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RECREATIONAL RFLYER

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RAA
RECREATIONAL AIRCRAFT ASSOCIATION
RÉSEAU AÉRONEFS AMATEUR CANADA

From The President's Desk

Gary Wolf RAA 7379

Amateur Built Registration numbers

Despite the aging population and the low dollar Canadians are still building amateur-built aircraft in good numbers. Nearly a decade ago there were 60-70 new Canadian built planes per year and in 2018 the number was 50. At this writing 2019 has 36 new registrations so we are on track to equal last year. Putting these numbers into perspective, in 2018 there were 300 registrations of 2018-manufactured aircraft of all categories so Amateur aircraft accounted for one-fifth of all new registrations among all the new Cessnas and Boeings. To date in 2019 the Amateur sector accounts for 36 of 250 2019-manufactured aircraft, one seventh of the new fleet. This is not bad for a group of builders working in their own hangars.

What has dropped off is imports of Amateur aircraft. When the dollar was high there were some thirty Amateur imports per year from the USA, but this has become a dribble, under ten. The MD-RA performed import process is still straightforward but with a 75 cent dollar the cost of US Amateur aircraft reduces their desirability.

Despite the aging population and the low dollar Canadians are still building amateur-built aircraft in good numbers.

New Light Sport / Advanced UL group

Chris Horsten of Sport Aircraft Canada has formed a new association to represent the interests of importers and buyers of Light Sport and Advanced UL aircraft. In 2006-2007 RAA was part of the TC Working Group that set the path for the Light Sport category to become part of the Canadian regulations. Unfortunately staff changes at TC resulted in the report being shelved and two years of work being wasted. Since that time anyone wishing to import a Light Sport aircraft has been forced to register in the Limited category, a one-off catchall that was meant for imported warbirds and Eastern Bloc aircraft that have never held a type certificate.

Chris has been attending Transport Canada meetings to reawaken TC to the possibility of having Light Sport as its own category in our regulations. His association, the Canadian Light Sport Aircraft Association has a website at www.clsaa.org and you may join online from the site.

Drones / UAV's

The official name keeps changing but we still refer to them as drones, and after a decade of airspace incursions TC finally has regulations to require training and govern their use. RAA Member Harish Jadeja built an AULA and is currently building a Rebel but he has set these aside for awhile. Harish has set up a school to provide UAV flight tests and signoffs for licensing, and he is travelling the

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features

columns

George Gregory

Above: An amazing replica of the Spirit of St Louis, Arlington 2019. George Gregory photo.
On the cover: Mac Mazurak's Amazing Spitfire Replica

First Flight

Bill Bird

Suitable Project + Dedicated Team = Success

ON THE WEEKEND, Sebastien confirmed that the Chapter executive had made the payment to put insurance in place for the Cruzer and that yesterday remained a possible test flight day. Sebastien arrived at the air park at a little after 10:00 am. A couple of the builders had already arrived to help and as other builders were able to a to clear their weekday schedules, they also appeared as the day progressed.

Sebastien began by updating the Dynon Skyview software. The aircraft battery was hooked up to a charger and the aircraft tire pressures where checked. The panel ELT switch (which had been a problem when tested last Saturday) was removed and inspected. Sebastien felt that the orange backup battery holder needed the larger battery (which had been previously installed in the carrier behind the actual switch) and that a better fitting battery should be in the switch carrier. Cyril and Peter Lenger volunteered to fly the switch to Pitt Meadows and have the battery installed there in order to assure that a correct battery would be put in place.

While waiting for Cyril to return, Sebastien asked each builder present to independently do a walk around and try to identify any issues needing correcting. The cockpit plexiglass was carefully cleaned. Wing fuel amounts were measured. Sebastien found that the sleeve for the carb heat cable (where it attached to the engine mounting bracket) required firmer connection and a solution was arrived at to fix this problem. Aircraft control movements were checked and the aircraft was generally gone over by everyone involved. Sebastien went through his list of items required to be on board the aircraft and made sure everything was in place.

Once Cyril and Peter arrived back with the ELT panel switch with it's newly installed battery, an ELT test was carried out. Unfortunately, the switch still would not trigger the ELT. It was re-confirmed that the ELT itself was functioning. Sebastien then decided to remove the ELT and switch so that all the components could be sent for further testing. The ELT would not be required to be in place for the short test flight which was being planned.

Around 2 pm, Sebastien asked all the builders present whether they felt that the aircraft was safe and in a suitable state for a test flight. Everyone affirmed that they thought the aircraft was safe and prepared. Sebastien then agreed that he was prepared and willing to attempt a flight. While Sebastien changed into his flight suit, cowls were installed and the members pushed the aircraft out of the hangar in preparation of start up.

Sebastien gave a briefing of the procedures he would be following and what he required from the members as events proceeded. There would be start up, some run up tests, and if all was well, the aircraft would move immediately to a short test flight. When all was ready, the aircraft was started (oil pressure appeared—to everyone's relief as there was a concern that the engine oil pump might have lost prime after such a long period of sitting), and after initial checks, Sebastien taxied the aircraft out.

However, at this point Sebastien identified that the radio was not functioning properly. He turned around and taxied back to the hangar. Investigation began. Thankfully, due to Eric Munser's design work which allowed the easy opening up of the underside of the panel electrical installations, it was found that the connection of the radio antenna cable to the connecting plug at the rear of the radio mounting tray had come loose. The antenna was replugged and seemed to lock properly in place. The radio was tested and found to be working adequately. This shut down period also allowed time for a quick inspection of the aircraft which confirmed that all appeared well in the engine compartment.

Another vote was taken to confirm agreement that flying could be attempted. Sebastien did another start up and preceded through his ground check items. Members and other on

A video of the Cruzer's first flight can be seen at https://youtu.be/KGmXHuN8pSs

lookers distributed themselves at various points along the edge of the runway in anticipation of a takeoff. Sebastien lined up at the threshold of Rwy 25 and then (in what felt like took a surprisingly short period of time) applied power, accelerated down the runway, lifted the nose wheel, and was in the air. With that, the aircraft rapidly travelled into the distance and the loudest sound became John Macready's cheering from his position at the western end of the runway.

Sebastien's experience can be viewed on the YouTube video. My notes are that Sebastien found that the aircraft flew well. However, Boundary Bay tower was unable to pick up his transponder signal which limited some of his planned activity. Also, the engine monitor was indicating that some of the cylinders were running hot—meaning that cooling modifications will be needed before further flights take place. The control stick is currently rigged so that the pilot's leg interferes with sideways movement when the stick is in the full back position. Rudder pedal movement was also slightly sticky. Sebastien—you may wish to comment further.

After passing over the field, Sebastien returned and performed a smooth crosswind landing on Rwy 25. He taxied back and accompanied by the clapping of the assembled audience, did his shut down. After answering the questions of the excited gathered members, he exited the aircraft and went off to fill in the logs and documents for the flight. The members pushed the aircraft back to the hangar, took the cowls off and did an inspection. No assembly or serious mechanical issues were found post flight. A number of things which can be done to improve engine cooling were immediately evident.

Post flight items list. The ELT switch problem will go back to Martin at Pitt Meadows for resolution. Sebastien said that he will investigate the transponder issue. Eric Klassen will co-ordinate the builders taking on cowl and baffling modifications to try to improve engine cooling prior to the next flight test. Discussion will take place on whether to modify the stick or to adjust the aircraft rigging to solve the stick/leg interference issue. Sticky rudder pedals will be investigated.

A very successful day. Congratulations to all the builders for their hard work over the last years and thanks to Sebastien for risking himself as PIC of the first test flight.

Bill Bird *is a private pilot and makes his home in Vancouver. His original training was in fine arts but needing to make a living, his career was spent in the horticultural industry, originally running his own company and then as a manager with a Crown Corporation. Recently retired, his current activity schedule makes him wonder how he ever previously had the time to go to work.*

Postscript: as of mid-September, the Cruzer had flown off its time and will soon be coming available for chapter members.

Sweet Triumph: grins aren't just for the RV crowd. Members of the justifiably proud build team: Left to right, Bill Bird, Cyril Henderson, Gerard Van Djik, Test Pilot Sebastien Seykora, Eric Klassen, Peter Lenger, Past President Peter Whittaker and Past President John Macready. Others contributed as well! Centre left, Sebastien fine tuning the Cruzer in the chapter hangar; lower left, Eric communicating prior to flight. Above: one picture that says it all: the crowning success of years of consistent effort.

LONG-TIME PILOTS AND HOMEBUILDERS from Southern Ontario will remember when Chris Heintz and his gaggle of boys first attended the "Orillia Fly-Ins" at Lake St. John (CNV6) in the late 70s and 80s. This was often when Canadians got a glimpse of the new prototypes that Zenair would be unveiling later that summer at Oshkosh: The first official appearances for the CH 100, CH 300, CH 600 and even of the STOL CH 701… At the time, Zenair and its six employees were located in downtown Nobleton, and Chris and his business partner Gerry Boudreau were in full R&D mode with new models. The planes were built at Zenair and flown from King-City airport (now closed) or from Brampton airport where W&B and fine-tuning was done in the RAA Chapter 41 hangar!

Back then, Zenair was less than 10 years old and had already introduced its "Zenith" line of 1-3 seat all-metal low-wing kitplanes. Those aircraft included the original 2-seat CH 200 Zenith design, the single-seat CH 100 Mono-Z and the record-breaking 3-seat CH 300 Tri-Z. Within the next couple of years, Heintz also developed his aerobatic CH 150 Acro-Z and CH 180 Super-Acro-Z and started to manufacture wooden propellers as well, all made in Nobleton...

In the early eighties, Zenair was also there when ultralights made their appearance. It introduced its unique Rogallo-inspired sail-wing Zippers which were trailered to and from a nearby sod-farm for test-flights, demo-flights and even flight-instruction. Zenair introduced its unique Zipper models at about the same time Transport Canada introduced Ultralight pilots licenses and as a manufacturer, Chris also became very involved in drafting Canada's first Ultralight design standards (TP101-41). At the time, he used his CH 600 design as the basis for these standards (which explains the odd number for the Gross Weight of the category)…

The original Zenair Zodiac was first introduced in 1984 and the iconic high-wing STOL CH 701 made its first flight later in 1986. This is also when Zenair installed and flew the first Rotax 912 in North America; the now-ubiquitous engine made its first US public appearance when Chris landed the CH 600 at Oshkosh, WI after crossing lake Michigan (he had faith in the engine!); the first Rotax 912 flew in a STOL CH 701 a few months later (and is still flying today!).

Kit-production for these two models (601/701) required more production space so Zenair moved to Midland, ON (where it has been located ever since). That is also when sister company "Zenith Aircraft Co." opened its doors South of the border, in Mexico, MO. With literally thousands of kits (and factory-assembled planes) sold worldwide, the CH 601 and CH 701 designs and their derivatives soon became Canada's top selling light aircraft in the world.

Today, Zenair is still based on Huronia Airport (CYEE) 1.5 hours North of

Toronto. Its current aircraft designs include the larger off-airport Super-Duty STOL CH 801 and the Zodiac CH 640 (both 4-seaters), and the CH 650, CH 750 STOL and CRUZERS that qualify as Light Sport Aircraft wherever that category exists (they are typically registered in the Amateur-Built Category in Canada). Also of interest to aircraft owners everywhere are Zenair's aluminum floats that are available is seven sizes.

Now under the management of Chris' sons, Zenair is still going strong as it continues its tradition of designing and manufacturing light aircraft. The company is currently expanding through licensing agreements whereby its designs are manufactured or assembled on other continents. Zenair designs are currently being produced in Europe, South America and Asia.

Over the years a number of designs have emerged from Chris Heinz' prolific mind. Clockwise from top: The 4 place Alarus is used by the Peruvian Air Force as an ab initio trainer; A Zenith 601 HDS "Speed wing"; The ubiquitous CH701 on amphibious floats; An early foray into the world of basic ultralights was the unique Zenair Zipper, featuring an almost-Rogallo type wing with Junkers type ailerons for roll control. Opposite, the Tri-Zenith similar to the one Red Morris flew across Canada with, and the early CH200 Zenith 2-place.

Photo Credit: Jorge Merino

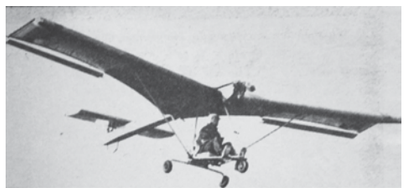


Photo credit: Adrian Pingstone (Arpingstone)

COMING OUT THIS FALL

People, Places and Planes by Mike Davenport

This book is about Mike Davenport's journey as a private pilot and an all-consuming interest in anything related to flying. It started when as a youngster he stared skyward as yellow Harvards and silver Beech 18 "Bugsmashers" flew overhead from a nearby RCAF base at Centralia in Ontario. This set the lifelong habit of looking upward every time an aircraft appeared.

The genesis for this book was the series of articles first published by The Recreational Flyer magazine and by the Experimental Aircraft Association's e-newsletter, "Bits and Pieces". Both publications are focused on their Canadian members who are interested in aviation in Canada and he thanks them both for being allowed to be a part of that.

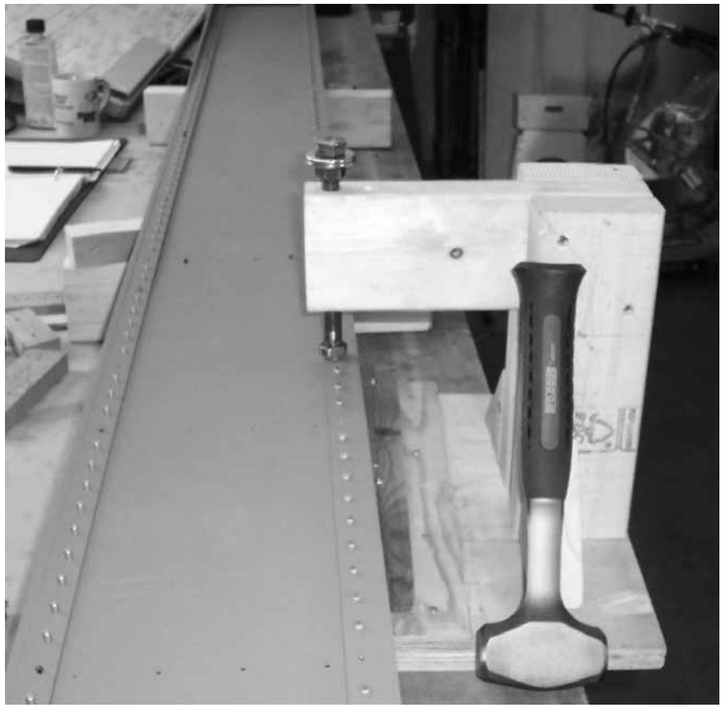
He has included stories about some of the interesting Canadians that he's been privileged to meet during that journey. Included are stories of restorations of some classic antiques and others are of his flying experiences in homebuilt or antique planes. While most were fun at the time, others became so only in retrospect. Some flights that we will join him on were long cross country trips halfway across the continent but as often as not the reader won't leave the circuit. While many other books tend to reflect the views of high time commercial pilots, this one is more about someone who just wanted to fly for the sheer joy and privilege of getting airborne. In the interests of full disclosure though, he did briefly try to earn a living from aircraft sales. Through a partnership in a composite aircraft kit company whose sales history was not unlike that of a holiday rocket that reaches up into the sky, only to come back down just about as fast, he did get to meet such Mojave notables as Quickie Aircraft principals Tom Jewett and Gene Shehan, Burt and Dick Rutan of Vari Eze fame as well as Jeana Yeager.

"I want to thank the many who have helped me along the way; from the instructors and assorted fearless check pilots who tried to keep me safe, my editor and publisher, and my long suffering wife who occasionally joined me on these adventures. Please do join me on this journey and I hope that you enjoy the ride".

The book retails for $29.95 plus $5.00 for shipping by mail. Contact Mike at mikedavenport8.wixsite.com/website-1

Neccessity is the Mother of Invention

Phil Hicks



THEY SAY (whoever "they" are) that "necessity is the mother of invention". I am going to share with you a tool that I built to satisfy a "necessity" that I had while constructing my Sonex wing spars. Most of the riveting in the construction of the Sonex is accomplished with "Avex" or "Cherry" rivets, which are stainless steel and about three times the strength of the ones you buy at Canadian Tire. The only part of the aircraft that has traditional driven rivets is the main wing spar. When I read this in the plans, I did not think much about it. I had attended a rivet workshop at Oshkosh and Tom Martin had shown me at one of our chapter meetings, so I was good to go. Well, imagine my surprised when I took a look at the rivets they wanted me to use, not the little, almost dainty ones you find in the skin of an RV, but rather, these robust 3/16 " rivets that would not look out of place holding steel plates on the Titanic together. How was I going to rivet these with my little rivet gun, it barely shaped the end of the rivet despite repeated application of the gun.

Sonex, in their usual simplistic manner, suggested that I use a large bolt and drive the rivet with it and a mallet (see Fig. 1). This sounded about right, so I went to TSC and bought several large bolts and washers and assembled the rivet driver. All looked good until I tried several "test" rivets on some scrap metal. I managed to hit my hand almost as often as I hit the rivet. In addition, I had trouble keeping the metal assembly in one location while I was trying to hold the bolt, the rivet, the mallet and the metal pieces. Now, I need my hands and fingers intact for my job, so a solution needed to be found. Asking my wife to hold things while pounding with the mallet was not going to work either! So, I needed to come up with a better way.

Earlier on, I had borrowed a friend's C-frame dimpler. I used it to create the dimples in the leading edge sheet for flush rivets. This gave me an idea. Could I make a simple C-frame that would hold the bolt assembly while I pounded it with the hammer? Some quick measurements of the spar and then the bucking bar I was using game me the rough dimensions. While looking at the rivet, I thought, would it be possible to put the factory head in an indent in the bucking bar to hold it in place? Well, it turned out I had a die that was the exact size of the factory end of the rivet. I drilled a hole in the bucking bar, inserted the die and was set to go. Placing the factory end of the rivet in the die, then driving the shop end with the bolt would work without me having to hold them. As a side bonus, the C-frame would hold everything perpendicular, so that I could minimize making sloppy shop ends. Here is what I came up with (Fig. 2). It

fig.1

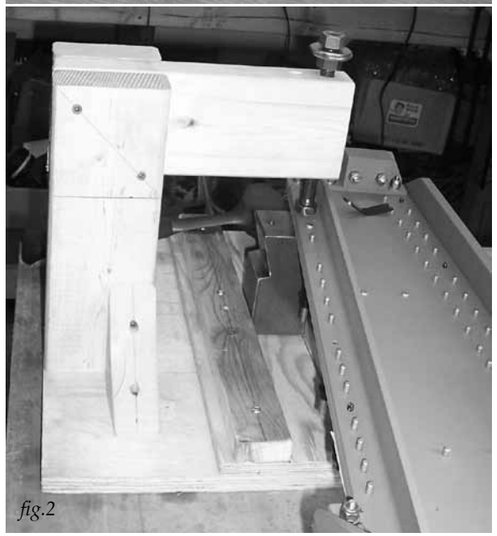


fig.2

fig.3

fig.4

Left, top down: Figure 1 shows the mallet and bolt rivet tools; Figure 2, Phil's C-frame holds everything perpendicular. Figure 3 shows the main spar jigs, and above, the main spar is shown in figure 4.

is really simple to use. Place the rivet through the various sheets of metal. Position the factory end in the die that is in the bucking bar, then whack the bolt three times (this seems to be the right number, these were fairly hard strikes, if I tried more, lighter strikes, the rivet hardened and became distorted". After trying this on a few sample pieces, I moved on to the main spar. After driving a few rivets, I found the spar assembly was moving. So, I built some wooden jigs that would fit between the spar caps (Fig 3). I then clamped them to the spar and table to secure everything, Now, I could just move the C-frame from rivet to rivet. Yes, it was time consuming, but the pause between hammering the rivets gave my arm time to recover.

You will notice that all the C-frame and spar jigs are built out of 2 X 4's, assembled with deck screws. Nothing fancy, quickly put together and have since been repurposed for other tasks.

Figure 4 show the entire wing spare with the C-frame being moved down it. I used two size bolts, a larger one for general use and one a little smaller to get into some tight areas where there were spar webs as well to navigate around. When I checked the driven rivets with the sizing tool, the majority came out within spec. I did find some that were a little out, usually caused by a

clamp slipping and the spar moving, the result being a happy face smile in the factory rivet end. From this, I learnt another valuable skill, drilling out rivets. Must have done about 20 overall, not bad for several hundred rivets.

Total cost for the project, about $6 in bolts from TSC, some deck screws and some scrap 2 X 4's.; probably the cheapest part of the whole Sonex project.

Bearhawk Aircraft Announces New Bearhawk Companion With Side-by-Side Seating

AUSTIN, TEXAS, AUGUST 26, 2019 – Bearhawk Aircraft announced today a new model in its lineup of Bearhawk aircraft kits, the Bearhawk Companion. Expected to ship in October, the Bearhawk Companion is a side-by-side seating two-place aircraft with utility category strength at full gross weight.

The new model complements other Bearhawk aircraft ranging in size from 1320 lb (LSA) to 2500 lb gross weight with two or four seats and significant payload capability. The lineup of Bearhawk aircraft share many common traits, most notably the durability of their construction. Designed by Bob Barrows, Bearhawk aircraft are renown for their strength, performance and safety. All Bearhawks feature aluminum wings completely flush riveted with driven rivets (not pop rivets), super strong steel tube fuselages for safety, and fast cruise speeds while retaining excellent slow speed manners.

Mark Goldberg, owner of Bearhawk Aircraft kit manufacturing, stated after AirVenture Oshkosh 2019, "We have for some time now heard from many buyers that desire a side-by-side, two-place aircraft with all the great features of the Bearhawk designs." While the idea was not new to the Bearhawk community of builders, its time had come. The Bearhawk Companion is based on the Patrol's wings with a fuselage derived from the 4-Place. The result will be a very rugged two-place utility plane with a large area for cargo and superb load carrying ability. Without the need to haul significant weight far aft, like on the Bearhawk 4-Place, the two-place Companion will handle and perform much like the Patrol, however, it will be sportier than the "SUV/pickup" styled Bearhawk 4-Place.

The possibility of offering this model had been discussed before, then a firm order and deposit from Greg C. of Massachusetts put the plan in motion. Greg asserted, "I wanted the proven strength and wide performance envelope of a Bearhawk. But, like many others, was torn between the 4-Place and Patrol. Since most of my flying is local, or medium distance cross-country with a single passenger, the new Companion is a perfect fit."

The Bearhawk Companion will appeal to backcountry and cross-country flyers alike. Side-by-side seating is preferred by some for its two-passenger configuration with both occupants having a broad view through the windshield. The arrangement also allows full access and an unobstructed view to the instrument panel. This can be advantageous for pilot training, flights into instrument conditions, and for "pinch hitter" pilots who may be called upon to take over the aircraft controls.

The Bearhawk Companion can be powered by the lower cost and readily available Lycoming 4-cylinder engines including the 320/360/370/375 variants and IO-390 providing 150–210 hp. A large cargo area will occupy the cabin behind the seats. The new two-place Companion offers 2200 lb gross weight, an increase of 200 lb over the tandem Patrol. The Bearhawk Companion will be capable of carrying 225 lb of cargo in the baggage area (likely to be increased after flight testing).

The Bearhawk is a Go Anywhere aircraft that performs a variety of flying activities. The 4-Place Bearhawk fills a utility and transport role extremely well with its large cabin. The Bearhawk Patrol is a tandem two-place version that excels at accessing remote airstrips. The Bearhawk LSA is a lightweight design that meets U.S. Sport Pilot requirements. The NEW Bearhawk Companion is a side-by-side 2-place model with superior strength and payload capability. Each aircraft shares backcountry qualities that include stable slow flight and higher than expected cruise speeds. Bearhawk Aircraft manufactures high quality quick-build kits for the Bearhawk 4-Place, Bearhawk Patrol, Bearhawk LSA, and now the Bearhawk Companion.

For more information on Bearhawk Aircraft, visit www.bearhawkaircraft.com, or contact Bearhawk at info@bearhawkaircraft.com or 1-877-528-4776.

Retirement Isn't a Bad Thing (Running out of Fuel IS)

Barry Meek

CONTRARY TO ALL THE ADVERTISING and dreaming, retirement isn't really all it's supposed to be. If you're finishing up a career, take it from a "somewhat-retired" guy, there are times when you will miss parts of what you now wish would just go away. The social aspect of the job, not something that you would expect, is probably what you'll miss the most. Think about all the people you interact with every day at work, starting from the moment you walk into the office, shop, airplane hangar, or wherever it is you go in the morning. Nobody starts work right off the bat. You need that first coffee and interaction with your co-workers. When you're done with the career, all that is gone. It's coffee with the same person (wife?), and maybe a chat with the dog each day. The wife, and even the dog will soon get tired of that!

My paramedic career ended in 2005. During the five-year period from 2000 to 2005, I was fortunate to be building flight hours, part time with short assignments for glider and training operations. Seasonal flying work was quite plentiful after 2005. So from one career, I slipped into another, part-time situation. It was just enough flying to get my "fix" each year. But it also meant there was the personal interaction with co-workers and customers, something we all seem to thrive on.

Having very little opportunity to fly in the last couple of years, I now feel "fully retired". Once you're here, the interest doesn't go away, but the flying does. Guys like us start keeping the pilot/flying magazines in business, stalking the flight section shelves at the library, and surfing the internet for everything there is to read about aviation. My bathroom at home, not unlike thousands of others I'm sure, has a shelf for aircraft literature. Why waste the time we're forced to spend in that tiny place? It has occurred to me that I should have a computer or iPad in there to look up all the websites mentioned in the magazines. Inevitably, if I don't do it when I first come across something interesting, I forget.

Not a week goes by without hearing or reading something about a plane that has crashed due to pilot error. And sometimes, the error is running out of fuel. The writer of the story always seems to admonish the pilot, referring

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Feature

THE JOURNEY BEGINS

by Jerry Trimble

IT ISN'T OFTEN that a trip anywhere in an aircraft isn't an adventure. Flying to Oshkosh qualifies! The following is a montage of many of those trips:

The adventure begins in January, for flying an older Cessna 172 with no transponder means early application for a special permit to cross the border and land at Port Huron for customs clearance. Never mind; Selfridge Air Base, the cross border eye in the sky, whom you must contact airborne before crossing, usually could care less that you have a permit number, unless you don't have one. Filing your cross border flight plan, a separate document, is mandatory. Forgetting can lead to some embarrassing and uncomfortable formation flying with an F18.

Cancelling the cross border flight plan is automatic if you remember to do so! This is another "forget me not" that can lead to some serious formation flying with search and rescue aircraft. The obligatory call to border services in the U.S one hour before departure will find you legally on the ground at the Port Huron Airport but "do not leave the aircraft until instructed" by the border security officer. The first question you will probably be asked is; "Do you have a current customs sticker" You did know that this had to be ordered, paid for and received before you left Canada didn't you? Having landed on American soil you will be greeted by a polite, often friendly officer that understands you're on an adventure and will expeditiously check your credentials (you remembered your up-to-date passport, right) luggage, camping gear etc. and you're on your way.

The month you spent preparing yourself, your aircraft, log books, flight plan (remember the one you had to file before crossing the border) can now pay many rewards. Remembering that there are different flight rules in the U.S., you set course for La Peer, Michigan as the pleasant countryside slides beneath your wings. Oh! Oh! What is that big black cloud doing in your way? Well, after all this is Michigan in July and weather is part of the national pastime. Using discretion, you land at La Peer, and are helped to tie down by some of the nicest people to be found. Accepting the generosity of a car to drive into town, three hours are spent in a pleasant hometown diner until this category seven thunderstorm has left for Ontario. Heading back to the airport, buy some fuel to thank the airport operator and say good-bye for now to the gracious friends you have just made.

Airborne again and heading west, Oshkosh here we come. You now begin to notice that Michigan has a lot of trees, not everywhere looks like Detroit! As you approach Rapid City the countryside starts to look a lot like Northern Ontario. Better recheck with flight following; your compass, your map, your G.P.S. (if you have one) and the fuel.

Stopping for fuel at St. Cloud seems prudent since flying right to the shore line at Ludington before fuelling-up finds you circling for altitude prior to the sixty five mile flight over open water.

To digress: you did prepare for over water flight, aircraft egress, buoyancy, signalling and very cold water just in case. 11,500' will work to get you close to either shore if you spent the time at your last stop to find the point of no return, hopefully. As you are climbing, you contact over-lake reporting and make arrangement for 10 minute "high and dry reports". Bang! What was that! Something in or on the airplane just exploded! No terrorists have been near the aircraft so what was that? Are rivets starting to let go? This aircraft never sees heights like this. Forget it, you were taught "fly the airplane". Another thousand feet….Bang! Remember, "fly the airplane". All instruments are normal, lots of fuel, well beyond the point of no return. What! Now the horizon has disappeared. Instrument time sure can be helpful even if you can see straight down to beautiful blue water. That is not where you plan on going.

Stay on course, stay level, stay up, report your "high and dry" to lake crossing, stay alert for other aircraft, " keep on truckin". There you are Sheboygan and the shore line, whew! You recall the weather check said VFR all the way across the lake but a night in a hotel in Ludington waiting for CAVU has been done before (and added $100 U.S.) to the trip.

Oh well, here we are over Wisconsin. Cancel the "over lake" reporting. Check the Oshkosh notam, turn off your non-existent transponder as all aircraft must do when approaching the busiest airport in the world (for this week only), plan your approach over Fond du Lac, get to the prescribed altitude and get in line. Sorry folks! It is after 8 p.m., OSH is closed. Return to Fond Du Lac and land, sorry folks we had a big rain and getting stuck in the mud as well as sleeping in a school bus is just part of the routine. Rise up bright and early the next morning, (you call that sleep?) check for lots of fuel and head for Fisk again. Sorry folks! There is a gaggle of Mooney aircraft on their way in. You will have to orbit until they arrive. "Orbit you say" but for one and half hours around a lake five miles wide with twenty other aircraft? This will give you a real-world test of your safe piloting skills. Ah, finally released and headed in to runway 27 downwind at the prescribed low altitude for slow aircraft, be sure to leave some space from the aircraft ahead, and do not talk on the radio! Just listen.

Cleared downwind, what! There is a very fast twin diving between you and the aircraft in front, WWII all over again! You're low and slow, the flaps are out, behind the power curve and now wake turbulence cocks you up to a 60degree roll' wow! Remember no ailerons, use the rudder. Ah stable again! Make your two right hand turns, keep your distance, land on the second stripe and get off the runway.

You are greeted by the nicest volunteer people that direct you to the camping tie-down in the North 40. Tail the aircraft into the row with a plethora of white wings as far as the eye can see, set up your tent and meet the most friendly kind hearted fellow aviators camped all around you. Now begin to have the most wonderful time of your life. You will be enthralled.

And don't forget to bring your money.

P.S. The explosions over the lake were large bags of potato chips relieving themselves of pent-up gas.

More on Richard Legault's Nieuport

Richard Legault

I THOUGHT I'D DROP A FEW LINES to update on the Nieuport and its newly overhauled engine. I took it up for the first time this week. Improved performance and generates a few more hp. I have now done 3 hours of local flying and confidence is setting in smoothly so I am very satisfied so far.

I flew to St-Hubert airport yesterday to participate in an air show organized by the ENA school. ENA stands for École Nationalle de l'Aéronautique and their event is called "Aerosalon". The students are given formation (college degree)on several sectors of aircraft maintenance...engine, avionics, structural, etc. http://www.cegepmontpetit.ca/ena/english

For me it was a first outing with the new engine. It is about a 30 minute flight. I took off in early morning so as to arrive before the airport gets too crowded with air traffic. With a low temperature of about 10c under clouds, I landed in a crowded airport with a 8-10 knot 90 degree cross wind. Once on the ground, I was rewarded by taxiing in front of an impressive line of nine red and white CL-41 Tutors starring at me. Yep it was worth braving the cold and absorbing a dose of adrenaline.

My friend Gilles was already there dressed in his French officer's uniform with our N12 poster stand and French flag post. With volunteers we parked the plane on grass and spent a day talking about the eye catching exhibit aircraft and its history, and dressing kids with my flying helmet and white scarf for pictures. But the most common question that kept popping up all day was: "Does it still fly ?" Needless to say we had an excellent day knowing we contributed to the memory of the courageous flyers of WW1.

Incidentally the DC3 that Buffalo Airways are rebuilding was on exhibition this weekend...it has its engines installed. I and many others are very excited to see it fly, its my favourite vintage aircraft. https://www.cbc.ca/news/canada/north/d-day-airplane-yellowknifer-montreal-1.4945443

Furthermore our pilot association called APPH (Association des Pilotes et Proprio de Hangars) had a great event Saturday May 25th 2019. With about 20 airplane owners, we arranged a massive mission to take 245 kids aged 10 to16 for their first free airplane ride. We first visited local schools to promote the project and enrol the youngsters, obtain their parent's consents, organize the event day with sponsors and entertainment, and qualify each aircraft and pilot by a senior instructor. The Nieuport was at center stage as a photo booth. We intend to repeat this experience next year around the same date.

Our next Nieuport mission was at our own airport for an annual Fly-in day during the International Balloon Festival (Montgolfiers) of St-Jean sur Richelieu from August 10 thru 18, 2019. Pilots and passengers were given a free lunch and day passes on Sunday August 11th. https://www.carnifest.com/international-balloon-festival-mont-golfieres-in-saint-jean-sur-richelieu-2019/.

So another mission accomplished and I thank RAA again for the tips in locating the parts to rebuild the engine of the Nieuport.

Attached are a few photos taken in St-Hubert and a few from the youngsters day. You will notice the last picture has the first female aboriginal pilot flying for Air Inuit.

PS: I am still aiming for my ultimate mission to fly over the next Nov 11th Armistice ceremony in Montreal.

(ed note: Richard had planned to fly over the November 11 2018 event but his C-85 engine failed a short time before. RAA assisted him to find the parts to rebuild, so that he could show at this year's events.)

The Nieuport is quite popular with the younger set and participated (along with a really cool MIG and other notables) at the "Aerosalon" airshow put on by the École Nationalle de l'Aéronautique.

The Go-Around

Fred Grootarz

A relatively simple procedure, which should be considered an automatic "Plan B" for every pilot for every landing.

FLYING A SUDDEN Go-Around should be a relatively simple and safe procedure for every pilot. Why then is it that statistics show that Go-Around is still a procedure with a less than perfect record?

A large part of the answer can be found with the pilots themselves. Many have forgotten the Go-Around procedure, simply because they haven't had to actually "do" one for quite some time. It should be noted that a Go-Around is not and emergency procedure, but rather should be considered a Plan B for every landing. However, there is truth in the old saying "if you don't use it, you lose it".

A Go-Around can be required for a number of reasons: You are too close behind the landing aircraft in front of you, and then that aircraft takes longer than anticipated to exit the runway. Other unexpected runway obstructions, like a wild animal suddenly crossing or stopping on the runway; or a ground vehicle shows up unauthorized on the runway when you are on short final. Sometimes another airplane ready for take-off may unexpectedly enter the runway surface and that pilot may not have paid attention and therefore not seen you on short final, or has not listened to your earlier landing positioning report. Now you have no choice but to initiate a Go-Around.

Alternatively you may not be happy with your final approach (too fast or too high/ low or a nasty crosswind, or difficulties during your base to final turn recovery), and suddenly decide that a Go-Around is the better and safer option for you at that moment. Now the question is: Do you remember the right things to do and in which sequence? You have decided to abort the landing and now need to do certain things to safely continue your flight. IFR rated pilots flying ILS approaches go through a mandatory briefing process for every landing, which includes a formal missed-approach procedure published for the applicable runway in case of a required Go-Around.

Knowing how to execute a proper and safe Go-Around is an acquired skill. Unfortunately, due to infrequent requirements for a Go-Around, many GA pilots holding a VFR PPL, lack the currency of this important and critical maneuver. Applying the wrong control inputs in the wrong order can do more than just ruin your day; it can easily kill you.

The cardinal rule for a safe and successful Go-Around (in that order) is:

Power
Attitude
Configuration

The first thing you need is to smoothly apply full power. Apply it the same way as you do to commence your regular take off roll. Don't push the power lever in fully in an erratic move. Your engine may not react as quickly as you want it to. And don't forget to turn the carb heat off (if you had it on for the landing).

Level off. Stop the descent and build up flying airspeed again. Don't start climbing at this point. There is plenty of unobstructed space over the runway to let you build up that needed airspeed. Pulling up prematurely will pitch up the nose up too high, and thus put the angle of attack to the critical point of stalling, because of the lack of forward speed. Remember, the airplane has been trimmed for landing, which means you really have to push the yoke/ stick forward to prevent the nose from pitching up prematurely. That pushing forward may take an unusual amount of pressure on it. Make sure you are flying the airplane at this time in a controlled manner, and that the airplane is not flying you!

Now you have to reconfigure your airplane from landing configuration into take-off configuration. For the landing you had set full flaps. Now you need to retract the flaps, but do it in stages, one step/ notch at the time. If you retract the flaps too quickly, there is usually a sinking spell imminent, which could quickly translate into a stall at this point. Adding just enough back pressure on the yoke/ stick will prevent that sink rate. But don't pull too hard; you don't want the nose to pitch up yet. In general, full flaps produce more drag than a retractable landing gear. Pull the last notch of flaps only when you have gained enough speed to climb. Managing flight controls during a Go-Around becomes a lot easier once the flaps have been retracted. As soon as power, pitch attitude and flaps are set, re-trim the aircraft. It will take away the pressure on the yoke/ stick. Then accelerate to either Vx or Vy and begin your climb. Remember, you never want to climb out of ground effect at less than Vx (below that the aircraft will stall). Don't forget to raise your retractable landing gear, if your aircraft is equipped with it.

Here are some of the typical errors pilots make in Go-Arounds:

Not recognizing the conditions that warrant a Go-Around in the first place. It's a lot easier (and a lot stressful) to start the Go-Around procedure at 200 or even at 100 feet AGL, than if you wait until the very last minute, when you are forced into an evasive maneuver at very low speed just a few feet above the ground.

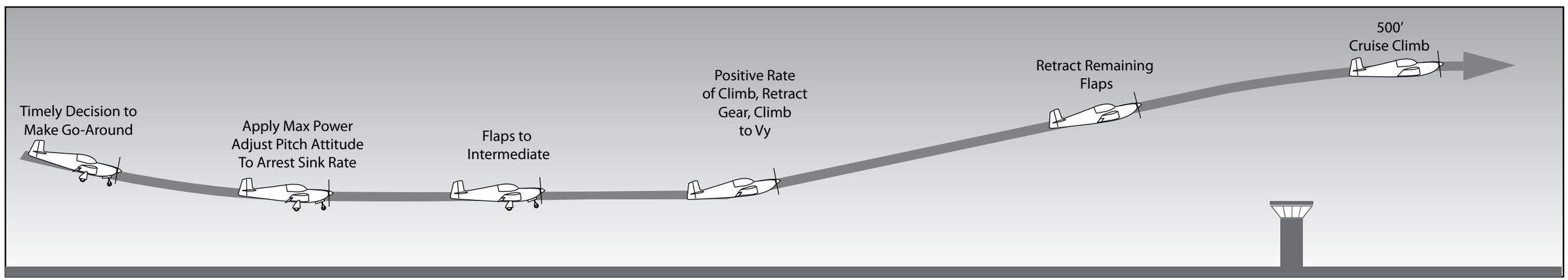
Failing to apply full power or not applying the power smoothly.

Improper pitch attitude. You first need to level off and build up speed to at least Vx before even thinking of climbing.

Improper configuration. Not bringing flaps up in stages to your takeoff configuration. Not re-trimming the aircraft at the various steps.

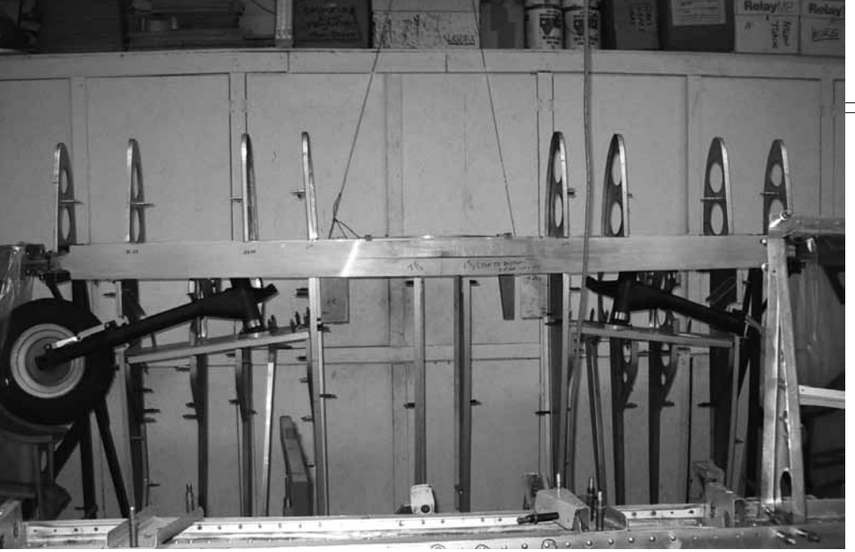
Not staying current and practicing Go-Arounds from time to time will make you forget detailed skills needed to safely execute this maneuver.

***Fred Grootarz** is the president of RAA Chapter 41 based in Brampton Airport. Fred does an annual tour of Ontario chapters to present Transport Canada approved recurrency seminars for RAA members.*



IN THE 1970s I started thinking about creating a scale Spitfire, something I had wanted ever since I realized I could never afford a real one, never mind operate it. The model had to be the MK24 as the previous models were associated with the period where my ancestors were persecuted and my father's country was destroyed. At that time there were a few plans available but they were all wood designs. My experience with wood is that it is high maintenance, as is fabric. Some like the Jurca designs, have been successfully completed over the years. Metal is my favourite construction medium so it had to be that. The Supermarine MK26 kits were not yet on the marketplace, and being based on an ultralight type of pop riveted construction were not in the running. Any kit was way over my budget anyway. My goal was to make every single part myself for cost and satisfaction reasons. In any event the first parts were made in 1991. They were the wheels and initial landing gear iteration. Gradual progress was made, with breaks up to a year in length until retirement in 2007.

Much earlier when I was building a modified Sonerai 1 (first flown in 1981) I had been exposed to the sometimes frustrating, sometimes exhilarating building process. After much research, program writing, and design work, an all aluminium structure ultralight (Pegasus 1) emerged from my living room. It was a test bed to see if the math actually worked. In 1986 it did, and very well too! Now I had the confidence to proceed to the scale Spitfire. An extensive aerodynamic and structural research and design effort followed. A scale model of a MK24 was purchased and scaled up to 70% actual size. The 2D area thus became 49% actual size and the 3D volume became 34%. The original had a loaded weight of 9900 lbs including armament and fuel. That would have led to 3300lbs for my aircraft.



Left, by 2007 the wing and its landing gear were beginning to take shape.Centre, the fuselage is shown here 2009, controls installed, and prior to skinning.

Right: the fuselage and beautiful elliptical wings were skinned in 2010. Contruction of the wings was time consuming but not overly difficult. Below, the initial, early mockup of Mac's design.

I chose a target weight of about 2200 lbs. I had hoped for a weight under 2000 lbs but you can't fool mother nature, at least not for the flight envelope I wanted. I suppose I could have shaved 200 lbs but not with my limited budget. Unfortunately the plane could not have as short a nose as the scale would suggest due to a lighter than scale powerplant.

My Mk 24 has a wing span of 25 feet and a wing area of 109 square feet. Overall length is 23 feet. All flight surfaces are to accurate scale and the flaps are split flaps. The wing airfoil is 23012 from root to tip. This was chosen for its negligible pitching moment. Its stall is sharper but 3 degrees washout of the outer panels tames that. The original was 2213 at the root to 2206 at the tip with 2 1/2 deg. washout. For the tail surfaces I used 0009 airfoils, flattened at the hinge line.

Making the Spitfire's wings was time consuming because with an elliptical planform each rib is a different size and requires a different form block. The ribs were mostly made from 6061T4 stretch formed over MDF panels or maple boards similar to that used for T-18 ribs. This was time consuming but not overly difficult. The leading edge joining strips are .040" 2024T3 aluminum, formed on an English wheel with custom rollers. The aluminum skins were shrunk and stretched, and rolled at the leading edges to conform to the semi-elliptical contour. That was a challenging process but doable because of the split at the leading edge. A small amount of epoxy was used to fair in the split so that it is invisible. The wings were skinned with the invaluable assistance of my wife Marg.

The landing gear is actuated by a convertible top pump that operates cylinders I made at home. The upper gear legs pivot on a tube sandwiched between the main spar and a false spar. The gear legs contain metal springs for load resistance and hydraulic dampers below those for shock absorption. Emergency lowering is possible with a hand pump and, if that fails extension is by an oil dump and gear free fall using G to ensure the gear is fully down. If that fails it is a gear up landing.

During this period a wonderful family came into my life which required some detours in the build. A T-18 was purchased and re-built so my family could share in the joy of flying. Work related time constraints reduced available time as did several years flying with the Canadian Harvard Aircraft Association. I learned a lot there about handling heavy single engine aircraft. The team at CHAA are just simply outstanding.

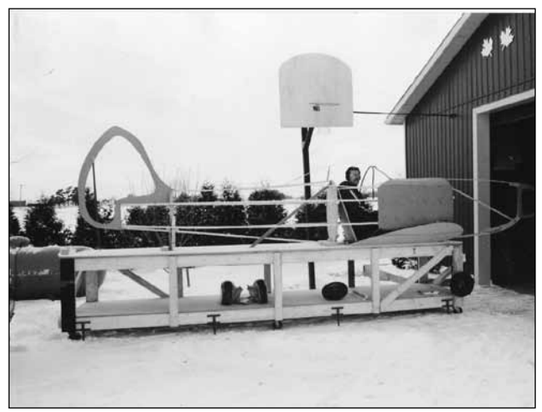
In 2009 the fuselage, controls, and tail structures were completed and in 2010 were skinned. By the time 2011 was through the airframe was sitting on its wheels, fully skinned and the canopy had been made.

The canopy was blown at home inside a plywood box (insulated on the outside) on an internal form made of metal and overlaid with a cotton bed sheet. The box was open to electric kitchen ovens at opposing ends and 4 thermometers were used to monitor the temperature. The Plexiglas was heated to drape over the lower form, then a mask made of masonite was clamped to the inner form over the Plexiglas with lots of C clamps. This method kept the Plexiglas thickness uniform at about 3/16 inch. When reheated, an air supply inside the lower form allowed the Plexiglas to be raised to contour and held there while the oven cooled. The usual cut off wheel trimming process followed to achieve the final periphery. The windshield is just a heated 1/4 inch thick Plexiglas sheet draped over a form, restrained while cooling, and trimmed the same way. The edges were then sanded and buffed to remove any scratches and stress risers. I made 2 canopies with slightly different contours and selected the one I liked best. Unfortunately I have a few small bubbles at the rear end in the one currently on the aircraft.

The canopy frame has feet that run on a rail on each side of the cockpit, and one of these is on the door. These links are disconnected before flight. The front nests under the roll bar/windshield cover strip. This is a simple no wind noise seal that also does not leak. A slide at the rear allows the canopy to open without falling off. When closed, the rear is retained by 3 forward facing pins that lock it onto the fuselage. 2 latches secure the canopy forward. The slide is disconnected in an emergency as are the 2 latches. Moving the canopy aft, if necessary, for only 3/8 inch disconnects it entirely from the fuselage. The whole process takes about 1 second. It cannot be opened during flight and re-closed as the originals could. It is very handy to easily remove the canopy when working on the cockpit interior.

A junk 302 Ford V-8 was purchased for mock-up purposes (budget constraints) and the chain reduction drive was completed. The chain drive method was chosen after exhausting planetary gear, spur gear, and belt scenarios. Each has severe limitations for high HP high RPM internal combustion engines for the amateur builder, in my view. That was an exercise in itself requiring a lot of engineering work. Surprisingly the cost of each method is about the same. In 2012 the instrument panel and wiring were in. A Ford 5 litre V8 was built up to produce 350HP and mated to the chain drive with a dual mode torsional coupling. The coupling is a bit of a crap shoot as even the multi million dollar commercial efforts get it wrong sometimes. Witness Diamond's initial attempt and the Bede saga. A bent McCauley 3 blade prop from a Comanche was acquired, straightened in my kiln and balanced, to be used for initial engine run-in. A time expired wood/composite MT prop from a Piper Malibu was obtained and overhauled at home. The radiators were made from purchased cores. They were the most frustrating build item of them all. It was a very, very busy year.

In 2013 the engine was run for the very first time with



the 3 blade prop. Sweet music and lots of power! The spinner was crafted from fibreglass and some taxi testing ensued on our short grass runway. The powerplant was run for some 20 hours, the gear was retracted (on jacks!) at least 50 times, and all systems were checked. In 2014 the Spit was moved to Chatham's airport for testing. After sign-off by MDRA and receiving the paperwork taxi testing began in earnest. Runs to 60mph down the runway proved the aircraft ran straight and true tail down or up. It has a locking tailwheel. Short runway lift-off/landings followed and 3 point no flap lift-off occurred at 75mph. In September the spinner exploded! I made a new one with a layer of graphite and torture tested it to 3100RPM using our lawn mower for power. Maximum RPM for the propeller is 2400. In October a runway flight went long and we overran. The left wheel found the only hole in the overrun area and the nose went down at about 5mph splintering 2 prop blades. Ouch!

The Spit went home for the winter where I laminated wood for 2 new blades. A good blade was scanned, converted to cutter paths and the blades were then profiled on a CNC milling machine. This was much faster and more accurate than the duplicator/router method I had used when I made the Sonerai, ultralight, and T-18 props. I purchased a DYNA-VIBE unit to dynamically balance the prop, and our other aircraft received the benefit of that as well. It is a tool that is used at each annual inspection.

In July 2015 the Spit was back at the airport, and on August 09 I flew a circuit for the very first time! Marg took the video. I had only enough adrenaline for 1 circuit! Several flights followed with the landing gear remaining extended while I perfected the landing technique and monitored all the engine, prop, and flight parameters. The brakes (internal disks) were poor. Then in October an engine failure occurred on climb out. A forced landing in an adjacent corn field caused substantial damage to the wing center section and to the landing gear as it was torn from the wing. The outer wing panels suffered some skin dents but not on the leading edges. The motor mount was bent and the prop blades were all broken. I was very lucky as I received only a slight cut and some bruising. Those race car 5 point harnesses are invaluable! The engine failure was due to the distributor gear (which also drove the oil pump) wearing down and jumping a tooth, instantly putting the ignition timing way off. Analysis resulted in manufacturing and fitting an exter-

In 2015 an engine failure and subsequent forced landing in a cornfield caused substantial damage. An extensive rebuild followed with modifications , including the fitting of an exteranl oil pump .

nal oil pump and adding more oil flow to the gear. As the load on the new gear is now insignificant the fix should last. Anyway it is easily monitored.

An extensive rebuild followed over the next 30 months with some revisions and lots of testing, and the Spit was reweighed. Back to the airport it went in August 2018 with new paperwork. After screwing up the courage to try it again the first post-rebuild flight occurred September 07. Surprisingly it felt like I had flown the plane only the day before. Several gear down flights followed to establish a base line, then the gear was retracted for subsequent flights. By November it was becoming too cold for testing and the weather was deteriorating, so the Spit was returned home to the workshop to await further flight envelope expansion in 2019.

What does it fly like? The prop is currently governed to limit the engine to 5200 RPM. I will increase that to 5700RPM once test flying has progressed. Normal rolling takeoff at 80 mph uses about 600 feet and wheel landing roll on at 85 mph uses about 1800 feet. 2000 ft/min plus climb at 120 mph gear down gets to altitude quickly. I have not done full power climbs yet with the gear retracted just after takeoff as I am mindful of the 2015 issue.

Retracting the gear at 140 mph IAS adds 30 mph IAS. Maximum speed to date has been 170 mph IAS at less than 50% power. The chase plane was indicating 180 mph at the same speed. Some forward trim is used as I think I have the tail incidence set 1/4 degree too nose low. Stick forces are very light yet the aircraft is solid in roll, pitch, and yaw. Rudder trim is needed to keep the ball centered. Aileron reaction in roll is very, very powerful as is the elevator pitch reaction. There is a small pitch trim change as the tailwheel doors are closed. Flaps cause a slight nose down pitch. Only slight control displacement is needed in any axis to create a very powerful effect. Visibility is fairly good in flight but the nose blocks forward view on takeoff and landing and low forward in flight. Fortunately the peripheral view is adequate for those flight scenarios.

The downwind is flown at 140 MPH, gear down. Pulling power back for descent is like deploying a parachute due to the windmilling prop drag in fine pitch. Base at 130 mph, Final at 120 mph, Flaps, runway threshold at 100 mph, reduce power gradually and let the aircraft settle. Barely a squeak and no reading on the G meter. It is easy to repeat as long as one is awake and gentle on the controls. 3 point landings are not as simple as the runway contact vertical velocity is more difficult to judge. The maximum crosswind to date has been gusts to 19 knots at 90 degrees and I think that is the comfortable limit. The brakes were revised to dual piston external callipers and now work extremely well.

For those interested in more information my webpage contains the ongoing saga at "http://users.xplornet.com/~macmaz/".

The straight stack engine exhaust noise is actually a fairly pleasant melody. Once the canopy is closed, earplugs in, and the headset ANR turned on it is relatively quiet for the pilot. CO levels are high with the canopy open but drop to about 10 ppm when it is closed and the cabin air vents are open. Seating is a bit tight due to the parachute but the 5 point harness is very comforting. The Spit has performed trouble free in 2018. Over the winter the paint scheme was improved and signed off by Transport Canada.

I had planned to expand the flight envelope and fly off the required air time in 2019 but had a heart attack in June so I will have to postpone some of the testing till 2020, I suppose. The Spit and I did get up to 190 MPH CAS at a very low power setting in May. The ASI reads to 300 mph and I intend to test to that level. The canopy can be jettisoned should things go very badly. The design has incorporated the best available empirical practices for flutter prevention but only testing can prove if it is sufficient. I devoted a lot of research time to this area, even fitting friction dampers to the ailerons and elevator for initial testing. The airframe is designed to an 8G limit so some testing will need to be done there as well. I'm not as tolerant of G as in my younger years for various reasons so I won't be reaching that level. Of course all the powerplant systems and reduction drive are unknowns as far as reliability goes.

So far it has been quite a journey with big highs and big lows. None of it would have been possible without Marg's forbearance and her active encouragement. The support and encouragement from Bill, Larry, Evert and the Z3 staff at CYCK has been outstanding. The incredible support from our local RAA Chapter and others after the 2015 incidence just defied belief. Thanks to each and every one.

Mac Mazurek *is a lifelong RAA member and a past president of the Chatham Kent chapter.*

Photo Credit: Gusair

VW to Continental in a Minicab

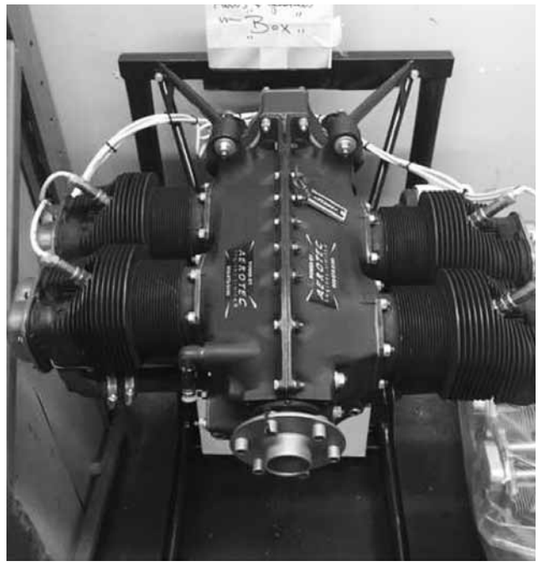
Mike Shave

In November 2017 I made the decision to buy a professionally assembled zero-time engine. The plane I fly, a GY-201 Minicab, was originally fitted with a 2276cc VW engine that I had assembled from new parts. I was excited about the potential of this size of VW engine. It was the largest displacement engine I had built. On paper it seemed to be a good match as the original Gy-20 Minicab flew with a C-65. Even though most homebuilt Minicabs around the world have C-85's installed, I was determined to get equal performance from this VW engine. It is well known that a VW aero-engine needs to turn 3000 RPM static rpm to make enough power for take-off. With the prop I had installed, the engine could turn 3050 rpm static. I was happy with that and waited for the right day to make the first flight. My son came to video the event for posterity, but mainly I wanted to be able to later hear the sound of the engine as the plane flew by him. The grass at the field was a bit long and wet with dew. I had placed a red traffic cone at a distance where I should abort the take-off if I wasn't airborne.

All of us who build planes get to make this first flight. It's exciting and also very gratifying. Years of our lives have gone into creating a flying machine. I was very optimistic and confident in the plane I had built. The video shows the plane getting airborne a short distance before the traffic cone I had set up. I kept the plane at a low angle of climb to build a bit of airspeed. Everything went well. I circled the airfield at a thousand feet, keeping an eye on the engine instruments. After twenty minutes I made an approach to land.

Over the next two years I tried everything I could to have this engine make more power. Early on I made climb test flights using bags of softener salt to load the passenger seat. The engine just wasn't strong enough to pull the plane fast enough to take off at full gross weight. I welded up what I thought was a better exhaust. I bought and installed an Aerovee carb. I made a variety of propellers. There were minor differences in performance with these changes but the basic problem remained. The engine

...my Continental arrived ready to install for $13,500.



wasn't strong enough.

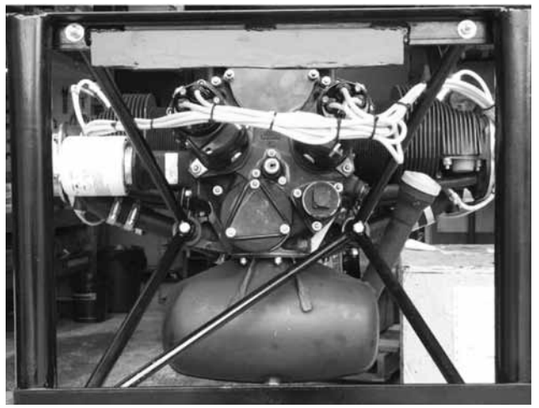
On a warm day in June I made a flight to meet friends for lunch at local paved airfield. The plane sat for about an hour on the apron while I had my $2000 hamburger. It is about 15 miles from where I had the burger to my home field and about half way home I noticed the EGT gage temps drop to about 1000 degrees ?? Oil temp and pressure were OK. The fuel ratio gauge which normally read 12 or 13 to 1 now showed 19:1 ?? Then my RPM started to decrease. I pushed the throttle forward for more power. No increase in RPM ! Even with the power I had I could still manage a climb so I eked out a few more feet of altitude over the next miles. I tried moving the throttle a bit but only at a certain spot was it less rough. During the flare and touch down at my home airfield the engine quit. An immediate inspection showed no sign of an oil leak, and everything looked normal. I used my car to pull the plane back to the hangar.

The next morning I tied the plane down and did a full power run up. All seemed normal. I untied the tail and restarted the engine. Then the clattering noise coming from the engine was unbelievable ! WTF ?? I removed the heads for a top end inspection.

Both heads had cracked between the spark plug hole and the exhaust seat. The clatter was from the pushrods. The valve seats had fallen into the cylinder preventing the valves from closing, which created about 3/8" clearance between the cam and the pushrod. The cause of the cylinder heads overheating to such a degree to crack remains a mystery. It may have been vapour lock and like carb ice it's difficult to prove. It may also have been a small bit of debris in the fuel system blocking the flow of fuel. It is hard to say.

My wife says you get what you pay for. I decided to follow her advice. I had seen Aerotec Engine ads in Barnstormers and I went to their website. On it was a C-85/O-200 engine available as an outright purchase, with no core required. I contacted them and got a reply from Phil Burchinshaw who has the position of Business Development at Aerotec. They shipped me the engine mid-winter 2018 and by the beginning of July I was ready to make another first flight with a new engine. What a difference 25 horsepower can make! Over the next months I followed the break-in instructions supplied by Aerotec. After the break-in period I made another attempt at the climb test with salt bags. This time the plane passed the test and I have been able to take a few folks for a ride in this amazing airplane.

I have been very happy with the engine and I wanted to meet the folks personally who put my engine together.



When my wife and I were down East this summer I contacted Phil to enquire about making a visit to Aerotec. The business is in Bedford near Halifax, NS. When I got there Phil took me through the entire place. We started in their new parts inventory section - shelves covered with cylinders protected with plastic wrapping. Crankshafts, camshafts, accessory covers, mags, etc etc. Next was their stock of assembled engines ready to ship. Most of their business is commercial, to airlines, airshipping companies and schools operating piston engine aircraft. Complete engines firewall forward are available to make the down time of a busy airplane as short as possible. Schools can have a new engine shipped to them in a timely fashion to also make the length of time the plane is out of service as short as possible. At the back of the building Aerotec has a test cell. All the engines they build are run in the test cell for the initial break-in. Next door is where new engines are shipped out and where old engines come in. The old engines are disassembled, their parts are cleaned and measured, and they go through NDT magnaflux examination as required. Any machine work such as having a case lapped and line bored is sent to Rimco in the States. Accessories such as mags, carbs, starter or alternator/generator are inspected and rebuilt by specialists at Aerotec. The engine assembly area is spotless as you would expect it to be. On a wall at the end of the shop is a whiteboard list of four or five dozen engines that Aerotec is currently working on or has in stock, everything from an A-65 to a TIO-540-A2C (WD).

I can highly recommend Aerotec Engines from the experience I have had with them. It is a business that is doing one thing really well: building aero engines, and the proof is in the increased performance of my aeroplane.

The comparison between the VW and the Continental shows up most clearly in take-off distance and climb rate so the first thing to try was a take off and climb at gross weight. Four 20kg bags of salt were firmly strapped onto the passenger seat. Take off distance was slightly longer and took a few more seconds but the plane climbed well enough. My takeoff roll at gross shortened to 700 ft instead of 1000 ft. Climb improved to 650 fpm, compared to my VW climb at 350 fpm. Cruise had been 95 mph and with the Continental it rose to 110 mph.

There are a few 2 place home built planes that have had success with a VW aero-engine. Monnett's Sonex performs well with a VW, but his earlier Sonerai 2 is better with a Continental. Rutan initially designed the Vari-Eze for VW but switched to Continental. The VW at 3000 rpms is prop limited to 58" so prop efficiency is low at low airspeeds. Monnett's VW engine kit comes as loose parts for about $10,000 CDN, while my Continental arrived ready to install for $13,500.

With the improved climb rate I will be able to meet my goal of taking my kids for a flight. This engine has turned my Minicab into a useful aircraft.

Kitty Hawk Introduces Heavyside PAV

Aircraft manufacturer Kitty Hawk of Palo Alto, CA has added a third vehicle to its stable of innovative designs under development. Project Heaviside joins the Flyer, a recreational vertical takeoff and landing single place rotorcraft, and the Cora, a two-passenger autonomous urban air mobility design. which holds an experimental airworthiness certificate and is currently being tested in New Zealand. Heaviside is a single place recreational VTOL that uses tilting electric motors and propellers mounted on the flying surfaces to provide powered lift for takeoff and landing with conventional wings for forward flight. For more see https://www.youtube.com/watch?v=q7mc3C19kE4&feature=youtu.be

RAA Oshawa Barnyard Fly-in 2019

By Gord Mahaffy

Photo Credit: Robert Daub

THERE HAS ALWAYS been a fascination with airplanes, but for most people the cost of flying has been a detriment to pursuing aviation as a hobby. However during the nineteen sixties it became practical to build and fly your own aircraft.

About the same time organizations were formed to assist the homebuilder in acquiring materials and helping builders find their way through the maze of necessary paper work. In Canada it was the Recreational Aircraft Association (RAA) that sprang up and has been there for Canadian homebuilders to this day. The RAA is a national organization which is divided into local chapters and one of these chapters is the Oshawa RAA led by Jim Morrison. As well as completing a ten-year restoration of a classic Piper Tri Pacer which has just taken flight, Jim and his Executives organize a once a year event known as the Barnyard Fly-in at Hawkefield

If you have ever dropped in on a weekday or weekend for that matter, you might be lucky enough to catch a few weary homebuilders rebuilding or assembling a new project and getting it ready for flight. Or you might catch a missed approach from one of the surrounding flying schools from Oshawa or Peterborough.

Amongst the notable vehicles at the fly-in were a 3/4 scale Spitfire and scratch built sports car crafted by Ross Ferguson and his wife and co-conspirator Blanche.

Hawkefield is a very peaceful airstrip; usually we are there on the weekdays and most of the time you can witness the quiet surveying by hawks of all sizes and the odd deer.

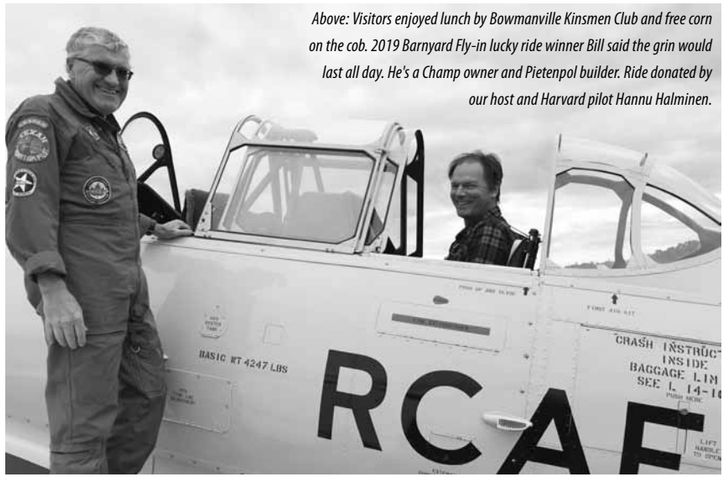
But one day of the year, the Sunday after Labour Day, Hawkefield is opened up to the flying public for a fun get together and fly-in.

This is made possible through the generosity of host Hannu Halminen, who owns the private airport just east of Oshawa, close to the small town of Orono. There is a 3300 foot grass runway and a private collection of aircraft that includes a Harvard, a Tiger Moth, a Waco Taper Wing, and a J-3 Cub. The event has been a twenty-four year tradition so it is well known in the area, and it attracts pilots like the late Bill Lishman (a.k.a. Father Goose).

This year the weather was cool and threatening but it held off so there were about 30 – 40 aircraft in total and at least 50 cars. This resulted in well over 100 people on the field.

The airplanes that commanded the most attention were the visiting open cockpit Tiger Moth, a Rand KR-2, a Teenie Two, the Harvard and the Waco Taper Wing. The most popular amateur builts on the field appeared to be Zenair 601s and a few CH-701s. Also well represented was the Aeronca line of aircraft, Champs & Chiefs. Many were in the Owner Maintenance category while some are still certified.

But without question the show stopper was the Ferguson Spitfire. This all-wood 2/3 scale replica was created by Ross Ferguson as his third major project. The first project was a scratch-built sports car which was displayed beside the Spitfire. His second project was a plans-built Piel Diamant with a Ferguson designed and built retractable gear. Then came fifteen years of steady work to produce the Spitfire. Ross had to work from plans that he created himself. (Note… It is often said in aviation circles that his wife, Blanche should get as much credit as Ross for all those completed projects since she often worked side-by-side with him during the construction).



Above: Visitors enjoyed lunch by Bowmanville Kinsmen Club and free corn on the cob. 2019 Barnyard Fly-in lucky ride winner Bill said the grin would last all day. He's a Champ owner and Pietenpol builder. Ride donated by our host and Harvard pilot Hannu Halminen.

Ross has the car and Spitfire up for sale now but the buyer will have to be a very special person - preferably a museum.

At the end of the day there was a raffle for a free ride in the winner's choice of aircraft, the Harvard or the Waco; the flight was generously donated by Hannu. Doug, a home-builder working on a Pietenpol, won the draw and chose the Harvard.

All-in-all it was a complete success and everyone went home happy while anticipating next year's fly-in, which will be the twenty-fifth annual. R

Barry Meek / continued from page 15

to fuel starvation as the "unforgivable sin". Leaving on a flight without the fuel required to complete it is indeed a dumb deed. But, there are times when a bad situation develops in spite of the pilots' best judgment and actions. For example, unexpected weather closing in along the planned route, a mechanical issue causing fuel to leak, stronger-than-forecast headwinds, and flying in areas so remote that there are few, if any alternates for landing. Daytime VFR reserve requirements say there must be 30 minutes of fuel on board at termination of the flight. Maybe that's not enough. Most pilots carry more.

One of two forced landings I have had was due to fuel starvation. While taking full responsibility for that situation, it wasn't because there was no fuel on board. There was plenty. However, I had left one gas cap off the tank on top of the wing, and fuel siphoned from that side, and emptied the small header tank in front of the instrument panel. That little tank fed the engine. Installing a fuel cap was all that was required to depart the farmers' field I had safely landed in.

"The unknown was: *did anyone tamper with the airplane during the afternoon?"*

Another incident when I thought I might run out of fuel, but didn't, was on a flight out to Tofino on the west coast of Vancouver Island. I left the aircraft unattended during the afternoon spent down on the spectacular Long Beach. Returning to Vancouver that evening, the peaceful night flight, part of it over the water of Georgia Strait, was a bit tense when I started thinking how dumb it was to have departed for home without dipping the tanks. The gauges looked OK, but they're notoriously unreliable in older Cessnas. Going over and over the calculations reassured me there was plenty of fuel, but the unknown was "did anyone tamper with the airplane during that afternoon?" There was no security at the Tofino airport at that time.

Daytime VFR reserve requirements say there must be 30 minutes of fuel on board at termination of the flight. Maybe that's not enough. Most pilots carry more.

As a relatively inexperienced pilot, I have other stories and close calls to talk about. Here's one more. While flying on a seasonal contract doing Pine Beetle surveys in B.C., I had two forest specialists on board who documented the damage to the trees caused by the beetles. There were days when weather prevented us from completing the planned coverage in some areas. Late in the season, one day we found ourselves close to an area that had been missed. The two fellows asked if we could "slip over" the ridge and finish up before heading back to the base. It was an amendment to our flight plan, and would put us beyond the fuel on board. There were two possible airports where we could re-fuel however, so we pushed on.

Getting close to the planned fuel stop, I called on the radio, only to be advised there was no fuel that day. An immediate diversion to the other alternate presented a bit of a problem as well. There was a small mountain range shrouded in cloud to get over. I chose to descend and fly under the cloud along a highway, rather than take the chance of running out of fuel above the clouds, over the mountains. We made it safely, but with less than a comfortable fuel reserve.

From the safety and comfort of my office chair, sitting here in front of the computer, aviation is still interesting and exciting. When reading about the problems pilots get themselves into, whether it is fuel starvation, bad weather, icing, or just something they do that's really dumb, I have a certain sympathy for all of it. I have made mistakes around airplanes, made my share of bad, and stupid decisions, and can't pass judgment on anyone doing something similar. The common wisdom that states, "learn from other's mistakes, you'll not live long enough to make them all yourself", is good advice. But there's not one pilot among us that hasn't figured that out just a bit too late. R

***Barry Meek** is a commercial pilot who flies summer contracts for various operators in western Canada. He is a retired ambulance paramedic, mountain bike guide and broadcaster. His articles have appeared in the COPA Flight, The Aviation News Journal and the Recreational Flyer. He now resides in Vernon, B.C. and in Lake Havasu City, Arizona. He can be reached at bcflyer@hotmail.com*

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 n.rioux1@videotron.ca or J-F Alexandre info@raa415.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 4th Monday of the month at 6:00 PM at the Lake Simcoe Regional Airport for the months of June, July & August (BBQ nights) For other months contact Dave Evans at david.evans2@sympatico.ca or 705 728 8742

COBDEN: Third Thursday of the month at the Cobden airfield clubhouse 20:00 hrs. Contact Bob McDonald 613-432-8496 or bobkim.mcdonald@gmail.com

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. Skip Reeves 705-429-5154

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. Meetings are on the second Monday of each month at 7:30pm upstairs at the Air Cadet building at CYKF except during the summer months when we have fly-ins instead.

Please contact Dan Oldridge at kwraa@execulink.com for more information or visit our newly expanded website at http://www.kwraa.net/.

LONDON/ST. THOMAS: First Tuesday 7:30 p.m. At the Air Force Association building at the London Airport. Contact President Roy Rader 519-349-2641

MIDLAND/HURONIA

Meetings: first Tuesday of each month, 7:30 pm, at the Huronia Airport terminal building (CYEE). Contacts: President Rob MacDonald - 705-549-1964, Secretary Ray McNally - 705-717-2399, e-mail - raamidland@gmail.com E-mail – raa.midland@gmail.com .

NIAGARA REGION: Regular meetings occur the second Monday of every month at 7:30pm in the CARES building at St. Catharines Airport (CYSN). During the summer months though, June-September, meetings take place the second Monday of those months at 5:30pm in Hangar #4 at Welland Airport (CNQ3). Contact Elizabeth Murphy at murphage@cogeco.ca, www.raaniagara.ca

OSHAWA DISTRICT: Last Monday at 7:30 p.m. at Oshawa Executive Airport air terminal, ground floor, 1200 Airport Boulevard. Contact President: Jim Morrison, 289-675-0660, jamesmorrison190@msn.com

Website raaoshawa.blogspot.ca

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 19:00-21:00 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 Dennis Fox dennis77fox@gmail.com 403-443-8434 or Secretary Bruce Flach o2fly@yahoo.ca

EDMONTON HOMEBUILT AIRCRAFT ASSOCIATION: meets second Monday - Sept. to June. Contact Michael Reimer 780-975-5263 or secretary Roger Smeland 780-466-9196. Website www.ehaa.ca

GRANDE PRAIRIE: Third Tuesday, (September to April), 7:30, 2nd floor boardroom of the Grande Prairie Terminal Building. Summer events on an informal schedule. For more information contact Lee Merlo at 780-518-4254 or e-mail arniesusanmeyer@gmail.com

BRITISH COLUMBIA

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 250-309-4171 email: Outintheair@yahoo.ca

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 Alex Mackay mackay@physics.ubc.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 Darren Watt 250-573-3036

ALASKA HIGHWAY: meetings held every third Thursday of every month (except July & August) at the Taylor Fire Hall at 7:30 p.m. For more information call 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*

Emails can be sent to President Gary Wolf at: **garywolf@rogers.com** *and George Gregory at* **gregdesign@telus.net.**

Classifieds

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

The Recreational Flyer is pleased to offer you colour advertising within the magazine. Previously limited to the back cover, we have added 4 new colour pages which will be available with limited space for your advertising needs. Our rates for both black and white and colour ads remain very competitive and you reach a captive and qualified audience. Emails can be sent to President Gary Wolf at: garywolf@rogers.com and George Gregory at gregdesign@telus.net

Deadline for submissions is the first of the month preceding date of issue.

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

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The Recreational Aircraft Association Canada does not assume responsibility for advertisements, but does exercise care to restrict advertising to responsible, reliable individuals.

Please note: Ads running more than 3 issues must be renewed to guarantee continued display in the magazine.

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

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

E.A.A. BIPLANE, Ron Riley's first home-built, airframe only, includes cowlings, motor mount, flying wires from Acro 1, N.O.S. canopy, fabric & other covering materials, wood etc. Dismantled," sold as is, where is" $3500. G Trimble 519 461 1665 ijtrimble@gmail.com

FOR SALE - Four lengths of spar grade sitka spruce. 7/8" x 6 1/4" rough, x 20 ft. This will plane down to 3/4" x 6". Located in Kenora, Ontario. I will box and wrap and carry to a shipping depot. Buyer pays shipping, or my ship costs will be added to purchase price. Cost for this material, planed, at Aircraft Spruce Canada is $14/ft, I am selling for $600 CDN. Call 807-468-4764, or email pjohnson@kmts.ca.

FOR SALE - Complete Ivoprop Magnum in flight adjustable pitch prop for sale. 4 3/4" Bolt pitch Dia. 37 hrs. on a V6 260hp Engine. (Spitfire MK 26B). Asking $2,000.00 CAD. Please contact Bob Poole at Aerostructural Inc 416-844-9440,

PARTIAL KIT for Zenair CH 640 See my Facebook photo album for progress (George Lowes). I've lost my medical. See Zenair web page for specs.
http://www.zenair640.info/standard-ch-640-kits.html Kits List Price in $US: Rudder Tail 590.00, Tail (Manual Trim) 1,995.00, Wings 7,995.00, Fuel System 1,495.00, Extended Range Auxiliary Fuel Tanks 2 X 46 USgal 900.00, Nav/Strobe/Position Lights (Incandescent NOT LED) 828.00. Total List Price 13,803.00 $US. Many air tools are also available. $10,000 OBO. George Lowes 705-843-0826

BX-1000 Black Max brakes, wheels and tires. 6 inches, axles 5/8" Brand new. 575.00 OBO. Lmistor@hotmail.com 289 838-9588, 905 469-2198

2017 ANDERSON KINGFISHER C-FBQF, registered amateur in 2017. 2 seat amphibian, tractor 160 hp Lyc by Aerotech 2016. All new instruments/ accessories. Maiden flight October 2017 Overall 9/10 $ 35,000 CDN. Guy at 902-541-4437 or gmlefebvre@outlook.com

PEGAZAIR-100 STOL PROJECT. Ready for instruments and 100hp engine. Built to plans with high build quality. All aluminum flying surfaces are closed and trial fitted. Plane has been rigged with factory supplied streamlined extruded aluminum struts. AN hardware, 4130 and 6061 sheet stock and an assortment of tools included in package. Asking $15,000 USD. Please call Clarence 519 742-3159 for more info.

KINGFISHER AMPHIBIAN PROJECT, Fuselage on Gear, Plans, Motor mount, Fuel Tank, 4130 Steel Tail Group Parts Completed, Internals of fuselage varnished. External covered in a layer of fibreglass. Value somewhere in the $2000 range but would prefer to trade for Geo Tracker, Suzuki, etc. in good running condition. 780-832-9750, arnie5149@yahoo dot com.

ACEY DEUCY 2 place tandem open cockpit, 63TTSN, 0200 Engine, radio, 406 ELT, Intercom, B&C Lightweight Starter and Alternator, 3 blade adjustable Prop, Hangared, Would consider trade to closed cockpit, $22500 . 905-396-7533
(Apr 30 photo)

MJ5 SIROCCO PROJECT, serial #003. The aircraft is 75% built. The fuselage is all finished with the canopy fitted. The ailerons, rudder, elevators, horizontal/vertical stabilizers all built. All the ribs for the wings are done but the Box spar needs to be built to finish the wings (all spar material included). All the work is absolutely best quality. I have no time to finish this and hence would like to pass it on to someone who has. I have invested over 5000 $ in materials but I have no time to finish.. My loss your gain... $1500 takes it all away. Wiese Laurent 604 989 4805

"THE SKY'S THE LIMIT!" $60,000 This Advanced UL 2011 Zenith CH750 Ultra-light is the perfect plane for going fishing, camping, gold panning, or for exploring anywhere off the beaten path! Jabiru 3300 engine, Sensenich propeller, Lowrance avionics, dual throttles, strobe lights and much more! Like new..less than 200 hours...always kept in a hangar. • Contact Bill W. Quin, Owner - located Fruitvale, BC Canada • Telephone: 250 367 7425 . 250 921 5524

1978 AMF-S14 MARANDA. Wood & fabric with Lycoming O-290-D2B, 920 TTSN, ICOM 210 radio, transponder. Same owners 18+ years. $25,000 obo www.MarandaFor-Sale.com 905-884-8598 Peter

76 h.p. 2180 cc VW engine for sale. Built by Scott Casler of Hummel Engines, $4,000 cdn maryannlapensee@sympatico.ca

½ VW ENGINE FOR SALE. Big cylinders, 1200cc, 45hp at 3600 rpm. No electrical, no starter. Cut crankcase. Attached to an airframe. 3.0 hrs since new. Single spark ignition, Bendix mag, Zenith carb, oil coil on Y intake, 2 aluminum NiCom cylinders, BxS 94x86 mm, 8:1 compression, shrunk fit 5" hub, 6 x5/16" bolt pattern on a 79 mm diameter, straight exhaust. 4100 CAD. Contact Liviu at lmistor@hotmail.com

PRINCE PROP for Half VW, P tip, wood, 52x36 DxP. Contact Liviu at lmistor@hotmail.com

ESTATE SALE. Bushcaddy R80. Kit# 0073, C-FFUE, registered Amateur Built. Flight and maintenance logs available. 22 hours on airframe. 105HP Lycoming O-235 with 65 hours since overhaul. Warp Drive 72" 3-blade carbon fibre prop. Full Lotus 1450 floats. Basic analog VFR and engine instruments. Avcom integrated intercom. Icom IC-A5 handheld radio. Airplane could be flown at Katepwa Lake Saskatchewan. Estate Sale. Asking $20000 obo. Contact Alex at (204) 807-9947 or alex.smithwindsor@gmail.com for more info.

CLEANING THE HANGAR! PS Engineering Aerocom !! intercom with one brand new never used PS Engineering stereo / mono headset (switchable) Including Mini XLR (switchcraft TA4FLX) plug for remote $150. Two Soft-Comm aviation headsets – in like new condition $100 /pair.. 1 used Cessna 150 remote drain gascolator $100. 2 new Facet 40108 low pressure fuel pumps with AN6 fittings $40 each. 1 ASI 40 – 140 knot new (green band 70-110 knot) $100. 1 VSI -used Garwin g991-01 (Cessna 150-170-1800) $50. Panel mounted digital clock with alarm $25.00 Leece Neville adjustable electronic voltage regulator 5078RB – new in box $30. Insite GEM 602 Rev D engine monitor with 6 EGT and 6 bayonet CHT sensors for 4 or 6 cyl. $500. Digiflow 6710m metric fuel flow meter/totalizer with both push on and threaded sensors – New $75. Lift Reserve instrument - Minihelic 11 Series 3000 with custom scale in case for glareshield mounting $75. 2 Cleveland 10-22 master cyls $300 for the pair. 2 Cleveland 30-63a Calipers ($829 each from ACS – in ACS boxes) $350 for the pair. Warp Drive prop left hand. It is a 68 inch and it is the HP (2 piece) hub and the HP has C14227 68L 2BLD blades. $500. All items open to reasonable offers. Contact Clare Snyder Clare@snyder.on.ca 519 574 4322

Plane Parts For Sale: EJ-25 Subaru 165 hp Marcotte Reduction, SDS Controls ignition and injector, IVO Prop 72" 2-blade magnum with governor. Call (705) 522-1579 home or (705) 523-1016.

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

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Classifieds On The Internet:
http://tvsac.net/BS1.html - more ads from our Kamloops chapter

Above: Jim Stunden dishes out the sausages; right, top down: the Chapter's shiny new Cruzer, Tim Saxton's Super Rebel, and Eric Munzer's BD-4 were amongst the notable aircraft gracing the September Show and Shine.

Chapter 85 Vancouver

It's been a great summer for Chapter 85. Following our very successful Annual Fly-In on June 29th, the summer weather was excellent. This year, as opposed to the summers of 2017 and 2018, our summer flying was not hampered by major atmospheric smoke from BC fires. Our airfield, the Delta Heritage Air Park, is looking great with patching of some of the concrete around our clubhouse and refurbishing our picnic benches and a shiny new fence around the end of the runway 25. We thank John Macready and John de Visser for this initiative.

The major activity of the Chapter this summer was carrying out the 25 hours of test flying of our homebuilt Zenith 750 Cruzer. A few adjustments have been required to improve the airplane, but the building team are almost ready to apply for the certificate of air worthiness. Then, the task will be to train Chapter members to fly the airplane. Five instructors have been identified for transitioning Chapter members. The 'ground school' is being created by Sebastien Seykora and Bill Bird in a series of training videos which can be found by googling 'You Tube RAA Chapter 85'. For the next few months of flying season, our chapter members will be focused on getting to fly the Cruzer.

We celebrated the end of summer with our annual Show and Shine event on Sept 3. Over 40 people turned up and 12 aircraft showed up including a C120, a C140, two C150's, a C172 and a C326, a Maule, two BD-4's, a Murphy Super Rebel, a Piper TriPacer, a Pober Pixie and the Zenith Cruzer. Also, there were two antique cars, a Mercedes Benz convertible and a Cadillac. Jim Stunden manned the BBQ and all enjoyed the feast- until we ran out of sausages.

Across Canada

RAA Chapters in Action

Left: Karl Pfister talked about his restoration of a German MBB B)-105 which he flew to Oshkosh. Right, Tom Martin graced the London-St Thomas Fly-In with his F-1 EVO.

RAA London St Thomas

The September Fly-In and Picnic was a great success with perfect light winds from the south. Four aircraft arrived and departed; numbers totaled almost thrity with many members and their wives in attendance. Thanks to Tom Martin for bringing his Harmon Rocket to the event.

At the September meeting, Dave Hertner reported that he was going to France to look at an aircraft kit called a G1from G1 Aviation (https://g1aviation.com). Dave indicated that this was a STOL aircraft in a format like the Zenith 750. Dave is interested in this as it is potentially a great aircraft to go with the D-motor that Dave offers. We look forward to more from Dave on this exciting new aircraft.

Eric Bartlett indicated that he is making parts for his turbine motor. He is surprised that everything seems to be coming out heavy.

Chris Staines reported that he was working on the motor mount and nose gear retraction systems on his aircraft.

Roy Rader told about the tour of Diamond aircraft that he and Bill W. went on. Roy spoke about the new ownership from a China based company and the ongoing success of Diamond. Roy also invited all to attend a Fly-in at his place on Saturday, September 21st. There will be a corn roast and sausages served at noon. Invites will be sent out to members by Phil Hicks. Invitations will be sent to Chatham and Exeter as well.

Karl Pfister presented a talk on flying his recently restored MBB BO-105 P1M German helicopter. This helicopter was recently surplused from the German military. Karl was able to purchase several from a government surplus sales site and bring them to Canada. He has restored one to flying condition and is flown in Canada as a historical military aircraft.

We were treated to many photographs of the helicopter and Karl spoke about the learning to fly it. Karl indicated that he had a German military pilot train him, so he felt competent flying with the training provided.

Karl took the MBB BO-105 P1M to Oshkosh. He shared many photographs of the trip. The ones of downtown Chicago were fantastic. Most of the flight was at approximately 1000

AGL, so pictures were very clear. Apparently, you will never win a gas mileage race with a helicopter. I am not 100% sure, but I think Karl indicated that they had to stop and fill up about every two hours (I think he said 500 litres per fill up, but I may be wrong). So, while incredibly reliable, these helicopters do not like to pass the fuel pumps.

Karl went over the approach procedures to Oshkosh and then the flights within the KOSH airport to get to the warbirds area.

RAA/COPA Midland/Huronia

The recent regional Fly-In covered its expenses, and it was reported that 45 kids were registered for the September 7 COPA for kids event, which which was subsequently flown in fine weather. Adam reviews the status of the Aeronca Chief project, and reported on the condition of the aircraft. It was decided at the Octcober meeting to poll the members to determine the level of interest in restoring the aircraft.

Leigh has had contact with the CASARA group located at Edenale and has tentatively booked a speaker for the November meeting.

The Zenith 601 Builder's group continues to meet in Bob's hangar on Thursday evenings and Saturday mornings.

President's Message / cont'd from page 2

country teaching operations and regulations to private and commercial users. Besides consulting and providing TC approved training he offers thermal and spectral analysis, aerial video and photography to industry, agriculture, infrastructure, and public safety.

Drones have gone through a transition similar to the Ultralights, beginning as a fringe group and they are now progressing to responsible flight under acceptable regulations that integrate them into general and commercial aviation. Harish's website is www.rpasotc.com

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