is aluminum strut material, but the configuration and method of attachment to the fuselage precludes its use. I spoke with friends as far away as Alaska, Vancouver, LA and Georgia and came up empty. One lad from the Waco club was very helpful and after remarking..."hey, you're the guy in Canada building the Fairchild, right ? " introduced me to Echim Engles in Germany via email and he taught me how to make up a rolling mill to roll my own from easily available round tubing. I took a week off from the stress and moved on to other parts. I emailed the RAA list asking for a go/no-go dimension on 5/32" nicopress fittings and none other than Wayne O'Shea from Irish Field Aviation quickly responded with the correct number. With tongue in cheek, I asked if he had any lift struts from a Norseman up in the attic and to my amazement, he replied that he had four available. We quickly made a deal (very generous, thanks Wayne) and we picked them up over Christmas.

The struts had mild rust inside and out, nothing serious, but getting it off the inside might be a pain. I was just glad to have them. Much advice was forthcoming from friends again involving strippers (no, not *that* kind), converters, inhibitors etc. but someone came up with the electrolysis process. It is very effective, inexpensive, environmentally friendly and simple to do.

I made up a 15' tub from scrap 2" x 8" lumber and lined it with cheap building poly. Any plastic will do. I fitted a drain on one end of the tub. The lift struts were trimmed to a 12' length and three 12' 6" lengths of rebar were welded up. All three rebars get connected together and laid in the tub one on each side of the strut and one down the length of it on the inside. The inside rebar is supported in three places so as to remain isolated from the strut. I connected the rebars with cheap metal strapping and left a foot or so hanging over the side of the tub for electrical connection. I fastened a second strap to the strut itself and we were ready for the solution.

The solution is simply Arm and Hammer ***Washing*** Soda.... not baking soda, mixed with water at a ratio of 1/2 cup soda to about 20 litres of water. Apparently the ratio is not dead critical and I just eyeballed the 1/2 cup. Mix thoroughly and pour into the tub with enough solution to submerge all parts. A battery charger provided the juice and after trying different levels, I settled on

12v at 12 amps. It is very important that you attach the NEGATIVE terminal to the part to be de-rusted and the POSITIVE terminal to the sacrificial anode array. Get it right, Amigo, or you'll be sacrificing your part to a dirty old piece of rebar. It didn't take long for things to get going and soon the solution changed to a rusty colour, with predominant lines of rust up in the surface foam along the lengths of the rebar. Apparently, different applications will require different lengths of treatment. After a few hours I could see things were happening. After 24 hours flakes of rust surfaced, but I let things go for 48 hours just to be sure of good action on the inside of the strut. With everything disconnected and shut off I drained the solution, dumping it on the back lawn (it won't hurt the grass). With a rinsing spray hose in one hand (with rubber gloves on) I easily swiped off any last bits of rust residue with a Scotchbite pad inside and out. A fresh water rinse was followed by a thorough drying and double boiled linseed oil was applied everywhere. The results were astounding. I can even see the batch numbers on the struts and the date of manufacture was April 1946 from the Summerhill Tube Company. A very big thanks to Wayne O'Shea for his help in my contribution to Canada's Aviation History. RAA

Left: a 15 foot tub made from scap lumber is lined with poly sheeting; three lengths of rebar are welded up and connected. One goes inside the strut, the others on either side.
Top down: everything is connected up to a battery charger. *How* it's connected is very important if you value your part. Center, the struts were left connected for 48 hours. Bottom, the astonishing result. *So* easy and *so* effective!

TWO YEARS AGO my daughter Shona purchased her first aircraft, a homebuilt Glasair. She sent pictures and explained that it was quite small and rather difficult to get in and out of and that she just fitted nicely into it.

NOT Your Average Mother Daughter Outing

By Norma Hirota

I, being more than somewhat overweight, I thought I would never fly with her. However, when she announced that she was planning to fly from Vancouver to Oshkosh in 2008 and continue on to Fergus, Ontario to visit us, I suddenly got the urge to have an adventure.

So, I worked hard and dropped 65 pounds in order to fit into the plane and be able to take a small amount of luggage without overtaxing the weight restrictions of the aircraft. I got more and more excited as her arrival neared. However, when that time came, and I finally saw the aircraft, I must admit, I began to have some serious concerns. Would I have the ability to maneuver my body in and out of such a small space? And would my back withstand that particular sitting position for an extended length of time? What if I suddenly needed a rest room? (It's not as if one can just stop by the side of the road!!) Nonetheless I had told many friends of my plans and I was determined to do this.

The first item of business was to procure a landing place here. Although we live within fifteen miles of the Guelph airport, I was also aware that there were a number of farms in our area that had landing strips. Now a grass strip is not always accessible to the little Glasair due to its low wheel clearance. However, as it turned out, we located a wonderfully well maintained strip complete with hangar facilities if needed, nestled among corn fields which at the time were lush with stalks eight to ten feet high. only five miles out of town. It is part of the Fergus Fly In Bed & Breakfast owned by Chris & Helen Juergensen. When Shona inquired as

to what they would charge for landing and a few days possible storage, Chris declined any fee but when pressed his reply was, "Well, it will cost me ten dollars to cut the grass for you." Chris is a ninety year old who taught both of his sons to fly and who are now both commercial pilots. He stays fit for running his large farm & B&B by swimming each morning in the indoor pool and flying his two aircraft as well as gliding. The Juergensens were most hospitable and really went the extra mile to be of service. Unable to reach us when a storm arose, they went to the airstrip and hauled the Glasair into the hangar. They were a little surprised that such a small plane had so much weight to it. And there was a fair uphill slope into the hangar. Chris has a winch to help put the planes in but it was not in line properly so, again going the extra mile, he took the time to drill a new hole in the concrete floor in order to put the winch in a convenient place to bring the craft in out of the storm.

That was the first confirmation I had about the statement my daughter had made regarding her little craft. It may be a cat but it is a cat with teeth!

Following a night of severe thunderstorms laced with hail, the morning of our departure dawned bright and clear. And suddenly, there I was, facing this little tail dragger dubbed "Glasicat" (which I had been admonished was not a "cute" plane but rather a "sexy" one). With the threat of more weather to follow, we quickly prepared for takeoff in order to be in advance of it.

But talk about a reversal of roles! I, the mother, was about to turn my safety and well being into the capable hands of the daughter, and as we careened down the grass strip runway in rural Ontario, surrounded by corn fields, realizing that I (nor the pilot) could even see where we were heading, I couldn't help but wonder – were we going to be in the air before we hit that corn at the end of the runway?

Of course we were and I was exhilarated as we circled over the field in one last farewell to those left behind. I was pleasantly surprised at how comfortable I was with the whole flight feeling. That is until we were nearing our first landing at Sault Ste. Marie. Suddenly there was an abrupt change in the engine and I had the distinct feeling that we were about to fall from the sky. Although I was sure that no gasp escaped me, I may be wrong since thereafter my pilot would occasionally remark, "There is going to be a change in the sound of the engine – don't worry." My next worry, once on the ground, was how to extricate myself from the confines of the small space I had managed to fit into. It took a little doing to get the legs in motion but eventually I found myself firmly planted on the tarmac.

While on the ground at the Soo we met a couple of fellow fliers who enquired as to our route. We were going around the lake to Thunder Bay while they were taking the more direct route straight across the lake. How surprised they were when they landed there and found we had arrived ahead of them. That was the first confirmation I had about the statement my daughter had made regarding her little craft. It may be a cat but it is a cat with teeth! At that time it was my first experience with weather also. We had to skirt around a storm as we approached Thunder Bay and I can assure you that I kept my eye warily on the darkened clouds and the lightning they produced (not that there was a darn thing I could do about it) but our good fortune held and the storm (again with torrential downpours complete with hail) delayed until after we had made our safe landing.

We stayed in Thunder Bay and had a lovely visit with old friends for a couple of days. Then, again with good fortune, we headed off in beautiful sunny skies toward the vast prairies where I had been born and raised. How it thrilled me to see the patchwork fields and the contours of the coulees (a term which Easterners simply cannot envision).

I enjoyed our fuel stops at small rural airports where there were always nice clean facilities and amenities for checking weather, flight plans etc. We received a special treat at the Moose Jaw regional airport. We arrived there at lunch-

Norma with Shona's sister; opposite, Norma look like she's set to go. A trip over the Rockies? Bring it!

time thinking that perhaps we'd eat there but found no facility for food of any kind. We were informed that there were plenty of eating establishments in town. Well, it was obvious that we were not about to be able to fly into town and land in the nearest Wal-Mart parking lot. However, we were quickly offered the use of a vehicle to drive the four or five miles into the city. We were given instructions as to how to get there along with where to stash the vehicle keys if there was no one around upon our return.

We did so with much appreciation. Not that we didn't have snacks to eat had it not been possible, but it was a nice break and ever so pleasant to meet such accommodating and trusting people.

Our next pleasant and accommodating person was my sister Enid in Calgary who would meet us at the Okotoks airpark. As we neared the area, we lost our GPS and I was told to look for the airpark below. I had become somewhat capable of identifying various things on the ground and was able to locate the railroad and highway Shona pointed out on the map, but I must admit that we were almost on top of the airstrip before I spotted it. So far my only field of expertise had been developed in the art of bug cleaning, a task that I had soon learned was among the first items of business to be taken care of upon landing (as it is important to keep us fast and "pretty"). Spotting small airfields on the ground and other small craft in the air was very slow at developing.

We spent a couple of very hot but pleasant days with family in Calgary before leaving once more after a stormy night to head for yet another stop in Kelowna to visit another sister, Rusty.

As we had upped and downed our way across the country I had become accustomed to the various changes and all was well. *Until there it was:* as we flew west from the Okotoks airpark, there, right in front of me rose the Great Rock Pile! Having been born and raised in southern Alberta I was very accustomed to the *short* jaunts into the mountains. So as we drew closer and closer to this huge obstacle I couldn't help but think, "We are zooming along here at 200 plus mph and there is a huge rock pile in front of us – shouldn't we perhaps be getting a little more altitude?" And as that thought struck me - wham! Right into a dense cloud where all vision was nonexistent. My heart leapt into my throat and the bottom fell out of my stomach. Luckily for me, we were out of it as suddenly as we had entered it and by the time I had recovered my breath, we were soaring over the majestic Rocky Mountains. I was totally enraptured with the scenery below and around me, recalling, as I viewed the beautiful lakes, how as a child drawing the

by the time I had recovered my breath, we were soaring over the majestic Rocky Mountains

pointed peaks of mountains, wondering how a lake could possibly stay on top of one.

Then once again, all too soon, it was landing time as we arrived at Kelowna. Although I was excited to be able to spend some time with my sister, we only stayed one night there. Surprising myself, I found that I was more anxious to get in the air once more. Even though Shona's aunt lives there, I'm not sure she should visit too often as Kelowna seems to be a place plagued with altercations for her. Years ago when she was visiting with her dog Chase, she found she had issues with the city in regard to their dog laws (or lack thereof), even getting herself into the local papers. And now here we were confronting issues with the airport facilities. The only place all across Canada where we had not the best of everything offered. But that's another story she may tell some day.

So it was off once more into the not so wild blue yonder (luckily only having to skirt around the occasional bit of weather) and on to home at Langley field. By this time I had actually gotten used to getting in and out enough, that I could finally remove myself with less difficulty and no longer required to have Shona out of the way first in order that I could reach and stretch across the whole plane in order to get myself up and out.

Well, here we were at home base and I immediately began to meet some of the wonderful people among Shona's new found flying friends that I'd heard so much about over the past couple of years. It was great to finally put faces with the names, although they came so fast and furious that many times I had to be reminded of who was who.

Well, what a wonderful experience I had had! But that was not the end. A couple of days later and we were off again. This time headed for the U.S.

With only a short hop of 10 minutes to customs at Bellingham, and the weather being quite on the hot side, I was not looking forward to having to get out so soon. Upon our arrival, I experienced mixed feelings of relief when told we needn't leave the plane, and a bit of anxiety as it was explained that we needed to get back in the air as quickly as possible as there was a large number of birds coming and we needed to be out of the way. Why the moment of anxiety you may ask? Well, being the novice flier that I am, my initial thought went to "what *does* one do when confronted by a flock of birds?" Fortunately, I clued in to the use of the term "birds" and swallowed the knot in my throat before voicing my ignorance, and was able to settle back and enjoy our flight to Independence, Oregon. Once there, we found the temperature soaring, and being glued to the seatback by perspiration did not help in my attempts at removing myself from the plane. We enjoyed a smoldering hot (103 deg. F) day at Van's RV homecoming & BBQ., occasionally getting refreshed from the fine mist sprayed from an elevated lawn hose. It was here that I was introduced to the world of living at an airpark, having a runway right to your own garage where some had not just one plane, but multiple planes parked. The day was capped off with a wonderful meal and great company. Then it was off to Hillsboro, Oregon for the night. What a treat to have only a block to walk from where you park your plane to a lovely hotel! (I had only been in places where it was farther than that just to get from your seat in the plane into the terminal). The evening was beautiful and cooled off enough that the bug duty (surprising how many hitchhikers you can amass in a ten

minute flight) was not so taxing. I had also, by this time, learned to help with setting chocks, and putting on the cover (eventually I was to even be allowed to help with an oil change.)

Morning arrived again with gorgeous weather and we were off once more headed for the McMinnville, Oregon fly in. I was sure getting an education in aircraft designs. I very much enjoyed my visit to the Evergreen museums. Not only was it a treat to finally see the famous Spruce Goose, but so many other aircraft as well. And – it was also a break from the blistering 100 degree plus heat outside.

When our wonderful day was ending, we prepared for home. Our little craft had been closed up all day and the heat being so intense, I'm surprised it hadn't exploded its canopy off. Getting in was like entering a sauna. I was glad that I had finally gotten over my fear of the possibility of taking off without everything being tightly closed up, something that had originally been a problem for me but Shona kept assuring me that it would be too hot inside before takeoff if we closed up too soon and besides, I had also learned to keep my head out being on the lookout for possible obstacles on the runway (a chore that I think may have been made up just for my benefit). Even though we got a good breeze inside before liftoff, we were heading north and I, of course was on the setting sun side so the heat just kept beating on me. By the time we arrived back in Langley, hot and travel weary, I believe I had perspired away at least another five pounds!! Both of us were glued to our seat backs and had a good laugh at my attempts to get out of the situation. As we arrived we noted that the Remax balloon was about to be readied for a flight, so we walked over and watched its inflation and loading of passengers. It was the first time I had ever seen one while it was on the ground. Wow! The experiences just kept building up!! I kept thinking that perhaps I should be returning to Ontario soon, but I was just enjoying myself too much. It's not often that I have the opportunity to spend so much time with a daughter who lives so far away from us. So, at the risk of having her tire of me, I stayed on.

Our next adventure was the fly-in at 108 Mile House where we once again enjoyed good company, good food, good weather and beautiful scenery. As usual, "Glasicat" got a lot of attention and when, at the end of the day, we were taxiing down the runway ready for liftoff to home, we received a request to give them a flyby before departing the area. I think I could get used to being in the limelight!!!

And still I stayed on – there was one item of business that had to be attended to. My seventeen year old grandson Philip had returned from living in New Zealand and was now residing at Comox. I had not seen him in two years and had promised him a flight with his Aunt Shona as a birthday gift. So off we went to the island on a beautiful Sunday afternoon. What a happy reunion we had. But his first remark as I opened the canopy was "It is small isn't it!" However, after nestling his six foot frame into the cockpit, he mused that perhaps he'd learn to fly one day. But upon returning to the ground, I asked how it went and he replied that perhaps he'd put off flying for a while. He obviously didn't take to it like his Grandmother had! On our return from the island, as we approached the Vancouver area, the skies ahead turned black but off to the left into the mountains, I glimpsed a very faint bit of a rain-

continued on page 28

Every year aircraft manufacturers try to add something to their latest models. If they can't add it to the instrument rack, the speed, the handling, or the load carrying capacity, they do the next best thing..... they add a bit to the price!

For months after California's Northridge earthquake of 1994, aftershocks rocked the San Fernando Valley and Van Nuys Airport. One morning about three weeks after the initial quake there was a particularly sharp aftershock. Moments later on Van Nuys' ground control frequency: "Uh, four-three-kilo would like to file a pilot report for moderate turbulence on the east taxiway..."

Across Canada

RAA Chapters in Action

Members celebrate the opening of the new Lyncrest Flight Centre.

RAA Winnipeg

RAA Winnipeg members were all in attendance at the dedication of the new Lyncrest Flight Centre on May 9th. This new building was built in large part with volunteer labour and donated materials. Governments were approached and also supplied financial support for this new community centre. During the opening ceremonies dignitaries and longtime members took the opportunity to address the crowd of nearly 200. Many members of the public attended too because in Winnipeg many families are connected to aviation.

RAA London/St. Thomas

The April meeting of the London/St. Thomas RAA Chapter consisted of a tour of the Diamond Aircraft manufacturing facility at 1560 Crumlin Road in London. About 40 people were present. The group was divided in two, one led by Jim Walker and the other by William Londono. Each group followed the manufacturing process from the making of composite parts to the final assembly line.

Three models are offered for sale at the present time. They are the DA 20, a single engine two place trainer, the DA 40, a single engine four place aircraft and the DA 42, a twin engine four place model. The D Jet, a five place single jet aircraft is under development and is close to final approval. No aircraft are made on spec. Orders must be on hand before construction commences. An excellent tour enjoyed by all.Thanks to Ed Hollestelle for using his contact to arrange the tour for us!

Last month, long-time Aylmer/St. Thomas crop-duster pilot Ralph Laur passed away. Many of us knew Ralph as a colourful fixture at St. Thomas Airport where he flew for Hicks & Lawrence, Central Ag-Air, General Airspray and most recently Supermarine. Ralph could fly anything and the box it came in.

Thank you to Denny Knott and Tim Kritzer for representing our group at 427 Wing on the occasion of the Feb.21st celebration of the Centennial of Flight. It was nice to see the coverage of the event by local media and as well by COPA where they pictured London MP Irene Mathyssen assisting with the cake cutting.

Angus McKenzie

RAA Scarborough/Markham

We owe our thanks to Claude Sherwood for informing us about the Canadian Air & Space Museum (formerly the Toronto Aerospace museum). The new name better suits their needs to expand and seek fundraising – the former Toronto moniker was too limiting.

Their expansion dreams from the present 37,000 sq. ft. will take place in steps, the first being the annexation of the adjacent green space for exhibiting larger aircraft outdoors. Future aspects may include the expansion of civil aviation exhibits, improved restoration facilities and workshops, education in the science of flight, the creation of visuals to enhance sponsor interest, better theatre, gift shop and office/administration facilities, space and discovery exhibits, material about the de Havilland fabric factory from the '30s, and even a planetarium. As always, timing is the big question mark. We all wish to thank Claude for his detailed information and his usual enthusiasm.

We wish to thank Mark Townsend of Can-Zac Aviation Ltd. (519-590-7601; www.canzac.

ca; E-mail: president@canzacaviation. com) for speaking to us at our May meeting. Mark is the Canadian dealer for Zenith aircraft kits and all Zenair designs. He spoke to us about the current Zenith lineup, all designed by Chris Heintz: the CH650, an updated version of the 601XL Zodiac; the CH750, an outgrowth of the STOL 701 with a cabin 50 inches wide and adjustable seating; the CH801, a 4-seat version of the 701/750; and the 4-seat CH640 having features in common with the factory-built CH2000.

Mark thinks that the 750 kit, with pre-drilled aluminum sheets and the 100 HP Rotax 912S engine, has a realistic build-time of 2 months. It can also be scratch-built. Thank you, Mark, for bringing us up to date on the developments at Zenith/Zenair.

Once again, Dave and Ann Austin have very kindly agreed to host our Summer BBQs at their home at 435 Rouge Hills Drive. These will occur on the third Thursday of July (16th) and August (20th) commencing at 6 p.m.

Bob Stobie

RAA Chapter 85 (Vancouver)

At the May meeting, the speaker, Jack Baryluk, spoke on the BCIT Aerospace Program.

A new aircraft, Helmut's Jodel, will be tied down soon on "RAA Row" where chapter aircraft tend to congregate.

On Sunday 5 July 2009 all day, Chapter 85 will be hosting its annual fly-in. Everyone's welcome! Breakfast will be served 0900-1100, with food service all day. BBQ Steak Dinner in evening. Antique, Classic and Homebuilt aircraft. Operating antique engines will be on display. Custom cars will also be there for our inspection. Sounds like a blast! FMI: http://raa85.b4.ca/

Mike Shave's Turbulent preparing for blast-off.

RAA Saskatchewan

Our year as far as meetings go has come to an end with the summer flying season now upon us.

While Saskatchewan Flying Clubs are hosting their own flyin b'fasts RAA 4901 has Sunday morning breakfasts and will continue for the remainder of the summer..... Every Sunday at Richter Field Martensville Sk.....9am-1030am...Everyone welcome to stop in and taste the fare. Fuel is available on the field. Check our website for information.

Cecil Dawe is very near completion of a Bushcaddy (awaiting final inspection). Murray Marien has purchased a Glasair FT from the US and brought it back to Canada (It still was Canadian registered so no import rules applied) and he has been putting on the hours.

Our regular meeting will start up again in the fall, until then have a great flying season everyone - and remember "Safety First".

Check our website for any events or flying information at www.raa4901.com

KW-RAA

The KW-RAA June 14 chapter fly-in had nearly thirty in attendance for the BBQ. Graham Luckhurst brought the supplies and Don Sinclair handled the cooking. John Kunz had the strip in perfect condition for the members who flew in. Thanks fellows.

When he was prepping to leave (above), Mike Shave hand propped the VW of his Turbulent and then did his runup while Keith Charest and Mike Adam held the plane back against its mighty thrust.

Quiet, smooth, clean, and economical: four words that most of us cannot use to describe our traditional aircraft engines. However all four terms are accurately applied to the EJ 22 Subaru engine package installed in Ken Lehman's Murphy Rebel.

Quiet, Smooth, Clean, and Economical

Ken Lehman's Subaru Powered Rebel

Text and Photos by Gary Wolf

Ken was looking for an engine that would give good fuel consumption numbers and which would run on unleaded fuel so that the impact on the environment would be minimized. He chose the 2.2 litre watercooled boxer engine that began life in a Subaru Legacy because of its small physical size and its reputation for reliability. This engine has become very popular among the rotorcraft crowd, where the engine usually operates at near maximum power much of the time.

Subaru became the darling of alternative engine crowd fifteen years ago when many were installing EA 81 1.8 litre engine in planes that had been designed to use a VW engine. Shortly the builders found that if that engine were normally aspirated it was a lot heavier than a VW for little more power, a bit of a disappointment. Turbocharging made the EA 81 a true 100 hp engine but many builders were not willing to accept the added complication and weight.

The EJ 22 has the advantage of having much better cylinder porting, a better combustion chamber, and more displacement. With its multi-valve pentroof combustion chamber the engine produces very good power and excellent fuel consumption figures at what in the automotive world is considered to be moderate rpms. This 9.5:1 CR engine will run well on regular grade auto fuel. The EJ 22 is a premium engine that has a forged 5 bearing crank, forged rods, high alloy pistons, and happily revs to 5800 rpms. Many rally drivers have extracted over 400 reli-

Exhaust is under the chin and has an O2 sensor for the computer. Air intake is at the firewall and has a temp monitor.

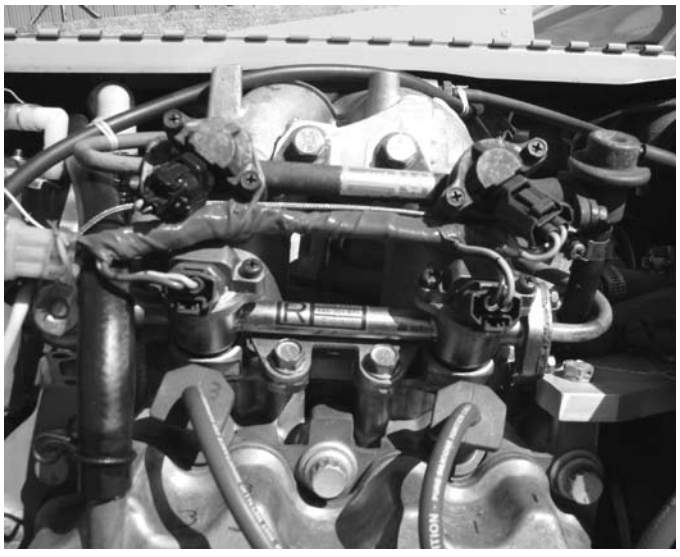
able hp with turbocharging, so the stock 130 - 140 hp is a walk in the park for this engine.

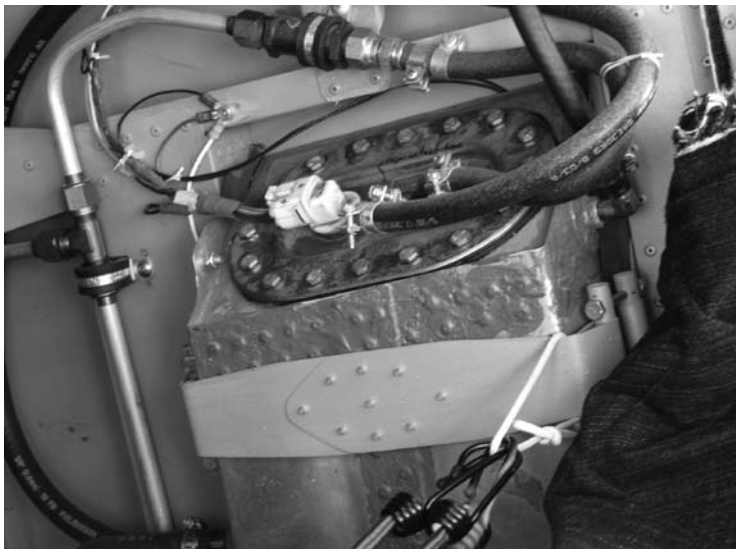
The most important decision to make when converting any automotive engine is how to reduce the revs to the range required by the prop. Belt redrives are the simplest, and because of their open architecture they have little mystery. However a belt redrive requires a large offset to ensure that enough teeth are engaged on the engine pulley. This usually results in the engine being set well down in the engine compartment, and a fairly bluff nosebowl shape. A gear redrive will have a lot less offset, usually only a few inches, so a boxer engine can frequently fit into the footprint of the Lycoming or Continental it is replacing. Ken chose the Marcotte gear redrive which is an internal spur gear design – this means that the propeller direction is not reversed, and with a Subaru this results in the same prop rotation as a Lycoming or Continental. The Marcotte does not share lubrication with the engine so a high pressure gear lube may be used.

Ken wanted redundancy for both ignition and injection on his engine. As the engine's primary control he used the stock Subaru computer, ignition, and injection systems, omitting only the catalytic converter and stock exhaust. This engine management system is operated from its own alternator and battery and provides the same altitude and temperature compensation as it does in an automobile. As a backup system Ken installed another alternator and battery to power a second set of fuel injection nozzles that he installed in the intake manifold adjacent to the originals. These injectors are controlled by a Megasquirt aftermarket computer. Two electric fuel pumps with check valves reside in the header tank and each is fed independently from one electrical system. The batteries are quite small – 9 AH – so they are automatically paired to provide the amperage for the electric starter.

The backup ignition system uses twin lead GM coils mounted on a stock GM Cavalier backing plate that in the car provides the limp home feature. There are just four sparkplugs, so both the original ignition and the backup are paired with high voltage diodes to prevent feedback. Either fuel or ignition system may be run alone, or they may be operated together. Surprisingly when both fuel systems are operated together the engine still runs well, and if the engine is run on the Megasquirt alone Ken has manual control of the mixture so that he can run lean of peak and save 5% of the fuel. Further, if there were a failure of one sparkplug the engine still makes enough power on three cylinders to maintain altitude.

Many rally drivers have extracted over 400 reliable horsepower with turbocharging, so the stock 130 - 140 hp is a walk in the park for this engine.





Economical and clean

Fuel used is always auto gas that does not contain ethanol. In southern Ontario the regular gas almost always has ethanol, and many middle and super grades contain none. Pumps that dispense all three grades can be a problem if the previous user bought regular grade – the first couple litres will inevitably be the regular fuel that was in the hose, so Ken brings along a small gas can and uses that for either his car or his lawnmower. A Rebel has wet wings sealed with one of the usual tank goops but none of their manufacturers will step up to say whether or not their product is impervious to ethanol fuels. This is a very good reason to be concerned about using fuel that might contain ethanol. Ken does not like 100LL because the Subaru does not need it and he feels that there is no justification to be putting lead into the atmosphere. His normal 100 mph cruise at 4200 rpms at 21 inches MP uses 17 litres per hour, for a fuel mileage of better than 20 miles per US gallon.

Smooth and quiet

The Subaru engine has a very short stout crankshaft and minimal offset of the two banks of cylinders. This results in only a very small rocking couple that is completely damped by the engine mount. The result is an engine that runs as smoothly as an electric motor. Ken fabricated his own stainless exhaust system, just a hollow transverse canister with the headpipes fitted to receivers in the endplates to allow for expansion. The canister has a series of holes drilled in a row along the rear face and the sound and exhaust percolate through these, then exit through a single exhaust downpipe. The result is an almost silent engine. When the plane is flying there is no discernible engine or exhaust noise, and a conversation is possible without an intercom. At idle the cabin sound level is 72 dB(a) and at full throttle it reaches 94. The exhaust could not be heard – the cabin noise comes from the prop and the slipstream. For a comparison I measured my son's Miata with the roof up and the windows closed and it was 2 dB(a) louder at highway speeds.

Cooling an auto conversion presents some space problems and can complicate the engine compartment. Ken elected to mount his rad under the cabin and fabricated a streamlined cowling to minimize drag. The 6" x 22" rad is 2: thick and Ken went to Kuchemann's book for information on design of the ducting. The rad inlet is far enough behind the prop to receive lots of air during ground operation, and to avoid blade interference. The bottom of the duct flows straight to the bottom of the rad, and the top of the duct curves up abruptly to meet the top of the rad. There is a cockpit adjustable exit vent about two feet behind the rad but it doesn't do much as the thermostat controls the water temperature nicely. Even on hot

A 150 hp Lycoming used $2500 worth of fuel to get from Ontario to the West Coast and back, while the Rotax and Subaru planes each used only $1000 worth.

The top-mounted cowl scoop releases heat when taxiing and admits cool air when flying. Opposite, left: a second set of injectors is mounted immediately above the originals; right, Two electric pumps with check valves reside inside the header tank

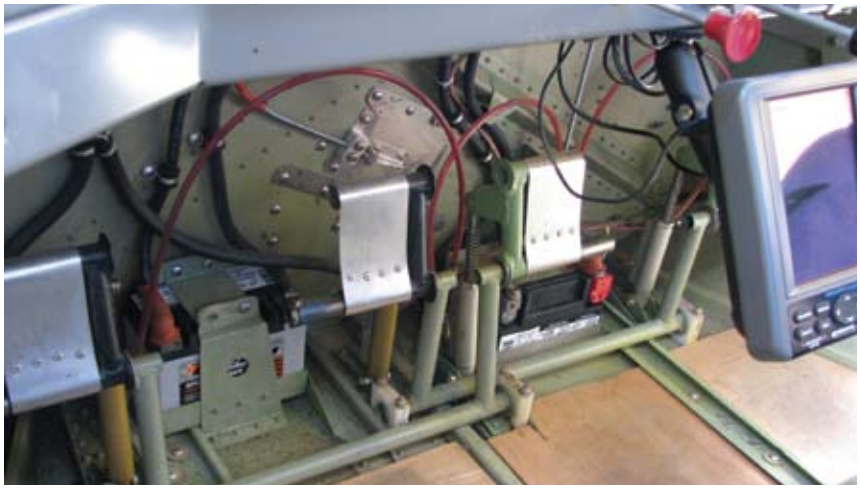
days there has never been a hint of overheating.

Combustion air is taken from inside the cowl and unfortunately runs about 30 degrees above OAT. The engine still runs well with that temperature penalty but Ken is now making a change to the air inlet to accept cooler air from outside the cowl. There is a reverse airscoop atop the cowl to give a bit more clearance to the throttle body and to let hot air out after shutdown. Ken did tuft testing and confirmed that air flows out of this scoop on the ground, but pressure buildup ahead of the windshield reverses direction, so air flows into the engine compartment when in flight. Interestingly, on Jaime Alexandre's Geo-powered Nessa the cooling air for the rad is taken from exactly the same place.

The Marcotte gearbox on this engine is the second one that Ken has used. The original was a Model 200 and it had problems with the bearings. Ken replaced this with the Model 300 and he recommends an inspection of the 8" steel drive plate for cracks every 50 hours. To confirm prop shaft bearing preload he says that there should be zero fore and aft play of the shaft when the redrive is at running temperature. For gearbox lubrication Ken has installed a 10 micron oil filter and uses synthetic 15w140 gear oil.

What is the Subaru-powered Rebel like to fly? Well, except that the Subaru is quiet, smooth, clean, and economical, it flies just like a 150 hp Lycoming-powered Rebel, except that this plane climbs a bit better. Most 150 hp Lycomings provide no more than 135 hp when fitted with the typical exhaust system, so the Subaru is in the same ballpark. Ken prefers to pitch his 3 blade Warp Drive prop coarse to limit his maximum rpms to 4700 in climb, at which rpm he gets just over 1000 fpm when flying solo with five hours of fuel in the wings. The Rebel has wet wings and Ken uses only 5 bays as fuel tanks instead of the usual six. Despite this, the economical Subaru provides eight hours of range at his normal cruise of 100

continued on page 27



Subaru / continued from page 25

Above left: Two batteries are fastened to the firewall and floor, between the rudder pedals. Right, Cooling duct conforms to Kuchemann's theories. Below, Spacious panel is "nearly IFR" for cross-Canada Rebel Ramble treks

mph. He could pitch the prop a bit finer to rev the engine higher if he wished to keep pace with the Lycomings, but he prefers the current setup. The lighter fuel load allows a higher payload than a Lycoming-powered plane without increasing the gross weight. Ken has flown to Oshkosh in the Rebel and on the return flight had it jammed full of booty, so full that after landing it took two trips to carry it all home in his car.

Ken recently took part in Bob Patterson's cross country Rebel Ramble and flew in company with Tom Inglis and his Rotax-powered Rebel. Compared to the Lycoming-powered Rebels they were able to skip many of the fuel fillips, and upon returning they compared gas receipts. A 150 hp Lycoming used $2500 worth of fuel to get from Ontario to the West Coast and back, while the Rotax and Subaru planes each used only $1000 worth.

Ken's next step will be to install a set of amphib floats so that he and his wife can commute from their Guelph base to their cottage in northen Ontario. The Murphy will replace the family car for these trips, and they will be able to enjoy the flight high above all the cars jammed in traffic, heading to cottage country every weekend.

13TH ANNUAL

RAA

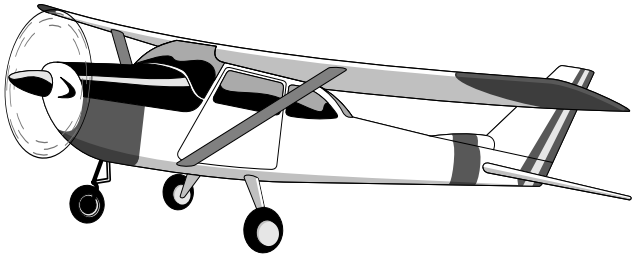
NORTHERN REGION

FLY IN

JULY 11, 12, 2009

Collingwood Regional Airport

(FREQUENCY 122.85)



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Mother and Daughter (cont'd from page 18)

bow in the dark clouds. Keeping an eye out for it, I finally saw it emerge and arc higher. Then, to my delight, there emerged the other end to our right. With the sun behind us and the dark skies ahead, the two ends of the bow shone beautifully and it gave the feeling that we would actually fly under the arch of the bow. It truly is wonderful to be able to experience things from a different perspective than one normally does.

So – again, time to consider going back to the east. BUT – there had been a lot of talk about air races in Reno – that sounded pretty interesting!

However, before that could even be considered there happened to be yet another aspect to the flying world I was to be introduced to. As we were enjoying a quiet evening at home, a dreaded phone call came – a friend had crashed his plane. The sickening feeling in the stomach! The quick rush to the hospital! The relief at finding that the occupants had escaped any serious injury! But I could not refrain from letting tears fall as I later viewed video and pictures of the sad remains of the recently completed, fourteen year, father and son restoration project, now in shattered pieces. Although bodies had not received serious injury, I'm pretty sure hearts were breaking.

And now it was time to decide. Reno or not? What the heck – I'd already overextended my visit and had been assured that I would be welcome to join in sharing the expense of the hotel room. Due to work schedules "Glasicat" was confined to the hangar as we took a commercial flight, but that was fine since it gave me a chance to visit some airports that I would otherwise not have seen. And I don't know how my very special vacation experience could have been topped off better than with five glorious days in the Nevada sun with the ups and downs, both literally and figuratively, of air racing. Planes went up. Planes were unexpectedly and sadly grounded, only to rise again and come out winners! It was both interest-

ing and informative to be in the pits and experience first hand the emotions involved – excitement, reservation, expectation, frustration, disappointment, determination, exhilaration, gratification and just plain jubilation. I was fortunate to enjoy so many different aspects of the event from general grandstand viewing, VIP lunches and viewing areas, even a ride of distinction on the winner's fire engine. Many thanks to the whole crew of "miss t'witchie" for their kindness throughout the week. They all signed a pylon poster for me which is now framed and hanging in my home.

After saying farewell to Reno, we returned home in time to have a few hours sleep before catching my flight back to Toronto the next morning.

All in all, I can't say enough about my introduction to the world of flying. Nor can I give enough thanks to all the many people who helped to make it such a wonderful experience. Some of you have posed the question as to when I may get my license, to which I say – not likely to happen. However, anytime any of you would like to drop into Fergus, you would be welcomed, and I'd be more than happy to tag along as a passenger. As I mentioned previously, there are a number of small aircraft facilities in our area including a glider school, and now when I hear the sound of a small craft overhead, I can't refrain from looking up with a bit of envy knowing what a wonderful thing the occupants are experiencing.

Finally, my heartfelt thanks to a wonderful daughter who gave so much in sharing her home, her time, her talents, and her friends, (even fitted in a day at the PNE) over a five week period, in order to see that I had a unique experience. I'm a slow learner, but she exhibited enormous patience in explaining things to me and I truly appreciate all that she does for me.

Here's hoping that God will be with you all as you enjoy the marvelous world of flight.

RAA Executive Director NOMINATION FORMS 2009

Photo Copy This Page

To Nominate National Executive Director, fill in name

Nomination for _____National Director

I,_____	_____	_____
Nominee's Signature	Printed	RAA #

Being an RAA member in good standing, accept nomination
Note - Nominee's signature constitues acceptance of nomination

I,_____	_____	_____
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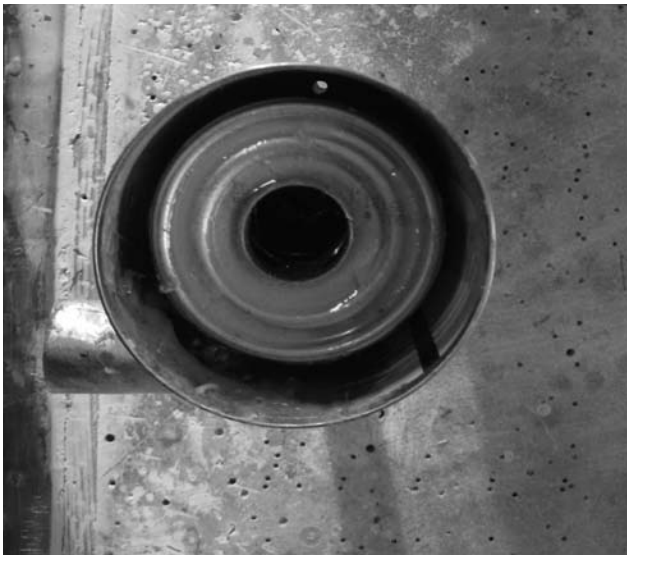
I,_____	_____	_____
Nominator's Signature	Printed	RAA #
I,_____	_____	_____
Nominator's Signature	Printed	RAA #

Note - Five Nominators are required; it is good practice to obtain several additional nominators in case of an inadvertent lapsed membership by a nominator.
Three seats on the Board of RAA Canada are expiring this year, and we need your help in running this national organization. Please photocopy this form and have five National members sign. Send it to RAA Headquarters by August 10, 2009. The nominations will be posted in the September-October issue, plus on the Announce e-mail list, and the www.raa.ca website.

Complete the above, and forward before August 10, 2009 to-
Recreational Aircraft Association Canada, 13691 McLaughlin Road, R R 1, Caledon, Ontario L7C 2B2

Soup Can Separator

Tom Martin



With each cowling change I make to my Rocket it seems to modify the way the air moves around my crankcase vent. My latest cowling modification, complete with a cowl flap is working very well in regards to engine cooling. I have been able to greatly reduce the cooling air outlet; hopefully with some reduced drag. This modification has also resulted in quite a bit more oil on the belly of the airplane than I have been used to. This has caused me to consider the installation, for the first time, of an Oil/Air separator in the crankcase vent line.

Before I discuss the latest vent line I would like to give a bit of history, in the last 15 years, of vent line installations in the RV world that I am familiar with. Pervious to amateur built most commercial aircraft merely have the vent line extending straight down from the cowling into the air stream. This looks bad, from a drag perspective, and also is known to leave little drops of oil on the floor after engine shut down. When I was building my first plane, an RV4, Larry Vetterman was recommending welding a short tube into one exhaust pipe. The vent line was attached to this tube and an automotive one way valve was inserted to prevent back pressure from the exhaust. Mine worked quite well but others reported some issues so Larry quit advocating that idea. Shortly after that someone had the bright idea of dumping the vent line directly over one of the exhaust pipes in the cowling area. This worked great as the few drops were burned off on the pipes. It also reduces the possibility of vent line freezing in the colder months. I adopted this method with good success. Somewhere along the way this has become standard practise for the Van's series of aircraft and is included in their firewall forward kits.

When I first started flying my current plane I noticed a bit more oil on the belly then I was used to. I put it down to this particular engine and although I did not care for it I just put up with it. For the last three

flying seasons I have been constantly chasing the elusive cooling drag reduction with the hopes of increasing speed. Typically I have been creating different outlet ducting and reducing and or changing the shape of the engine cooling air outlet. After one modification I noticed that I was dumping even more oil from the vent line. My theory was that as I was decreasing the outlet air size the air was moving faster and this was creating more suction and thus the increase in oil from the vent line. To test this theory I rigged up a manometer in the cockpit and took some pressure readings from the cowling. I tested the upper plenum, the lower plenum and the crank case itself. The crankcase was done by removing the dipstick and making a little cap that had a nipple attached to for one of my test hoses.

Off I went for a test flight and recorded my data. If my theory was correct I would be getting quite a bit less pressure in the crankcase then the normal static air. What I found was quite the opposite. The crankcase was in fact being pressurised by the lower cowling air. The upper plenum was about 12″ of water pressure, the lower plenum 7″ and the crank case was 8″. At first I was very surprised but after considering it for a while it makes sense. The engine itself created about 1″ crank case of pressure while sitting on the ground at 2000 rpm. That one inch plus the lower cowling 7″, in flight, added up to the 8″.

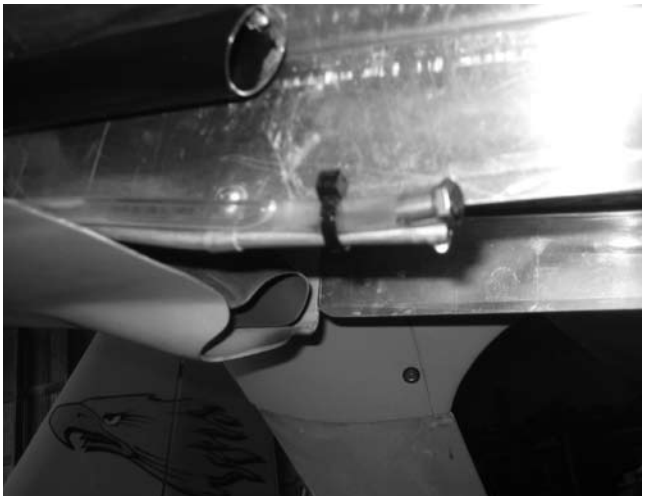
A good friend of mine, Mark Fredrick, had recently spent quite a bit of money trying to increase the power on his engine. One thing that they did was to use a vacuum pump to create a negative pressure in the crankcase. Apparently some of the race cars do this as it reduces the work that the pistons have to do on their way down the cylinder.

My next step was to route my breather tube aft of the cowling outlet. I was not sure how long to make it but I left it about 2″ aft of the cowling. I tested again and noted that I was now getting a 2″ negative pressure on the crankcase. This amounted to a difference of 10″ of pressure difference. Immediately I noticed a decrease in my oil consumption and strangely, a reduction in blow by. Also there we numerous small drips of oil in the engine compartment that completely went away. It would appear the old fashioned certified aircraft had the vent issue right all the time. It may be necessary to move the outlet of your vent line from the high pressure cowling area to reduce the potential of pressurising your crankcase.

This last winter I made even more cowling changes and rerouted my vent line closer to the floor of the aircraft. I have reduced my cowling outlet even more and now I am getting more blow-by again. Although I have not checked the crankcase pressure I am quite sure that I have created too much suction on this tube due to its location.

As I would like to keep some negative pressure in the crankcase, but not dump oil on the belly, I thought that I would experiment with an oil separator. I took a peek in the catalogues and felt that I could make something that would work quite well for considerably less then the $200 to $400 units advertised. Essentially they are an expansion area that lets the air slow so that the oil will fall out of the air stream. The oil is then collected and ducted back to the engine.

I made my unit with a large and a small soup can. The small one has a bunch of half inch holes drilled around the top. It is then inverted and set inside the large can. A one inch aluminium tube is placed through holes drilled in both the bottom of the large can and the bottom of the small can. The top of the tube has a series of holes drilled in it to allow the air out. Another tube is inserted in the top side of the larger can, it is angled in such away that the air that goes into the can is caused to go around the



smaller can. The air goes down between cans, shedding oil as it slows, and then goes through the holes in the bottom of the small can. It then continues up the inside of he small can where it exits through the holes in the inner one inch tube.

I added a drain nipple in the bottom of the large can that will allow me to capture any oil that accumulates. I do not intend on returning this oil to the engine but I will be able, through a short hose, to drain this off periodically.

All the bits and pieces of the separator are held together with glass cloth and resin. A piece of plywood was bonded in the top to complete the seal between the two cans.

Total cost: two fewer cans in our local land fill site!

I installed the unit and went for a couple of quick flights. After letting the oil settle I could clearly see oil in my clear drain tube. There is still a trace of oil getting by the separator so am going to add some steel wool, or fine screen to the inside of the unit.

I would call this project a success! RAA

Leading Edge Vacuum Forming

Jack Schenck

Step 1

MOST OF YOU WILL HAVE READ the profile of Eric Bartlett and his Bear Hawk project in the April Slipstream outlining his many innovative procedures for tackling problems. We thought it deserved a follow-up describing how he is bending that stubborn 2024 T3 aluminum skin for the leading edges of the wings. Many of you pansies who are building or have built from kits won't have this to sweat over, but for the die-hard scratch or plans-builders, Eric's method is great. He is building from plans and has only the designer and the Bear Hawk support group to lean on.

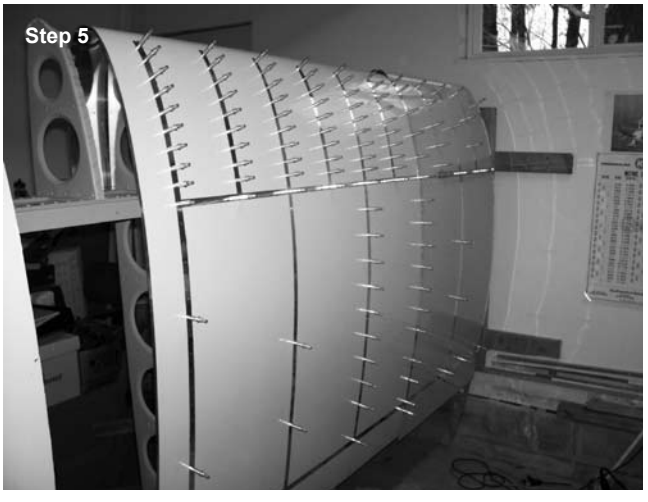
Eric gives credit to builders in that group for this idea of using atmospheric pressure to form the leading edge of the wing.

Starting with **step one** (right), cut a piece of common 1½ inch PVC pipe the same length as the width of your aluminum sheet (from ..025 to .032 thickness). Drill a few 3/16 or 1/4 inch holes along the length of the pipe. Then place the pipe on the sheet with the holes toward the


Step 2


Step 3


Step 4


Step 5

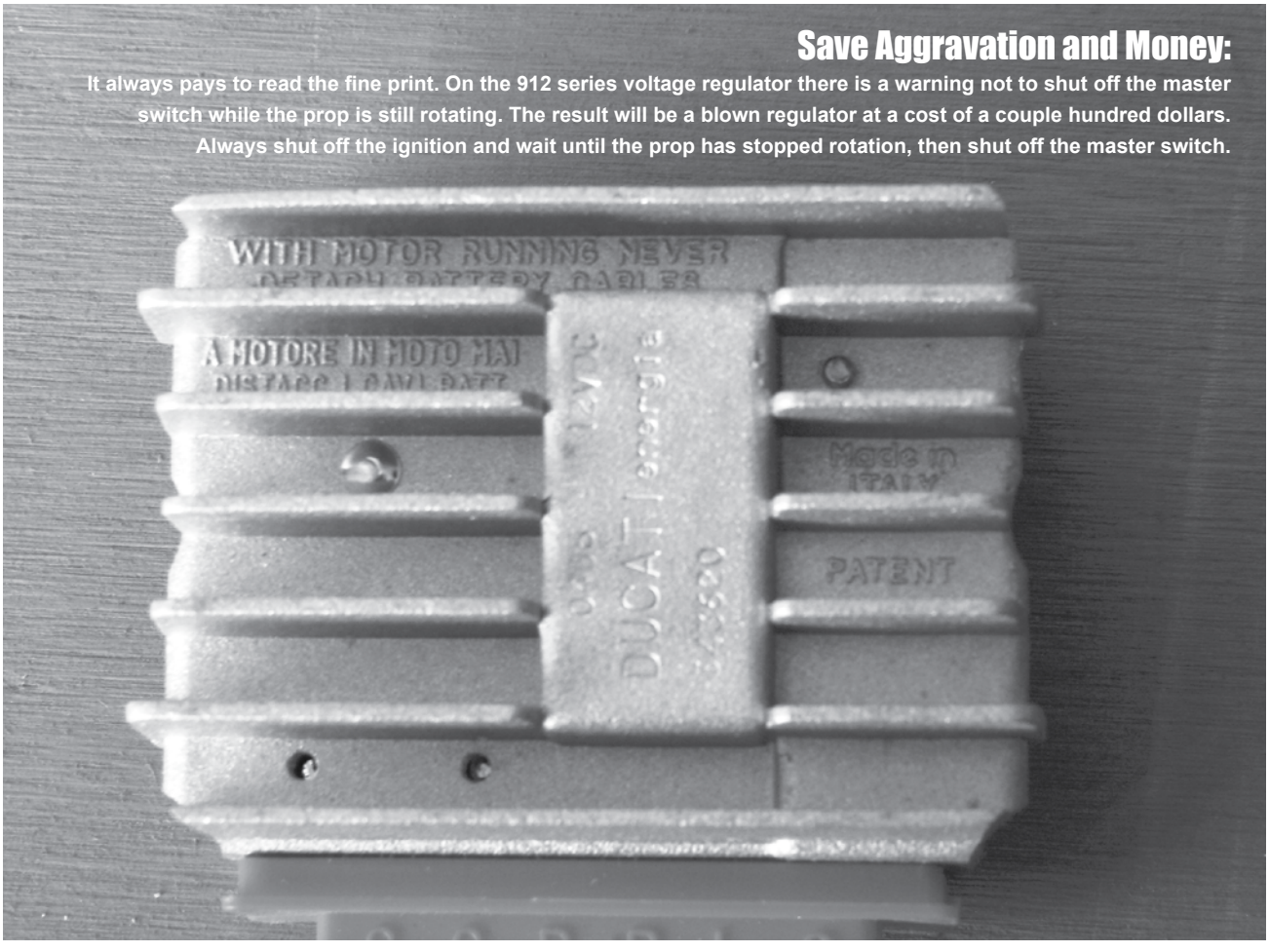
trailing edge and tape in place. The aluminum is then bent in a large radius and taped in place (on itself) with packing tape or duct tape for the complete width (usually 4 ft). It needs to be airtight. Eric stresses the need for an absolute square contact with the bottom of the sheet before taping. Then, using any heavy plastic (6 mil?) pieces, tape up the ends leaving only one open end of the pipe. **Step two** (above) shows the vacuuming process using any Shop Vac or household vacuum (sealing the entrance, of course). If your sealing all around is good, the atmospheric pressure will do the job in very little time. In effect, you are over-bending the leading edge, but with the pipe acting to prevent any kinks (shown in **step 3**, top right). Of course the material springs back as shown in **step four** (right, centre). From here, the bent sheet can be ratchet-strapped on the wing structure. Then comes the drilling of two holes for orientation, cleco-fastening for lining up to drill all the thousands of rivet holes. **Step five** (right, bottom) shows most of these holes done and clecoed in place. Eric will be pleased to answer any question readers might have concerning the process. He can be reached at (519) 649-0403 or email at bartletteric@ymail.com

We will all be watching the progress of Eric's Bear Hawk and maybe even hope for a flight some day.

RAAC has sets of electronic scales that are available to all members for doing the weight and balance calculations on their aircraft. Only $30 for weighing. Contact the RAA office at 1-800-387-1028 to reserve a set.

Save Aggravation and Money:

It always pays to read the fine print. On the 912 series voltage regulator there is a warning not to shut off the master switch while the prop is still rotating. The result will be a blown regulator at a cost of a couple hundred dollars. Always shut off the ignition and wait until the prop has stopped rotation, then shut off the master switch.



New Products

Aircraft Spruce Stocks the Artex ME406 ELT

The Artex ELTs are in stock and ready to ship at Aircraft Spruce. The Artex ME-406 is a single output ELT. Two emergency frequencies (121.5 and 406.028 MHz) utilize the same RF output, requiring only one coax cable to connect to the new series of Artex single input antennas. The ELT automatically activates during a crash and transmits the standard swept tone on 121.5 MHz. Every 50 seconds for 440 milliseconds the 406 MHz transmitter turns on and transmits an encoded digital message to the Cospas/Sarsat satellite system. The mounting hardware for the ME-406 Series is compatible with all previous models of Artex 406 MHz, as well as the ELT200 Series, ACK, Pointer Model 3000 ELT and Narco ELT's. Current owners of Artex 2-frequency ELT can re-use the remote switch in the cockpit as well as the wiring harness from the cockpit to the ELT thus greatly reducing installation costs.

Multiple models are available, and they can be programmed for international or US registered aircraft. Versions can also be purchased with a whip or rod antenna. The Artex ME406 ELTs with a whip antenna are priced under $1000, and the Artex ME406 ELTs with a rod antenna are priced under $1500. All of these units are in stock and ready for shipment.

For more information, please contact Aircraft Spruce at HYPERLINK "http://www.aircraftspruce.com" www.aircraftspruce.com or 877-477-7823. Aircraft Spruce's complete product line is available at HYPERLINK "http://www.aircraftspruce.com" www.aircraftspruce.com. Request your complimentary copy of the company's free 800 page catalog and their full color Pilot Shop catalog.

Dynamic Propeller Balancer

Balance is very important for the longevity of your prop. A properly balanced engine installation offers a number of advantages over unbalanced equipment. The most significant advantage is in the longevity of components associated with the power plant. In many cases high vibration levels have lead to premature failure of critical engine components. Engine accessories, engine mounts, firewalls, and instruments are also susceptible to vibration damage and premature failure.

The Dynavibe dynamic prop balancer is now available, and it can be purchased at Aircraft Spruce & Specialty Company. DynaVibe is an economical, state-of-the-art dynamic propeller balancer designed specifically for the aircraft industry. DynaVibe displays the magnitude and phase of propeller vibration allowing precise weight adjustments for balanced and smooth engine operation. This prop balancer is very accurate reporting both the RPM along with the vibration magnitude. This results in reduced vibration for a smoother flight in addition to decreased mechanical wear of engine and instruments.

Included with each Dynavibe are an Accelerometer with 30 feet of cable, optical pickup, reflective tape (tach), and a carrying case. There are no hidden costs associated with these units nor are there any additional items to buy to use the Dynavibe Dynamic Prop Balancer. Dynavibe pricing starts at $1495.

For more information, please contact Aircraft Spruce at HYPERLINK "http://www.aircraftspruce.com" www.aircraftspruce.com or 877-477-7823. Aircraft Spruce's complete product line is available at HYPERLINK "http://www.aircraftspruce.com" www.aircraftspruce.com. Request your complimentary copy of the company's free 800 page catalog and their full color Pilot Shop catalog.

President's Message
continued on page 36

day, but TC receives $35 for the release from restrictions. Is this a good use of taxpayer's money?

The latest victim of these two inspectors has been tag teamed by them. A member flew off his 25 hours and then called Hamilton office. Mr. Hayes told him that Juniper would handle his paperwork and encouraged the member to drop it off. Unfortunately for the member Mr. Juniper was away on a course at the time, and a month of phone calls were unreturned. I called about this holdup and found that Mr. Juniper will be away on various courses, at meetings, and on holidays well into July. The member then called to ask for his paperwork back and was told that there are half a dozen applicants ahead of him, and the paperwork is piled high on Mr. Juniper's desk. Mr. Juniper's out of office email reply makes it clear that he will not be responding to calls or emails while he is away from the office.

This would not be so great an insult if it had all come as a surprise, but it is no secret that every Spring there is a batch of completed planes flying off their 25 hours. Only Transport can release them from restrictions, but at the Hamilton office they send the one person who does this on courses and holidays. Mr. Hayes undoubtedly knew this when he encouraged the member to drop off his paperwork. Is all of this just job justification?

I called Ottawa to see if this bottleneck at the Hamilton office could be remedied. But Ottawa is powerless to do anything. There are union concerns to be considered so no one is going to step on an inspector's toes. If you must have any dealings with a Transport Canada Maintenance and Manufacturing inspector, do yourself a favour and give Hamilton's office a wide berth. It is well worth driving to 4900 Yonge or to Buttonville.

The member who is the latest victim is now considering engaging his Member of Parliament in the process. There is certainly no reason for pilots and builders to accept being victimized. RAA

Keep in Touch With Your Board of Directors!

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David Moore ..... Vice President (programs)
..... charlotte.moore@sympatico.ca 905-659-3454
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..... whadath@rogers.com
Chris Gardiner ..... Secretary
..... 905-668-5703 cgardn628@rogers.com
Ed Butler ..... landed@sympatico.ca
Dave King ..... kingdws@shaw.ca

RAA Regional Directors

Mainland BC:
BC Coast ..... Terry Wilshire terwil@telus.net
604-721-7991

Interior BC/Technical Director: ..... David King
contact best between noon-10pm 7days work
ph. 250-868-9108 homep ph. 250-868-9118.....
..... emailKingDWS@Gmail.Com

Alberta North:
Tom Hinderks ...780-453-1078 or leave a message at
780-451-1175 .... e-mail eahs.execdir@interbaun.com

Alberta South:
Gerry Theroux ....403-271-2410 grtheroux@shaw.ca

Saskatchewan:
Laura Drinkwater..... 306. 955-1361
lauraprd@shaw.ca

Manitoba:
Jill Oakes....204-261-1007 jill_oakes@umanitoba ca

Ontario SW:
Tom Martin .....fairlea@amtelecom.net

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Magazine Mailing: .....Dave Evans
Ultralights: .....Wanted
Web Page .....Nicholas Grose
Insurance Committee ..... Gary Wolf
AirWear.....Dave King

Coming Events

Every Sunday, Martensville Saskatchewan. Martensville…Richter Field….Prairie Partners Aero Club Hangar B'fasts on Sundays…9am-10:30am Sausage,Eggs, Hash browns, Juice, Toast & Coffee

Every Monday Brampton On RAA-TR Chapter BBQs, the 11th season. Every Monday night to Sept. 3. Your choice of beef, turkey or veggie burgers, sausages or hot dogs; all the trimmings. Coffee, and other refreshments available. An established tradition that keeps growing. All are welcome. RAA-TR hangar at the north end of Brampton airport (NC3). Pres. Brian Heinmiller 905-877-7947 b.j.heinmiller@sympatico.ca; V.P. Bill Tee 416-742-8939, steec551@rogers.com

June 27 2009 Langley BC (CYNJ) flyin. This year will have a bi-plane theme. More details to follow.

June 30 - July 1 2009 3rd Annual Corman Airpark Fly N' Fair Pilots who fly in on either day and leave their aircraft on display for the public will get free breakfast Canada Day, and a chance to win an award in the appropriate category. Gates open to the public both days at noon. Checkout the website: www.cormanairpark.ca for more details or phone 866 882 3380.

July 4-24: Rebel Ramble "Through the rocks". Starting from the RAA-TR hangar at the north end of Brampton airport (NC3). A three-week camp-and-fly trip to the west coast and back with a stop at Oshkosh (depending on weather and timing). You don't have to be a Rebel owner or builder to go. Join for whichever leg of the trip your schedule allows. Hosted by Bob and Anna Patterson. 905-457-5238, bob.patteron@interbiz.ca.

July 5, Sunday 2009 Delta Heritage Airpark Fly-in (Chapter 85) all day. Everyone welcome. Breakfast 0900-1100. Food service all day. BBQ Steak Dinner in evening. Antique, Classic and Homebuilt aircraft. Operating antique engines display. Custom cars.

July 7th Annual London/St. Thomas RAA fly-in drive-in picnic at the Rice Ranch. Details to follow.

JULY 10-12, 2009 GLENN CURTISS MUSEUM / GENESEO AIRSHOW www.glenncurtissmuseum dot org AND www.1941hag dot org/ and click on 2008 airshow

Aug 29, 2009, (rain date Aug.30) Fly-In Brunch/Lunch between 8:00 and noon, at the Medicine Hat municipal airport. FMI: Boyne Lewis, (403) 527-9571 balewis@shaw.ca

Aug. 29-Sept. 12: Rebel Ramble "Down East" Hosted by Bob and Anna Patterson. 905-457-5238, bob.patteron@interbiz.ca.

Sept. 7: Monday night BBQ's Grand Finale! Last one of the season. RAA-TR hangar at the north end of Brampton airport (NC3). Pres. Brian Heinmiller 905-877-7947 b.j.heinmiller@sympatico.ca; V.P. Bill Tee 416-742-8939, steec551@rogers.com

Sept. 12: Fall Corn Roast, 18:00. Succulent, farm-fresh corn. Pot luck for salads, desserts, and buns. Coffee, and other refreshments available. All are welcome. Nominal cost. RAA-TR hangar at the north end of Brampton airport (NC3). Pres. Brian Heinmiller 905-877-7947 b.j.heinmiller@sympatico.ca; V.P. Bill Tee 416-742-8939, steec551@rogers.com

This from the RAA London/St Thomas Slipstream newsletter:

In addition to communicating with the local Air Traffic Control facility, all aircraft in the Persian Gulf AOR are required to give the Iranian Air Defence Radar (military) a ten-minute 'heads up' if they will be transiting Iranian airspace. This is a common procedure for commercial aircraft and involves giving them your call sign, transponder code, type of aircraft, and points of origin and destination. Someone has reported he overheard this conversation on the VHF Guard (emergency) frequency 121.5 MHz, while flying from Europe to Dubai. It's too good not to pass along. The conversation went like this:

Iranian Air Defence Radar: 'Unknown aircraft you are in Iranian airspace. Identify yourself.'

Aircraft: 'This is a United States aircraft. I am in Iraqi airspace.'

Iranian Air Defence Radar: 'You are in Iranian airspace. If you do not depart our airspace we will launch interceptor aircraft!'

Aircraft: 'This is a United States Marine Corps FA-18 fighter. Send 'em up, I'll wait!'

Iranian Air Defence Radar: (no response ... total silence)

Classifieds On The Internet:

http://www.ocis.net/tvsac/buyandsell.html -more ads from our Kamloops chapter

http://www.lyncrest.org/sfcclassifieds.html -more ads from our Winnipeg chapter

Classified Ads

To submit or delete a classified ad, please send to classified@raa.ca and place "RAA ad" in the subject line.

The Recreational Flyer is pleased to offer you colour advertising within the magazine. Previously limited to the back cover, we have added 4 new colour pages which will be available with limited space for your advertising needs. Our rates for both black and white and colour ads remain very competitive and you reach a captive and qualified audience.

Ads can be emailed to : ***classified@raa.ca***

Deadline for submissions is the first of the month preceding date of issue.
Artwork: Rates apply to camera ready artwork. Digital files are preferred and should be sent as email and in .txt format, PDF, JPEG, MS WORD, Photoshop or other common file types. Advertising is payable prior to printing of magazine unless other arrangements have been made. Payment is in Canadian funds. 10% Discount applies to one year (6 issues) insertion paid in advance. Commercial Classified ad rates 1/8 page minimum.

Advertising Policy
The Recreational Flyer Publisher reserves the right to refuse any or all advertising for any reason stated or unstated.
The Recreational Aircraft Association Canada does not assume responsibility for advertisements, but does exercise care to restrict advertising to responsible, reliable individuals.
Please note: Ads running more than 3 issues must be renewed to guarantee continued display in the magazine.

Recreational Aircraft Association Canada

President: Gary Wolf
Vice President (Programs): David Moore
Secretary: Chris Gardiner
Treasurer: Wayne Hadath

Recreational Flyer Magazine

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The Recreational Flyer is devoted to the aerospace sciences. The intention of the magazine is to promote education and safety through its members to the general public. Material in the Flyer is contributed by aerospace engineers, designers, builders and restorers of aviation devices and vehicles, used in an amateur capacity, as well as by other interested persons, publications and organizations. Contributions to the Recreational Flyer are voluntary and without remuneration. Opinions expressed in articles and letters do not necessarily reflect those of the Recreational Aircraft Association Canada. Accuracy of the material presented is solely the responsibility of the author or contributor. The Recreational Aircraft Association Canada does not guarantee or endorse any product offered through articles or advertising. The Flyer and its publisher welcomes constructive criticism and reports of inferior merchandise or services offered through advertising in the publication.

For Sale

Zenith CH-250 Project For Sale. Tricycle configuration First inspection done. Ready for rigging. Have 3 in 1 engine gauge, VSI, ALT, Compass, Tack, and air speed gauges. Have a dinafolcal engine mount for 0320 engine, prop, some pneumatic tools. Plus lots of old news letters for the project and pictures of different configurations. $10,000.00 Ph. 604-859-6884, John.

CAVALIER 102.5; 700 TTAF (airframe rebuilt/97), AERO Sport, O-320-B2B, 75 TTSN (seeing 1500 ft/m), Sensenich metal prop, 1750 lbs gross weight, 622 useful load, VFR instruments + GarminMode C, kept in heated hangar. Flies fantastic! $32,000. moneypit@uniserve.com or 250-558-5551; ask for Cameron. Oct08

Parts for sale: Low hours Colin Walker wooden prop a 7256 off an O-290D ($600); New ROTAX 9" UHS 2 blade spinner ($80). If you are interested, I can be contacted at: moneypit@uniserve.com or 250-558-5551; ask for Cameron. Oct08

Zenith 701 project. All formed parts made, spars riveted, jeep landing gear, Matco wheels and brakes, dash and most of the fuselage components, pedals and some welded assemblies, $6500 millfly@sympatico.ca 519-822-6693 Apr08

HP with Engine Mount, custom 4130 Prop Hub and rolling engine stand to ship.$1750.00 obo. New Colin Walker wooden Prop 6856 with fibreglass L.E. SAE 1 $500.00 G.B. Lewis wooden Prop 7441 metal L.E. very good, no nicks or damage. SAE 1 $500.00 Super Cub 8:00 X 4 wheels, tires, brakes and reservoirs. $500.00 for set. C85 starter and NAS3 carb. $200.00 each, or will trade one for C85 generator. 780- 460-6841 Aug08

PARTS FOR SALE--- Corvair 110 HP with Engine Mount, custom 4130 Prop Hub and rolling engine stand to ship.$1750 obo. New Colin Walker wooden Prop 6856 with fibreglass L.E. SAE 1 $500.00 G.B. Lewis wooden Prop 7441 metal L.E. very good, no nicks or damage. SAE 1 $500.00 . Super Cub 8:00 X 4 wheels, tires, brakes and reservoirs. $500.00 for set. C85 starter and NAS3 carb. $200.00 each, or will trade one for C85 generator. 780- 460- 6841 Oct 08

O235C LYCOMING ENGINE, Ground crank nitroed new bearings, seals, rings, seats, and guides. Can be seen running PA12 exhaust. metal prop. $4,800 Maxwell Say 519-941-9698 Oct 08

Lost medical. Partially completed (right wing some tail feathers) Murphy Rebel kit $10,000 OBO. Call 250 658 2046 or email breathnach@shaw.ca Oct 08

Christavia IV fuel tank for left wing, per Ron Mason drawing. 14 Imp gals [63 litres] all fittings in place. Peter James 416 282-2186 Oct 08

1992 MURPHY RENEGADE Professionally built and maintained. Excellent condition, powered by Rotax 618. $23,000. Still flown by retired Air Force pilot Tony Bellos from his own strip in Knutsford, near Kamloops, BC. 250-374-6591 or tbellos@telus.net Aug08

FOR SALE DUE TO HEALTH -aircraft engines and an Aeronca Champ project. The three engines are zero-timed: two 0-235, one 0-0-290DQ. Some mags might be missing, but the prices will be very low... The project is a Champ awaiting the MOT final approval. For details, contact George ASAP at 250-768-3585. Oct 08

FOR SALE: Aeronca Champ wing hardware [except drag wires], rudder horn, 3 pc tail wheel spring, parking brake handle unit and nose fuel tank all for 7 AC/ Peter James 416 282-2186 Oct 08

Lycoming O-320 H engine, $6000 certified with logs, and pickled. This engine is near 2000 hours but it recently had new a new case and most internal components replaced. The previous owner bought the plane and immediately repowered it with a new 180 hp for float flying. With not much more than a top overhaul this would be nearly a zero time engine. kinger@bmts.com Dec08

PARTS FOR SALE: Parts from 1976 C150M including damaged wings, main and nose landing gear (Zenith owners often use C150 nose gear), brakes, cowl, newly rebuilt engine
mount, seats and rails, intercom, fuel tanks and other misc parts. Call Chris at 905-495-2383 Dec08

For sale, new RV9A parts; conical engine mount, 3 L/G legs, mounting brackets, nose wheel, fairings. All the parts I didn't use when I converted to tailwheel. Contact Terry Elgood for list at TMB_Elgood@shaw.ca or 604-279-2062 Mar 09

SIDEWINDER: All metal; seats two. Equipped with Lycoming 0-290D (110 hrs STOH), engine log, 3-blade ground adjustable Wrap Drive Prop. Bendix/King KY 97A radio, Icom portable standby radio; intercom, transponder/c. Full cockpit and panel lighting, strobes, L/L, and nav lights. Ready for MDRA final pre-flight inspection. All drawings and building manuals are included. Selling for material cost only ($20,000 cdn.) Call Norm at 519-745-7971 or email at ldservice@rogers.com. Apr09

Project Assistance 15 years of aircraft sheet-metal/fabric/ composite construction/ mechanical. can help your project. Have helped on RV projects.and other home-build aircraft. 1-519-777-7084 ask for Robert April09

ZODIAC - CH601 - 8 years - Rotax 912 – 80 HP with warp drive prop. 800 hrs TTAE. Bendix King Radio – 2 headsets. Excellent Condition – asking $ 40,000 – negotiable. Call after 7:00pm - 519-986-2343 April 09

FOR SALE: Teenie Two homebuilt, first flew 2002, total air time 28 hours, flies beautifully, TC time flown off. All paperwork up to date. Has brand new VW factory 1600cc longblock to be installed, all engine assessories ready to install, rebuilt Vertex mag, ground adjustable IVO prop, all parts to repair slight landing gear hard landing, hydraulic brakes, new tires. Nothing to buy. Bargain at $4500.00. One of the nicest built and flying T2 anywhere. 519-426-8583. Near London ON. jdonaldson@kwic.com Jun09

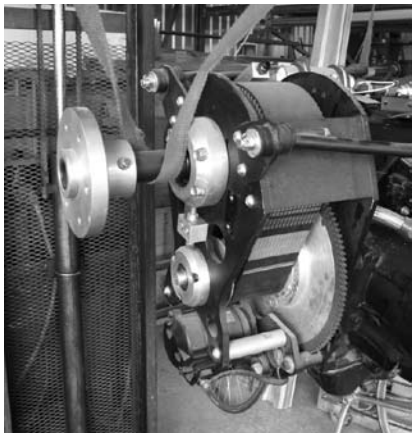
FOR SALE: Bushcaddy R120 kit, tail section done, cabin 85% completed. Comes with everything needed to complete the plane. Rotax 912S, Warp Drive 3 blade propellor, instruments, etc. Price:$49,500.00. Rexton N.B. W 506-523-9056, H 506-523-9614
e-mail: ahudson@nbnet.nb.ca Jun09

FOR SALE: Cuby project at precover stage, on gear with controls, seats, engine mount, struts, wood wings. $3500 gpeees@

hotmail.com 519-831-5350 Jun09

Zenith Zodiac 601 C-FZOF. Subaru powered, warp drive propeller, A22 ICom portable, flightcom intercom. Flight authority valid to Aug 11/09. 13 hrs total time on airframe. Presently located at St. Catharines airport. Asking $25.000. 905 295 4906 Jun09

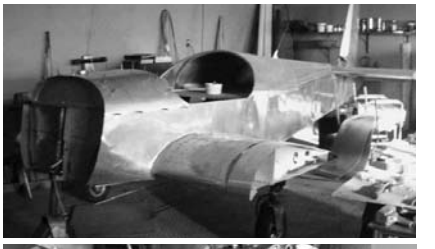
Tri Pacer fuselage with main gear. $300. Must be picked up, cannot ship. garywolf@rogers.com 519-648-3030 Jun09



Brand new Crossflow redrive for Subaru EA 81 with flywheel and starter. RAA is handling the sale of this redrive for the estate of the late Mike Davy. $1200. This is a complete bolt-on unit. Please contact garywolf@rogers.com or call 519-648-3030 Jun09

RAA DONATION FOR SALE: 6 cylinder Continental IO 470 J engine as acore for rebuilding, condition unknown. Thus engine was in a Debonair that had a wheels up landing. Best offer but be resonable as the proceeds go to RAA. I can email photos to you if required. garywolf@rogers.com Jun09
FOR SALE: 1969 Stitts Playboy.135hp. Lycoming. Fuselage & tail surfaces covered with ceconite in 2006. Gross 1450 lbs. Net weight 945 lbs. $12,500. Call 1-519-294-6118. E-mail mtlarkin@sympatico.ca. Jun09

FOR SALE: Lycoming engine-Model IO-360-B1B--Last annual 5-8-73 at 646.0 hrs since top O/H--in storage since removal from Beechcraft--C/W Hartzel C/S prop. Dynafocal mount , Exhaust,--Logbook--Located in Edmonton,Ab. $8500 OBO forestind@mmipro.com Cell 780-499-1724 Res: 780-460-7420 Jun09



FOR SALE _ Zenair 601HD tricycle gear built from plans. Wings and empennage finished. Fuselage 90% done. Electric elevator trim operational. Control cables finished. Hydraulic brakes operational. Fuel tank installed. Radio antenna and cable installed. Logs up to date. Also included; plexi for canopy, radio, extra aluminum sheeting and some tools. Asking $8000. ALSO FOR SALE_ Corvair Monaza 6 cylinder 110 Hp engine. Prop hub, ring gear and starter installed. Needs carburation, ignition, and exhaust. Logs complete. Asking $4000. Both items for $10000. ph; 403-665-2482 Hanna, AB. e-mail; mcdonell@netago.ca Jun09

I have too many RV projects on the go…
1. RV-4 project well on the way with the tail feathers finished, wingspars finished and all ribs drilled, primed and numbered in the box. Flaps and ailerons finished. Fuselage on the jig. All primed. Good workmanship. $9500 OBO . Call for more details or e-mail for pictures. (519) 461-1464 or ed@solaire-canada.com
2. RV-8 project, tail feathers finished, spars done, flaps,ailerons, D-tube and tanks finished. Predrilled ribs and skins. All parts in boxes ready to go. Excellent workmanship. $9500 OBO Call for more details or e-mail for pictures. (519) 461-1464 or ed@solaire-canada.com Jun09

Wanted

WANTED Aeronca Champ. Preferably 85 to 100 hp Continental. Located Ontario or Quebec. Contact <tingle@ionsys.com Feb08

WANTED: Alternator or generator for C90. Must have gear intact. Contact Jeff Deuchar 780-352-4268 or f1rocket@telus.net Aug 08

Looking for a port side wing for a 1989 Avid Flyer H.H. STOL. if any one has one they can email me @ wcsorell@northwestel.net or phone Wade Sorell 250-500-3775 Fort Nelson B.C. or is there anyone out there who rebuilds AULA

Ads run for a maximum three issues depending on space available and then must be renewed for continued display. Please direct all classified inquiries and ad cancellations to: classified@raa.ca and place "RAA ad" in the subject line.

New In Canadian Skies

George Inman's RV-8

C-FQVQ, my kit built RV-8, took to the skies May 16 2009. Brian Koldyk was at the controls, as I need to take taildragger training. She flies great with just a slightly heavy left wing,but I should not need any trim tabs.

George H. Inman
ghinman@mts.net
Home 204 287 8334
Cell 204 799 7062

RAA Chapters and Meetings Across Canada

The following is a list of active RAA Chapters. New members and other interested people are encouraged to contact chapter presidents to confirm meetings as places and times may vary.

ATLANTIC REGION

HAVELOCK NB: Weekly Sunday morning get together year round, all aviation enthusiasts welcome. Havelock Flying Club - 25 mi west of Moncton. Contact Sterling Goddard 506-856-2211 sterling_goddard@hotmail.com

QUEBEC REGION

COTE NORD (BAIE COMEAU): Meeting times to be advised. Contact Pres.Gabriel Chouinard, 418-296-6180.

LES AILES FERMONTOISES (FERMONT): First Sunday 7:30 pm at 24 Iberville, Fermont. Contact Pres. Serge Mihelic, 418-287-3340.

MONTREAL (LONGUEUIL): Chapter 415, Meeting in French second Wednesday at 8 pm, at CEGEP Edouard Montpetit 5555 Place de la Savane, St. Hubert, PQ. President Pierre Fournier, pierre.fournier@cmc-electronics.ca (514) 645-4355

OUATOUAIS/GATINEAU: Every Saturday 9:00 am to noon at the restaurant l9Aileron in the airport terminal. Contact Ms N.C. Kroft, Gatineau Airport, 819-669-0164.

ASSOC DES CONSTRUCTUERS D'AVIONS EXPERIMENTAUX DE QUEBEC (QUEBEC): Third Monday 7:30 pm at Les Ailes Quebecoises, Quebec City Airport. Contact Pres. Ray Fiset, 418-871-3781. rayfiset@qc.aira.com

ASSOC AEROSPORTIVE DE RIMOUSKI: First Saturday at 9:00 am, La Cage aux Sports, Rimouski. Contact Pres. Bruno Albert, 418-735-5324.

ASSOC DES PILOTES ET CONSTRUCTEURS DU SAGUENAY-LAC ST JEAN: Third Wednesday 7:00 pm at Exact Air, St Honore Airport, CYRC. Contact Marc Tremblay, 418-548-3660

SHERBROOKE LES FAUCHEURS de MARGUERITES. Contact Real Paquette 819-878-3998 lesfaucheurs@hotmail.com

ONTARIO

BARRIE/ORILLIA: Fourth Monday 7:30 pm, Lake Simcoe Regional Airport. Contact Treas.Gene Bemus 705-325-7585 gene@encode.com

COBDEN: Third Thursday 8:30 pm at Club House, Cobden Airport. Contact Pres. Clare Strutt, 819-647-5651.

COLLINGWOOD AND DISTRICT; The Collingwood and District RAA, Chapter 4904, meets every first Thursday of every. month, at 7:30 PM except July and August, at the Collingwood Airport or at off-site locations as projects dictate. The January meeting is a club banquet held at a local establishment. For more information contact Pres. Keith Weston at 705-444-1422 or e-mail at kcweston@georgian.net

EXETER: Second Monday 7:30 pm at Summers-Sexsmith Airfield, Winters-Exeter Legion. Contact Pres. Ron Helm, ron.helm@sympatico.ca 519 235-2644

FLAMBOROUGH: Second Thursday 8:00 pm at Flamborough Airpark. Contact Editor Frank Ball

fdnmeball@teksavvy.com 905 822-5371

HAMILTON: Second Friday 8:00 pm Months of Feb, April, June, Aug, Oct, Dec, at Hamilton Airport. Contact Pres. Brian Kenney, 905-336-5190

KENT FLYING MACHINES: First Tuesday 7:30 pm at various locations. Contact President , Jim Easter 519-676-4019 jim.easter@teksavvy.com.

KITCHENER-WATERLOO: Meets the third Monday of each month in the upstairs meeting room of the cadet building at CYKF, except during the summer months when we have fly-ins instead. Please contact Clare Snyder clare@snyder.on.ca

LONDON-ST. THOMAS: First Tuesday 7:30 pm. At the Air Force Association Building, London Airport. Contact President Angus McKenzie 519-652-2734 dahatch@rogers.com

MIDLAND-HURONIA: First Tuesday 7:30 pm Huronia Airport. Contact Tom Massey 705-526-5304, fax 526-5310

NIAGARA REGION: Second Monday 7:30 pm at Niagara District Airport. Contact Pres. Len Petterson swedishcowboy29@aol.com http://home.cogeco.ca/~raaniagara/

OSHAWA DISTRICT: Last Monday at 7:30 pm at Oshawa Airport, 420 Wing RCAF Assoc. Contact President Chris Gardiner 905-668-5703 cgardn628@rogers.com

OWEN SOUND Contact President Roger Foster 519-923-5183 rpfoster@bmts.com

OTTAWA/RIDEAU: Kars, Ont. 1st Tuesday. Contact: Secretary, Bill Reed 613-831-8762 bill@ncf.ca

SAUGEEN: Third Saturday for breakfast at Hanover Airport. Contact: Ed Melanson 519-665-2161 meled@wightman.ca

YQG AMATEUR AVIATION GROUP (WINDSOR): Forth Monday, 7:30 pm Windsor Flying Club, Airport Road, Contact: Kris Browne e_kris_browne@hotmail.com

SCARBOROUGH/MARKHAM: Third Thursday 7:30 pm Buttonville Airport, Buttonville Flying Clubhouse. Contact Bob Stobie 416-497-2808 bstobie@pathcom.com

TORONTO: First Monday 8 pm at Ch 41 Hangar on north end of Brampton Airport Contact: President, Earl Trimble 905-787-8524 northerntailwind@aol.com

TORONTO ROTORCRAFT CLUB: Meets 3rd. Friday except July, August, December and holiday weekends at 7:30 pm Etobicoke Civic Centre, 399 The West Mall (at Burnhamthorpe), Toronto. Contact Jerry Forest, Pres. 416 244-4122 or gyro_jerry@hotmail.com.

WIARTON: Bruce Peninsula Chapter #51 breakfast meetings start at 8:30am on the second Saturday of each month in the Gallery of Early CanadianFlight/Roof Top Cafe at Wiarton-Keppel Airport. As there are sometime changes, contact Brian Reis at 519-534-4090 or earlycanflight@symptico.ca

MANITOBA

BRANDON: Brandon Chapter RAA meets on the second Monday of each month at the Commonwealth Air Training Plan Museum at 7:30 PM except in the months of July and August. Contact Pres. John Robinson 204-728-1240.

WINNIPEG: Winnipeg Area Chapter: Third Thursday, 7:30 pm RAA Hangar, Lyncrest Airport or other location as arranged. Contact President Ben Toenders at 204-895-8779 or email raa@mts.net. No meetings June, July & Aug. RAA Winnipeg info also available at Springfield Flying Center website at http://www.lyncrest.org/sfcraac.html.

SASKATCHEWAN

Chapter 4901 North Saskatchewan. Meetings: Second Tuesday of the month 7:30pm Prairie Partners Aero Club Martensville, Sk. info at www.raa4901.com. Kevin Drinkwater 306-955-1361 lauraprd@shaw.ca

ALBERTA

CALGARY chapter meets every 4th Monday each month with exception of holiday Mondays and July & August. Meetings from 19:00-22:00 are held at the Southern Alberta Institute of Technologies (SAIT) Training Hangar at the Calgary Airport. Join us for builder discussions, site visits, tech. tips, fly out weekends and more. Contact president President Gene Lukan at 403 932-4238

EDMONTON HOMEBUILT AIRCRAFT ASSOC: First Tuesday 7:30 pm EAHS boardroom. Contact President Bill Boyes 780-485-7088

GRANDE PRAIRIE: Third Tuesday, Chandelle Aviation Hangar, contact Jordie Carlson at 780-538-3800 work. or 780-538-3979 evenings. Email: jcarlson@telusplanet.net

MEDICINE HAT: Last Thursday of the month, 7:00PM, RAAC clubrooms, airport. Contact Boyne Lewis at (403) 527-9571or E mail balewis@shaw.ca

BRITISH COLUMBIA

ABBOTSFORD: Third Wednesday 7:30 pm Abbotsford Flying Club, Abbotsford Airport. Contact President, John Vlake 604-820-9088 email javlakeca@yahoo.ca

DUNCAN: Second Tuesday 7 pm members homes (rotating basis). Contact Pres. Howard Rolston, 250-246-3756.

OKANAGAN VALLEY: First Thursday of every month except July and August (no meetings) at the Kelowna Yacht Club. Dinner at 6:00pm, meeting at 7:30pm Contact President, Cameron Bottrill 250-558-5551 moneypit@junction.net

QUESNEL: First Monday/Month 7:00 p.m. at Old Terminal Building, CYQZ Airport. Contact President Jerry Van Halderen 250-249-5151 email: jjwvanhalderen@shaw.ca

SUNCOAST RAA CHAPTER 580: Second Sunday 13:30 pm Sechelt Airport Clubhouse, sometimes members homes. Contact Pres. Gene Hogan, 604-886-7645

CHAPTER 85 RAA (DELTA): First Tuesday 8pm, Delta Heritage Airpark RAA Clubhouse. 4103-104th Street, Delta. Contact President Gerard Van Dijk 604-319-0264, vandijkg@yahoo.ca. Website http://raa85.b4.ca.

VANCOUVER ISLAND AVIATION SOCIETY (VICTORIA): Third Monday 7:30 pm Victoria Flying Club Lounge. Contact Pres. Roger Damico, 250-744-7472.

THOMPSON VALLEY SPORT AIRCRAFT CLUB: Second Thursday of the month 7:30 pm Knutsford Club, contact President - Dick Suttie Phone 250-374-6136 e-mail - richard_suttie@telus.net

ALASKA HIGHWAY: meetings held every third Thursday of every month (except July & August) at the Taylor Fire Hall at 7:30 p.m. For more information call Richard at 782-2421 or Heath at 785-4758.

Chapter executives please advise of changes as they occur. For further information regarding chapter activities contact RAA Canada, 13691 McLaughlin Rd, R R 1, Caledon, ON L7C 2B2 Telephone: 905-838-1357 Fax: 905-838-1359 or call toll free: 1-800-387-1028 email: raa@zing-net.ca www.raa.ca

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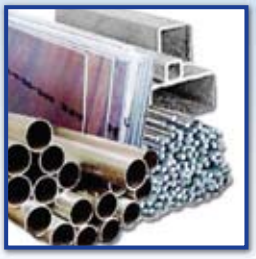
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