July - August 2011

# Recreational Flyer

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The Voice of Canadian Amateur Aircraft Builders $6.95

RAA
RECREATIONAL AIRCRAFT ASSOCIATION
RÉSEAU AÉRONEFS AMATEUR CANADA

# From The President's Desk

*Gary Wolf*

**PASSAGES**

Every chapter has a member who is quietly the backbone of the group, always ready to help and never asking for anything in return. In Delta BC it was Terry Wilshire, and in Quebec City it was Ray Fiset. Kitchener Waterloo had Larry Edwards, and Kamloops until very recently had Dick Suttie. We usually take these people for granted, easy to do because they do not ask for recognition. It is likely that they are the same with their families, and when they pass on they leave a large void. It is then too late to thank them for what they have done, but one way to repay them would be to help the family through the next year until they adapt. Take turns cutting their lawn and shovelling their snow. Make sure the family car gets its oil changes and other maintenance. Nominate someone to handle the sale of the plane so that the family does not have to handle this while they are bereaved. And if you recognize the fellow while he is still alive, take the time to thank him

**IMPORT REGISTRATION PROBLEMS**

Canadians appear to have been making the most of a high dollar this year but some have rushed in without looking closely at what they are buying. Certified aircraft must go through a rigorous import inspection to ensure that they are airworthy, that all AD's have been complied with, and that they meet their type certificates. All modifications must be supported by STCs or the plane will not be registerable in Canada. Lately I have seen one certified plane that suffered extreme corrosion from exposure to salt air in Florida, and another that had a non certified engine installed in it. How does one avoid situations like these? Hire your own AME and pay his expenses to do a prepurchase inspection. It is a lot cheaper than finding out once the plane has been paid for and flown into Canada.

There is no place for certified planes that do not meet their type certificate. They cannot be slid into Owner Maintenance. This category requires that a plane meets its type certificate, all AD's must have been complied with, and there must be a fresh annual. If all are possible there is no reason to go into O-M.

Another plane was bought when the owner thought that because it was registered in the US Experimental category it could automatically be registered here as an Amateur Built. Experimental is a broad category in the US with many sub categories, and Amateur Built is just one of them. The plane in question had been factory built by a manufacturer of certified aircraft but because it had

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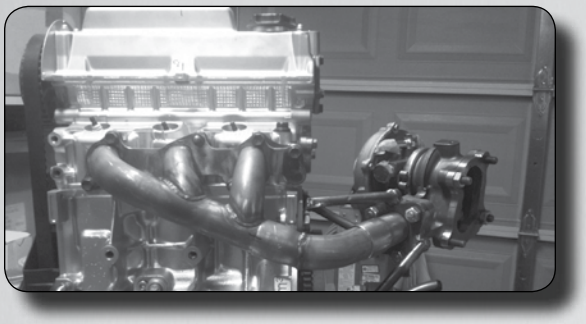

# features



# columns



George Gregory

*Above: A Bucker Jungmann at Goderich, 2005, Cover: the Mills Family Cub*


HARISH JADEJA'S

# GREAT ADVENTURE

**Ever since I finished my own X-Air Advanced Ultralight in 2009 - in fact ever since I began its construction in 2004 - it has been my dream to fly it to Oshkosh for the annual event. 2011 was going to be the year and I began planning last winter.**

*Text and Photos by Harish Jadeja RAA #9189*


*Flying Buddies at Porter County. Opposite, the X-Air at OSH.*

Initially I went through the regulations and found that with an Advanced UL I needed at minimum a Rec Permit so I completed that in February. I conferred with other pilots to determine the best route and which charts I would need, and ordered them from Hammond Aviation and Aircraft Spruce. My plane has a Mode C transponder so I did not have to get special written permission to enter; all I needed was to download, print out, and sign a copy of the FAA authorization that allows a Canadian Advanced UL to fly in the US, valid for six months. I had already signed up for an eAPIS account so I filed my manifest with Homeland Security on their website a day prior to my departure.

My family and I cleaned up the plane and filled it with luggage and camping gear for a week away, and I planned to depart at 6:00am the next morning. Weather the next morning was low ceilings and heavy mist but Flight Service said that it would clear by noon, which it magically did. I called Flight Service again to check weather enroute and called Port Huron Customs who were questioning why I was calling three hours ahead of time. When I explained the airspeed of my plane they were then happy to take my information.

As soon as I took off from my rural strip I called Toronto Centre to get a discrete code for the transponder, and three hours later I landed at Port Huron St. Clair County Airport after obtaining clearance from the Selfridge Air Force Base. I was told to stay in my plane until approached by an officer, and to my surprise six armed officers in bulletproof vests surrounded my plane with one of them going around it with a Geiger counter. After forty-five minutes of questioning and

*Leaving Oshkosh and crossing Northern Michigan.*

**CUSTOMS... WERE QUESTIONING WHY I WAS CALLING THREE HOURS AHEAD OF TIME. WHEN I EXPLAINED THE AIRSPEED OF MY PLANE THEY WERE THEN HAPPY TO TAKE MY INFORMATION.**

paperwork I was free to resume the journey. I fuelled at the FBO and when I checked weather I was told that there would be heavy winds on the nose for the next leg to Howell Michigan. I decided to stay the night in Port Huron and the FBO lent me the courtesy car, provided a hangar, and got me a good rate at a local hotel. Next morning I got off the ground at 8:00am and made my way across Michigan with a couple of fuel stops for 100LL, the only fuel that was available en route. The HKS engine runs very well on 100LL so this worked out fine.

In late afternoon I landed at Valparaiso Indiana where I spent the next night. At every stop the local EAA chapters had welcoming committees and food for traveling pilots. Valparaiso airport too provided a hangar and courtesy car and booked a hotel. It is amazing how friendly everyone was.

The next morning's weather was low ceilings, normal for that time of year because of the humidity being carried from Lake Michigan. It cleared in an hour, so after refueling I took off for DeKalb County Airport in Illinois, just outside of the Chicago airspace that I was avoiding by making a wide circle. I asked for flight following but it was declined because the air traffic controllers were too busy to provide it to VFR traffic. Weather was clear all the way to DeKalb, and enroute I saw the planes that were in the Airventure Cup race and I recognized Wayne Hadath's Rocket with its smoke system functioning very well. At DeKalb the local airport had a BBQ and offered me a free meal. After the meal I had some problems with the starter and I discovered that the solenoid had a loose ground. It took only a few minutes to repair and I was on my way to Hartford Municipal

*Top: Back on solid ground. The outbound flight took 14 hours with groundspeeds as low as 35 mph. Below: The view for the next few hours on the way home. That's a lot of water to cross in an ultralight!*

Airport, some fifty miles south of Oshkosh. I landed there in the afternoon to wait out the Oshkosh airspace closure while the afternoon airshow was on. I listened to the Oshkosh ATIS on the phone and took off at suppertime for the last leg to Oshkosh.

As I approached Oshkosh I followed the Ultralight arrival procedures as outlined in their Notam, flying at 300 ft AGL the last five miles before joining the pattern for the Ultralight field. Flying an unfamiliar route at 300 ft does not give much warning when the field abruptly shows up, and this is right after a 90 degree turn. I did not want to be remembered as the Canadian who screwed up his landing but fortunately the X-Air and I made one of our best landings ever.

When I taxied to the gate I was warmly greeted by volunteers and an official of the EAA who asked where I would like to park and if I would like to camp. Volunteers then helped to push the X-Air to my assigned spot and I used my Claws to tie the plane down, and pitched my tent under the wing.

When I went to the barn to pay my fees the next morning they waived the camping fee because of the distance I had flown. They also handed me a cap and a mug as souvenirs.

I stayed at the airport and show all week, saw all the airshows and displays, enjoyed the excellent museum, and attended some forums. Since my plane was the only X-Air there were many who wanted to know about the plane and engine, and many Canadians saw the Maple leaf on the tail and dropped by to ask about my trip. During the week I changed the engine oil and the volunteers took me to a disposal site at the EAA motor shop on the field. The weather all week was spotty but on Friday it looked good so I flew several circuits of the Ultralight pattern, an exciting experience. On Friday evening I departed Oshkosh right after the airshow and headed north for a two hour flight to Menominee Wisconsin where I stayed the night. On Saturday morning the weather was beautiful and with a quartering tailwind I made good time to Manistique Michigan where I made a fuel stop at a friendly FBO, and I filed my flight plan to Canada at the FBO's booth and called Canada Customs. From Manistique the tailwinds helped again and the last stop in the US was Chippeway Michigan for more 100LL and then I island hopped over the long lonely stretches of Lake Superior, en route to Gore Bay. To stay within gliding distance of land I climbed to 5000

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# Suzuki G10 for the BD-5 Part 2

*Power for your Pocket Rocket*
*by Mark ter Keurs*

**Turbo-Charger Considerations**

As I wrote before, this engine will be turbocharged. This engine appeared in several models in a turbocharged form, i.e. Chevy Sprint Turbo and Pontiac Firefly Turbo. It could be very tempting to use the same turbocharger as the factory automotive installation. Do NOT do that. The factory is interested in reducing turbo lag and a wide operating band. An automotive engine spends very little time near maximum rpm. So the factory turbo installation makes sacrifices in that rpm range for the benefit of the lower end operating range. In an airplane you don't care one bit about the lower end. See the SDS website for more good information regarding turbochargers[1].

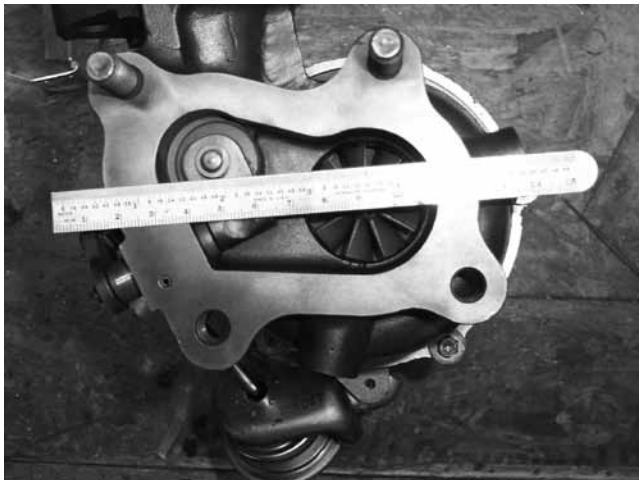
A turbocharger works by recovering energy in the form of pressure in the exhaust manifold, turning it into rotational force in the turbine, and then through the shaft between the turbine and compressor, returning this rotational energy to the intake manifold in the form of pressure. For all of those who just got up on their perch about heat energy.... yes, the exhaust is cooler after the turbine than before. But this is a function of dropping the pressure through the turbine. To test this statement, just hold a cold high pressure air-source to the intake of the turbine housing and watch the turbine spin. Now hold the flame of your favorite welding torch to the same intake and watch the turbine not move and just warm up. Do it in that order, or you'll burn your fingers!

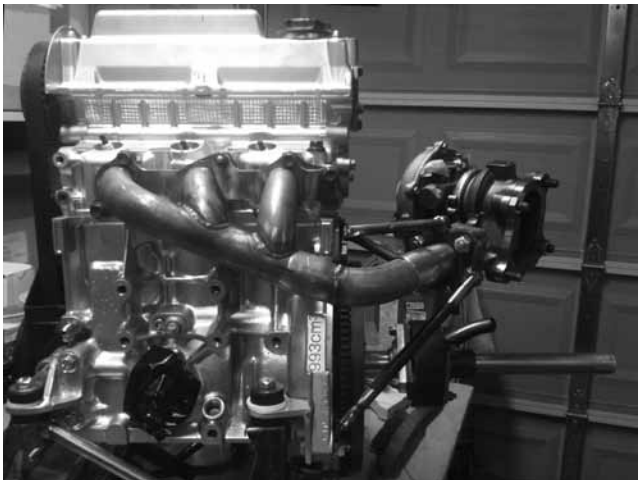
For the automotive turbocharger to work at low engine rpm, the turbine housing needs to be relatively small to raise the pressure of the exhaust-gas sufficiently to spin up the turbo to its operating range, and avoid turbo-lag. As the engine increases in rpm, however, it pumps considerably more air and all this still needs to fit through the same restrictive turbine housing resulting in excessively high exhaust manifold pressure (and resulting high temps!) and the consequent over-speeding turbocharger. Somewhere along the way you'll also overboost the intake manifold. To prevent this virtually all automotive turbochargers are fitted with waste-gates. Waste-gate actuators sense intake manifold pressure and then use a valve to by-pass the turbine. Waste-gates may be integral to the turbine waste-gate valve on the lefthousing or external. External waste-gates have the performance edge, but require additional plumbing. Integral waste-gates are much easier to use.

An aircraft engine, even an automotive conversion, runs in a fairly small rpm range. This means the turbine housing can be sized to run at its optimum condition and reduce the exhaust back pressure, and thereby temperature, as much as possible.

The compressor on the other hand frequently needs to run fairly high compression ratios. Take for example an engine that permits 45 inches of manifold pressure. At sea level that means that the compressor needs to produce a compression ratio of 1.5 to raise 29.92 inches to 45 inches. If you choose to apply full manifold pressure when the same airplane flies at 18,000 feet, the compressor needs to produce a compression ratio of 3 to raise the outside air pressure of roughly 15 inches to 45 in. of manifold pressure.

So how to figure out which turbo you need? Well, we can start on a bunch of math like:





*Above, left: the integral waste-gate on the left; right: Although the room under the cowl may prevent us from building the perfect turbo manifold, above is an acceptable one. The runners should be short, equal length, and as straight as possible. We want the lowest possible exhaust back prressure required to get the job done; turbo lag is not an issue.*

(CID x Ve x RPM/2) / 1728 = CFM
MAP / Patm = Pr where;

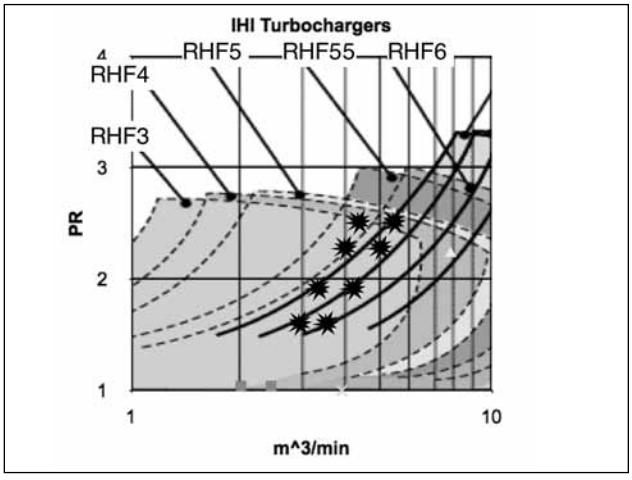
| Altitude | Patm |
|---|---|
| Patm=0.00000004262 x Alt - .0035 x Alt + 99.918 | |
| Sea Level | 29.92 |
| 8,000 | 22.23 |
| 18,000 | 14.96 |

**CFM x Pr = Compressor Flow in CFM**

Or you can cruise the internet and find links like: http://not2fast.com/turbo/glossary/turbo_calc.shtml. This is a great website because it will kindly calculate your requirements as well as plot it on several compressor maps.

If your preferred turbo-charger is not on the list for display, you can still use the calculator to obtain the engine's flow in CFM and pounds per minute. Then search the internet for compressor maps and copy the maps to your computer.

Now you can use your favorite spreadsheet program to plot the values you obtained for your engine on a graph. Even a cheap program will let you select a background for your graph. Paste the downloaded compressor map and make sure your axis scales agree with the map's axis scales and you're in business. And then there is always the option to work out the numbers for your situation and take those to a turbocharger shop so they can match a turbocharger for you. Make sure it is a reputable shop. It is easy for a guy to sell turbochargers and simply have a list of application he can choose from to tell you what you need without ever really knowing what he is doing.




*IHI turbocharger map. Starbursts represent various operating conditions.*

**Exhaust Manifold**

A turbocharger exhaust manifold has very different demands than a naturally aspirated manifold. Acoustic properties are still present, but far overshadowed by need to manage back-pressure. Once again it can be tempting to use factory parts like exhaust manifolds.

Factory exhaust parts are frequently built with pack-

*Factory stock turbo manifold. It's compact but doesn't let the exhaust gasses escape very easily.*

aging in mind. The G10 log manifold shown is very compact but does not let the exhaust gasses escape from your cylinders very easily.

This keeps high pressure in the manifold, which is good for low rpm boost response, but horrible for high rpm operations. The above is in fact an example of a lousy manifold for airplane use. Do not use this style of manifold.

For a turbo manifold the best thing to do is keep the runners short, equal length, and as straight as possible. If you review the automotive sources you will find that it is suggested to keep the runners fairly small in diameter as well to raise the exhaust gas velocity to minimize turbo lag. This does not apply to airplane use. As stated before; we don't care about turbo lag. We care about the lowest possible exhaust back pressure required to get the job done. Packaging requirements may prevent us from building the perfect exhaust manifold, but here is an example of an acceptable turbo manifold:

This manifold illustrates a few aspects worth noting. First; this manifold is fabricated from 321 stainless steel tubing. Second; the manifold is sloped down to try to equalize the path lengths to the turbo as much as possible. Third; the turbocharger is completely supported by a steel truss bolted to the engine block. No weight is carried by the manifold.

Some thoughts on stainless steel: There are basically two kinds of stainless steel popularly available for fabricating your manifold, 304SS and 321SS. 304SS is cheaper, the easiest to obtain, and slightly easier to work. 321SS is by far the better choice for a turbo manifold though. Its high temperature qualities are much better. It is just not worth the potential safety issues to try to save a few bucks going with 304SS. Another misunderstood safety aspect is wrapping your headers in heat tape. This is done in cars to keep the pipes hot! You won't need that. The manifold will be red hot all by itself in an airplane. Wrapping your aircraft manifold can lead to overheating and failure of the manifold. Also, any moisture that wicks into the tape can cause corrosion. The 321SS can take the temperature, the surrounding materials probably can not, so you are best off installing some heat-shields and providing some cooling airflow around your manifold.

One last characteristic of 321SS is its high coefficient of expansion. This means that the metal grows and shrinks significantly with changes in temperature. Because you bolt one side of your manifold to the head and the other is bolted down by the truss you built to carry the turbocharger you need to accommodate the expansion of the manifold when it gets hot. You can use bellows or slip joints. In the picture above you can see two slip joints, one before the bend and one after.

#### Bearing Considerations

Oil in your engine has two jobs that are equally important. The first is obvious; lubricate all the moving parts. The second is cooling. In an automotive application the oil has to lubricate the engines bearings but these are relatively lightly loaded. This means they do not have a huge cooling requirement. Even if you have to climb a long steep hill at near maximum rpm and wide open throttle, you will only be doing that for a few minutes at a time. This gets the bearings toasty warm but long before this leads to problems you will be at the top of the hill reducing

***The G10 log manifold shown is very compact but does not let the exhaust gasses escape from your cylinders very easily... [and] is in fact an example of a lousy manifold for airplane use. Do not use this style of manifold.***

your throttle, reducing the rpm's, and letting the oil cool the bearings down. In an airplane the engine remains at high power for a long time and the bearings can use a little extra cooling.

The factory clearances for the main bearings of the G10 are: 0.02 - 0.04 mm, and need to be replaced if they exceed 0.06 mm. Even just the difference between the new limits of 0.02 and 0.04 mm increases the oil flow through the bearing by more than 200%. This extra volume of oil flowing through the bearing represents added cooling ability by the oil.

So is there enough oil flow available? The outward appearance of the oil pumps on several Suzuki engines is the same, and they are physically interchangeable. The difference lies in the thickness of the pump gears. The thickness ranges from 7 mm for early naturally aspirated G10 engines to 9.5 mm for GTi G13 blocks.

Not having enough volume available from the pump to maintain pressure is deadly to an engine. On the other hand, just because a bigger pump fits does not mean you should automatically mount it. Pumping oil takes a lot of power. If the pump is going to waste that power by simply dumping the excess oil through the pressure relief valve you have done no good at all. All you have done is lost horsepower to the propeller. One sure-fire test is to get the oil up to maximum temperature, have the engine at low cruise rpm, and measure the oil pressure at the point farthest away from the pump. If you still have good oil pressure there, your pump is big enough. If not; its time to upgrade your pump.

My main bearings were sized to provide 0.04 mm (0.0016") clearance. All out racing engines with bearing diameters of this size will run 0.002" clearance.

[1] *Read SDS turbocharger web page http://sdsefi.com/techair.htm*

# ZENAIR TO RE-INTRODUCE KIT-BUILDING WORKSHOPS

**After a ten-year hiatus, sheet-metal workshops will once again be offered by Zenair Ltd. at its Midland, ON manufacturing facility. Designed to show potential kit-builders how quick and easy it is to assemble a Chris Heintz aircraft design, workshops in recent years had been led by regional distributors rather than the home factory. "Regular requests for these hands-on seminars have prompted us to schedule three factory-based introductory rudder workshops before the end of the year," said Michael Heintz, workshop coordinator. "These two-day events offer participants an ideal opportunity to build an aircraft component (rudder) under factory supervision; to have the workshops take place where the kits are manufactured only enhances the experience," adds Heintz.**

**A first workshop is scheduled for August 12-13th, with additional events planned in September and November; cost to participate is no more than the price of the parts (rudder kit). Participants are encouraged to bring a building partner (spouse, son, daughter, friend, etc.) to share experience. For exact dates, prices and more information on these workshops, Zenair Ltd. or its kit aircraft, contact the company directly at 705 526-2871 or go to www.zenair.com and look for the "workshop" tab.**

**ZENAIR Ltd.**
**Huronia Airport**
**P.O. Box 235, Midland, ON L4R 4K8**

***Six hundred years ago, the invention of printing democratized knowledge, and changed the world. People could exchange ideas, and learning for the common man exploded; it truly marked the beginning of the modern world as information could be freely shared, compared, corrected and systematized. We're experiencing a similar transformation now, a new paradigm that touches more of our lives than we might realize. This time it's more to do with how quickly information is spread.***
***How can the RAA benefit from this?***

# Keeping in Touch

*by George Gregory*

Instead of going to the library and looking (perhaps in vain) for some esoteric bit of information, I can do an online search for the subject and find useful information, usually within minutes. The world of information is literally at your fingertips. A case in point: a few years ago I had a problem with the 0-300 in my Cessna. The engine ran smooth at power, but idled rough between 1200 and 1500 rpm. Not being an engine guy, I asked around the chapter; some suggested (as it turned out, correctly) an induction issue, but my AME didn't think that was the problem. I googled "rough running Continentals" and found a veritable grocery list of things to check out - most of them having to do with (you guessed it) induction. After I showed that to my AME he was willing to take a second look, and the problem - a missing nut on an intake tube, of all things - was found and fixed.

So a lot has changed in the last few decades. The advent of the internet and more recently, social media (Facebook, Twitter, etc.) have radically changed the way people keep in touch. Many RAA types are already immersed in the New Order, but for those who are not, I offer this brief primer, hopefully to dispel some of the apprehension and shine a light on the tremendous potential it offers. Pretty much everyone is using email, so there's not much to add to that, with one caveat. Most of the submissions to this magazine arrive as emails with attached files, whether text or photos - but there's one important thing to watch out for: most email programs have a setting to make pictures smaller for email purposes. This is fine if the picture is only going to be viewed on a computer screen; but if it's for use on the printed page, make sure this option is turned off. The design people (meaning me) need high-resolution pictures, which means big files.

### *RAA's New Website*

The RAA has an updated website (www.raa.ca). If you have not visited it, please do so! Think of the website as sort of like a town square you can visit with your computer. The home page has links to various other pages resident in the site, including contact information, news, upcoming events (updated regularly!), archived issues and tech articles, and a forum. This website is only as useful as the members make it: the more it's used, and the more information submitted (chapter activities, coming events, etc.), the better. It is key to serving RAA's constituency.

### *RAA Forum*

All the pages on the website feature a forum link. If the website is the town square, the forum page is like a bulletin board in that square. People can communicate and share information there.

***In the world we presently live in, computer literacy is almost as empowering as being able to read... social media takes the ability to connect and network to a whole new level. This ability can be leveraged by the RAA to better serve their members.***

To expand the analogy, if someone had a question, they could write it on a card and stick it on that bulletin board. Someone comes along, notices the question, and writes an answer on another card he posts next to the question. Perhaps several others will do so, and when the questioner checks back, he has some answers - and just as importantly, the original question with its answers is there on the bulletin board for all to view.

If I hadn't had immediate access to chapter members to ask, I could have asked the question on a forum, and someone who'd had a similar problem could post an answer. On a recent project, I had to ask some questions on a forum and received useful answers within a day of posting the question. Such things exist for nearly every interest imaginable, and demonstrate a wonderful way to share information and expertise. *But this feature is only useful as it's appropriated by members.* Following the analogy, if nobody visits the town square (website) or looks at the bulletin board (forum), it's not doing much good. But if it does get used, it's an extremely efficient way to share knowledge. It's easy and free. Small organizations like the RAA can - and must - leverage this technology to streamline their communications. In the world we presently live in, computer literacy is almost as empowering as being able to read.

### *Social Media*

This where I'm a bit of a newbie (social media is a comparatively recent development), so you'll have to bear with me. If the internet is a world of information at your fingertips, social media lets you connect with people connected to that realm. It's is basically a way of keeping in touch with, and informing those *of like interest*, of your activities, learning what other people are doing, and getting the word out about neat stuff to check out. A particular feature of social media is that it can work exponentially to inform people of coming events and interesting developments; it's like focused email on steroids. An essential part of its nature is its opt-in nature. You control the amount of information that comes through the pipe by *who you decide to connect to*.

There's been a lot of buzz about it, and for good reason. I'm not going to go into the nuts and bolts in depth (lots of that info is online and easy to find) but I do want to show how social media can work for the RAA. I'd like to take a look at the two that I'm most familiar with, Facebook and Twitter.

### *Facebook*

On Facebook, you basically set up a free account and post stuff that's happening in your life: pictures, events, and so forth. You can send secure messages in Facebook (which has the advantage of being immune to email spam). Although these messages are discrete and only go where they are intended, there are parts of your Facebook account (your Wall and Profile pages, for instance) that are open to all to see - a public space. Don't put anything there you're not willing to share with the world.

The tremendous feature of Facebook is that it allows you to "friend" people (that's the "social" in social media). Why this matters is because once you've friended someone, when you post an invitation on your wall, your Facebook friends (and only them) are notified of the event by email and on their own

***The website is sort of like RAA's town square... if the website is the town square, the forum page is like a bulletin board in that square. People can communicate and share information there.***

Facebook pages, and invited to check it out. If you're planning a fly-in, this is an easy way to tell a lot of people all at once: if everyone in your chapter is on your friend list, and you're planning an event, just post an invitation on your wall, and everyone who is on your list will get a notification, along with a little button that will ask them if they can make it. Furthermore, when you are "friended" with someone, that person may have friends who can likewise be connected, spreading the word *in an exponential fashion*. This is the peculiar power of social media, and its defining characteristic. You may be thus friended with an RAA connection who is friends with someone who is not directly connected with yourself; but if that third party is connected with your RAA buddy, he'll be able so see what's going on your friend's Facebook site and will thus also learn about that composite seminar you were telling your pal about.

***Twitter***

Do you you have a fly-in you want to announce? Have you found a great article online that you'd like to point out to your buds? Try Twitter.

Twitter is basically an abbreviated way of telling people something's up. Setting up an account is free and takes seconds. You "follow" people, and get a feed of information from only the people you choose, either by name or interest.

At the top of your Twitter page, it also asks you"what's happening?". If you type (for instance) "neat article on composite construction" and then post the internet address (URL) next to it, everyone who is following you will get that information on their own Twitter feed, and can check it out when they feel like it.

When I opened my Twitter account I looked up aviation sorts, viewed their profile, and decided to follow some of them: but *who I decided to follow was up to me*. This allows me to control the amount of information I get. If I'm just following a bunch of aviation types, then when they "tweet" (that is, make an announcement or post a link to something they find interesting and want to tell people about) it will show up on my Twitter page, which I can check at my leisure. A few caveats: stuff you post on your Twitter page is limited to 140 characters. This can be quite limiting if you have a URL to tell folks about that is quite long. For this reason, there are websites like TinyURL that will abbreviate internet addresses for you. Just copy, then paste, the long version in one window, and a shorter version shows up in the other. That's the one you'd post on your tweet.

Also, you can send direct messages on Twitter that go only to the intended recipient, and not into your general Twitter stream.

You can access Facebook and Twitter on any PC or smart phone hat has an internet connection.

So there you go. I'd encourage members to use the new website and forum - it's there to add value to your membership and increases in usefulness as more people appropriate its features. The Upcoming Events page has events (fly-ins, corn roasts, whatever) posted as they are submitted, so don't be shy about letting everyone else know about what's up: send the info to Gary Wolf (garywolf@rogers.com) or myself (gregdesign@telus.net). And check out Facebook and Twitter. They're easy, and can connect us aviation sorts with a minimum of fuss.

## A quick summary of terms

***Social Media:*** *a way of people connecting and exchanging information and messages via the internet. It is defined by its opt-in, social nature. It allows peoPeople invite, and respond to invitiations to connect in order to receive information. In a word: networking on steroids.*

**Facebook:** *a social media site. where you can post happenings, pictures, just about anything non-commercial.*

**Friend:** *no longer just a noun. You can "friend" somebody on Facebook, which means you invite them to be connected to you and recieve notifications of posts you've made to your Facebook site. You'd be surprised at some of the connections (or re-connections) you can make.*

**Twitter:** *also known as microblogging, is more a way of making announcements or drawing attention to a news fact or web site that the "Tweeter" (the person sending the message) wants to tell folks about. Messages are restricted to 140 characters.*

**Tweet:** *To post a message on Twitter.*

**Follow:** *To opt in to person's tweets.*

# Pr

Jo Hunter Photo

# Propellers

## *Inspection Requirements and the Homebuilder / by Mike Adam*

ONE COMMON AREA of confusion with amateur built aircraft owners is how to meet the Transport Canada CAR 625 Appendix C – Out of Phase inspection requirements for propeller inspections.

To begin, the propeller inspection requirements are divided into 2 categories: Variable Pitch Propellers and Fixed Pitch / Ground Adjustable Propellers.

Variable Pitch propellers are those in which the blade angles can be varied in flight, either by direct selection, or by the action of an automatic mechanism. This category is more commonly called a Constant Speed propeller.

When you read 625 Appendix C the inspection requirements for variable pitch propellers it's no wonder why homebuilders have confusion about what to do. To quote 625 Appendix C, Part 5 – Variable Pitch Propellers it states:

"Except for aircraft that are operated under a special certificate of airworthiness in the owner-maintenance or amateur-built classification, all variable pitch propellers shall be overhauled at the following intervals…"

The requirements of this regulation obviously do not apply to AB or OM aircraft. So technically speaking, your variable pitch propellers are considered to not be a mandatory overhaul item. Because of the statement quoted above, this means that you are not tied to the maintenance requirements as stated for variable pitch propellers as stated in CAR 625 Appendix C.

The question now remains, what do you do? The best approach is to follow the propeller manufacturer's recommended maintenance, service and overhaul requirements. If the manufacturer does not have any published overhaul limits, it would also be considered best practice to follow the inspection requirements as stated in CAR 625 Appendix C, as the propeller doesn't know whether or not it is operating on a certified aircraft or on an AB or OM aircraft.

As per this requirement, if your propeller has been installed for 2000 hours or ten years (whichever occurs first), it's definitely not a bad idea to take it off and send it to a prop shop to be overhauled…regardless of the inspection being required by regulation or not.

The second category is Fixed Pitch/ Ground Adjustable propellers. A fixed pitch propeller is a propeller in which the blade angles cannot be altered. A Ground Adjustable propeller is a propeller in which the blade angles cannot be varied in flight but are capable of being adjusted on the ground.

The inspection requirements of CAR 625 Appendix C – Part 6 are a little easier to make sense of, however still leave a room for confusion. This section contains a few inspection points that homebuilders need to be aware of.

The first point that is stated is that Fixed Pitch wooden propellers are to be checked for tightness after the first 25 hours of air time following their installation and at each subsequent inspection.

Because this is a regulatory requirement, you must be sure to record that this inspection was performed in your aircraft maintenance records. Your log book entry for this inspection item can be as follows:

"Propeller tightness inspected to manufacturer's recommended torque limits as required by CAR 625 Appendix C – Part 6 (a)"

And don't forget to include whether there were defects noted or not. If not, add "Checked Serviceable – No defects noted."

The second item listed in CAR 625 Appendix C – Part 6 states that the fixed pitch or ground adjustable propeller is to be removed from the aircraft and inspected for corrosion or other defects over its entire surface, including the hub faces and mounting hole bores.

This inspection is to be carried out at 5 year intervals.

What exactly are you looking for during the corrosion inspection, and what do you do if you find any corrosion? These are very valid questions, should you be performing this inspection yourself. The best approach is to get the corrosion inspection and repair criteria from the propeller manufacturer, as well as the allowable damage limitations, before you begin.

> ***"The best approach is to get the corrosion inspection and repair criteria from the propeller manufacturer***

A good description of propeller corrosion is found in the Sensenich Propeller Company Service Bulletin # R-15A.

It states, "corrosion of aluminum propeller blade surfaces occurs at varying rates, depending on the condition of the protective finish and on atmospheric conditions prevalent in the aircraft basing area. Corrosion may appear as a white, powder on the blade surface or, in the later stages, as tiny black specks or cavities extending inward from the surface of the metal. The mechanical effect of corrosion damage is similar to that of sharp-bottom impact damage, adversely affecting propeller airworthiness. Particular concern is that of older propellers, still finished with anodize and clear wearcoat finish, do not have the corrosion retarding capability of modern Alodine treatment and polyurethane finish. However, flaked or blistered paint may also indicate existing corrosion".

During the propeller inspection, be sure to have the latest revision of the propeller manufacturer's pilot operating handbook to determine whether any damage found on the propeller is allowed. If the damage found is beyond the manufacturer's limitations, the propeller will have to be sent out to be repaired by an approved propeller shop.

This note also states that "while the propeller is removed, it shall also be checked for correct dimensions" To help clarify this statement, there is an informational note which is found below this item in CAR 625 Appendix C. It further goes on to elaborate what is required and what the intent of the propeller dimensional check is.

The dimensional check does not include a check on blade twist. The dimensional check refers to changes in blade dimension resulting from repairs, particularly cropping of the tips. It is intended to ensure that the blade diameter remains within service limits.

The propeller dimensions can be obtained from the manufacturer's design specifications, or if the propeller is a certified aircraft propeller, the information can be found on the propeller's Type Certificate Data Sheet (TCDS). TCDS can be found on the Transport Canada website: http://wwwapps.tc.gc.ca/saf-sec-sur/2/nico-celn/ or on the FAA website: http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgMakeModel.nsf/MainFrame

Finally, don't forget that these requirements for the fixed pitch and ground adjustable propellers are mandatory. As discussed for variable pitch propellers, there are no overhaul requirements that are applicable to aircraft operating in the amateur built or owner-maintenance category. That being said, you should still follow the manufacturer's recommended limitations.

# Across Canada

*RAA Chapters in Action*


## Meet the New BC Regional Director

Originally from Thunder Bay Ontario, ***John Macready*** grew up in the post war years after WWII. His father had served with the RCAF in Bomber Command and likely this stirred an interest in aviation. As a young person he built model airplanes and flew in small airplanes as a passenger with friends. John was a member of the YMCA, a competitive swimmer, gymnast, scuba diver, sailor and skier.

John became serious about learning to fly while living on the west coast. He qualified as a private pilot at Boundary Bay Airport in the late 1990s. He joined the RAA Chapter at Delta Heritage Air Park in 2001, became a volunteer with the operating committee and learned to fly tail wheel in the chapter's homebuilt. Shortly afterwards he purchased his own 1946 Cessna 140 C-FPJP which he currently flies on a regular basis out of Delta Heritage Air Park. John has served as the Chapter Custodian and Program Chairman and currently is Vice President of Chapter 85. He is a Clinical Pharmacist at BC Children's Hospital. John has been acclaimed as the RAA Regional Director for Coastal BC to promote the activities of RAA Canada. Among his duties will be the administration and distribution of the RAA Weight and Balance scales.

**RAA Vancouver**

A local Councillor, Heather King was treated to some fun from the Delta Crew. She is presently running for Mayor of Delta; Her campaign blogger, Barb Westlake, recounts:

Councillor King had a treat today.

She met with some fun and friendly pilots at the Delta Heritage Air Park.

As a past airline employee (21 years), she was in her element and enjoyed mixing and mingling with the group. Better yet, they [Chapter 85] have a pancake breakfast the second Sunday of every month - yup, watch and learn, today is the second Sunday - she scored a pancake breaky! She is good. Perfect way to start of the day!

A perfect day and it only gets better, because Heather was invited for a ride in a small, 4-seater, single-engine plane to have a birds eye view of Delta. Lucky girl -- no wonder she loves her job! Darn, she's good!

No barnstorming here! Heather assured me that they flew at 1200 feet and mostly over the bog and water so as not to disturb the residents or her pancakes!

Heather's famous last words, "I'm proud of the fact that I did not even need to use the 'little bag', that is a first for me!"

Obviously, Heather was in good hands! Thanks Ray, Peter, and Virginia for taking good care of my friend!

True confession: I am also an occasional user of the "little bag", but pilot friend Mireille Goyer, told me, "If there is no wind and the pilot is skilled and flies smoothly, no one would ever have to use the "little bag".

**RAA London-St.Thomas**

The picnic this year was hosted by Karl Pfister at his fabulous grass aerodrome which he calls Karl Pfister's Pioneer Air Park, located at 15548 Nine Mile Road, north of London.

*Top: Councillor King smiling like a Cheshire cat - proud of her treat and ready for her adventure!*
*Above: Pilot Ray Roussy with Councillor King and friend at Chapter 85's Delta Air Park.*

Pioneer Air Park is just outside the bounds of the London control zone by a few hundred feet, therefore the approach circuits are to the North and to the East and West of the runways to avoid London control zone traffic.

The weather was pretty well perfect for a fly-in event. Some of the fly-in aircraft included the Chipmunk Tof Hugh Shields, Jack Schenck with his Jodel, Rod Bell with his Cessna 150, Jim Tyler with his RV6, Jay Davis with his Sonex, and about three others which I'm sorry I did not get noted down.

Karl not only hosted the event by supplying a great meeting venue, but he also supplied and arranged for the Bar-b-Q of the Burgers, supplied some of the food, and a couple of ice chests with pop and even a few beers. Karl had out for display his own personal aircraft for our inspection and answered many questions about them. He threw his shop and hangar facility open for us to tour as well, and what a fabulous facility it is!!! Karl and his family proved to be very gracious and extremely generous hosts for this RAA Chapter annual picnic meeting.

At 6:45PM Angus McKenzie called the meeting to order by saying grace. I counted fifty-five in attendance. There was no business portion of the meeting….It was a picnic after all….We will get back to business in September. Angus, on behalf of the Chapter, gave a huge thank-you to Karl and his family for hosting this excellent event, followed by a large round of applause.

Karl noted that the Chapter members were welcome to attend another picnic at his Air Park on August 20th. For that picnic he has invited all the Nav-Canada staff and controllers, and FIC and so on for a friendly get-together with the aircraft owners and operators who are in and around the London control zone, but not necessarily associated with London Airport. Kind of a reminder that a whole world of fliers exists outside the

## Join the RAA Forum

**RAA's new forum is online! We hope to add many features over the next while to enhance the value of your membership. The URL is the same at raa.ca - once you're on the home page, simply click on the "forum" tab to get there. You'll find it a useful place to exchange ideas and ask questions - but it's only as good as the people who contribute to it. Help make this a useful resource for builders and pilots.**

***Members are encouraged to send in news and chapter happenings* for postings on the site. Get the word out, and check frequently for news on upcoming events. You can post them directly on the forum, and we'll make sure they make it onto the main site as well.**

**Any suggestions and ideas for improvements are welcome and can be sent to George Gregory at gregdesign@telus.net. Stay tuned for further developments!**

"zone" and we should all be able to co-exist in a friendly environment of mutual respect, perhaps more easily if we know of, and perhaps know personally members of "the other group".

Also a Big thanks goes to Phil Hicks, who on the Chapter's behalf brought the coffee and tubs of pop and water, among other good things. The flyers of course left before dusk, and the picnic broke up around 8:45 p.m.

Congrats to member Stan McLure whose Colby Starlet has taken to the skies after a 5 year gestation. He writes: "Stan's Corby Starlet took to the skies at 0800 hrs 23 August 2011. Here are his comments.

"Flies a charm and well worth the thousands of hours to build her. First landings were at Lucan with the last one at 10 a.m. on my 1000' strip, but it only needed half the runway. She climbs like a scalded cat and performs like a little fighter. Is very responsive and the controls are rock solid.

"Makes the Fleet Canuck feel like a tank. Kept the speed below 100 mph for the first flight, but would not be hard to reach VNE of 160. Looked like 1500 ft/min climb without even trying."

Here is J.Davis' report on his 2011 Fly in – Drive in. "Just wanted to say 'thanks!' to all who flew or drove in on August 6th to make the 2nd annual Brandywine picnic, a really fun get-together.

Weather was fine, and there were a total of 8 fly-ins, surely lost some to Edenvale. More than last year, less than next! About a dozen drive-ins (including three motorcycles) made for a great potluck lunch and social! So thanks to everyone, a good time was had by all!"


*Top: the flight demonstration of the ever versatile "Beaver" expertly piloted by Mr. C. B. Villeneuve. As the Beaver came skidding sideways along the "flightline" seemingly nodding to us the group returned with an enthusiastic wave of it's own.*
*Above: A young enthusiast checks out a Renegade while an older friend looks on.*

**Thompson Valley Sport Aircraft Club (RAA Kamloops)**

Blair Field, Knutsford –Home of the TVSAC- was invaded by a horde of small aliens on Tuesday July 19th 2011.

My Daughter-In-Law asked if she could bring 12 day-care kids to check out my Challenger and perhaps sit in it and have their picture taken.

I suggested it would be nice to have a few more airplanes - especially the Renegades which are most popular with kids (of all ages). Five aircraft and six members

*continued on page 29*

## *Women & Girls Fly for FREE!*

Book your flight by contacting <jill_oakes@umanitoba.ca>

Airplane Rides, Prizes drawn every hour, Hot dogs on the BBQ, Certificates, Photographs – all for FREE at Lyncrest Airport.
Limited to the first 200 Women and Girls of all ages so book your flight reservations now.
Prizes for the largest number of women from one family/organization, youngest, oldest…etc
Flights booked NOW for Sept 10th, from 10 am to 4 pm

# The Mills Family Cub


Who could look at a Cub and not fall in love? These planes are cute like a puppy and just as eager to play. An early morning flight from a farm strip is sublime. Simply chugging around the sky at 500 ft. with the door wide open, smelling the fresh hay and waving to the cows is something that every pilot should experience. Pilots who fly at 150+ mph in closed cockpits, watching glass panels, making position calls do not know what they are missing. They get places fast but they miss the simple cud-chewing enjoyment to be had from flying at 70 mph from one rural strip to another. Speed does not matter when every minute of the trip is enjoyable. This is what a Cub is made for.

THE CUB was originally designed in 1930 by C.G. Taylor as an open cockpit tandem, originally with a 20 hp engine that proved to be underpowered. Later he fitted the Continental A 40 sidevalve engine which made the performance adequate for the low expectations of the Thirties. The 184 sq. ft wing with its forgiving USA 35B airfoil made flight possible with a range of underpowered and heavy engines of the period.

When Taylor went bankrupt , William Piper bought the company and had the plane redesigned to give an enclosed cockpit for better weather protection, but wisely retained the one up-one down window and door that opened up the entire right side of the cockpit. The wing and airfoil remained, and the Cub got its distinctive tail shape and Cub Yellow colour.

The war years saw Cubs dressed up as L-4 observation planes in Europe, while back in the USA civil pilots used their own Cubs for submarine patrol along the coast. The military used Cubs as their primary trainer, with 75% of US pilots taking their flight training in a Cub. To satisfy the demand some fourteen thousand Cubs were built during the war years, with many of them being crashed and many others being destroyed right after the war as the US geared up for a consumer economy. Piper then went upmarket, installing larger engines inside fully enclosed cowls, making Super Cubs and three seat variants, but for many the classic airplane is a Cub yellow minimalist J-3 with its cylinders out in the breeze.

The Cub fuselage is a development of the primitive parasol type aircraft. The fuselage is a simple truss, the pilot sits in the rear seat to balance the engine, and the variable load of the passenger is placed under the centre of lift. Even the forward cabane is of the parasol type, an inverted V. The rear cabanes have been modified from parasol – instead of an inverted V they are verticals with fore and aft triangulating tubes to the top longerons at a bulkhead behind the cabin. These two fore and aft tubes are triangulated in the horizontal plane to take the wracking forces of the wing. There is also a V overhead the cabin, going from the centre of the front cabane to the tops of the rear cabanes. This layout of the cabanes gives good cockpit access and forward visibility.

The Cub door opens the whole right side of the fuselage. The upper longeron has been cut and in the cabin side bay there is a collection of triangulating tubes to carry the loads around the door opening. The right side window is top hinged and may be latched up against the bottom of the wing. The door is bottom hinged and may be laid down flat against the side of the fuselage to allow full access to both seats, and the plane is quite happy to fly with both wide open.

The Cub wing is of the two spar

*. . .for many the classic airplane is a Cub yellow minimalist J-3 with its cylinders out in the breeze*

*Above: Rigging and weight and balance were completed in Wayne Hadath's hangar, sparing space with his Rocket and RV-10 project. Opposite, the Cub's emporary digs inside a plastic quonset while being painted (Cub yellow, of course).*

type with steel tube compression struts and long metal spokes for drag-antidrag. Because of the cabane layout the main spar must be longer, going to the centre of the fuselage and the rear is shorter, going to the sides of the fuselage. Tip bows are elliptical, a signature of the Cub. Cable operated ailerons are at the tip, and with the washout of the wing they provide good control right up to the stall. Because of the well braced cabanes and the wing's internal drag-antidrag system the lift struts may be of the V-type, giving good access to the cabin. Jury struts are of course used to brace the spars, trading drag for lighter spar weight.

The tail of the Cub is steel tube covered with fabric, wire braced all around, with both the rudder and elevator having aerodynamic counterbalance. The stab hinges at its rear spar, and pitch trim is accomplished by raising and lowering that stab's leading edge by a cable operated jacking screw. Everything on the Cub runs on cables, the simplest and lightest system, and also the cheapest which was a major consideration in the Thirties.

Landing gear on the Cub has been copied so often that it is referred to as Cub type. Triangular swing arms are hinged to the bottom longerons at hard points and suspension loads are taken into a lower cabane by pullrods, with rubber bungee as the suspension medium. Many Cubs have had the bungee replaced by steel die springs, a bit heavier but completely unaffected by weather or engine exhaust. The tailwheel is mounted to a mulileaf spring that looks as if it was sourced from a buggymaker.

Cabin accommodations are spartan and narrow. The passenger clambers in first and gets comfy, and the

pilot can then fit his legs around the sides of the front seat, with his feet on rudder pedals that are hard against the passenger's thighs. Cables run from the passenger's pedals to the pilots, and both crew have sticks. One thing that is immediately apparent is that in neither seat is there any view over the nose, so taxiing involves a lot of S-turns. On the takeoff roll it is a relief when the tail can be raised so that at last the crew can see what is ahead. Once the tail is up everything changes and the Cub becomes graceful – flying is what it does well.

Since the last J-3 was built in 1947 an industry of replica Cub manufacturers has grown with Wag-Aero being the first, selling replacement parts and then plans so that dreamers could construct their own Cubs as Amateur aircraft.

In the 1970's Tom Mills was one of these dreamers, a bush pilot and high school shop teacher with a young family. To buy a plane was out of the question but to build one was a possibility for someone who knew how to weld and form metal. Tom began with a set of Wagaero plans and part of a Cub fuselage. There was a stillborn Cub project available from the Kitchener Waterloo chapter, and wingribs came from it. Wood spar blanks were bought and milled locally, and the fittings were found at swap meets and scrounged everywhere. The Mills kids all worked on the plane making and painting small parts. When it was time to form the leading edge cuffs the entire family stood on a large pipe to force the aluminum sheet down between a pair of 2 x 4's fastened to the floor. In one huge choreographed jump each cuff was formed. Mary Mills became an expert at fabric and ribstitching and the entire plane was painted not in Cub yellow but in orange 2 part Imron that a local manufacturer was selling off as surplus. In the Kitchener Waterloo area a lot of airplanes, cars, even hangar refrigerators got painted orange in the early Eighties. First flight of the Mills' Cub was in 1982 and that year it flew to Oshkosh with a support crew following in the van.

The Mills' Cub spent the next

*Since the last J-3 was built in 1947 an industry of replica Cub manufacturers has grown with Wag-Aero being the first, selling replacement parts and then plans so that dreamers could construct their own Cubs as Amateur aircraft.*

*Mary and Tom admire their handiwork. Note the plasric fuel tank in the first bay of the wing. Below, The Mills' Cub spent the next twenty years flying all over southern Ontario, usually from one farm to another, going to fly-ins or just visiting friends.*

twenty years flying all over southern Ontario, usually from one farm to another, going to fly-ins or just visiting friends. The daughter and two sons took turns as passenger in the front seat, and son Jim was bitten by the flying bug so he earned a Private license. Yours truly learned to fly a Cub in this plane, and it was a relaxing change from the workload in my turbo Dragonfly canard. Just push the throttle in, push the stick forward to lift the tail, climb at 60, fly at 60 (lie and say 70), and approach at 60. There was no ROC gauge but we figured that it made 500 fpm and did not care anyway. We were flying a Cub.

There were no flaps, just the very basics for instrumentation, and definitely no intercom. We communicated by shouting or handsignals, and for a Cub this was entirely appropriate. Tom and I would head out on a spring morning to have breakfast somewhere, and the approach to Tom's rural hangar was usually low, over a forest topped with large nests of baby herons. With the throttle pulled back the plane was almost silent, and the herons would look up at us and we would look down at them, watching them grow over the season.

It was the open front hangar at a pig farm that eventually left the Cub looking shopworn after twenty years. It still ran well enough but the paint was looking dull and small spots of rust began poking through the paint, so it was time for a refit. By this time there were small grandchildren to occupy the kids, so most of the work was by Mary and Tom. After a good scrubbing it became apparent that the Imron had done a good job of protecting the fabric, so only small repairs were necessary. The rust spots proved to be minor too so local sanding and touchup sufficed. The interior got a facelift and the windows were replaced or polished. The engine was sent out for a complete rebuild, a new exhaust and aluminum cowlings were made, and plumbing and cables were inspected and replaced as necessary. Son Jim began flying the plane a lot and everyone in the area went for rides. The Cub drew looks everywhere it went but this

was to be short lived. On approach to a fly-in at an uphill strip Jim found a lot of sink and the plane could not outfly the hill. An attempted diversion into a cut through the trees was unsuccessful and the plane ended up in a ball among the saplings, with its prop well embedded in the ground and the wings broken. No one was seriously hurt but it looked like the end for the Cub. The chapter members all helped to dismantle the plane but it certainly did not look rebuildable, and the prop strike put paid to the fresh engine.

KW-RAA member Terry Jantzi quickly organized a steak dinner in Clarence Beintema's hangar and several hundred attended, with the proceeds being given to the Mills family to help rebuild their plane. Many in the room had flown in the Cub over the past twenty years and they wanted to see it flying again. Tom and Mary began another rebuild, and this time it was going to be extensive.

Peter Halsall had space in his hangar so Tom and Mary set up the fuselage repair shop there. Over the next year they cut apart the fuselage, fitted it with new tubes and brackets, and welded it back as good as new. Meanwhile the wings were trucked over to Jim's large garage and dismantled for their fittings, all that was salvageable. This time the wings were to be rebuilt with extruded aluminum spars and aluminum ribs. Years earlier Tom had scratch built a Zenith 701 and had taught many how to cut out

*Many in the room had flown in the Cub over the past twenty years and they wanted to see it flying again*

ribs with a router and to form them with a rubber mallet and formblock. Jim and Tom made tooling from ¾" MDF, complete with lightening holes and spar slots, and within a couple of weeks they had a full set of 6061 aluminum ribs. They set up a wing fixture in Jim's garage and set to rebuilding there. Because the extruded aluminum spars were narrower than the original spruce spars many of the fittings had to be spaced out with small blocks of aluminum. To increase fuel capacity a pair of plastic surplus generator fuel tanks from Princess Auto were installed in the wings. Mary again did much of the fabric work using traditional dope this time, finishing everything in Cub Yellow. Instead of ribstitching, the fabric was fastened with screws going into the flanges of the aluminum wingribs. Jim straightened out the nosebowl, made new cowlings, and repaired the elephant ear airscoops.

Inside Peter Halsall's hangar the fuselage was by then living in a plastic tarp quonset hut where it was blasted and painted with epoxy, finally emerging in its new tough yellow finish. A new panel was made, new wiring and cables were installed, and new cushions were sewn. The most dramatic change was to the windows - this time the plane was being outfitted with L-4 plexiglass and the effect was remarkable. The increased visibility and all the yellow combined to make the plane look light and airy.

Jim sold his Zenith 200 project to pay for another engine rebuild, and the C-85 received a new crank and many other new components to return it to zero time. Jim and Tom rebuilt the motor mount and fitted new bushings. Rigging and weight and balance were performed in Wayne Hadath's hangar and finally the Mills' Cub emerged in its new form. Tom did the first flight

*Right, A simple panel for simple flying. Left, The L-4 wndows show the cabane structure, plus all the light sections to support plastic and fabric*

at Waterloo Airport, climbing to 3500 ft above the field to check all engine parameters and handling. Oil pressure fluctuations proved to be the result of a loose oil pickup and since this was corrected the engine has run flawlessly.

For a year Jim kept the Cub in a hangar at Waterloo airport but finally he found space at a farm strip, where a Cub belongs. He flies it regularly, checking out the cows as his father used to do. Most of the grandchildren are now teenagers and some of them are interested in becoming pilots. When the kids are ready, the Mills' plane will train another generation of Cub Pilots.

*Above: KW member Gord Reed helped with wing construction. Below: the essence of grassroots aviation: whispering down on short final to a grass airstrip. It just doesn't get any better.*


*When the kids are ready, the Mills' plane will train another generation of Cub Pilots*

*Chapters / continued from page 21*

attended. Our President, Wally Walcer, came from Hefley Creek to support the effort.

The airplanes and their pilots lined up outside the hangars. The weather was pleasant with a nice breeze keeping the bugs away. The kids spilled out of their vans and edged toward the strip in eager anticipation. I called out for them to stay still and watch out. Out of the sky to the north, Gerald Gibbons' with his beautiful red, orange and white Renegade grew larger.

The children burst into a cheer as Gerald zoomed along the strip with "smoke on" and with a smooth bank to the left disappeared behind the buildings. Then the Renegade entered the circuit and came in for a perfect landing to another rousing applause from the audience. As Gerald brought the Renegade to a halt and shut down the engine the kids lined up to sit in the airplane, headset on, for their photographs.

The children then went through the photo routine with the other four airplanes and never seemed to tire of getting in the airplane, taking imaginary flights to who knows where, smiling for the camera and then off to the next one.

Next up was the flight demonstration of the ever versatile "Beaver" expertly piloted by Mr. C. B. Villeneuve. As the Beaver came skidding sideways along the "flightline" seemingly nodding to us the group returned with an enthusiastic wave of its own.

The Beaver then climbed higher than we had ever seen before and slowly circled downward right over the field breaking off to come in for a very long gentle landing from the south.

*The Calgary RAA Aircraft Aluminum Work Shop was well attended. Left to right is Allan Logan, (upper) Bruce Flach, Glenn Miller, (upper) Greg Labine, Gerry Theroux, (Instructor) Chuck Luehr, Don Rennie, Matheau Rothwell, (Back) George Craft, (Front) Neil Henderson, (Back-Instructor) Scott Church, Ernie Novakowski. Not shown and taking the picture is Instructor Guy Bourgeois. We all had a great time Bending, drilling and riveting. All went home with more knowledge and the Aviation Mechanic Handbook.*

The munchkins then dispatched a fine selection of Tim Horton's best (compliments of Larry L'Heureux).

We gave each child two selections from our extensive library of all things airplane, RAA stickers, and an RAA pin. As they left, the children gave a rousing THANK-YOU!

They seemed very happy with their visit to our beloved airstrip and we were very pleased to have them. Everyone left feeling good.

# Ambition²

***Nobody will accuse this builder of thinking small. This Mini-Herc was spotted at a recent fly-in (Stratford) and lends a whole new meaning to pain at engine overhaul time. Perhaps Shakespeare (who's celebrated at Stratford annually) would have something to say.***

***We're hoping to have more information on this beauty in a future issue. Stay Tuned!***

# You Never Forget Your First Love

*Barry Meek*
*bcflyer@hotmail.com*

You never forget your first love. That's what they say. But it really is debatable. It may have been a woman who said it. Women are more intuitive, sensitive, and in many ways, more intelligent than men, but they seem to get all mushy and gushy about stuff like that. They keep old love letter stashed away in boxes. They talk to each other about how their "first" made their heart beat faster, butterflies somehow got into their stomachs, how it was meant to be, and of the one that got away.

PERSONALLY, AND I THINK I speak for most men, it wasn't like that at all. But that's only if we're talking about the first love of a woman. Switch topics to airplanes or cars, and most men will tell you all about their first loves, and in great detail.

The act of flying is of itself, something born of love. Pilots don't keep old letters stashed away, but we'll often keep the books. "From the Ground UP" comes to mind. Many of us still have our E6B flight computers, our first headset, the Raybans, and an old flight bag. When you talk about love, the only exceptions to pilots who apply it to our passion are the airline guys who would describe love as the score of zero in a tennis match.

Like so many others, I learned to fly in a Cessna 150. It was slow, didn't climb fast, wouldn't carry much weight or go too far. But then, it didn't matter. I was flying. I was enjoying my first love. My first car was a Volkswagen. A 1959 Beetle. It too was slow, didn't accelerate fast or carry much weight. But it didn't matter either, because I was driving. That was another first love.

Years passed, cars and airplanes came and went. I drove and flew more powerful, faster machines, logged many hours and miles. I worked as a driver and as a pilot The "love" I felt initially somehow faded, but you keep on doing it because it's turned into a career, or more of a necessity.

We eventually reach a point in life which has been known to be described as a mid life crisis. That's when guys will go ahead and buy something they've overtly or otherwise, craved and drooled over for years. The Harley Davidson motorcycle, the sailboat, the sports car. Some of us will go shopping for an airplane. For me it was a natural move to want back into a Cessna 150. Not just because it was so familiar ... there was more. It brought back memories of long ago. That airplane represented freedom and a giant step toward manhood. Learning to fly was one of the most important and exhilarating things I've ever done. Back then and

even today, the ability to control an airplane and soar above everything and everybody somehow elevates the mind and spirit as nothing else can. The little 150 unlocks that for me, and therefore draws me back to enjoy the ride. It's a great little plane, and I've owned or been partners in several.

Cars are another source of expression for the mid-lifers. For guys who express themselves with four wheels on the ground, often they will revert to something from the past. And it could be back to their first love. The '55 Chev. The '63 Pontiac. Maybe a 57 Ford. For me, it was a '59 Volkswagen. Not brand new, not fast, not even classy back then, it didn't matter. It was wheels. I was mobile in high school, and that meant a lot to me and my friends. Times have changed too for the modest little Bug. Today, there are hundreds of fine examples of restored VW's which sell for many times what they were worth brand new back in the '60's and early '70's. Most are owned by fellows who, like me, have more than just a casual attachment to them. They have history, and even spirit. Carmakers today are cashing in on that with "retro cars", vehicles that resemble those from the past.

*Back then and even today, the ability to control an airplane and soar above everything and everybody somehow elevates the mind and spirit as nothing else can*

In our society today, it seems important to own items that represent more than just utility. We're spending our cash on memories, items that have the spirit of our youth woven in. Airplanes and vehicles, having played such a huge part in the shaping of our lives, will always be in our future, particularly the ones that were a part of our individual past. It's really not the actual machines, rather it's what terrific things they did for us, for our egos and our spirit, that we'll always remember. Our first love was the emotion, and is what we'll never forget.

# Do You Do Your Own Maintenance?

*Paul Parsons*

MOST PRIVATE AIRCRAFT OWNERS like to do as much maintenance as possible in order to keep costs down and as we all know that that is vital to our continued flying. To do this we either need the guidance of an AME , overhaul schedule or similar type guidance but a word of caution: the old saying about the blind leading the blind needs to be applied here. Fellow aviator may come up with what on the surface may be good suggestions. Unless the ideas come from a competent AME always check them out very carefully as some things may seem fine but could be flawed. For example the supply of cheap hardware from your local hardware store that purports to be a certain quality should be avoided. Aircraft hardware etc. must come with a release note to be acceptable for aircraft use. The purpose of this paper work is to ensure that if a problem arises with a batch of items they can be traced and remedial steps taken to ensure safety is maintained.

All those who service aircraft should read the reports on mechanical incidents in particular and also the full aircraft accident that are published by the aviation authorities as these highlight any problems both mechanical and human that may have had any bearing on the incident/accident. They may highlight areas that you may not have given much thought to. A case in point is one that I read many years ago concerning the crash of a DC 3 topdressing aircraft spreading fertiliser in rugged hill country in the Marlborough area at the top of the South Island. The old work horse was working off rough back country airstrips and carrying up to 9 tons of superphosphate on each sortie. This of course proved to be rather hard on the machine and required frequent maintenance. One of the items that started coming to the attention of maintenance personal was the occasional loose or missing wing attachment bolts at the flange that attaches the outer wing sections just outboard of the engines. The bolts were duly tightened or replaced and the machine returned to service.

On a nearly calm sunny morning while doing a run low along the hills an outer wing broke off. The cause of this fatal accident was traced back to bolts that had been over stressed. The missing bolts had snapped and fallen out and the loose bolts that had been retightened were stretched and finally under operational stress the bolts gave way.

So what did I learn from this? Several things. First: be suspicious of any loose bolt and learn the definitive reason for it being loose. Second: always use a GOOD quality torque wrench on all bolts and this means having torque settings for bolt sizes. When checking the bolts this will give a clear indication of any slackness there is even if it is not obviously loose. Three: if in doubt pull it out and closely examine it and check for elongation/waisting where the shank and the thread meet. If there is the slightest suspicion that it may not be 100% throw it out or use it to mend the lawn mower.

It is a lot cheaper to buy new hardware than it is to pay for a funeral.

It is a lot cheaper to buy new hardware than it is to pay for a funeral.

I was doing a 100hr/annuals on an aircraft and proceeded to check the prop bolt torque. I thought that one bolt had moved very slightly. I increased the torque wrench setting slightly (still within the range) and felt sure that the suspect bolt moved more than the others so removed it and found that it was clearly elongated. All the hub bolts were pulled out and replaced. Be alert for the slightest hint that something isn't quite right. This bolt has been kept and is used as an example in engineering classes.

If you are not absolutely certain about a problem get professional advice – your life may well depend on it. RF

**Keep in Touch With**
**Your Board of Directors!**

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*President's Message / cont'd from page 2*

left the factory with mods to engine, canopy, and other items its initial US registration had to be as Experimental Exhibition. Our Amateur category is only for Experimental A-B so that avenue is out. The plane does not meet its type certificate so it cannot be O-M either. Limited category is usually our catchall for registration but it does not allow certified aircraft or planes that are replicas of certified aircraft. The only way to register a plane like this in Canada is to modify it back to meet its original type certificate, go through an import inspection, and register as Certified. Simply looking at the registration document before buying would have saved a lot of money. Call the RAA, the local Transport office, or an AME before jumping into what looks like a deal.

**SELLING A PROJECT**

Builders who have decided to sell their homes and move into a condo frequently want to sell their projects, and right now is probably the worst time to do this. Because the Americans are going broke there is a huge oversupply of unfinished projects on Barnstormers and Ebay, so it is a buyer's market. Put yourself in the shoes of the buyer - if he buys a partial kit or plansbuilt project he is committing to buy an engine and FF package, panel instruments, paint, and upholstery. There are a lot of flying Amateur aircraft available at low prices so few buyers will pay much for any project. What to do with an abandoned project? Lower the price or give it away to a younger chapter member with the proviso that you get to fly as passenger when it has been completed. Alternatively donate it to the Air Cadets or other group with charitable status and get a tax receipt. There is no way to sugar coat the situation - abandoned projects are not worth much these days.

**SELLING AN AMATEUR AIRCRAFT**

There is liability involved in selling any Amateur aircraft and builders sometimes ask how to limit this. Even if you did not build the plane you have presumably been signing the annuals, so you are affirming that the plane is fit to fly. The first step is to require that the buyer must perform a complete inspection of the plane before buying, preferably with an AME or an experienced builder. Then require that before flying the plane away the buyer or his AME must do an annual and sign the tech log, indicating to the world that either he or his AME is affirming that the plane is airworthy. You can walk them through the annual using the list you usually use, but do not limit them to that. And do not be a party to a nudge nudge, wink wink half hour annual and a signoff by the new buyer. And do not, repeat do not allow a buyer to fly away with an annual signed by yourself.

# Coming Events

***Delta Pancake Breakfast***
Second Sunday of each month - Delta Heritage Air Park, Vancouver Monthly fly-in pancake breakfast by RAA Chapter 85 and DAPCOM. Air Park location is in the CFS. Full breakfast for $4. Breakfast served from 9am until the food is gone or 11am, whichever comes first.

**Terry Wilshire Memorial**
There is a Memorial for Terry Whilshire on Saturday September 10, 2011 in the Old Coffee Shop at Delta Heritage Airpark from 12-4pm.

Sept 10 **Brampton ON PEO Tour and RAA-TR Corn Roast**. Cost is nominal, no charge to those bringing a dish or plate of something.

Brampton Flying Club, 13691 McLaughlin Road, Cheltenham, Ontario (West of Highway 10 and south of King St., at the RAA Toronto Region hangar 41 at the north end of the field)
Date: September 10, 2011, Time: 10am - 4 pm. $5 admission fee.
For more information, please contact President Brian Heinmiller at 905-877-7947 or b.j.heinmiller@sympatico.ca. V.P. Alain Ouellet at 416-709-2020 or aouellet@icecanada.com

**Hawkefield Fly-In**
Sept 11 Orono (Oshawa) ON Hawkefield, N44 00, W 78 39, 620 ASL (private strip) Overnight camping on field is available, if required. ( No facilities.) Breakfast and lunch served for nominal cost. Hours of Flyin are 9AM to 3PM.
For further information contact Chris Gardiner at 416 436 3361 ( email: cgardn628@rogers.com) or call Doug Raine at 906 697 2577 ( email: doug_raine@symatico.ca)

**RAA Niagara Gathering**
Sept 12 Welland ON RAA Niagara social meeting at the Red Hanger Welland Airport on Sept.12th at 7.pm. All members and visitors welcome.

*Adventure / continued from page 7*

ft where I picked up a good tailwind. It was disconcerting to be flying over so much uninhabited land and water but I kept myself busy taking pictures, and I noticed that my sense of hearing had become acute while listening to the engine for any fluctuations.

Next stop was Gore Bay to clear customs and refuel. When I taxied to a stop I was very happy to be greeted by a friendly Canada Customs lady who welcomed me back to Canada. The inspection was brief and to the point and I was offered the use of the Customs washroom and their self service flight planning desk. I filed my last flight plan from Gore Bay to Juergensen's field, my home strip near Fergus Ontario. I had originally planned to stop at Wiarton for fuel enroute but the tailwinds were ben-

*Top: Fond du Lac: almost there*
*Left: At Valparaiso Indiana the local EAA chapter set up a food tent to welcome pilots heading to Oshkosh. This happens across the country.*

*A loan paraglider wings over the Harrison Mills area in BC's scenic Fraser Valley. George Gregory Photo.*

eficial and I recalculated that I could make it home with fuel to spare. After a three hour flight my family and some local pilots were there to greet me, and fortunately the landing was a greaser.

The outbound trip took fourteen hours of airtime because the headwinds sometimes had me tracking only 35 mph over the ground. The return trip used only eight hours because of the tailwinds. I enjoyed the trip and next time I would like to have another plane alongside to share the experiences of the journey. I especially appreciated all the help and encouragement from fellow pilots and volunteers along the way. It was a great experience and I encourage every pilot to take a trip like this – it should be on everyone's bucket list. R

# 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. Contact president Normand Rioux at NRIOUX@lapresse.ca*

*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.*

*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 CHAPTER Fourth Monday 7:30 PM Lake Simcoe Regional Airport Contact Secretary Dave Evans 705 728 8742*

*E-mail david.evans2@sympatico.caCOBDEN: 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. George Elliott gaelliott@sympatico.ca 705-445-7054*

*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 Pres. Karl Wettlaufer 905 876-2551 or lazykfarm@sympatico.ca*

*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 p.m. At the Air Force Association building at the London Airport. Contact President Angus McKenzie at 519-652-2734 or angus.mckenzie@sympatico.ca*

*MIDLAND/HURONIA*

*Meeting: First Tuesday, 7:30 pm at Midland/Huronia airport (CYEE) terminal building. Contacts: President Ian Reed – 705-549-0572, Secretary Ray McNally – 705-533-4998, E-mail – raa.midland@gmail.com .*

*NIAGARA REGION: Second Monday 7:30 pm at Niagara District Airport, CARES Building. Contact Pres. Elizabeth Murphy at murphage@cogeco.ca, www.raa-niagara.ca*

*OSHAWA DISTRICT: Last Monday at 7:30 PM at the Oshawa Airport, South side, 420 Wing RCAF Assoc. Contact President: Jim Morrison ,905 434 5638 jamesmorrison190@msn.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: SAUGEEN: Third Saturday for breakfast at Hanover Airport. President: Barry Tschirhart P.O. Box 1238 27 Ridout Street Walkerton, Ontario. Home: 519-881-0305 Cell: 519-881-6020. Meetings are held every second Tuesday evening, at 7:30pm. Location(s) Saugeen Municipal Airport, Kincardine or Port Elgin. All interested pilots are welcome. Email: barry.tschirhart@bell.net*

*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 8:00 pm at Hangar 41 on north end of Brampton Airport. Contact: President Brian Heinmiller 905-877-7947 b.j.heinmiller@sympatico.ca*

*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. Brian Caithcart is the chapter president. Contact email: president@raa4901.com.*

**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 Don Rennie cgmmv.skylane@gmail.com 403-874-0876*

*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*

**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 7:30pm, Delta Heritage Airpark RAA Clubhouse. 4103-104th Street, Delta. Contact President President: Tim Nicholas vibraanalysis@shaw.biz.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* **R**

# 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.*
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*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 / 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

**NEW PRICE!** $15,000 Zenair Zodiac 601HDS Tricycle gear, registered 1993, Rotax 912 UL, ARPLAST flight adjustable prop. 756 hrs TT. ICOM A-4, 2 headsets, GARMIN 95 GPS, Vacuum AH. Stainless exhaust, new upper paint 3 years ago. Canopy cover. Cruise 120 mph. At Oshawa. Dave, 416-282-5252 Sep11

MINI-MAX ttsn 217 seoh 29.8. Rotax 447 new GSC prop. skis. radio. always hangared. excellent condition $11,900.00 obo

For sale KR-2 fuselage in boat stage and metal kit for retractable landing gear castings $300.00 call Ian 604-856-1159 or email tri-pyramid@telus.net

For Sale: CH-701, Basic Ultralight, Rotax-912, jeep gear, gull wing doors, $24,500. Tom 1-519-822-6693, 1-519-638-5075, millfly@sympatico.ca June/10

C-IGVE Cara-two (Karatoo) 2 seat basic UL with overhauled Continental 75 hp engine and Zenith wood prop. Steel tube and fabric taildragger fuselage with all metal wing. Day vfr panel, no electrics, 600-6 wheels with disc brakes. $12000 OBO Bill Rice 519-461-1849 June/10

C-ICPZ Silverbird single seat Basic UL with aluminum fuselage, all metal wings, HAPI VW 1600 direct drive engine with dual ignition and Ellison carb/injector, day VFR panel. First $5000 takes it all Bill Rice 519-461-1849 June/10

C-IFWE Cloud Chaser single seat Basic UL that began life as a Schweitzer 126B sailplane. 40 ft span all metal wing, steel tube and fabric fuselage and tailfeathers, tricycle gear with telescoping nose strut and fibreglass main gear. Powered by electric start Kawasaki 440 with belt redrive and IVO prop. Day VFR panel. plexiglass canopy. $7000 OBO Bill Rice

519-461-1849 June/10

Beryl project - tail feathers, all 26 wing ribs, plans - unused. Some Sitka & a/c grade plywood. The Beryl is a Claude Piel design - like a more robust Emeraude but with tandem seating. Good x-country and strong enough for mild aerobatics. Some instruments too. $1,000 takes it all. Call Nigel (705) 429-3449 or landnlaw@sympatico.ca Oct10

For Sale; New 66"dia. 3 blade Warp Drive propeller with 4" dia. bolt pattern and bolts for Rotax 912S. Never used as it was purchased as a backup. $1200.00 Call Mike @ 905-476-3438 Dec10

STRETCHED PACER PROJECT - ESTATE SALE 0320 160 HP Lycoming engine in crate - extended fuselage 18" - ready for covering - new windshield - side-by-side sticks and toe brakes - large luggage compartment - 2 doors - welded float fittings - seats included - main gear with new Cleveland wheels and double puck brakes - tail wheel and spring - wheel pants - super cub wings with cuff leading edge ready for covering - extended flaps and ailerons- fiberglass wingtips - 15 Imp. Gal. Tanks/wing - most instruments included $29,500.00 complete (905) 985-3195 Rose Dec10

Brand new dynafocal ring for Rotax 912/914, never used. Regularly $800 plus tax, I have one for $375 CDN plus shipping. gpeees@hotmail.com Dec10

For sale: Engine Mount for LOM 337B Engine installation into a Zenith CH 801. Asking $1,200.00. Nose Gear for the same, $1,000.00. Walter Lom Engine: New factory overhauled M337B (6 cylinder, inverted, inline, supercharged, certified 235 HP aircraft engine): 1400 hours TBO with possible 200 hour extension, including spare parts, tool kit, log book, and manual. In its original shipping crate. The distributor, governor, and oil lines for a LOM V541 propeller are factory installed on the engine.
Walter Lom Propeller: V541 (2 blade) constant speed propeller with tool kit, log book, and manual. The propeller is brand new and is in the original shipping crate.
One set of aluminum anodized engine mount pad blocks, vibration isolators, and bolting kit. For further information and images contact: Dan Marshall 519-794-3270 dgmec@bellnet.ca Feb11

Propellers, wood, new, never mounted, tractor cwise (view from cockpit), priced OBO plus shipping: One 42x23, weight 2 lb., Lepper, conventional outline, 4 bolts on 70 mm b.c., $195. One 43x34, 4 lb., squared tips, 6 bolts on 75 mm b.c., $295 Call Frank, 905 634 9538

Bede-4 for sale! 380+ hours TTSN, Lycoming 0-320 E2D McCauley FP prop 75x53 2000 lb GW, 1285 empty. Murphy ext. metal wings, 30 ft with droop tips. Vortex generators, Extended flaps and ailerons. Wing fold mech. built in! Complete set of fairings - all design improvements complied with. Cessna gear legs with solid link in gearbox. Murphy type nose wheel (5x4) Towbar (2 pc) New brake discs and linings! Endura paint - 2002. Complete upholstery, adjustable seats, headliner, door panels, carpets. Instruments: A/S, A/H, Alt., VSI, Turn Co-ord., Slaved mag compass. Tach, Vac. Gauge, Cyl. Temp (2) Fuel (2) oil press., amp. meter, clock/air temp and heated pitot. King KX145 NavCom with KI205 Ind., ValCom 760, Flybuddy Loran, RT359 Transponder with Narco AR850 Encoder (mode C) Magellan GPS with expansion card/software, Sharc ELT, 2 place Flightcom intercom, 2 headsets. Maintenance records, builder manual, some spares, etc., halon fire ext. first aid kit. Any serious offers near $27,000 considered. No tire kickers please. Located CYNJ. Contact Fred Hinsch fred7@shaw.ca

1997 Pegastol with moving slat wings (Zenair CH-701 Variant) The original Pegastol aircraft built by the owners of Dedalius Aviation in 1997. Registered as an amateur built aircraft @ 1200lbs gross weight and can be flown with a ULP. Rotax 912S x 100 HP, with slipper clutch gear box and 68" Warp Drive Propellor. Engine just back from Rotax (Tri-City) for starter sprag clutch replacement. Gear box overhauled. New tires and tubes that have yet to leave terra firma. New engine Barry Mounts upon engine reinstall. New Custom aluminum main fuel tank spring 2010. New windshield and upholstery in 2009. Floats have Lake n Air pump out cups (that are rarely needed as floats are tight). 1/2" sound deadening foam throughout cabin. Wheel gear and forks also included. TTAF 600 hours, 912S Engine TT360 hrs, Prop TT 512 hrs, TT on Amphibs 422 hrs. New $700 Heavy Duty starter. Offers on $49,000 Cdn For more details view at www.irishfield.on.ca or send us an email oifa@irishfield.on.ca

For Sale. Lycoming 0-360-A4A. 279 SMOH c/w mags and carb. Recent prop strike inspection by Pro Aero Engines in Kamloops. Yellow tagged. New bearings, rings, gaskets, inhibited and crated, ready to ship. $15,000. Barry Holland 250-785-6431. w-b-holland@uniserve.com


CP 301-A Emeraude, first flew June 2003. TTAF 47 hours O290G Lycoming 393 hours since Major. Sensenich metal prop inspected and refurbished by Hope Aero June 15/09. Dual controls (pedals, sticks, throttle), custom interior, Annual due may 2011. Hangared at Stratford Ont. $25,000. Jim Demerling 519-348-9655

O-200 engine 2000 hours in running condition with accessories. $4000 Ron Fleet fleetair@wightman.ca 519 -364-5975

VANS RV7A, by owner and 6 times Van's builder. TT A/F and E 183.3 hrs. Lycoming 0320/ 160, AP, EFIS, KLX 135 with GPS and Moving Map,GRT Engine Monitor, 3 blade

Catto comp prop., etc, etc, list of eqpt and more pic avble on request, Prof paint., new FlightLine int, superb workmanship throughout. Manitoba, $110,000 204 371 5209, burtloewen@mts.net

AVID AMPHIBIAN KIT FOR SALE $5,000 Complete kit; tube fuselage and tail, all wing parts, wheels, tires, hardware. Left wing started. No engine, no mount, no instruments, no fabric. Contact Don, located near Owen Sound, ON Telephone: 519 372-1383 . email: we3kingers@yahoo.ca

FOR SALE; MURPHY REBEL KIT, Serial #515. Wings and Empennage complete,also Fuselage from Cabin back. All closure inspections completed. Spring type Landing gear. Reason for sale, lost Medical. Available in Edmonton AB. $12,000. OBO.Ted Taylor,780 455-2524
ted.taylor@shaw.ca

Zenith CH300-1983-LYC. O-320 (case split under Leavens Supervision). TT273. ICOM 200/Intercom. Mooney seats. Nosewheel Mod. Toe Brakes. Strobes. Sensenich Prop. Based Oshawa. Lost Medical. $19,990. 905-686-7546. albanus@rogers.com.

Murphy Moose; firewall back kit, 40% built. Many extras including long range tanks, drooped wingtips, float and ski fittings and bubbled side window, partially crated and ready for shipment. Asking $38,000.00 OBO 40% of new price. Contact Lyle Skaien 1-403-875-2770 or Cal Gazdag 1-403-875-2770

Stitts Skycoupe with O-290 125 hp, 240 hrs TT. Garmon 195, Escort 110, ICOM A5, intercom, wing tanks. Located at Burlington Ont CZBA. Must sell due to financial constraints. $16,900 OBO. 905-332-7331

Amphibious homebuilt Floats approx 1400'S in need of modification water tight bukheads not watertight.with rigging for installation 2 rudder config Floats too small for my aircraft $6000.00 Larry Taylor 250-492-0488 days ltaylor@pacificcoast.net

0320 E2C currently mounted on my Osprey which could be included in sale. Osprey has 175 hrs since new engine has 1850 but was dissassembled for a propstrike inspection 200 hrs ago Compression 125 lbs cyl on all four jugs oil pressure good complete with accessories. $6000 for engine $9000 for all aircraft needs refinishing and recover Larry Taylor 250-492-0488 days ltaylor@pacificcoast.net

FOR SALE C-GTYZ ZENITH CH-300 on floats (land gear available) Engine O-320-C2A zero timed in 1999 now with 170 hours. Prop McAuly 1A175/GM8241 new in 1993 Floats, Zenair 1850. Location Lake Muskoka. $20,000 George 705 445 7054 Collingwood
Super Cub project with fuselage and wings ready to cover. Includes Ceconite cover kit, glass, Lycoming 135 hp O-290 D2 and Macauley metal prop. Most parts to finish included. $27,500, serious inquiries only. Located Alliston Ontario 705-435-9460 Sep11

For Sale: 1997 Pazmany PL1. C-90 Cont. Total Time: 220 hrs. (Airframe and Engine). Side by side seating. Low wing, tip tanks (24 gals US total). Full inst. panel with mode C. Always hangared. Pictures available. $24,000.00 or Best Offer. Call: Ed at 204-642-9485 or email: edira@mts.net Sep11

PA-18 Super Cub Project. Wings complete less leading edge skins. Fuselage 30 in. wide complete with rudder pedals and tow brakes. Flaps (90 in. ), ailerons, Rudder, Elevators and Horizontal Stabilizer complete. Gear wheels, brakes complete.Seats installed. Project Pre-Cover inspected. $37,000.00 OBO. Lycoming 0-320 (150 hp) with E-Mags, requires carb. Ed at 204-642-9485 or email: edira@mts.net Sep11

FOR SALE Teenie Two, completed in spring of 2011 and has taxi time only. New Great Planes 1835, icom handheld, beautiful construction. Registered as ultralight and currently hangared CYPQ. See the youtube video at http://www.youtube.com/watch?v=d89Gg0TvJ98 $7500. Owner deceased so I am handling the sale. Contact Dave Smith davecsmith2002@yahoo.com Sep11

T-hangar for sale at Springbank (Calgary) airport, so if you know anyone who is interested let me know. This is the lowest priced hangar and most economical to operate at Spring Bank. Total monthly cost including, natural gas, electrical, insurance, and lease is about $100. There is nothing else. The capital cost for the hanger is $105,000 which you can get back at any time. Don Rennie 403 874 0876 or rennie.don@shaw.ca Sep11

9187 aero grinder M 92 with directions, plus drill guide #d 92. This machine refaces exhaust ports without removing cylinders from thenengine. It has a drill guide for removing broken exhaust studs on Continental and Lycoming engines. Air powered. asking $800 647-298-4461 Toronto area. Sep11

Zenith CH20 65 hrs TF 100 HP Cont 1800 STOH, trigear, sliding canopy Full panel, unpainted $10,000 416-431-2009 Sep11

1946 Ercoupe 415-C, changed to 415-D. 85 hp with full electrics, 860 empty, 1400 gross. 1800 hours total time with 700 hours on engine. Spin on oil filter, nice upholstery and wing fabric, metal shines and is in good condition. Plane is hangared and annual runs to July 2012. This plane turns 65 on Sept 11 2011. Fly open cockpit with the windows down and elbows out, using only 4 US gph. $26K OBO garywolf@rogers.com

Aeronca Chief project, 1160 TT A and E Original 65 Cont, McCauley metal prop Interior, panel, instruments, refurbished, new tires, New ELT, rejuvenated ceconite, requires windshield, Work on wings and assembly to complete. No runout on engine


# New In Canadian Skies

## Stan McLure's Corby Starlet

On August 23, 2011 at 0800 hrs Corby Starlet C-IIRC took off on its maiden flight with builder Stan McClure acting as test pilot after ten years of construction. The Starlet was built from scratch from plans drawn by John Corby an Australian aeronautical engineer.The Starlet design has a type certificate in Australia and has a proven safety record with hundreds flying all around the world. Although the design came in 8th place in the Rollason competition in the early sixties, it is the only design from that competition to be built in quantity due to it's superior design qualities.This Starlet is powerd by a Jabiru 2200 engine of 80 HP with wood propeller made for the engine by Jabiru.

The performance can only be described as awesome with 80 HP on the nose of a sleek airframe with only 813 lbs all up weight. The conservative test flight demonstrated 1500 ft/min climb at 65 mph with a purposely held down cruise of 96 mph at 50% throttle. VNE is 160 mph which would be very easy to exeed if not carefull. Stall speed appeared to be below 40 mph but was not taken to full stall on first flight. Control is rock solid and extemely responsive. Landing in three point attitude takes some practice but plenty of control is available. A truly remarkable little aircraft and well worth the thousands of hours to build her. John Corby got it right!

**Send us Photos of your completed projects**

*Share your accomplishment with others - you've earned it!*
*Please include a brief description of your aircraft and any other details you want to include, and send us a colour print with it. Mail to: Recreational Aircraft Association of Canada, Waterloo Airport, Breslau ON N0B 1M0*
*...or email us the information and a high resolution digital picture (jpeg format, 300dpi please) to: raa@raa.ca*

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shaft. $10,000 or offer. 416-431-2009 Sep11

Front portion of RV6 Tilt Type Canopy new, covered with protective material. $60 or offer. Misc chief and champ parts. Call for details. 416-431-2009 Sep11

FOR SALE two disassembled VW engines from station wagons, one with flanged crank, enough parts for 2 engines with parts left over. Appear to be in good condition. One magneto and a couple of distributors, intake manifold and carbs. Also set of Firestone wheels, brakes, axles and 700x6 tires. Reasonable offers. Contact Bill at 905-628-2304 or w.brubacher@sympatico.ca.

## Wanted

WANTED: Spin-on oil filter and adapter with STC for 1973 Cessna 150 - L model. tingle@rogers.com"

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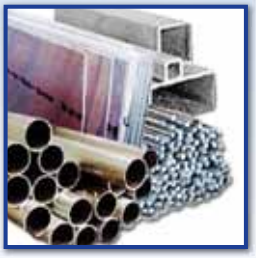
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