March - April 2013

RECREATIONAL RELYER

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The Voice of Canadian Amateur Aircraft Builders $6.95

A Lot In A Small Package: The CRICKET

RAA
RECREATIONAL AIRCRAFT ASSOCIATION
RÉSEAU AÉRONEFS AMATEUR ✦ CANADA

From The President's Desk

Gary Wolf

INDEPENDENT INSPECTIONS UPDATE

The sad story continues. The problem appears to be that people with no experience in Amateur aviation have been slotted in by Ottawa to handle our sector. They have no understanding of the history of the category and they bring preconceptions that do not fit the world of non certified aircraft. The article is in this issue. Please also take the time to go to the www.md-ra.com website to read the latest version of the C 100 document, and then read the regulations and standards that are referenced in its highlighted links. Note that although this is on the MD-RA website, the document is not of their doing, so please do not contact them on the matter.

JILL OAKES

It is hard to imagine anyone with more energy and determination of Manitoba RAA Regional Director Jill Oakes. When she has a project people had better leave her province or expect that they will become a part of it. Her most recent endeavour has been to organize introductory flights for 680 women during the Women Fly event in March, to win the international competition that celebrates the first issuance of a pilot's license to a woman. Jill's article is in this issue of the Rec Flyer.

When she is not running an event or organizing the construction of club facilities, Jill flies her self-built Acrosport to commute from Winnipeg to Saltspring Island. She has also built a Land Africa STOL aircraft for local use.

ROTAX 912, 914 SERIES ENGINES

Rotax has issued a mandatory alert service bulletin for a specific range of serial numbers of recently manufactured 912 and 914 series engines. You may read this at www.rotax-owner.com. ASB 912-062 / 914-044 R1 is available in both text and video formats. Mismachined #2 and #3 cylinder heads can allow oil to enter the intake valve guide area to carbon-foul the spark plugs, and the repair involves replacement of the cylinder head. Removed parts are to be returned to Rotax service centres. Reading between the lines, it looks as if this is a warranty situation, but they do not pay shipping or other related costs.

CONSIDER THE UL PERMIT?

Have you considered earning an Ultralight Permit (PP-UL)? Many of us are currently flying with a Private License validated by a Cat 3 medical, while a PP-UL validated by a self-declared Cat 4 medical would suffice. The Permit allows the holder to be PIC in any aircraft that meets the UL definition of 1200 max gross and 45 mph max stall speed, no matter how the plane is registered. Passenger carrying is not allowed unless the passenger is also licensed. One advantage is that even when the pilot is over 40 the medical period is five years. If you are over 40 your current Cat 3 would have an extra three years when used to validate a PP-UL. The Jan-Mar 2013 issue of the Aviation Safety Letter has more about this in an article by a CAME. Just google for Aviation Safety Letter.

It is easy to add a PP-UL when you already have a license. You have already satisfied the ground school and knowledge requirements so all that remains is some seat time with an instructor. From CAR 421.21: An applicant who is the holder of, or has held a pilot licence - aeroplane within the preceding 5 years shall have the experience requirements reduced to a minimum of 5 hours of flight time in ultra-light aeroplanes, including a minimum of 2 hours dual instruction flight time and a minimum of 2 hours solo flight time. The flight time shall include a minimum of 20 takeoffs, full circuits and landings, including a minimum of 10 as sole occupant.

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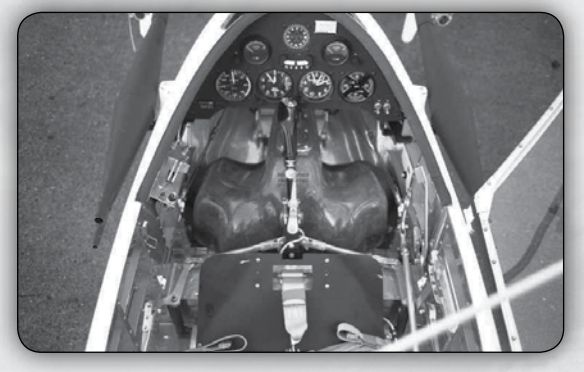
The Recreational Flyer is published bi-monthly by the Recreational Aircraft Association Publishing Company, Waterloo Airport, Breslau, ON N0B 1M0. The Recreational Flyer is devoted to the aerospace sciences. The intention of the magazine is to promote education and safety through its members to the general public. 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.

features



columns

George Gregory

Ryan SCW at Arlington, 2012
On the cover: Gunter Malich's Cricket.

by Jill Oakes

TWO World Records for Manitoba Aviation Community!

Members of the RAA Winnipeg Area Chapter, Brandon Chapter, Prairie District and National played a leading role in supporting the 99s Association of Women Pilots International and Northern Spirit Women in Aviation International "Women Fly" in Manitoba on March 9th . In 2013, only 6% of the aviation industry is female; the purpose of "Women Fly" was to introduce women to aviation-related careers and recreational activities.

On March 9th the weather was IFR (as forecasted) throughout southern Manitoba, except for one tiny hole directly over St Andrews Airport, which miraculously stayed VFR right through til 5:30 pm! With the help of over 600 volunteers, 30 aircraft and Custom Helicopter's Bell 206, 35 pilots, over 700 women passengers, and over 100 Manitoba-based local, regional and national aviation-related organizations, including: Amik, Northway, Keewatin, Calm, Perimeter, Missinippi, West Jet, Air Canada, Skycare, STARs, Allied Wings, Winnipeg Aviation, Harv's Air, Interlake Aviation, Mt City Morden, Millennia, RAA, CASARA, COPA, UPAM, Brandon's

Women [Fly]

Part 2: RAA Lyncrest works with the 99's and Northern Spirit Women to spread aviation love in Manitoba

CATP Museum, WCAM, CAHS, flying clubs including Springfield, Carmen, Brandon, Beausejour, Steinbach, Winkler, Altona, Gimli, Winnipeg, Shoal Lake, to name a few; and aviation materials including Gregorash, Air Parts, Aviall, Goulet, Canadian Propeller, Prop Works, Leading Edge Mechanics to name a few; and universities and colleges, including Stevenson Campus who set up their cut-away engine so we could actually see the insides of an engine while it was running (see www.facebook.com/womenflyfree for all sponsors, photos and quotes from men and women who were involved). Working together the Manitoba aviation-related industries brought World recognition to Manitoba for St. Andrews Airport as the "most female-friendly airport" and Frank Roberts with Custom Helicopters as the "most female-friendly pilot"!!

RAA Winnipeg Area Chapter President Jim Oke (retired Canadian Forces pilot and instructor, and RV6 builder and pilot) generously accepted the 99s invitation to serve as Chief and Director of Operations. Jim has a lot of experience working air shows and knew fully what he was getting in to. His advice was invaluable to the smooth communications between the team of Directors. Jim's commitment to the philosophy of "Women Fly" carried through every aspect of the event, Jim states:

For the future health of aviation in Canada (be it commercial, military or recreational) it is self-evident that ignoring or discounting roughly 50% of the population who are female is a bad way to start. …Involving an additional 50% of the population in aviation either directly as participants or indirectly as interested and knowledgeable observers can only be of benefit to the various aspects of the aviation industry.

Speaking practically, as more women come into positions of political power (I see currently 6 of 10 provincial premiers are women), surely it will be an advantage to aviation if these individuals have had some positive exposure to various forms of aviation activity. Note, for example, it was Shiela Copps who was the Federal Minister responsible for the attempted closure of the grass airstrips in Jasper and Banff National Parks some years ago (that COPA had to put a lot of effort into

Celine Guay was thrilled to get a ride with Frank Roberts, Worlds most female-friendly pilot, in Custom Helicopters' Bell 206. Celine was one of the over 700 women who flew for the first time on March 9th. Photo credit Celine Guay. Oppositee: Keith Bjorndahl flew in from Regina, IFR, to help set the World Record. These three women were thrilled he made it!! Photo credit Jay Ladouceur.

opposing). One would imagine that had she been familiar with recreational aviation from earlier in life, she might have been more resistant to the "must close these airports" advice she was getting.

On a personal level, it was really rewarding to work with other aviation minded people to accomplish a common task. More generally, of course, seeing happy, delighted people pleased with their flights afterwards is always nice too.

RAA Female membership quadruples

Over 100 prizes were offered by the Manitoba aviation industry to the men and women who helped make this event a success, including tickets from Air Canada and Northway Air, and two one-year RAA memberships, one for the RAA Winnipeg Area Chapter and another for the RAA National membership. Dana Chepil (Calm Air pilot) and Bette Holtman (long term 99s member) were thrilled to receive their one-year RAA memberships on April 15th at Lyncrest Airport and join new Winnipeg Area RAA member and Secretary, Marissa Selman (private pilot 2013), quadrupling the number of women in the Winnipeg Area Chapter!

Congratulations local and national RAA members – you have set the stage for several decades, where gender is irrelevant and where all women and men crazy about aviation are welcome!

RAA Winnipeg Area Chapter Executive Member, Bert Elam (Air Canada Captain and building a Pietenpol and Bearhawk) kindly accepted the 99s invitation to volunteer as Director of Safety and Marshalling. Bert has a lot of experience teaching Air Cadets and other volunteers how to marshal at EAA Young Eagles and COPA for Kids events hosted at Lyncrest every year and is 100% committed to the philosophy of "Women Fly". Knowing he would be focused on a month-long 'Triple 7' course throughout February, Peter Moodie (Lyncrest's Safety Officer and recently retired Air Canada Captain that flies a mint Fleet Canuck and Brandon's CATP Museum's antique aircraft) volunteered as Interim Director of Safety and Marshalling. Bert and Peter's commitment and teamwork was exemplary and indicative of the philosophy expressed by so many of the 600 volunteers!! As Bert said:

For the future health of aviation in Canada ... it is self-evident that ignoring or discounting roughly 50% of the population who are female is a bad way to start.

The importance of the flights is to introduce women to aviation and show them the possibilities that exist out there. Without that extra little push and making the venue "female" friendly they might not venture into an otherwise male dominated sphere.

Female pilots/AME/ATC controllers need to show that it can be done and it is a good career choice. The inclusion of females into the industry only serves to broaden the scope and reach that GA needs to survive and thrive.

My personal enjoyment comes from seeing the excitement and joy

Left: Bert Elam, Director of Safety and Marshalling, trained Sturgeon Collegiate Aviation Program students and Stonewall Air Cadets to help marshal aircraft and people. With over 700 aircraft movements – more than St Andrews Airport has seen since the late 1970s-early 1980s – Bert's crew of volunteers were busy throughout the day. Photo credit Rick Riewe.

Below left, Calm Air pilot Dana Cephil, borrowed a plane from Harv's Air and was excited to be part of the event. The names of all volunteers were put in a draw for about 100 prizes, including a Air Canada and Northway Air tickets and two RAA one-year memberships. Dana Cephil won the one-year membership in the Winnipeg Area Chapter RAA and looks forward to participating in some of the upcoming events. Photo credit Jay Ladouceur.

Right: Bette Holtman is a long term member of the Manitoba Chapter of the 99s International Association of Women's Pilots and was pleased to win the one-year membership in the National RAA; she's planning on attending the upcoming project tour in Stonewall at the end of April. Photo credit Rick Riewe.

when people experience flight for the first time; overcoming any fear and trepidation, seeing that GA is a personal expression of freedom, yet still controlled and safe.

May Ground School

An overwhelming interest in aviation-related careers from the participants inspired the 99s, WIA, with support from RAA, SFC, Stevenson Campus, Sturgeon Collegiate, Nav Canada, Perimeter Air, and local flight training centres, including Brandon Flying Club, Harv's Air, Winnipeg Aviation, Allied Wings and Mt City Aviation to offer the women's ground school course. About 50 women have signed up; the dates are: April 21st, May 2, 3, 4th and first flight lessons are on May 5th . Several women plan to have their aviation-medical completed by May 5th. Register by emailing jill.oakes@ad.umanitoba.ca

The importance of this type of follow up is underlined by Bert and Jim: "Follow ups to the actual flight event allow the participant to network and receive mentor ship in a safe and female friendly environment. There is still a lot of testosterone in this business and without

Above, left: Jim Oke, Chief and Director of Operations, was in close communications with all sectors and kept an experienced eye on weather, people and plane movements from the vantage point of the Old Tower used as the base for registration, briefings, and loading. Photo credit Jay Ladouceur. Right, three happy participants give the thumbs-up.

It is important to follow up with those who appear generally interested and provide them useful information

actually meeting women who have overcome that; they will question their ability to succeed. …There needs to be a certain "will" on behalf of the individual to persevere and overcome some of the obstacles, financial being one of them, gender shouldn't be one of them." Bert Elam

"It is important to follow up with those who appear generally interested and provide them useful information (beyond what can be passed on in a simple WIA afternoon visit) to allow them to make a realistic assessment if aviation is something they would wish to pursue given the money, time, and effort that is involved." Jim Oke

***Jill Oakes** is very active in the Lyncrest chapter of the RAA. She works at the University of Manitoba at the Centre for Earth Observation Sciences, and holds a commercial rating. She flies a plans-built AcroSport II and a Land Africa kit-built STOL aircraft.*

Left: Frank Roberts, Worlds' most female-friendly pilot, was directly supported by about 15 volunteer staff from Custom Helicopters. Over 600 volunteers helped produce the entire operation! Photo credit George Love. Centre, Donna Pronishen's husband, Grant, flies a Citabria and volunteers as an MD-RA Inspector. Donna was one of the lucky women who was able to fly with Frank in Custom Helicopters' Bell 206. Photo credit Donna Pronishen. Right,, The Canadian Air Training Plan Museum and Ross's Air put on an awesome display of antique and warbird aircraft, including a personal look at the roles women played in aviation throughout WWII. Photo credit Harvey McKinnon.

Elevator Skin Dimpling

Chris Sheehan, Mississauga ON

Tip 1: Just use the male die in the squeezer without the female (i.e. the squeezer yoke acts as the female). That's actually not my idea; saw it on the web somewhere but it actually works.

Tip 2: Using a "pop rivet" die is tricky because it's hard to angle the "mandrel" (nail) through the hole. So I came up with the following: I used a short (2-3") length of 3/32" piano wire as a mandrel, and a 3/32" "wheel collar" (both hobby store items). I filed a notch in the wire close to one end, fed it through the male die, rib, female die and wheel collar (in that order) and tightened the collar set screw in the notch. Now just run the pop rivet puller on the mandrel as usual, and once the dimple is formed undo the wheel collar and take it all apart. Sounds time consuming, but there are only a few dimples to do this way and it takes about 1 minute per.

Tip 3: Regardless of how you manage to make the dimple, if it's not quite right a turn or two by hand with a piloted countersink finishes it off perfectly, barely removing any metal at all.

You thought it looked firm and now you're stuck in the snow. What's a pilot to do? Read on...

Stuck in the Muck

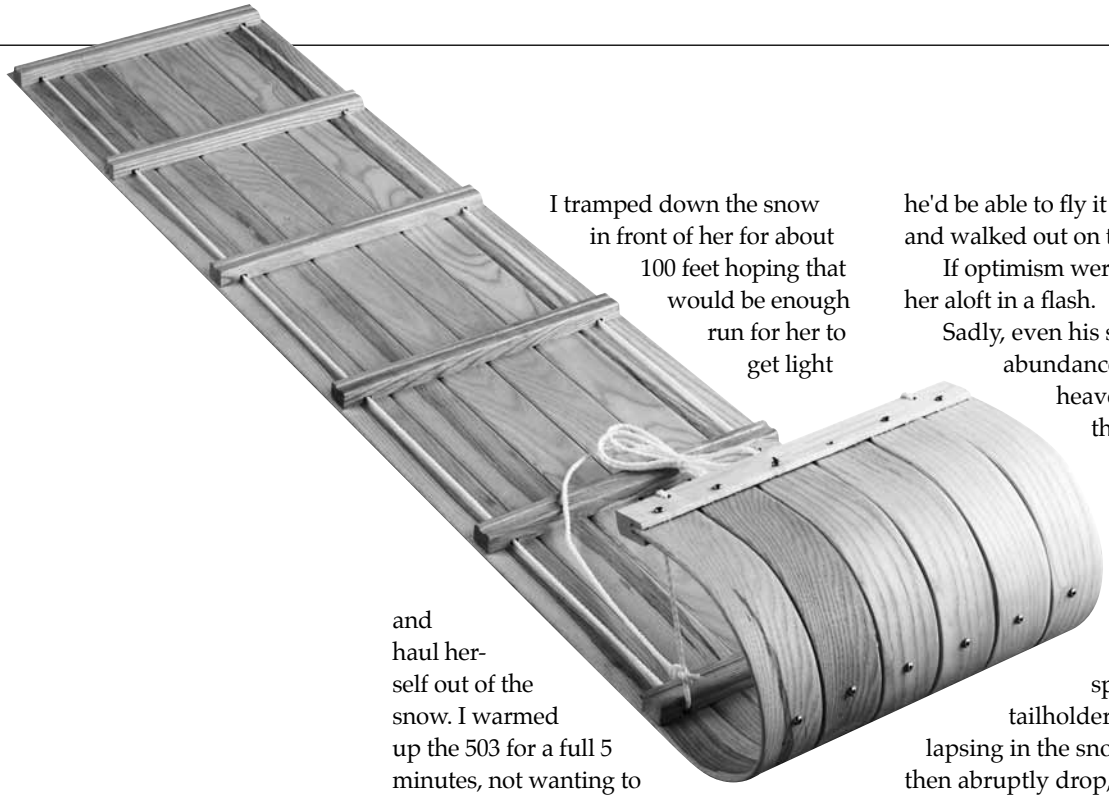
ON A BEAUTIFUL mid March day, I was flying my RX550 Beaver over Lake Simcoe at 100 ft AGL. The ice was still thick with well packed snowmobile trails criss- crossing every which-way. Despite flying on wheels only, I was confident that if necessary I could set down on any of these well packed snowmobile "highways".

The EGT gauge for the rear cylinder suddenly dropped almost to the peg and trembled there. The engine sounded normal... or did it? Was that a high pitched, rattly sound I was hearing through my ear plugs and muffs? There was no loss of power, but I was concerned about exhaust system probes, clamps and pieces departing the aircraft through the prop. (The Beaver is a pusher).

Below me a well packed snowmobile highway beckoned. I considered the options: baby the aircraft home, hoping not to shed exhaust bits through the prop: or land, check it out, make repairs, then carry on with confidence. The decision: throttle back, line up with the middle of the most heavily traveled trail, and with slight power ease down gingerly in a nose high attitude. Mains touched lightly, then started to sink. Abort! Let's get out of here! Stick back to the limit, and smoothly power up to the max. But the high mounted pusher prop overwhelmed the elevator and drove the nosewheel deep into the snow. Chop the power, control the skid to an abrupt halt. That snowmobile highway wasn't as hard packed as it looked and I had been suckered.

I got out and checked for damage. Main gear OK. Nosewheel and gear OK. Exhaust system solid and intact. Nothing about to fall off.

Optimistically I lifted and dragged the plane out of the ruts she had dug.



I tramped down the snow in front of her for about 100 feet hoping that would be enough run for her to get light and haul herself out of the snow. I warmed up the 503 for a full 5 minutes, not wanting to damage the engine with the strain to come. I throttled up smoothly to full power. We started to roll and skid along. But well before we'd used up the 100 feet of tramped snow, the nosewheel dug in and we were stuck. I tried again, and again and again with identical results.

A kind ATV'er came over and offered to help. He towed, while I pushed the plane to the nearest public land/water access point. Along the way I tried to take off twice at spots where the snow seemed firmer. Same old story. The ATV'er gave me a lift to the nearest pay phone.

My friends at the airport were convinced it was my excessive gravitational attraction to earth that was the problem. No, there were no skis we could borrow from other planes. No, there were no tundra wheels we could scavenge. No, there was no snowplow or steamroller we could borrow. And of course, who has ever heard of Marsden matting? (At one point, I found myself calculating the cost of 50-100 sheets of 1/2" plywood and trying to think of what I could build with them or get for them as salvage!).

My friends were convinced it was my excessive weight that was the problem. What they did have was a very experienced Beaver pilot who weighs about half what I do. Surely he'd be able to fly it out. So they drove over and walked out on the ice to have a look.

If optimism were lift, Bill would have had her aloft in a flash.

Sadly, even his skill, lack of girth, and abundance of optimism couldn't heave my Beaver out of the slush. We pushed; we lifted; we even ran along holding the tail down, to keep the nosewheel up out of the snow. Futile! Each time, just as the plane approached lift-off speed, we pushers and tailholders would fall behind, collapsing in the snow. The nosewheel would then abruptly drop, dig in, and bring the airplane to a slithering halt.

Some passing snowmobilers were flagged down and kindly repacked the trail ahead as best they could, but to no avail. After more attempts than I care to remember, we abandoned the Beaver on the ice and returned to the airport. (Bill had a student at 3).

One suggestion was to leave the plane till just before sunset when dropping temperatures might stiffen up the snow enough to allow take-off. Maybe even leave it overnight and fly it off at dawn. Neither of these options offered any certainty. With spring coming on fast, I couldn't bring myself to sit back hoping for colder weather. It might have worked, but passively waiting and hoping are not in my nature.

Off I drove to Canadian Tire where I bought three 4' long toboggans, 150' of 3/8" rope and a utility knife.

Back at the plane I found two snowmobilers admiring my Beaver. The male introduced himself as Ted, a former ultralight pilot and Chinook owner. He showed great interest in my plane and my predicament. He offered to help me lash the toboggans to the wheels. I declined. If this turned out badly I didn't want anyone else to have anything to regret. My plane; my neck; my responsibility. He understood and set his girlfriend, Mary, to

Slowly I gained speed. Ten, fifteen, eighteen mph. But no more. I plowed on hoping to pack the snow for a second run. I turned around, back tracked, and tried again.

work with the snowmobile repacking the track. He kept me company, telling tales of the early days of ultralight flying in this area.

I know that skis should be positioned with the axle 3/5 of the way from the front to the rear of the ski. This helps keep the tips up and prevents them from digging in. But it also requires a system of restraining wires and bungees to keep them in position after take-off. Because my toboggans were so big, I thought they were unlikely to dig in. By placing the wheels forward, pressing against the curled-over lip of the toboggans, there would be two points of physical contact between each toboggan and wheel. In flight, the weight of the tails of the toboggans would cause them to stream out behind the wheels and not rotate into some unflyable or unlandable orientation. I lashed the wheels to the toboggans; front to back, side to side and diagonally, corner to corner. Carters' knots were used in abundance. A rope was tied to the trailing edge of the nosewheel-toboggan and looped through the cockpit so I could manually augment the rudder pedals in steering it.

The lashings were checked and rechecked. Start up, warm up, throttle up. Slowly I gained speed. Ten, fifteen, eighteen mph. But no more. I plowed on hoping to pack the snow for a second run. I turned around, back tracked, and tried again. No go. Twenty miles an hour tops. Where are those big head winds when you really want them?

My new friend towed me back and forth with his snowmobile, packing the track again and again. But the snow was just too sticky. I'm not sure who broached the subject first. I didn't want to endanger Ted or Mary but there was only about an hour 'till sunset. I was running out of time and ideas.

We decided to attempt a tow assisted launch. The tow rope had been passed through the nosewheel forks to assure a central tow point. It was then tied around the main boom for a strong, secure attach point. We couldn't improvise a rope release at the airplane end. The other end of the rope was wound six times around the rear bar on the snowmobile and Mary, sitting backwards on the rear seat, pulled the free end hard enough to keep the loops from slipping. With hand signals, we coordinated our acceleration. The toboggans slid. Our speed built. No problems with control. At about 25 mph there was enough lift to unweight the toboggans and acceleration picked up rapidly. Gently, I eased back on the stick. Up we zoomed! I leveled out at fifteen feet. Mary released the rope and I was free! I pulled in the rope to keep it from catching the prop or fouling the control surfaces then started a slow climbing turn to the left and circled over my benefactors. After big waves back and forth, I was homeward bound. The airplane handled well considering the improvised undercarriage. Not wanting to "push the envelope" in this new configuration, I climbed slowly to 1500' AGL and headed back to the airport.

Soon Bill was off my left wing, in the Buzzard, shepherding me home. After more than two months of having all kinds of *(continued on page 35)*

Coming Events

Flamborough Chapter Breakfast fly-in Saturday - May 18 - 8 am to Noon. If you're flying to our grass field, field elevation is 840 ft. 43 22.25 N 79 55.95 W Circuit height 1,000 ft. and ALL circuits must be to the EAST of the field. If driving, take Highway 6 N from Hamilton to Conc 6 East. Turn right at the corner and proceed east to Flamborough Centre and Centre Road. Cross and continue on east for 1/4 mile to railway tracks. Cross tracks and after 50 yards take the first laneway to the left. Follow the lane North through the woods to the hangars. There are no signs. Everyone welcome.

Fly-In Breakfast, TC Safety Seminar and Fly Market. Friday May 25, 2013. Chatham, ON CYCK (formerly CNZ3): Location: N42 18 23 W82 04 55. The Kent Flying Machines, RAA Chapter 4975, is proud to present our Eleventh Annual event. Breakfast starts at 8:30 with the TC presentation scheduled for 10:00. The Fly market will be open during breakfast and after the TC presentation. Lunch will also be available. Come and join us for a day of commeradie, increased aviation knowledge, and bargain hunting the Fly-Market. Bring any spare items that you wish to sell, tagged and priced. Plenty of parking, a 5000 ft runway, 100LL fuel, good food. Ultralights welcome. For more information contact Gerrit van Vrouwerff at 519-674-3851 or gerritvan@aol.com

June 14 Flamborough **Chapter Family Bar B-Q and fly-in.** 5 pm to dusk.

RAA **Vancouver (Chapter 85) Fly-In**. June 29, Delta Heritage Air Park

The Upgrade

The quest for cheap, dependable power / By Tim Vader

In November of 2000 I had the opportunity to purchase a partially completed project from a builder in British Columbia. The project was a Kitfox Classic IV with an EA81 Subaru installed. A belt reduction drive by Reductions Inc. was also fitted to the engine. Very little else was done and what was done was not done to my preferences, so most of the work to the panel, wiring, and engine was redone to my liking.

After six years of working on the project I finished the plane and had jumped through all the regulatory hoops. In August of 2006 I took the first flight in C-FBYV which consisted of a couple of circuits in the aircraft. Some airport friends were on hand to congratulate me when I shut down. I added some more fuel and shortly went for another flight. Much to my surprise, on about the fourth circuit, my engine stopped dead at 500 ft AGL.

A few days later I went back out to the airport to try and determine why this happened. There was no water in the fuel, and after a few cranks of the starter and a big backfire the engine fired up and ran smoothly.

What I eventually determined the problem to be was fuel starvation. The Kitfox has folding wings with a flexible fuel line from the wings down to the header tank. To enable the wings to fold, an extra six inches of fuel line is bunched up near the wing root. It is imperative that this portion of the line maintain a constant downward path from the tank to the header. I had a small high spot in mine that allowed the fuel to flow nicely when on the ground (tail low attitude) and those many hours of ground running, but when flying straight and level the fuel would not flow properly over the rise.

I saw the opportunity to get rid of the Subaru and exchange it for an engine better suited for my aircraft and my preferences.

Every circuit that I did I was running off the fuel in the header tank when in straight and level flight. Then, for a short time on the ground and climb out, fuel was running to the header tank. Finally, on the fourth circuit, I had used up the last of the fuel in the header tank.

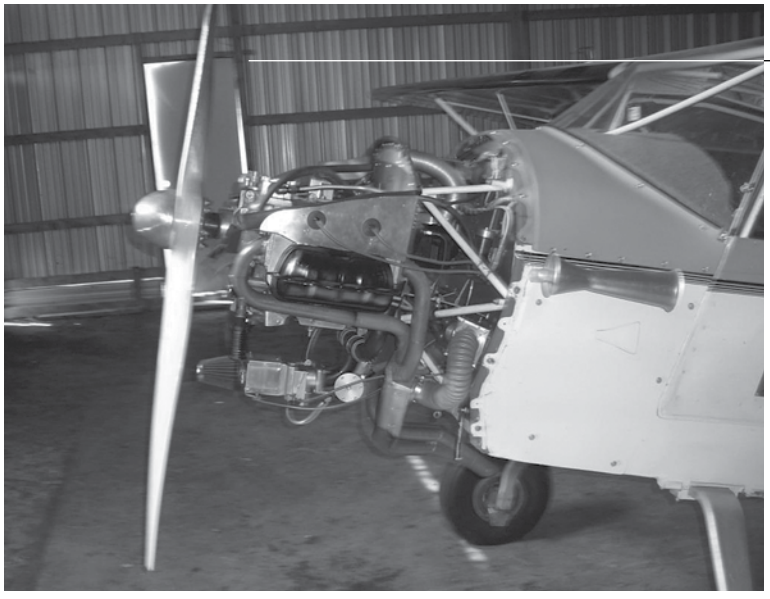
About that time the Canadian dollar went from $0.65 U.S. to about $1.08 U.S. The Subaru engine in the Kitfox had some shortcomings and I was not completely satisfied with it. The belt drive did not like to track properly, and the water pump and alternator were driven by a single V belt. The single ignition system was totally dependent on the alternator or the battery. The engine weighed 230 lbs which made the Kitfox nose heavy and reduced my useable weight. I saw the opportunity to get rid of the Subaru and replace it with an engine better suited for my aircraft and my preferences.

Steve Bennett at Great Plains had a package set up for a VW engine conversion for the Kitfox IV, complete with an engine mount and exhaust system. I took advantage of the great exchange rate and bought the engine package. I decided on dual ignition; one magneto and one electronic ignition on a direct drive 2276 cc engine. Because I was feeling flush, I also chose the aluminum cylinders for an extra thousand bucks. These cool better and save 10 pounds of weight for the plane.

The kit comes in a large wooden box in many, many pieces but includes a good assembly manual and a DVD that shows how to do everything. I was very careful to follow instructions very closely and took my time building the engine. I had some difficulty with the supplied intake tubes but managed to get them fabricated so they did not interfere with any thing else under the cowl.

Steve originally suggested that I run a single Bing CV 40 carburetor slung under the engine. The intake ports on the heads are on the top of the engine so the intake tubes are about 18 inches long. The engine ran fine on the Bing but the carburetor wanted to escape from its rubber socket mount when the engine vibrated. I didn't like that scenario, but I did fly it with the Bing for two hours.

After taking off one afternoon in August of 2009, I was just about to circuit height when I thought I heard the engine running a little roughly. I ignored it for a few seconds but then turned back towards the airport. Sure



enough, it started running really roughly.

I made it back to the airport but I was high and fast again. I elected to overshoot the runway and to try to use a runway more aligned with the wind. On the way back to the approach to the runway I found I couldn't keep the plane flying anymore. A forced landing left me and the plane in chest high canola, which I managed to swath a bit of before stopping.

With help from good friends from the airport, I managed to get the plane back to the hangar. When I checked the engine I found that the exhaust pushrod on the number two cylinder had lost capture in the rocker arm and that the exhaust valve on that cylinder was not operating. I thought that I must not have tightened the jam nut correctly on the rocker arm when adjusting the valve lash. As I later determined, this was not the case.

After another 18 months of repairing and changing out carburetors, to find one that I felt happy with, I settled on my fourth choice, the Rotec throttle body injector. I had tried a Zenith carb and the Aerocarb. I almost didn't settle on the Rotec because the first one sent from Australia had a fuel leak internally and no amount of adjusting would stop it from running rich.

All the time I was testing carburetors I continued to have problems with the pushrods. They would often get bent or the tips would break off. Also I could not get the cylinder head temperatures down. I switched from steel to chromoly pushrods so I could set the lash tighter, but the pushrod tips were still breaking.

After running the engine for a couple of hours one day, I took the valve covers off only to find the heads of the valve stems mushroomed because of loose tolerances in the valve train and the ball feet rotating on the rocker arms. This required replacing the valves by cutting the ends off to get them through the valve guides. When I installed the new valves I thought I'd try new rocker arms so I switched to 1.25:1 ratio rockers from Scat. The arms slide across the valve stems. This solved the overheating cylinder heads allowing the engine to exhaust the hot gases more efficiently now. My cylinder heads rarely got over 250 degrees F., but I was still having pushrod issues.

After researching the VW racer sites on the web, and all the talk about coefficient of expansion, it finally hit me. The aluminum cylinders were expanding at twice the rate of the steel pushrods! It was even worse when I used chromoly pushrods as they have an even lower coefficient of expansion than regular steel. As soon as the engine warmed up, the valve lash became enormous and there was slop all through the valve train.

The answer would be to use aluminum pushrods.

I went to town and bought a set, off the shelf, from a VW supply shop in Calgary. They were cheap junk but I didn't know it at the time. I put them in and thought my problems were solved. I flew the plane for about 10 hours with these pushrods in with no problems.

Then, at the end of a two hour flight I was getting close to the airport when the engine started running roughly again. I tried to make it back to the airport but ended up landing in a field about five miles from the airport. The crops were off so there was no damage to the airframe. When I got the plane back to the hangar I found the aluminum pushrods had their chromoly tips mushroomed back into the pushrods by as much as 1/4 inch. No wonder the engine was running roughly; the exhaust valves were hardly opening.

I sourced out a site for reliable aluminum pushrods from AirCooled.net. and installed them. Finally the pushrod issue was put to rest. I have over 50 hours on these pushrods and have no issues with them at all.

While I was working on the pushrod issue I got an email from Great Plains that the wrist pin keepers supplied with my engine may not be the correct ones and they would send me replacement ones. Despite being only a couple of bucks worth of parts, it meant removing the heads and cylinders, and replacing the wrist pin keepers after removing exhaust, intake and baffling. It was a full day's job.

One day I had added a muffler to the exhaust and wanted to hear how it sounded from outside the airplane. I got my son to sit in the plane and rev it up and down. When he throttled back I noticed a ticking noise. After shutting the engine down and turning the prop over by hand I found the ticking and clunking to be coming from the crankshaft. It had some end play movement of about 1/8".

After removing the engine and the Diehl accessory case from the engine, I found that the head of the gland nut that holds the flywheel to the crankshaft had broken off. The dowel holes in the flywheel had been made oval from the crank shaft movement. This necessitated replacement of the flywheel and the gland nut. The cheap 36 mm cast gland nut that broke in half was replaced by a larger 44 mm chromoly forged gland nut and the engine was put back together and reinstalled.

The gland nut requires 219 foot pounds of torque and I put the chromoly nut on with about 230 foot pounds. Six months later, after the winter had passed, I went flying again. After a short flight I turned the prop over by hand. I immediately heard the telltale tick and realized it was the gland nut again.

I removed the engine again, and because I was getting good at this, it came off in two hours. The gland nut was not broken this time, just backed off. There was no damage to the flywheel. This time I torqued it up to about 300 foot*pounds and used Loctite. I've had no problems with it since.

I stopped test flying this year once the canola crops got high and started again after harvest.

While all this was going on I was having problems with the valve covers leaking oil at wide open throttle. I did a compression test and found all the cylinders to be between 110 to 120 psi, meaning the rings were not worn and allowing too much blow-by into the crankcase and subsequently the valve covers.

My thoughts were that this crankcase was originally designed for a 1300 cc engine and now I've got it bored and stroked to 2276 cc. That leaves very little extra room in the crankcase for pressure to build up. I wondered if the natural blow-by from the increased displacement was over-pressuring the crankcase.

My first attempt to solve this was to install a PCV valve from a similarly sized Nissan engine into the crankcase and run vacuum lines to the intake manifold. This worked, but not at full throttle. I then installed vents in the valve covers to pull air into the crankcase, but oil would simply blow out these vents. The PCV valve couldn't handle the amount of blow-by in the crankcase, so I scrapped the PCV valve.

Newer engines, I'm told, run a thing called a metered orifice instead of a PCV valve. The idea is to use just the right amount of vacuum from the intake and by pulling the vacuum through an orifice of the right size it will pull the correct amount of vacuum on the crankcase for all engine speeds. I took a brass nipple and filled it with solder and drilled it out to 5/64" and installed it in the hole where I had earlier fitted the PCV valve. I kept drilling the solder out by 1/64" at a time and running the engine up to full throttle till I got to 11/64" when all of the oil leaks stopped. I now have enough vacuum on the crankcase that all the blow-by is evacuated from it. Any leaks are leaks of air into the crankcase not oil out.

After solving that problem my oil consumption went up slightly, which was anticipated. The 30 weight oil I was using was misting too much in the crankcase and was being sucked out by my metered orifice system. I switched to 50 weight oil and the problem was solved. Most VW air cooled engines under severe service conditions use 50-weight oil. I was ready to put some time on the airplane.

I stopped test flying this year once the canola crops got high and started again after harvest. I did my climb test, as required by

Transport Canada's amateur-built aircraft rules, and got all of my flight restrictions removed from my Special Certificate of Airworthiness.

I managed to get my first cross country flight in that fall before it became too cold; a short trip from Indus to Vulcan and back. I was listening and imagining bad things happening both ways on the trip but nothing out of the ordinary occurred with the VW. I think I finally have an airplane.

Climb with the VW is about 600 FPM at 1200 pounds gross weight, with a cruise of about 85 MPH. Cruise rpm is from about 2800 to 3200 RPM. Wide open throttle is about 3300 to 3400 RPM. I'm currently running a GSC 60X32 prop but am looking forward to trying some other options in the next year. My next project is to build some wheel penetrating skis and beef up the heater so I won't have too much down time next winter.

If you are building a VW for aircraft use I would suggest you buy the best parts available.

It has been a long and often disheartening struggle to get to where I'm at now and I hope nobody else has to go through these troubles. If you are building a VW for aircraft use I would suggest you buy the best parts available. If you are building a kit engine check the quality of the parts that are supplied. There are tons of Asian manufacturers that produce cheap and faulty parts for VW engines and the kit suppliers often like to use them due to the lower cost. Aircooled.net in Salt Lake City is a good supplier of quality parts. Local VW supply shops in your city can usually supply good parts but they can also have the cheap stuff on the shelves, so choose carefully. Use OEM parts when you can.

I hope that for anyone else who is planning on using a VW engine, my experience and solutions will help them with their build. Keep in mind these are my opinions and I'm not an expert by any stretch of the imagination. Good luck. R

The Cost of Power

It's said there's two things needed to fly: airspeed and money.
The expense associated with powerplants has always been a bugbear for would-be aviators, with engines often consuming more than half an an aircraft's cost to build.

Anyone who's been around amateur built aircraft knows how common Volkswagen conversions are. Shortly after World War II aircraft such as the Druine Turbulent and the Jodel D-9 started appearing with the little German engine hanging on the front, and their popularity has continued unabated.

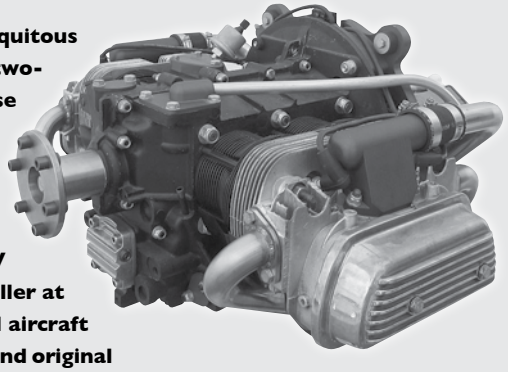


Photo: Wikipedia/Flugkerl2

A cursory glance online reveals at least 75 aircraft designed around the ubiquitous powerplant, with another 10 designs like the Hummelbird utilizing the two-cylinder modification. Wikipedia states: "...Especially interesting is its use as an experimental aircraft engine. This type of Beetle engine deployment started in the 1960s. A number of companies still produce aero engines that are Volkswagen Beetle engine derivatives: Limbach, Hapi, Revmaster, the AeroConversions AeroVee Engine (right), and others. Kit planes or plans built experimental aircraft were specifically designed to utilize these engines. The VW air-cooled engine does not require a heavy gear reduction unit to utilize a propeller at cruise RPM. With its relative low cost and parts availability, many experimental aircraft are designed around the VW engines. Formula V Air Racing [such as the V-Witt and original Sonerai] uses aircraft designed to get maximum performance out of a VW powered aircraft resulting in race speeds above 160 mph". - Wikipedia

Glareshield Lighting

John Allen

I elected to install a fiberglass glareshield in my RV6A. I did this because I wanted the look of a padded glareshield, and because I wanted a removable means of attaching overhead lighting.

To do this I used the existing aluminum skin as a mold for the fiberglass. I installed the skin on the fuselage with clecos (with a couple of low profile screws under the fiberglass layup). I used just 3 or 4 layers of glass to allow for flexibility in the finished product (remember the mold release).

I then trimmed both the fiberglass glareshield and the skin to make the intersection of the two fair neatly into each other. The finished aluminum is no less than 1 inch form the panel in the centre, and of course much wider at the sides to fit the windscreen appropriately.

For lighting I used flexible lighting strips (like light bulbs in vinyl tubing) from JC Whitney. I bent a very thin and lightweight piece of aluminum angle with my shrinker tool to fit the inside curve of the glareshield and used double sided sticky foam to adhere the lights to the inside of the angle.

On top of the glareshield I used vinyl I purchased from an auto upholstery shop over a layer of very thin foam. I also purchased some edge stripping from them which just snaps onto the edge of the glareshield and makes a nice finish. Contact cement was used to glue the vinyl and foam to the glareshield.

The glareshield itself is attached to the airframe with rivnuts.

The system is powered by a 5 amp solid state system from Aero-electric Connection.

The end result was a very good lighting effect, except for the A/I and the D/G. Both of these instruments have pointers at the very top of the instrument which are shadowed in the overhead lighting. For these two instruments I used Whelen post lights driven from the same power source.

It was an interesting experiment that achieved the desired lighting effect and attractiveness at the expense of additional weight and time.

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MD/RA

CONTINUING AIRWORTHINESS, AMATEUR BUILT AIRCRAFT REQUIREMENT FOR MAINTENANCE RELEASE (Version 2)

This information is effective immediately
During the construction stage of an amateur built aircraft, all modifications, corrections of deficiencies resulting from the various inspections, adjustments and/or changes to the engine and flight controls systems are considered to be integral part of the manufacturing process.
Issuance of the Special Certificate of Airworthiness and Operating Conditions documents officially ends the manufacturing process.
All maintenance/modification/repairs, performed after the date of issuance of the Special Certificate of Airworthiness and Operating documents are regulated by the continuing airworthiness maintenance program.
All maintenance/modification/repairs must be performed as per acceptable technical data and be recorded in the Journey log book. The entry must also described the work performed and list the part(s) used. See Exemption from Section 549.01, PART VII - Continuing Airworthiness, para. (61)
In accordance with CAR 571.10(2), all maintenance/modification/repairs must be certified by a maintenance release statement or similarly worded statement entered in the Journey log book:
"The described maintenance has been performed in accordance with the applicable airworthiness requirements."
1. A maintenance release statement is required following any work performed, except for elementary work as defined in Standard 625 Appendix A.
2. An independent check requiring 2 signatures on the maintenance release statement is mandatory following any work which disturbs the engine or flight control systems on any amateur built aircraft. One of these signatures shall be that of the aircraft owner. Ref: Part V, Std 571- Types of Work (Table). (d) Work that disturbs engine or flight controls.
3. The log entry certifying the Weight and Balance data must be followed by a maintenance release statement.

Who may sign the maintenance release: Part V - Subpart 71 para 571.11 (2) (b) states that the person who may sign the release for an amateur built aircraft is the owner of the aircraft.
Out of phase items are those (such as transponders and mode C equipment, for example) which require regularly scheduled maintenance, certification, calibration or adjustment, and whose anniversary dates do not coincide with the aircraft annual inspection. All out of phase items, as defined in Standard 625 Appendix C. must be recertified no later than the due date as written in the journey log book. All maintenance/modification/repairs on these items must be logged, and a maintenance release is required to put them back into service.

Guide line to interpretation of the regulation
The rules have changed over the years and today we don't have dual inspections or independent checks. According to Standard 571.10, Types of Work item (d), when an engine or flight control is disturbed a second person has to inspect it. In the past that person had to be a pilot or an AME, however today we don't define who that person needs to be. This means that the owner of an amateur built aircraft can sign for the work and someone else that he has been shown the installation to can sign for the inspection of the controls for proper operation etc. Second person signing needs to be educated so that they understand what they are witnessing. This requirement applies to all aircraft.
Transport Canada / Civil Aviation Safety

Disclaimer: MDRA INSPECTION SERVICE publishes information as accurately as possible and in a manner which is easily read and understood. Note that the actual legislation and information published by Transport Canada are the final authorities. For this reason, we have included links to the relevant sections of the Transport Canada website in this document. Please refer to these if you need clarification when you are performing maintenance on your aircraft and completing your logs.

INDEPENDENT INSPECTIONS

Two months ago I wrote about independent inspection of control systems, and how Transport Canada was trying to require this of the Amateur Built category. There have been a lot of emails and phone calls since that time, two TC types have sequentially ducked out, and I was handed off to the third, this time a supervisor, whose style quickly became a stonewall / by Gary Wolf

THE DOCUMENT SHOWN here *(opposite page)* is the second version, modified from the first version after many emails with TC inspector who will remain unnamed, but who appears to be the person behind all of this. I had been asking what standard he proposed for training someone to perform a proper independent inspection and he then added his "Guide line to interpretation of the regulation", verbatim from his email to me, grammatical mistakes and all. It also contains a statement that contradicts the CARs, namely that this requirement applies to all aircraft. Unfortunately for the credibility of this document the regs specifically exclude hang gliders and ultralights, so it appears that this document was either breaking new ground or more likely it was a shot from the hip.

The French version was different from the English version, so it quickly became very obvious that none of this had gone through the usual TC channels for wordsmithing and legal checks. It was also curious that he would be posting what was purported to be Transport Canada policy not on the Transport Canada website, but instead on the MD-RA website.

I circulated this document to other Transport personnel and it became apparent that it was not in their document file, so it had no TC standing, the whole situation giving the appearance of a freelance operation. This inspector then excused himself from further dealings and handed me off to his Acting Supervisor. Emails with this new fellow proved to be frustrating because he refused to engage in any meaningful dialogue.

At this point you would do well to go to the www.md-ra.com website and click on the "continuing airworthiness" box at the right side of the menu. Then go to the C 100 document to compare this third version that has been posted after I explained the mistakes and inconsistencies of the document shown in this magazine. The guideline and the statement about applying to all aircraft have now been removed, replaced by a statement that the person performing the independent check must be educated, but again does not give any standard for this education.

MD-RA has no part in all of this so please do not call them for explanations. They are a subcontractor to Transport Canada, and if they are required by TC personnel to post a document they must do it without question.

All versions of the C 100 document quote Transport Canada Part V Std 571 (d), work that disturbs engine or flight controls. Here is the wording of the latest 2010/12/30 amendment:

"(d) Work that disturbs engine or flight controls"

"Applicable Standard of Airworthiness

That the system has been inspected for correct assembly and correct locking of any parts disturbed

by the maintenance performed, including an operational check for proper sense and range of motion of the engine or flight controls has been accomplished, by at least two persons, and the technical record contains the signatures of both persons."

Note that this standard has three distinct parts and the use of the word "including" means that all parts must be satisfied whenever a control has been disturbed. The person inspecting cannot choose to check just whether the parts have been correctly assembled and safety wired – he must also check that the control has not been reversed and he must also verify the range of motion. It is the last requirement that gives all the problems.

It is important to keep in mind that there has been no rash of Amateur Built accidents caused by incorrectly assembled controls, so one might ask what we are being protected from.

Member Bill Reed had earlier sent a query off to Enforcement for advice and their inspector replied that we should look at Airworthiness Notice AN C 010 for guidance on training someone to do a proper independent inspection. This document is aimed at AME's who are training a non-AME to do an independent inspection, and it gives good insight into how Transport Canada wishes this issue to be handled.

AN C 010 requires that someone doing an independent inspection must use the latest information that is from the highest authority. The highest is the "Instructions for Continuing Airworthiness" (ICA) from the holder of the Type Certificate. Other documents such as AC 43-13 may be used but not if they are in conflict with the ICA of the Type Certificate holder. Essentially you may safety wire according to AC 43-13 but if the ICA requires Loctite or a cotter pin you may then not safety wire.

Sense of operation requires that the correct aileron must go up and the other must go down when the stick is pushed, the elevator and rudder must move in the right direction, the throttle must open when the lever is pushed forward, etc. This is common sense, but if the ICA says otherwise the person inspecting must follow its requirement.

Verifying the range of operation is the real problem, and I think that this is the reason that previous administrations at Transport Canada have agreed that the independent inspection wording cannot be applied to Amateur Built aircraft. Our aircraft do not have a type certificate so there cannot be any ICA to say what is the correct range of travel for controls. I tried to explain this to the Acting Supervisor but he was of the opinion that Amateur Built aircraft have a Type Certificate. He was trying to equate our Special C of A with a Type Certificate but the two are nothing alike.

A Type Certificate defines the aircraft and unless it is amended by an STC the plane may not be modified from the original Type Certificate. The manufacturer initially provided engineering date to the FAA or Transport Canada and on that basis series production was allowed. Type Certified aircraft may even be used for commercial purposes, a privilege that is not extended to Amateur Built aircraft. Transport Canada's position is that each Amateur aircraft is a unique project, and for that reason they do not allow commercial use, they do not issue AD's to this category, and they even extend this to justify not issuing AD's for series produced engines and propellors that are on Amateur aircraft.

The argument might be made that the kit manufacturer issues the ICA, but even if he does supply information, he is legally just a supplier of components. The person who takes the project through the final inspection is legally the manufacturer, and he is allowed to make any changes he wishes during construction. A manufacturer like Vans may give range of operation information for his CNC-manufactured kits, but the builder can even take a Vans fuselage and fit biplane wings, and it can still be inspected and registered. Van's information then has no validity.

The Amateur fleet has many aircraft that have been built from plans, and in the early days the plans were rather rudimentary, and control deflection information was not necessarily given. It is also entirely legal for someone without engineering credentials to design his own one-off plane, and this too will not have any control range information that has any meaning. A large part of the legacy fleet was inspected by Transport Canada themselves, without requiring that the

builder state the control deflections, so subsequent owners do not have anything that could be considered to be an ICA. Any regulation that is going to be applied to Amateur Built aircraft must be appropriate to the whole fleet, not just to the latest cookie-cutter CNC aircraft.

Going back to the wording of the 571 Standard, it certainly looks to me that its requirements cannot be satisfied by an Amateur Built aircraft. If I read the requirement correctly, anyone who signs that he has performed an independent inspection would then be signing fraudulently. Further, his signature will be in the logbook forever, and if there is subsequently an accident you can be certain that the insurer will have questions for him about his decision to sign the logbook. AN C 010 explains that the person holding liability is the person who signed the maintenance release, and this would probably be accepted by Enforcement. However the civil courts do not pay much attention to this, especially if the insurer's lawyers can show that someone signed fraudulently. Even if the person who signed the independent inspection is exonerated he will still bear the cost of his own defense.

In the case of a plane that is jointly owned both hold liability, so if they wish to satisfy this proposed requirement the owner signing the independent inspection is in the same legal position as the owner signing the maintenance release.

It is important to keep in mind that there has been no rash of Amateur Built accidents caused by incorrectly assembled controls, so one might ask what we are being protected from. Pilots are not stupid - they know that they will be PIC during the test flight and they regularly have other builders check critical work. Independent inspections have always been done, but not to the Type Certified aircraft standard.

If Transport Canada does in fact want an independent inspection regulation or standard that can be applied to Amateur Built aircraft it must reflect the reality that it is almost impossible to get someone to sign an Amateur logbook, and it must have requirements that may be met by the entire fleet of Amateur Built aircraft. If not, the alternative is to stop logging this aspect of maintenance or to log sketchily. This makes liars out of honest men, and engenders a disrespect for the regulations. Transport does not have the manpower to check everything so they rely on voluntary compliance. Attempting to impose a requirement that cannot be met is not a great way to run a regulatory organization. If you read this otherwise, then I would appreciate hearing your argument.

Across Canada *RAA Chapters in Action*

RAA London St. Thomas

We extend our thanks to our visitors from the Kent Flying Machines, RAA Chapter 4975, for joining us at our April meeting. It was great to hear what they are up to and renew acquaintances.

We have some exciting RAA events coming soon. June will see us fly or drive into Mark Matthys' grass airstrip and July will be our Annual Club Picnic.

As part of the April meeting's discussion, President Phil presented a progress update on his Sonex project and some of my thoughts about it. He went up to a Sonex gathering at Brampton airport to check out several completed airframes. The gang there were very helpful in explaining the pros and cons of the aircraft and factory.

President Phil read an email from Denny to the point that there seems to be an end to the Skyhopper project and that the Kara-two is a more likely project for Chapter involvement. Gus suggested that the membership give thought about the Skyhopper until a meeting with Denny present. Jim Tyler noted that the Chapter as a whole has had no involvement with the Skyhopper and that Denny and Gary have been the only ones involved and the affair should be ended on that basis. Bill added to what Jim had said by saying that it was his intention to propose at the next meeting the Chapter sell the Skyhopper to Denny and Gary for a nominal sum.

Scarborough-Markham

Bob Stobie obtained a DVD of the famous feature-length aviation movie, *Hell's Angels*. This is the film centred on the combat pilots of WWI, produced and directed by Howard Hughes, starring Jean Harlow, Ben Lyon and James Hall. This is one of those films which we have all heard about, but which many of us had never had the opportunity to watch. Much of the

continued on page 33

Les

The 60's and 70's were a time of revolution.

STARTED BY THE BEATLES as the baby Boom (that's us) hit their stride, we were young, we had hair, and few of us had any assets - so liability and insurance were almost non-considerations. Aviation was glamorous and we all wanted to be a part of it. A new generation of aircraft designers was trying out every possibility. Bede had his ephemeral BD-5; Rutan designed his unconventional canard VW-powered Vari-Eze wth its revolutionary mouldless composite construction method; Sheehan and Jewett commissioned Rutan to design the original Quickie with its Onan generator engine. Colin Chapman of Lotus racing had a prototype of a small canard aircraft powered by an Italian 2 stroke; Monnett designed the 2 stroke Moni that originally had bonded aluminum and foam wings; Davis made his V-tail DA-5; and Michel Colomban of France produced the world's smallest twin engine aircraft, the Cri-Cri, an aluminum

ss Is More

Gunter Malich's Cricket / by Gunter Malich and Gary Wolf

shrink wrap around the pilot, powered by two little 2 strokes mounted on stalks. These were heady days! At the time Gunter Malich of Waterloo Ontario was a young aerospace engineer with Private and Glider licenses and some flying experience with the Canadian Air Force. He saw a film of two Cri-Cri's being flown aerobatically at Oshkosh and became intrigued with Michel Colomban's design. At the time there was an arrangement between Colomban and Zenair who were manufacturing kits and selling plans from their facility in Nobleton Ontario. Colomban had named the plane Cri-Cri, imitating the sound of a cricket's chirping, and Heintz anglicized this and named his kit version the Cricket.

Gunter appreciated the Cricket because it could be built on a budget and it had the presumed redundancy of twin engines. It could be built in a small workshop, and most importantly the wings went on and off quickly so that it could be trailered home to be parked in his garage. Gunter ordered his kit and brought it home to his basement workshop.

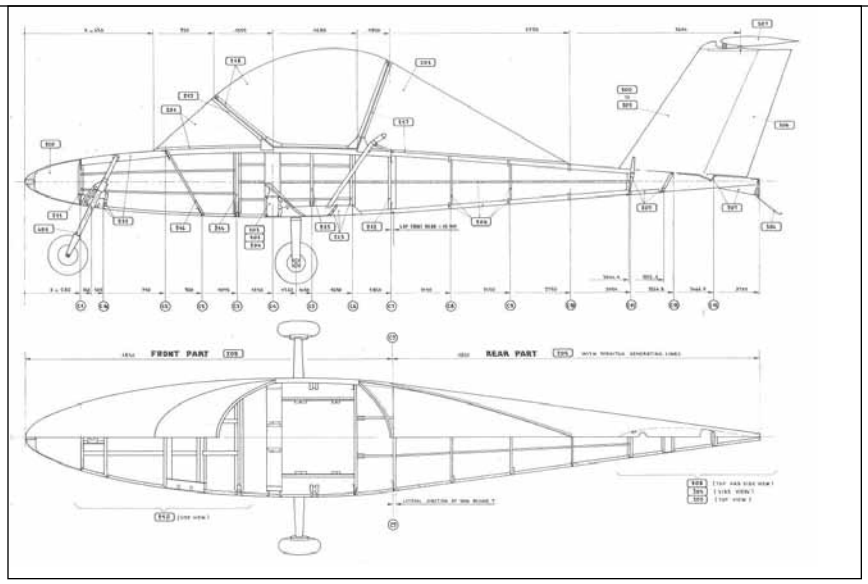
In those days most "kits" were really just a collection of raw materials and a set of plans, but the Heintz kit was better than that; it came with the completed spars and prebent aluminum landing gear hoop, plus all the aluminum and Klegecell foam that would be required to fabricate the many parts. Michel Colomban's plans consisted of a set of very well drafted sheets, and Heintz added a package of addenda that described the changes that he had made to the original Colomban version. Gunter chose to build using a combination of the Colomban and Heintz design elements, and for much of the control system he reverted to the original Colomban plans.

Gunter had previous experience in woodworking so his basement workshop already had a drill press and bandsaw, and the usual hand tools. This became his aircraft factory - very little space was required for a plane with a total wingspan of 16 feet and a wing area of 33 square feet. Building involved a lot of cutting aluminum with hand shears and the bandsaw. The parts with serious bends like the wing skins were supplied already formed in the kit, and a home made bending brake did the rest.

In order to minimize weight, Colomban was very creative in construction methodology. For example, the wing consists of an aluminum spar, a large number of closely spaced foam ribs, and an aluminum skin. In order to make the ribs for the wings, the builder first fabricates an aluminum rib template using the airfoil coordinates in the plans. The template is then overlaid on a piece of ¼" Klegecell foam, which is then sanded to form with a drum sander on the drill press. Except for the aluminum root ribs all ribs are foam.

Gunter built a fixture to hold the spar and ribs in place, and the foam ribs were then bonded to the spar with Hysol 9430 structural epoxy. Colomban specified that all aluminum to be bonded should first be scrubbed with Ajax cleanser, water, and Scotchbrite pads. Following this the ribs were buttered with epoxy and the Zenair-supplied preformed .020" aluminum skins were bonded to the spar/rib combination, using a vacuum bagging approach. The vacuum was produced with a simple shop vacuum; pressure control was maintained with a rheostat, and pressure was monitored with a manometer. To set the 1.5 degree washout Gunter twisted the fixture while the epoxy cured.

The wing is constructed almost



A t-tail positions the pitch control surface in clean air, even at a high pitch angle, so less area is required, resulting in a smaller and lighter part. Given the relative size of the canopy, it's hard to imagine any other possible configuration for the tail. The design abounds in innovations aimed at maximum performance for the smallest possible airframe.

entirely without rivets, producing a very smooth laminar flow skin. The only rivets are at the aluminum root rib, and a few keeper rivets at the bonded trailing edge. Zenair supplied the simple fiberglass layup wingtips that were bonded to the wing structure.

Instead of ailerons, the Cricket has a pair of bottom-hinged Junkers flaperons which run the full span of the wings. The formed .016" aluminum skins wrap around a precarved full length Klegecell foam nosepiece, and a few aluminum ribs transfer the aero loads from the skin to the pivot bearings. Each flaperon was built by bonding the preformed skin to its foam nosepiece while each aluminum rib was riveted in place, plus a few keeper rivets at the bonded trailing edge, and the whole assembly was vacuum bagged whle the epoxy cured. The flaperons are not mass counterbalanced, and for flutter resistance they rely on the stiffness and fit of their control linkages to provide damping.

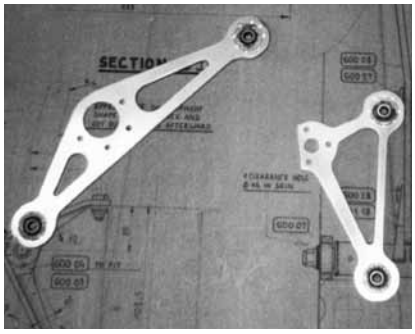
The horizontal tail is interesting in that it is both a t-tail and all-flying, which simplifies construction by eliminating the elevator that would require its own spar and hinging. A t-tail positions the pitch control surface in clean air, even at a high pitch angle, so less area is required, resulting in a smaller and lighter part. The Cricket stabilator is made in the same manner as the wings, with foam ribs, a 6061 aluminum spar and .016"skins. There is a difference between the hinging methods of the CriCri and the Cricket, and Gunter chose the Colomban version that hinges the stabilator on bearings, rather than the Heintz version which uses the bolt rotating in the aluminum vertical fin's spar caps.

The vertical fin has one aluminum spar, closely spaced Klegecell ribs, and a wrap of .020" aluminum sheet. The main spar is somewhat wider and stiffer than usual to take the pitch loads of the t-tail. The top end of the spar is reinforced and fitted with aluminum brackets fitted with the pivot bearings for the stabilator.

The rudder is made from a single piece of .016" aluminum sheet wrapped around ten foam ribs, with epoxy bonding everything including the trailing edge, which has only a few rivets for security. Reinforcement is added at the top and bottom of the rudder's nose to hold the two hinging bolts.

Controls are by torque tube and pushrods for everything except rudder, which is by cable. The rudder pedals are tiny and people with large feet can end up flying in their socks. Ahead of the stick is a fiberglass fuel tank that bulges up between the

Top, the two tiny motors are mounted on stalks. Centre, the wing skin is vacuum bagged after epoxy is applied to the ribs, pictured at bottom. The lack of external rivets makes for a very clean airframe. Opposite, top, Gunter opted for the original spherical bearings for the control linkages as called for by the designer.



pilot's knees. This tank was made long before anyone had thought of adding ethanol to gasoline so anyone flying a Cricket must be very careful to check for alcohol before pouring the gasoline into the tank. Gunter had a supplementary aluminum 2.5 gallon tank built and mounted it behind the seat.

There is a central control stick connected to pushrods for standard roll and pitch control. The flaperons can be offset to "flap settings" using a lever on the right side of the cockpit.

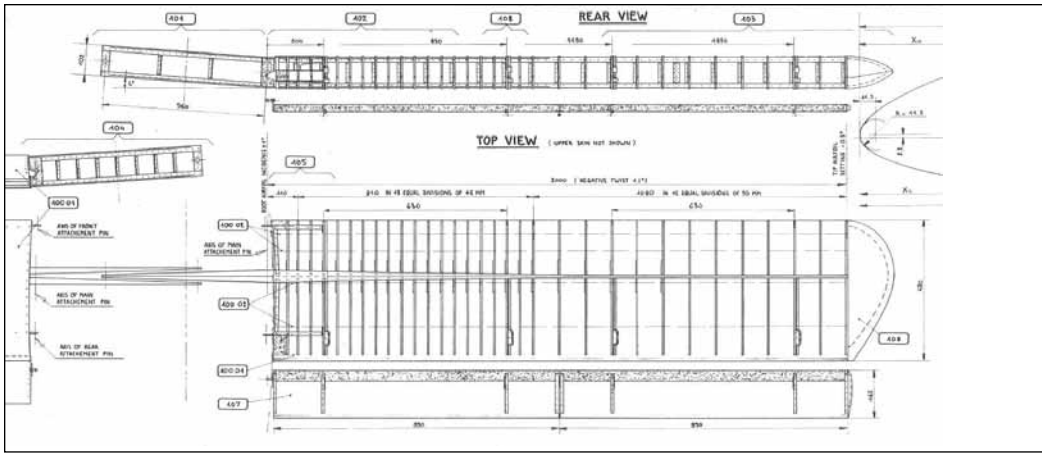
On Gunter's airplane, he chose to follow the original Colomban plans, and used spherical bearings for connecting all control rod ends. The Zenair kit used simple steel bolts riding in an aluminum hole.

The left and right flaperons are connected with a torque tube, and it is mandatory that this be constructed with no flexibility or looseness in its mount. There have been a number of instances of flaperon flutter as a result of loose mounting, and one instance resulted in the death of a pilot. It is highly recommended that the builder follow Colomban's design drawings to ensure a sufficiently stiff mount.

Main landing gear is the typical four bend aluminum plank, with cable operated brakes and tiny 8" wheels and tires. Gunter found that the brakes worked well enough for taxiing but were marginal for reducing speed on rollout. The nose gear has a lower tube telescoping inside the upper, and suspension is by a loop of bungee that takes the suspension loads into the floor. This nosegear is steered by pushrods running forward from the rudder pedals.

The fuselage of the Cricket is in cross section a rectangular aluminum box with bulkheads assembled from shop-formed 020" aluminum channels and angles. The plan view is an airfoil with a long slim tailcone.

The wing is constructed almost entirely without rivets, producing a very smooth laminar flow skin.



Klegecell foam longerons are bonded to the sides as stiffeners. The main fuselage resembles a little rowing pram, and Gunter built it on a table fitted with a series of chipboard frames to keep everything square and true during assembly. Pulled rivets are used to construct this section and also the tailcone that marries to the pram. At the rearmost end of the tailcone there is extra reinforcement for the aerodynamic loads of the empennage. At the front a Zenair supplied fiberglass nosecone was fitted, and this is removable for maintenance.

The pilot sits on a pad on the floor, with his back against an aluminum seatback, padded with thin foam. The seated pilot is enveloped in a hinged clamshell canopy that is reinforced with aluminum tubing to give stiffness but no rollover protection. Gunter made the turtledeck from polycarbonate sheet although some builders have substituted aluminum.

It is the engines that define the Cricket. Initially they were smaller 10 hp 2 strokes but later versions including Gunter's have a pair of 15 hp French JPX engines. These are fitted to the ends of 4130 tubular stalks and the mounting method is unusual. Colomban found that there was so much vibration that he had to design a special vibration-absorbing mount. The result was an engine attachment

Another Cricket, now owned by Eugene Dubowski. This diminutive gem patrols southern Ontario, presumably in cooler weather as his other ride is a Breezy. And yes, a full sized man can actually fit into a Cricket. At 5'-11" and 180 lbs, Eugene describes the fit as "snug". There's no room for baggage - which is probably a good thing; centre of gravity calculations are critical with such a small airframe, and any baggage not carried on the lap would present real difficulties.

Performance

From Gunter's testing records, here are the performance numbers, with all speeds in mph:

Take-off roll	*500'*
Stall, flaps up	*56*
Stall, flaps down	*45*
Vx	*62*
Vy	*75*
Best Glide	*70*
Rotation	*55*
Cruise	*105*
Max flap speed	*80*
RPM (ground static)	*5100*
Idle RPM	*1600 to 1800*
Cruise RPM	*6200*

which cantilevers each engine to its steel mount via four floating pins. These allow flexibility in the vertical and lateral direction, while maintaining rigidity in the longitudinal direction. Gunter found the performance of the vibration mount to be good at higher RPM settings. At idle, the engines did shake quite a bit, so he found it desirable to use a high idle rpm. The reliability of the engines was good from a mechanical point of view but it was not uncommon for an engine to quit at low power settings, likely due to poor mixture control in the pumper carbs.

Both engines are clockwise rotation and each engine has a horrendously loud expansion chamber exhaust that ends where it is best positioned to ensure that the pilot will know if the engine is running. A good set of well-fitted headphones is imperative. Each engine has its own throttle and matching rpms is a combination of watching the tachometers and listening for the beat frequency.

Zenair supplied a pair of 27" fiberglass props that were designed and made in France specifically for the 6100 rpm cruise of the JPX engines. JPX engines are no longer in production but Colomban subsequently recommended 15 hp

Solo engines, and some builders have creatively used jet engines, electric motors, and even large model aircraft engines.

The panel of Gunter Malich's Cricket has basic steam gauges, typical of a plane built at that time. He fitted two tachometers, a quad engine gauge for EGT and CHT, vertical card compass, ball, Hobbs, airspeed, altimeter, and G-meter. A hand-held ICOM radio was mounted to the right side of the fuselage, feeding an antenna on the rear fuselage.

Luggage space is nonexistent, typical of this category of aircraft. Cabin space for the pilot is adequate and no more – Gunter is 5'11" and 155 pounds and found it to be a reasonable fit. Another Cricket owner, Eugene Dubowski is the same height but at 180 pounds he finds the cockpit on the snug side.

Gunter found the flying characteristics to be delightful, without any twitchiness that one might expect of such a tiny airplane.

Payload on a Cricket depends on the care taken during the build. Empty weight is claimed to be 175 pounds. Gunter's plane is registered at 400 pounds and Eugene's is at 440. In either it is necessary to be careful with fuel load, for both gross weight and CG range. The Wortman laminar airfoil has a chord of approximately 2 ft from wing nose to flaperon trailing edge, and the CG range is just 3-3/4". The conventional belly button CG of the pilot cannot apply when his legs are stretched out forward and his upper body is vertical. It is important to do a weight and balance with the pilot in place. A forward CG can mean that the stabilator will not have enough authority at the 45 mph stall speed of a light Cricket. Eugene Dubowski lands somewhat faster than the published stall speed of 45 mph to get

Transport Canada inspector Martina Wassmer, marvelling at the Cricket. Below, Tom Mills dwarfs the Cricket, and a shot of the Cricket's front office.

The Cricket, sans wings, is small enough to fit into a utility trailer. The wings and controls detach with simple pin mechanisms, and the fuel is in the fuselage: removing the wings is a snap.

better flare, and he might be at the front of the CG envelope. A narrow CG range requires attention to placement of weight.

Gunter moved from Ontario to British Columbia during the build process and his final inspection was performed in BC by Terry Elgood. He did his taxi testing at both Boundary Bay and Chilliwack, where he appreciated the quick assembly feature of the Cricket. The wings just plug into the carrythrough and are held in place with pins. Flaperon controls are also plug-ins, requiring no fasteners.

The first flight of Gunter's Cricket was in 1998 at Chilliwack. Gunter found the flying characteristics to be delightful, without any twitchiness that one might expect of such a tiny airplane. The control was brisk and positive, and the plane exhibited positive stability in all axes. Very little rudder was required when turning and the control forces were well balanced. Ground handling was no problem with the tricycle gear and steerable nosewheel. There was no need to use differential engine power for steering.

Gunter did ten hours of flight with his Cricket but never felt comfortable with the reliability of the engines. After moving back to Ontario he then parked it in the rafters of his garage with the expectation that an engine upgrade would become a future development project. He had no intention of selling it but a Cricket enthusiast in Ontario repeatedly contacted him and he finally relented. His separation anxiety was mitigated by the fact that he was also building an RV-8. The plane was flown for a few years by Dave Smith who finally sold it to James Pike who keeps it at a friend's grass field near Brampton. James now flies the Cricket cross country and has been a regular at the Northern Region RAA Fly-in and many Ontario airfields.

James enjoys the flying characteristics and reports a similar cruise speed. The plane achieves a 7-800 fpm climb at 75 mph. Single engine operation allows level flight but there is not enough climb to do a go-around. James finds that the tiny wheels and the length of the grass on his friend's 1700 ft strip determine the length of the plane's takeoff roll, always a lot longer than on pavement. James is accustomed to the vagaries of tiny two stroke engines - his collection includes a pair of German cabin scooters, a Messerschmitt and a Heinkel.

The other Cricket currently flying in Canada is owned by Eugene Dubowski who bought it from its Hamilton-area builder. Eugene now patrols the southern part of his province when he is not flying his Breezy. Eugene owns another Cricket, currently non-flying, that might be the very first one built by the Zenair factory. Eugene has a taste for eclectic aircraft, and his collection also includes a Bensen gyrocopter.

Michel Colomban will no longer sell plans into North America, for fear of lawsuits on this continent. However there are many enthusiasts in Europe still building and flying his design. No kits are being produced but some parts are available to support plansbuilders. A set of plans costs in the range of 500 Euros. There is an enthusiastic group of builders and pilots on the Yahoo forum devoted to this plane, who exchange ideas and parts, and right now a batch of canopies is being made for the next group of builders. A determined enthusiast could buy a set of unused second hand plans and a new canopy but he would have to hot wire his own foam parts and form his own wing and tail skins.

Gunter Malich offers three overriding thoughts:
1) Remarkable plane, but needs better engines.
2) Very inexpensive to own, given its low fuel consumption, and ability to store easily at home.
3) Make sure you follow the Colomban design on all parts of the control system. There have been several instances of flutter on aircraft that had slop in their linkages.

Gunter is now working on the firewall forward of his RV-8 and expects shortly to be booking his final inspection. He will soon be attending fly-ins with the RV-8 but nothing can equal the attention that a Cricket attracts. **R**

Dornier Restoration

by Bruce Prior

RAA Chapter 85 Project Visit
Eric Munzer's Dornier DO-27-B2 Restoration

ON APRIL 20, Chapter members went to Eric and Susan Munzer's home in South Langley to see his Dornier DO-27-B2 restoration project. Eric has been working on this restoration for about 25 years, and now the time is near for it to be moved to Langley Airport for assembly and flight.

Susan had put out a table of delectable snacks, drinks and coffee. The pastry cookies were wonderful! We all made multiple trips to the food table, but still found a little time to look at the airplane, too.

Susan took the ladies for a tour of her vegetable and flower garden, and they also visited her workshop above Eric's airplane shop, where she does crafts and develops preschool teaching aids.

The fuselage is on its gear and the tail is raised on a support to provide clearance for Eric's car. Eric explained that he built the shop-garage around the Dornier; it looks like it was shoehorned into place! Eric invited us to climb aboard the Dornier and many of us did. The Dornier 27 is a BIG airplane. It's a tough climb up into the cockpit and rear seat room allows a passenger to stretch legs out fully without bumping the front seat (Air Canada could learn from this...). The huge side windows offer amazing visibility for passengers.

The engine was on display on its stand. It's a 270 hp Lycoming GO-480-B1A6 with geared prop drive and is ready to go. A new propeller is hidden under Eric's bed and hasn't seen the light of day in many years. We asked to see it but Eric insisted that it was too difficult to move it and it would stay there under the bed until it was needed. The completed wings are stored at Eric's hangar at Langley Airport.

All the flying control surfaces are completed and hanging from the ceiling in a neat row. The interior of the fuselage appears to be complete, including upholstered seats in front and rear. The instrument panel is finished and sports a glass panel on the pilot's side. A highlight is the wooden trim wheel handmade by Colin Walker based on remnants of the original wheel.

The DO-27's MTOW is 3460 lb, and normal cruising speed is about 130 kt. It was originally intended to have 6 seats but Eric's is fitted as a roomy 4-place. The wingspan is 39.4 ft, aircraft length is 31.5 ft and height is 11.5 ft. Landing distance at gross weight under STOL operation with 35 deg flaps is 585 ft (1230 ft to clear 50 ft obstacle). Dual brakes and dual controls are the distinguishing feature of the B2 model.

Left: a flying DO-27; centre, the panel is a tad more modern than original; a huge EFIS will make life easy for the pilot. Right, Eric Munzer (L) enthuses about his project to chapter members.

In his youth, Eric was a pilot in the Swiss Air Force. He flew (in order) the Buecker Jungmann, the Buecker Jungmeister, the Pilatus P3 (father of Pilatus PC7 and PC9) and the DeHavilland Vampire. He has been a Chapter 85 member for many years and has built a Bede 4, which he still flies. His plan for the Dornier is to assemble it at the airport this year and then fly it for at least a year or so. Then he will reassess the joys and costs of flying it. So if you are yearning for a Dornier DO-27, check with Eric in a couple of years--he may have just what you want. You won't find a nicer one around anywhere. All you will need to do is talk him into parting with it! **R**

***Bruce Prior** is very active in Chapter 85. A long time owner of a Cessna 190, he now flies a 152 with his wife Jean. **Eric Munzer** is a long time member of the Vancouver chapter and is a former pilot in the Swiss Air Force. He has also built an immaculate BD-4.*

Time Saving Tips

Why reinvent the wheel?/ by Jim Stunden

RAA members watch as Stan McClure demonstrates rib construction of his Colby Starlet. Goderich, 2005.

Fibreglass

The process that adds the most weight is probably fibreglass.

Polyester: Does not bond well to wood and will not bond to epoxy. Polyester has a short working time but has a strong odor. It can be both waxed and/or unwaxed. The unwaxed polyester does not cure. It is used for doing multiple layers. Waxed polyester does cure and needs to be sanded between separate coats.

Epoxy: West system is a trade name. It bonds well and can be bonded to polyester. In my opinion, it does everything better and does not have an odor. It is easier to work with but, of course, costs more. You can use epoxy for your hull and it can be thinned with acetone or lacquer thinner; however, you lose strength and water resistance by the amount thinned. If you try to apply very light cloth (less than 6oz), without thinning the resin, it will ball up, pull the weave and be difficult to use. Years ago I gave up using polyester resin and went to a 6 ounce cloth. Epoxy resin was new back then and I did not know you could thin it. Now you do!

Paint

I used to think that the latest high tech processes were better but sometimes there are advantages to old school processes

All metal wants to oxidize, so by painting it you slow down the process to varying degrees; you do not stop it. The traditional painting process involves having the primer sacrifice before the metal. When the metal oxidizes, the paint forms bubbles and, therefore, is easy to see and repair. The more modern processes have really tough paint that does not scratch or bubble. They are more like plastic. Corrosion starts underneath the finish and moves towards the surface. You do not see it until it is really bad. RV's have their engine mount powder coated from the factory. The builders tell me that there is controversy now about corrosion occurring underneath the coating. Time will tell.

Spray can paint is convenient but I find that the paint fades with time. It is not durable. Zinc chromate bonds really well when properly applied but it is hard to get now. I do not know if it is the best, but I like to use Polyurethane paint, Imron or Endura. It is a two part epoxy. Car people use it for under carriage parts. It is chemical resistant and durable. There is one primer coat and one top coat. It is not good for your health. Labels on most of the chemical containers involved in airplane building read that they cause health problems.

I like to prepare my metal parts in batches: collect them up and sand blast them, then handle them with rubber gloves and paint them right away.

I use old coat hangars, cut and bent, to hang parts. You will have a lot of small parts, so I string them on a suspended ladder or on garage tracks. I have used a variety of spray guns. At a small hobby shop you can buy a Bradner paint gun. This has become a favorite because it does not waste any paint. It is really good for painting small metal parts holding about 1ounce of paint it will easily paint an Osprey gear leg on one fill.

To paint the hawk on the tail, make a slide for a projector and project the slide onto the tail. Move the projector about 6 feet away to get the size that you want and paint by numbers. Reverse the slide and repeat on the opposite side.

Scarf Joints

Make your scarf joints using a hand plane, router or saw blade for Sitka spruce. Sitka spruce should not be sanded prior to gluing as it pulls the resin out of the wood and interferes with the glue joint. Birch plywood should be sanded.

Round the corners in sheet metal. Do not leave sharp corners especially on the inside of parts because they could cause stress cracks. Sharp corners will cut you, scratch other parts, and add weight. Airplanes should be built light. 1/16 inch and 3/32 inch plywood can be cut with a box cutter and a straight edge.

A light weight starter saves 8 lbs. A 10 amp alternator will save weight. Riding a bike to the airport saves gas and 15lbs.

Welding

Welding jigs can be made with a sheet of plywood and some common nails to hold pieces (EAA Video Webinar). A piece of stainless sheet can be used for a heat shield.

Tools

You can build only using hand tools like a hack saw and file with some other common tools. Some power equipment will really speed things up. There is no end to what you can buy. Some of the more common equipment I decided to use:

Table Saw - This will cut all your wood, aluminum, 4130 steel, and work as a disc sander. A carbide tipped blade will stay sharp and cut all your wood and aluminum. Carbide tipped blades tend to be wide blades though and waste a lot of wood when ripping long boards with multiple passes; maybe an eighth of an inch per cut. A cut off wheel for 4130 steel can be installed or a sanding disc for wood. The down side of this set up is that it may not always be that convenient to switch attachments.

A Drill Press with a tube jig (EAA Books).

A band saw - A band saw with a bi-metal blade and 14 teeth/inch will cut aluminum all day at 400 ft/min. A jack shaft will slow it down if it is too fast.

Small 6 inch Belt Sander - A belt sander can be used with one hand. A 14 inch belt is only 6 inches long.

Scarfing Machine - You can craft an electric motor with a sanding drum to make scarf joints. It is quick and easy. I made all my scarf joints with a hand plane. You can get quite fast at it. I can do a better job with a hand plane and for me it is hard to say which method is faster. You have to build the tool first.

Work Benches - I built the work benches in the EAA books. They are made to go through a standard door and are on wheels. My florescent lights are portable and hang on chains so they are easily adjustable. I can now easily move my shop and lights. I never have to build benches or wire lights again; one of my greatest achievements.

Air Compressor - 3 HP will do everything well except sand blast.

Sand Blaster – A sand blaster can clean metal parts before painting. My experience is that even a cabinet style sand blaster will make a mess. Dust will go everywhere and you will need a lot of air. I have seen people mount them on wheels and push them outside. The abrasive will not be very effective below 110 pounds air pressure. 140 pounds of air pressure is good. If you have a self-serve U-Blast in your area, I would recommend going there. It cost me about $1 per minute and is the best way to prepare my non-aluminum metal parts before painting.

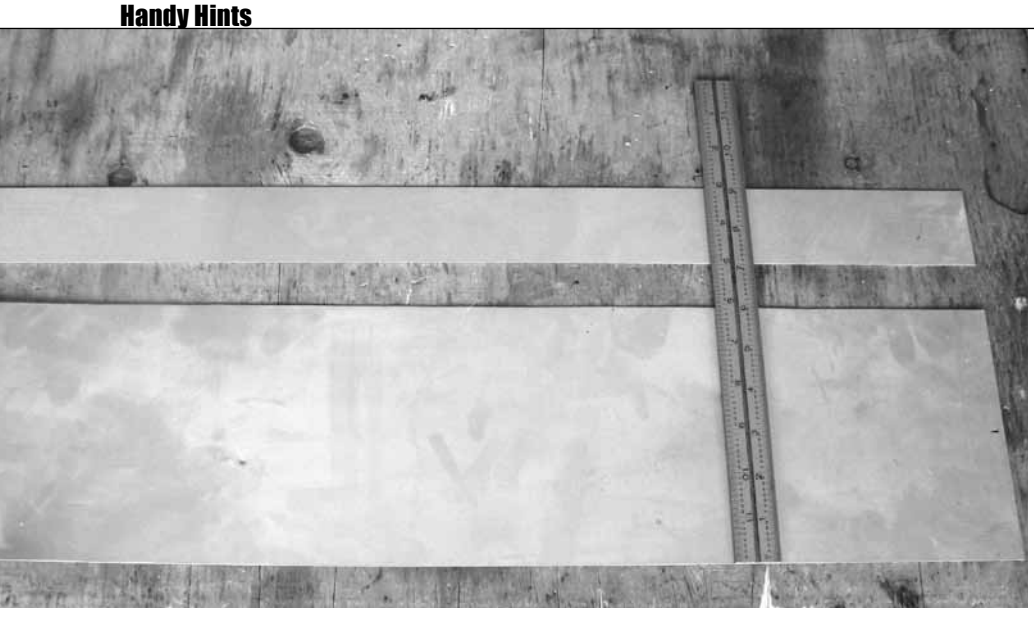
Jim Stunden *is a member of Chapter 85, and has built an Osprey II Amphibious aircraft. He learned to fly in 1974 at the age of 16, has most endorsements and has flown Douglas, Lockheed, Airbus and Boeing aircraft. A professional pilot since 1976, he has accumulated 20,000 hours in his logbook, including 600 hours in a Fly Baby.*

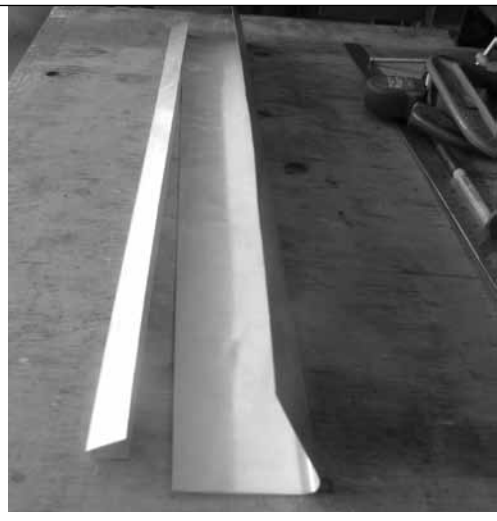
President's Message cont'd from page 2

ESTATE PLANNING

No one likes to think that far ahead but shuffling off this mortal coil while you still own an aircraft leaves the family with a paperwork and storage burden. If the plane goes out of annual there is no one except an AME who can sign for it, so the window of opportunity for test flights by potential buyers might be brief. To transfer the registration will mean sending to Transport Canada a death certificate, a copy of the will, a letter from the executor, a photo of the data plate, and more, so expect delays in the transfer. An Advanced Ultralight will also require a Fit for Flight form signed by the executor or whoever Transport Canada will allow. Contrast this with how easy it is while the owner is alive - just sign the registration and take the cheque.

Expect that any buyer willing to put up with the delays will offer a lowball price, and meanwhile the cost of hangarage and likely also the insurance will continue. An airplane that cannot be flown is a liability, so it is a lot easier on the family if the sale takes place while the owner is able to handle the paperwork. In the past few years I have been contacted on this matter by the widows of several members and it has never been easy.





Easy Lift Strut Fittings

How would you like an almost free 5 mph speed increase in an afternoon?

ROUND LIFT STRUTS are notoriously draggy, and it has been proven many times that an airfoil shaped lift strut will increase speed. The problem is that to retrofit aluminum airfoil section lift struts can cost in the neighbourhood of a thousand dollars, and much of this is for the shipping of the overlength material. You would also have to make new end fittings and reset your dihedral. The same drag reduction may be achieved by fairing your existing round struts with thin aluminum sheet formed to the airfoil shape, and this can be done in an afternoon without dismantling anything.

The best material to make lift strut fairings is .016″ or .020″ aluminum 6061T6 sheet. Anyone who has built a Zenith, Bushcaddy, or Murphy will undoubtedly have leftover pieces that could be used. The blanks must be sheared to 6″ and 2″ widths if the struts are in the range of 1″ to 1-1/4″ diameter. For larger struts the leading edge blanks could be increased to 8″ width, and the trailing edge will remain at 2″. Four ft lengths are easy to work with and if you buy a sheet, you will need 4 ft x 6 (or 7) ft for the average light plane.

Brake the trailing edges to about thirty degrees included angle. The forward fairing blank may be bent in three steps of about thirty degrees each to get a more rounded nose. Then squash the blank down with a full length 2 x 4 to attain the airfoil shape.

Fit the blanks to the lift struts using duct tape to hold everything in place while positioning for drilling. Cutouts may be necessary to clear bolts and jury struts. One problem is to keep the fairing sections in plane with each other. Gerry Poulton kept his seams straight with the trailing edge, running it over the gap to keep both fairings aligned.

Drill and cleco, taking care not to

Above: Two pieces of .016" aluminum, length to fit your bending brake. In this case the chords are 6" and 2", and 2 ft length Top down, right: 1. The 6" nose skin needs a few shallow bends to approximate a nose radius. The 2" trailing edge skin needs a sharp bend that is nearly closed. 2. Slip a tube the same size as the lift strut inside the nose skin and squash the skin down with a plank of metal wood, or MDF, as available. 3. Preassemble the parts over a tube and wrap with tape. You may now drill and cleco for rivets.

scarf the lift struts, then dismantle to deburr the drilled holes. Reinstall with 1/8" Avex pulled rivets and the job is done. Jay Davis reported an 8 mph increase on the test flight after installing these fairings on C-IGGY. Gerry Poulton got an immediate 5 mph on his amphib Zenith 701 with the investment of less than $50 and a few hours work. He also noticed that the flaperons felt more responsive, likely because there is less turbulence coming off the lift struts.

Note - the weight of the material will be in the range of 6 pounds, so if you are adding fairings to a registered Amateur-Built plane, you should amend your weight and balance to be certain that you remain legal.

Basic and Advanced ultralights for some unfathomable Transport Canada reason do not require a weight and balance, but there is still the requirement to meet the minimum useful load. If your plane is borderline legal, better calculate the effect of this weight before adding anything to your plane. Also for an Advanced UL, you had better check with your manufacturer to see that you would not be breaking out of his type definition. / Gary Wolf

The cross section shows the optimal fineness ratio for low drag.

Chapters / continued from page 21

acting was amateurish, contrived and wooden, with the possible exception of Harlow. Some of the events were rather improbable; e.g. a low-time pilot steps into a twin (Dornier?) for the first time for a night flight over enemy territory. Some of the dogfight sequences were quite wonderful. It was great fun to see this film, and a reminder as to just how much film-making has advanced in the intervening years. The film was 127 minutes long. It proved that showing a feature film at one of our meetings, with a short break for coffee in the middle, is entirely feasible. Ed Weeks tells us that the Kawartha Lakes Flying Club has arranged a visit to Trenton to visit the Museum on July 15. We have permission to fly into Mountain View and the Air Force has arranged for buses to transport everyone to the Museum and back to Mountain View afterwards. They are arranging refreshments. The Oshawa and Peterborough COPA chapters have also been invited. Firm numbers have to be established. Ed Weeks will keep Bob Stobie informed.

Ottawa/KARS

On Saturday March 2nd the Ottawa/Kars Chapter 4928 held its annual winter fly-in at the Kars airfield. Weather was overcast, however six aircraft and one helicopter arrived. The chapter's members put on an excellent feast for all attending, including chili, Irish stew, hot dogs and beans, plus a large variety of deserts.

This was the most financially successful winter fly-in for the club, and more importantly we shared stories and friendships with good friends and some new visitors. All of the visiting pilots commented on the warm reception and on our excellent hospitality. Again, this was a great start to this year.

Chapter 85 Vancouver

Our Annual Awards Banquet was held on March 20 at the Delta Town and Country Inn.

We managed to recruit Col (RET) George Miller, as a speaker. George has recently been the manager of Langley Municipal Airport but formerly a member of the Canadian Armed Forces and among other things, serving in the European theater during the cold war. George delivered an inspiring presentation on flying the CF-104 Starfighter during tactical nuclear training. The presentation was accompanied with excellent pictures taken by George during his training. It was a great success and George deserves much appreciation for his contribution to our event.

The Most Valuable Member award was presented to John de Visser for his outstanding contribution to the chapter in 2012. Tim Nicholas received the Ira Jameson (The Unsung Hero Award) and Jill Colley received the Women of the Year Award. Other winners included, Peter Whittaker for completing a homebuilt aircraft, Helmut Gebenus, the Craftsmanship Award for repairing the wood structure of the Turbi. Other winners included Beat Myers, George Gregory and Bruce Prior. A very pleasant evening was had by all ▶

in attendance and participants stayed to exchange aviation anecdotes.

The Chapter has been investigating a major project for members. For this, Eric Munzer and Gordon Hindle introduced and presented the topic of the auto gyrocopter at the monthly meeting in February, March and April. Eric is interested in building an ultra light gyrocopter and our chapter has been looking for a major project.

However after much discussion with Transport Canada, Eric concluded the ultralight gyrocopter would not be realistic to build as a project. These aircraft are not approved in Canada and more expensive two seat machines are out of the range of the budget for the chapter to build as a project. The idea of building a gyrocopter was sadly abandoned. However, not to be discouraged, the chapter will investigate other potential projects for the future.

Work on the Turbi continued throughout March. Once the wing was reattached and the controls were reconnected, some moderate maintenance was completed on the engine by Gerard Van Dijk. All proper documentation has been submitted and a maintenance release has been signed. Raymond Colley, our aircraft chairman has organized a group of 9-10 people who wish to fly the airplane over the summer. These individuals will pay 350 dollars up front to cover the cost of flying and maintaining the airplane. This will allow the chapter to justify ownership of the aircraft.

On Saturday April 20, Eric Munzer hosted an open house at his residence to provide an opportunity for Chapter members to view his restoration project, a Dornier DO 27-B2. (Please see article by Bruce Prior in this issue of the Turn and Bank) Eric has been working on his project for 15 years and is soon intending to move it to Langley airport for final assembly. The visit was attended by 15 members and refreshments were provided and served by Eric and his wife Susan. The chapter wishes to thank Eric and Susan for the opportunity to view the airplane and for being so generous in sharing their time to meet with the chapter.

Finally, and with great sadness, most members will know that Mary Swain recently passed away in hospital due to serious illness. Mary and her husband Tony are stalwarts of the aviation community in Canada and of Delta Air Park specifically for many years. A major Celebration of Life will be held at the Airpark on Sunday June 2 and it is anticipated that many people will be in attendance.

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RAA B.C. Regional Director NOMINATION FORM 2013

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To Nominate Regional Director, fill in name

Nomination for _____B.C. Regional Director

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

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

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

Note - Five Nominators are required; it is good practice to obtain several additional nominators in case of an inadvertent lapsed membership by a nominator.

Complete the above, and forward to -
RAA Headquarters, Waterloo Airport, Breslau ON N0B 1M0.
email: raa@raa.ca

Unstuck / continued from page 11

snow, ice and slush on the runway, the warm March sun had finally melted it down to clear, dry pavement. And there I was with wooden toboggans lashed to my wheels. I signaled to Bill to land first. He'd be more use to me on the ground if things went badly. He'd also have trouble landing after me if I cracked up on touch down. I crossed mid field and joined right downwind for runway 25. Some cloud on the horizon spared me landing directly into the setting sun. Bill had backtracked and was clear of the runway as I turned final. Several thoughts occurred to me as I approached my landing. I had no idea what my stall speed was so I wanted to stay at or above 55 mph until just above the deck. I couldn't risk a forward slip that might set the toboggans fluttering or disrupt the airflow over the tail.

Guess what my three nephews got for Christmas the next December...

High snowbanks loomed on either side of the runway, so failure to hold the centre-line might result in a broken wing or worse. I had taken an extended downwind to give Bill time to get off the runway. I now used the extended final to bleed off altitude early and then "dragged it in" under moderate power with a nose high attitude. About one foot above the pavement I added a touch of power to slow my descent rate. The mains touched with a great screech of wood grinding on asphalt. Despite instantly chopping the power and full rear stick, the nose toboggan smacked down pretty firmly and we skidded to a stop in about 50 feet. Engine off, fuel off, belt off. No sign of fire. The toboggans and lashings were in pretty good shape. The utility knife made short work of slashing lashings and the Beaver was back on wheels and clear of the runway minutes later. And the EGT gauge was right back to normal.

Guess what my three nephews got for Christmas the next December!

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 Saturday (and second Sat. as well) each month 9:00 am at the restaurant at Lake Simcoe Regional Airport Contact Secretary Dave Evans 705 728 8742E-mail david.evans2@sympatico.ca

COBDEN: Third Thursday of the month at the Cobden airfield clubhouse 20:00 hrs. President - Grantley Este 613 432 0797 este@compmore.net

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 7:00 pm at various locations. Contact President Paul Perry 519-351-6251 pkperry@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 Phil Hicks p.hicks@tvdsb.on.ca 519-452-0986

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 613-858-7333 bill@ncf.ca

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 7:30 pm at Hangar 41 on north end of Brampton Airport. Contact: President Fred Grootarz - Tel: (905) 212-9333, Cell: (647) 290-9170; e-mail: fred@acronav.com

TORONTO ROTORCRAFT CLUB: Meets

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

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

MANITOBA

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

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

SASKATCHEWAN

Chapter 4901 North Saskatchewan. Meetings: Second Tuesday of the month 7:30pm Prairie Partners Aero Club Martensville, Sk. info at www.raa4901.com. 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 drennie@hemisphere-eng.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 Mekong Restaurant.1030 Harvey Ave. Dinner at 6:00pm, meeting at 7:30pm Contact President, Cameron Bottrill 250-558-5551 moneypit@uniserve.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: John Macready jmacready@shaw.ca. Website www.raa85.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 - zzA-LASKA 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 Gerry at 250-782-4707 or Heath at 250-785-4758.

Chapter executives, please advise of changes as they occur. For further information regarding chapter activities contact RAA Canada, Waterloo Airport, Breslau ON N0B 1M0 Telephone: 519-648-3030 *Member's Toll Free line: 1-800-387-1028*
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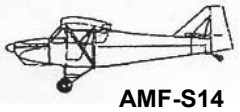

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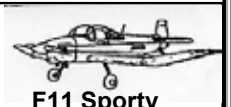

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Recreational Aircraft Association Canada
President: Gary Wolf / Treasurer: Wayne Hadath

Recreational Flyer Magazine

Registration Mail Publication No. 09869

Contributing Editors:
Gary Wolf, Don Dutton, George Gregory, Wayne Hadath, Tom Martin
Art Director and Layout: George Gregory. Printed by Rose Printing Orillia, ON

The Recreational Flyer is published bi-monthly by the Recreational Aircraft Association Publishing Company, Waterloo Airport, Breslau ON N0B 1M0. Toll Free line: 1-800-387 1028 email: raa@zing-net.ca. Purchased separately, membership in RAA Canada is $35.00 per year, subscription to Rec Flyer is $35.00 per year; subscribers are elegible for reduced membership fees of $15.00 per year. Rec Flyer to have a single issue price is $6.95.

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

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

2002 CP 301-A Emeraude. First flew June 2003. TTAF 50 hrs. 0 290G Lycoming 396 hrs. since major. Sensenich metal prop inspected and refurbished by Hope Aero June 15/09. Dual controls (pedals, sticks throttle) custom interior. Annual due May 2012. Always kept in a hanger. Contact Jim Demerling 519-348-9655 (Ont.) $19,900

FOR SALE: Zenith CH601XL , airframe 80% complete, controls installed. Canopy mold. No landing gear. Subaru 2.2L no re-drive. $3000 or best offer. Call 705 279 4399 or 519 351 6251

EUROPA XS monowheel with Rotax 914 turbo engine and Airmaster constant speed prop, 87 hrs total time. VFR panel with Mode C transponder, KMG GPS, Becker 720 com with intercom and headsets. This is a fast and efficient cross country aircraft with low fuel consumption. Asking $65K, no reasonable offer refused. Contact Hazel Peregrym at 250-672-5587 snowgoose@telus.net

ENGINE - LYCOMING 0-320 A3A, 968 SMOH, with starter, generator, mags,

to remove from flying a/c, $9000 + shipping. 905.878.4017, mohne40@yahoo.ca

Bendix/King KY 97A vhf com radio with shelf and wiring harness. ($1500). Collins transponder (mode 'C') with antenna, shelf and wiring harness ($1100). I-com 4 place intercom (with music option) ,with shelf, wiring harness and head phones jacks. ($100). 2, 4 point hooker harness. ($ 100 ea. set) Contact Norm at graham110@rogers.com for details.

VAL 760 TRANSCEIVER, SN. 04275. Worked when removed for panel upgrade. Asking $600 obo. Comes with mounting tray and connector. Estimated mailing cost $35. Direct inquiries to blehmann@pris.ca

CESSNA RT-459A TRANSPONDER, PART No. 41470-1028, SN 6993, 14V Unit, (for use in 28V aircraft use dropping resistor on mounting) Authorized release dated 11-Jul-13. Worked when removed for panel upgrade. Asking $600 obo. Comes with tray and connector. Estimated mailing cost $35. Direct inquiries to blehmann@pris.ca
Tail wheel assembly complete, New, off Rebel, also main wheels. $350 for all. Chris 1-866-733-8432

1960 Bellanca Cruisemaster 2555 TT 260 HP IO-470F A fast aircraft with good short field performance and triple tail style.Full size nosewheel suitable for grass fields.1000 mile range. Gami injectors, engine analyser,white polyurethane paint . Otherwise stock. Have paperwork to turn it into an amateur built.
$65,000.00 Richard 705-652-6307

RV6 Project for sale - sliding canopy taildragger model. Wings and tail surfaces complete, fuselage is on metal jig 50% complete and ready for skinning. Jig included - readily transportable. Started in 1995, lost medical. All parts from the original kit are primed and ready for assembly. $20,000 complete. Required sheet metal tools available - negotiable. Available: the ideal engine for the RV-6 - Lycoming 0320 160 hp (stored with preservative oil) low time (120 hours) since remanufacture by Lycoming. Call for viewing at Waterloo Regional Airport. Photos of parts available on request. Peter Hanna 905-629-8836 Mississauga peterdhanna@gmail.com or Terry Jantzi 519-748-1817 Kitchener tjantzi@p3tec.com

ACEY DEUCY 2 seat open cockpit project. Fabric covering completed and painted. Engine Continental 0200A rebuilt with logs. New Warp Drive 3 blade ground adjustable prop. B and C Light weight starter and alternator. Full instruments and guages in rear cockpit basic flight instruments in front cockpit. Full electrics. Aluminum fuel tank. Radio included. ELT included. Gross weight 1230lbs. Estimated 50hours to final inspection. Asking $18000. Will sell only as a package. Many extras. 905-786-2482.
FOR SALE: Advanced Flight Systems Engine information system. Some probes, fuel flow. $750 OBO. Chris 1-866-733-8432

Stinson 108-3, a classic aircraft for sale. Airframe 2365TT. Franklin 165 hp engine 998 TT, 82 hours since top overhaul. Fabric in 2005, float kit, wheel pants, spare engine parts, 2 metal props - seaplane and cruise. 30K OBO. 250-991-7958 Quesnel BC.

1964 Corben Baby Ace . 600 TTAF. Recovered and TOH in 2000. A65. Metal Prop. Great flyer. Can be flown with ultra-light permit. $15000. Gary Wallace 519-223-0368 Hangared in Roseville, Ontario.

LYCOMING 0-290-D ENGINE. Comes with: alternator, gascolator, starter, cooling shroud, newly rebuilt carb, 6 bolt pattern prop extension, logs and maintenance manual. $10,000. Bendix / King KY 97A VHF com-radio with shelf and wiring harness. $1500. Collins mode 'C' transponder with antenna and wiring harness. $1100. Two sets of 4 point 'Hooker harnesses' seat belts. $100 each..Please contact Norm @ graham110@rogers.com.

FIBERGLASS FLOATS-1500 lb+, all bulkheads installed, just ends need finishing, can be finished as amphibs or straight floats- complete with aluminum streamline spreader bars, rigging tubing,fittings. 15' 2" L x 22"W at step- $1500, pictures available.- Also MA-4 SPA carb set up for 125 HP with new float and pump plunger. Includes aluminum airbox- $200. Bob 519-271-9575 trirmb@cyg.net. Stratford ON Fiberglass floats-1500 lb+, all bulkheads installed, just ends need finishing, can be finished as amphibs or straight floats- complete with aluminum streamline spreader bars, rigging tubing,fittings. 15' 2" L x 22"W at step- $1500, pictures available.- Also MA-4 SPA carb set up for 125 HP with new float and pump plunger. Includes aluminum airbox- $200. Bob 519-271-9575 trirmb@cyg.net. Stratford ON

Bakeng Duce, built in 2001. Low time airframe with 180 hour O-290 D2 Lycoming. Good compression on all cylinders. Oil filter, oil separator, Cleveland main wheels, stainless exhaust. Aymar-Demuth wood prop 72 x 52. 100 mph at 2450 rpms. This is an easy flyer that is not aerobatic. Asking $15,500 or make an offer. david.evans2@sympatico.ca. Plane is in Barrie Ontario.

65hp Franklin engine for sale, zero time since major rebuild. Needs carb. $2200. Located in Orangeville, Ontario. 519-925-3639 Pat pjb@ornithopter-pilot.com

CLEANING OUT THE HANGAR! Continental C-85 crankcase and rear case. Champ tail surfaces, some PA-18 tail surfaces, PA-18 gas tanks, Scott tailwheel for Cessna 180. Box of new O-200 parts including rings, pins and valves.Sensenich 74-45 prop, 2 SL 13623 pistons low time. 8 pieces SL68763 bearings, low time. 8 pieces 65006 chrome pushrod tubes. 8 pieces O-320 pushrod

tubes. 8 pieces (2 sets) O-235 anodized pipes.4 pieces O-235 intake pipes. 3 pieces O-235 oil sumps.10 pieces O-200 intake pipes. 8 pieces O-200 pushrod tube housings. 2 pieces O-200? intake manifolds. 16 O-200 lifter cores.24 pushrod tubes. 3 O-320 vacuum pump gears and housings. alternator support and 2 adjustable brackets.2 mag housings. 8 O-290 steel cylinders. O-290 GPU bottom end. 6 pieces Bendix magneto cores. 3 O-200 box covers. Met-L-Pro S/N 17207. flyings@shaw.ca

Lyc. 0-235-L2C 115 HP 0 time SMOH $7,450.00 OBO. and Lyc. 0-290-D 125 HP 0 time SMOH $7,750.00 OBO. Both of these engines are for Experimental Aircraft. Crank was checked in a certified shop and is good but not certified. Cylinders honed and new pistons and rings. All new bearings. These parts are certified parts.

Lycoming O-290 D that throws oil. This engine is quite rebuildable and is going cheap. make an offer.

Super Cub in O-M category. This plane is in beautiful shape and has been flown for only 74 hours by a careful pilot. Photos available. flyings@shaw.ca

Cavalier 102.5, "Aero Sport Power" O-320-B2B; 152 TTSN. Sensenich metal prop. Airframe was totally rebuilt in 1997; 1750# GW, 622 lb useful load; VFR instruments + Garman GTX 327 TXP Mode C & Val Radio; Trutrak Turn & Bank; Kept in heated hangar; 8/10 inside and out. $29,000 OBO. cavalier102@uniserve.com or 250-558-5551. Ask for Cameron.

KR 2 Trigear, 2180 cc Great Planes VW, 3.5 gph @ 130mph cruise, TTAE/TTAF 54 int/ext 10/10 $15000 call Ray Larson {905}892-6389 (SEE PIC)

McCauley metal prop, markings - DES 1 C60, DTM 7557 M1, sn# 735006 -history-unknown. Please contact JOHN SHYKULA 403-607-8539

One pair of Aeronca Champ wings with a fuel tank in each. They were briefly on a Volmer Sportsman and have been recovered in Ceconite. The wings include the ailerons and cabling. $3000. Located in Westbank BC. 250-768-2346 dgupton@shaw.ca

O-290 G engine converted to D with dual mags and O-290 cylinders. Includes starter, generator, carb, and Sensenich metal tractor prop. Rebuilt 12 hours ago, this is a very nice running engine. $7500 OBO. 250-768-2346 dgupton@shaw.ca Westbank BC

GOOD HOME WANTED FOR TRUSTY STEED ! Zenith CH300 with 0-320 Power Plant- uses 5 gph at 100 mph. Nav/Strobes/Beacon/Toebrakes. Excellent viewing of countryside. I was denied by DOT on Medical Grounds so my plane is now for sale.$16,900 . albanus@rogers.com 905-686-7546.

Lycoming 0-235 C1BX 115 HP ZERO (0) HOUR SINCE (0M) OWNER MAINTENANCE 2013. 1456.1 SMOH 446.4 Stoh on tbo of 2 400 h. come with carburetor starter and mags it has flown 60.8 h. last summer 2012. Presently flyable on my PA 22-108. Also Sensenich 76 AM2-48 (74 x 48) never been repitched. Reason forsale: upgrading to 0-320A2B Price: $7,000 OBO. Paul Gagnon 819-429-6022

"New" 2011 Challenger Light Sport XS50, only 21 hrs. For Sale $45,000
TTSN 21, TET 6 Built professionally by the late Rob Lake of Lake Aviation Wing tanks Brakes, Heater
Upgrades include: Rotax 582 engine installed professionally September 2012 Flip-up nose cone hinge (Aeroloite Flight) for easy access to battery, panel wiring Custom fabric interior with pockets Hinged third door for easy entry and exit to cockpit Oil injection Strobe lights, wing tip lights from Kuntzleman Electronics upgraded Throttle assembly from light Engine Services. Avionics: BECKER CCX 175 COM/XPDR COMPAC FALCON VSI2FM-3 VERTICAL SPEED BANKINDICBALLTYPE20-20M2010-00700 Falcon Gauge Voltmeter, 6-16V, 2-1/4. Model number is VM16-2Q. AmeriKing AK-350 encoder. Avcomm AC-2EX intercom TED antenna for the transponder 11-17995 Miracle Air Whip Antenna 11-03018 for the radio additional ram mounts. Contact Bev 613 478-2923 or bevie01@ho mail.com

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Classifieds On The Internet:
http://www.ocis.net/tvsac/buyandsell.html - more ads from our Kamloops chapter
http://www.lyncrest.org/sfcclassifieds.html - more ads from our Winnipeg chapter

Remembering

Mary Swain May 12, 1929 – April 3, 2013

ONE OF BC AND CANADA'S, PRIME AMBASSADORS for the general aviation community passed away in Vancouver on April 3, 2013. A Celebration of Life will be held at the Delta Heritage Airpark on June 2nd, starting at 11:00. This event is being jointly organized by: RAA Chapter 85, the Delta Airpark Committee, & COPA Flight 5/Boundary Bay Flying Club. This gathering of Mary's family & friends, and an enduring suitable memorial, at the HeritageAir Park, is being completely funded by donations from her many friends and supporters. Donations can be made to the Mary Swain Memorial Fund, by making your cheque payable to the Boundary Bay Flying Club, 7997 Redtail Place, Surrey BC, V3W 0N4. More details may be found at http://www.deltaheritageairpark.org

In 1971 Mary owned and operated Royal Seafoods, a very successful retail fish store, in West Vancouver and was dating an ex air force pilot, Tony Swain (later known as the COPA Guy),who was soon to become her husband. During one of their Sunday outings they were visiting the Delta Airpark and ran across a surplus Harvard, which on a whim, they purchased on the spot! This was the beginning of a love affair, not only with each other, but with an airplane and an aerodrome that would last over forty years. The Harvard was dubbed "Bessy" and she sported "nose art" on her cowling of the "Fish Lady". This airplane became their magic carpet that transported them all over the Western & Central Provinces and the Western United States. With Tony as the pilot and Mary as the navigator, expeditor, and general good will ambassador, they traveled to many, many, airshows, fly ins, and other aviation events representing the Western War Birds and the Canadian Owners and Pilots Association. Tony became a COPA director and in doing so he wrote articles in the COPA "Flight Newspaper" under the banner of: "The Pacific Perspective" and later as "Tony's Perspective." In his many years of writing these articles he featured "The Mary" and so she became even more widely known all across Canada. Their exploits and adventures were closely followed and every month on receiving the newspaper, the first thing most readers did was turn to Tony's section to see what "The Mary" was up to next.

Mary had the amazing ability, when meeting both new and old friends, to immediately make direct contact with that person and have them feel that she was their best and dearest of old friends. It was a rare talent and she made so many folks feel comfortable and at ease, even when in strange surroundings.

Ove the years, the November ***(Continues next page)***

Charlie Cetinski (April 19, 1943 - Feb 11, 2013)

Charlie Cetinski of Flamborough Ontario passed away in his sleep at his winter residence Wings South Airpark, Naples Florida on February 11, 2013.

Charlie was a local fixture in the southern Ontario aviation scene and was the owner of Cetinski Field located north of Waterdown Ontario. During his life, he owned numerous aircraft including such rare birds as a Cessna Wren, a Cassutt, an Air Shark amphibian and a Davis DA5. In 1997, on the second take-off in the Air Shark, Charlie had a tragic accident in which he sustained severe injuries leaving him a paraplegic. His final aviation endeavour was the building and modifying of several Titan aircraft for surveillance duties.

His achievements include winning first place with friend Stuart Loten in the Alaskan Trans-Canada Highway Float Plane Competition, receiving the Queen's Golden Jubilee Medal, being named a Paul Harris Fellow by the Rotary Foundation, Rick Hansen Medal Bearer, the Chamber of Commerce award for Community Service and setting the World Record of 10 consecutive marathons with fellow wheelchair athlete Chuck Mealing.

Charlie's life followed the simple guiding principles of honesty, integrity and perfection. He was always striving to experience, learn and understand as much as possible.

In honour of Charlie, the Tuesday and Saturday get togethers will continue where friends and colleagues are encouraged to join us at the Flamborough field.

Remembering Mary / continued

11th Remembrance Day Ceremonies took on a special meaning for Mary & Tony. In the earlier years they would participate with Bessy and be part of the Harvard formation that flew over the cenotaphs of the lower mainland and brought many a tear to the eyes of those who looked skyward and heard the sound of the mighty round engines, as they roared over the silent crowds remembering those that had fallen in war. In later years a memorial ceremony has taken place at the flagstaff at the Air Park, that has added a personal touch to those of us who have gathered to remember the fallen, and afterwards have joined Mary and her helpers as she provided steaming hot soup, a bun, and cup of coffee or tea, to the folks coming in out of the cold and wet Remembrance Day weather.

Wherever Mary held "court" (she was nearly always dressed in an apron for the occasion) and most often it was in her West Van fish store or in the old coffee shop at the Delta Air Park, where she drew a crowd of new and old friends that just wanted to be with her. She was that kind of person. But, it wasn't all love and hugs! If there was an injustice, or a cause worthy of her attention, she could be fiercely loyal and she would fight the good fight for what she believed to be right. This was the case in the 1980's when the opponents of the Delta Air Park, came very close to shutting down this wonderful, grass roots, aerodrome. Mary and Tony, in league with other supporters like Terry Wilshire, led the cause to save the aerodrome and it was only when on the brink of closing that they successfully saved the Delta Heritage Air Park, that is now a Jewel in the Crown of the Greater Vancouver Regional District's parks system. The park is now a Mecca for not only aviation enthusiasts, but also for the urban dwellers and their children that want a short drive out into the country, and experience grass roots aviation, where they can actually get out and touch, feel and smell airplanes up close. What a legacy that Mary and her friends are leaving behind!

So come on out to CAK3, walk around, talk to the folks that are building, flying and loving aircraft. Come on in to the coffee shop that has now been dubbed MARY'S PLACE and have a cup of coffee and a cookie and think of "The Mary" in her apron, welcoming you, and stay a while and have a chat. By the way, smell the flowers. She planted them.

W.T. (Tim) Cole

We'll miss you, Fish Lady, Blue skies and fair winds...

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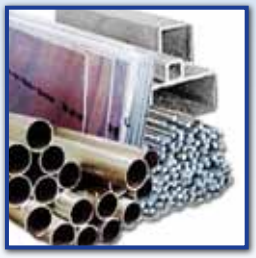
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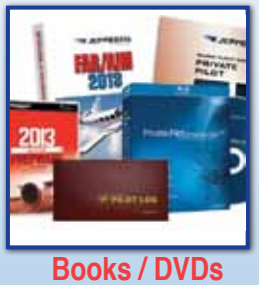
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