

# 5 kywriter.



# December 2003

# Countdown to Kitty Hawk December 17<sup>th</sup>

by Bob Kirkby

"If you're one of the lucky 35,000 who have a ticket for the December 17 centennial of flight celebration at Kitty

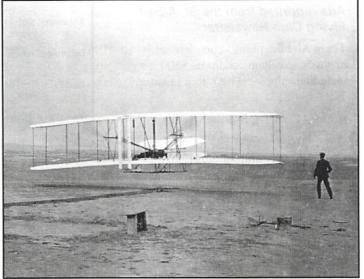
Hawk, North Carolina, your day is set. But what about the rest of us? How can each of us mark this grand event? One of the best things you can do to honor what Orville and Wilbur accomplished in 1903 is get in your aircraft and fly! Fly a Young Eagle, fly a friend, or fly alone ... just FLY!" - EAA President Tom Poberezny

Do you have any plans to celebrate the 100<sup>th</sup> anniversary of powered flight? Pilots, particularly recreational pilots who are identified by

their passion for flight, should want to do something to commemorate this great event. Weather permitting, I intend to take the day off and fly on Wednesday, December 17<sup>th</sup>. I think it would be great to organize a group flight that day, after which we can hit the pilots' lounge and raise a glass to Orville and Wilbur. Maybe even catch some of the Kitty Hawk celebrations on TV. Any takers?

### EAA Wright Flyer Makes First Flight!

On November 20<sup>th</sup> the EAA Wright Flyer replica made a successful first flight with Dr. Kevin Kochersberger at the controls.



Wilbur looks on as brother Orville makes the first powered flight at Kitty Hawk, December 17, 1903. The flyer weighed over 600 pounds including its 179-pound, 12 hp engine, and had a wingspan of 40 ft, 4 inches.

The stage is now set for the December 17<sup>th</sup> commemorative flight at Kitty Hawk. I hope the EAA makes a video tape of that flight available.

### 1 Millionth Young Eagle Flown

On November 13<sup>th</sup> Tom Poberezny announced the Young Eagles program had reached its goal of flying 1 million Young Eagles before the centenary of flight on December 17<sup>th</sup>.

"The program will continue into the future because you have told us how important it is to remain involved with young people, working together to build aviation's future. Young Eagles has become a part of the very fabric of EAA. Our mission is too significant to stop now", said Poberezny. The Young Eagles program started on July 13, 1992.

The CUFC can be proud to have facilitated 35 of those 1 million. +++

### The first powered flight

At 10:35 a.m., December 17, 1903, Orville Wright fired up the four-cylinder engine and embarked on the first manned, sustained, powered flight. That initial ascent lasted about 12 seconds and spanned an estimated 120 feet.

Wilbur then gave it a try and exceeded his brother's distance by about 75 feet. As any pilot knows, nothing can substitute for experience. By Wilbur's second try (the fourth overall and the last one of this fateful day), he sustained flight for nearly a full minute and a distance of over 850 feet.



Himax Parts - All hardware for a Himax 1700, both aileron and rudder control cables, complete tail section and tail wheel, right wing and both ailerons, two 5 gallon wing tanks, Alt, AS, Tach, EGT, CHT, Compass, Antenna fuel pump, Gascolator. Barry 403 935-4609 or barryleewood@hotmail.com (12/03)

Floats - Puddle Jumper Amphibious, 14ft, kevlar bottoms, rudder, brakes, new in 2001, 1hr on Challenger, red, make offer. Reid Huzzey, home 403-272-9090 work 403-298-5507 (12/03)

Phantom One - 1982, 135TT airframe and engine, flys weekly, \$5,000 OBO. Dick Rankin 403-286-5735 (11/03)

Engines - 0484 Military engine core \$300. 0442 Military engine ready to mount, good condition, \$300. Dick Rankin 403-286-5735 (11/03)

Spiral wrap - 5/8" spiral wrap, nylon, \$0.15 per foot. Bob Kirkby 569-9541 (11/03)

Flight computer - Jeppesen CR-3 circular computer, new, 2 available, \$10 ea. Bob Kirkby 569-9541 (11/03)

Avid Aerobat - Advanced Ultralight, 102 hours since rebuild completed in January 2003, new Rotax 582 engine 3:1, Powerfin 2-blade 74" prop, new VFR instruments, new interior, new fabric and paint (red and yellow), wings rib-laced, new wide stance gear, new double tail spring with Matco tailwheel, tricycle gear option included, new cowling with twin rads, folding wings provide easy storage in garage, cabin heat, all maintenance logs up to date, cruise 95 to 100 mph, \$24,900.00, Troy, (403) 936-8424 or email for pictures brancht@tsesteeel.com (10/03)

SkyPup - Plans built ultralight. 52 hours total time on frame and rebuilt 277 Rotax. Cruise at 55mph on 1 1/3 gallons per hour, climb at 450 fpm. Enclosed cockpit. Single seat. Endura paint. Asking \$4,000, Bruce Lange, 403-227-6577 or langeb@rvvs.com (10/03)

Cuby II - 2-place, side-by-side, 65hp MZ202, low time. Beautiful yellow airplane I need money for my next project, \$19,000. Peter Wegerich, 403-862-7148, email wegericp@telusplanet.net (09/03)

Parts - Set of 3 skies (tail ski), teflon bottoms, \$500. Arrow 500 engine, 65hp, 2 cylinder, horizontally opposed, 93 hrs, \$1500. Cuby fuel tank for left or right wing, \$100. Variety of flight and engine instruments, Alt, AS, Tach and more. Some other parts as well. Peter Wegerich, 403-862-7148, email wegericp@telusplanet.net (09/03)

Mini-Max - TT173, 3 fuel tanks, 15 USG, Rotax 447, 40hp, enclosed cockpit, removable canopy, new tires, \$8300. Stan Sheriff 934-3460 (09/03)

Notice: Classified ads are free to CUFC members. Contact Bob Kirkby to place or renew your ad (see masthead). Ads will be dropped after 6 months unless renewed.

### Ads reprinted from the St. Albert Flying Club Newsletter

Team Airbike plans - complete set, manuals, excellent condition, \$200 including shipping, OBO. Reg Lukasik 780-459-0813.

Rotax 447 - CDI, B-drive, overhauled. Dan Pandur 780-418-4159.

Puddlejumper amphibious floats used, \$2500. Dan Pandur 780-418-4159. DCDI, oil injection, 177hrs on engine, decoked at 100hrs. Fuel 12g, cruise 70mph. Ivo in-flight adjustable prop. Strobe, wing lights and landing light. Skis, Clark headset, handheld GPS and Icom A22. \$19,800. Len 780-436-1928 or email to lennegreenwood@hotmail.com.

### Skywriter

Skywriter is the official newsletter of the Calgary Ultralight Flying Club and is published 12 times per year. Forward your articles and letters to:

Editor: Bob Kirkby 569-9541 e-mail: bob@skywalker.ca

Assistant-editor: Bernie Kespe bernie.raymac@shaw.ca

### Calgary Ultralight Flying Club

Meetings of the Calgary Ultralight Flying Club are held on the second Thursday of every month, except July and August, at 7:00 pm, at the Northeast Armoury, 1227 - 38 Avenue NE.

President: Bob Kooyman 281-2621 e-mail: kooyman-eng@shaw.ca

Vice-President: Stu Simpson 255-6998 e-mail: bushmaster@shaw.ca

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### Choices

by Ken Beanlands

As aircraft builders and pilots, we make many choices by asking many questions: Is the weather suitable for flying? Is the wind too high? What color should I paint the plane? What's the best airstrip to house the aircraft?

...and so on.

However, the two biggest, aviation related choices we can make are: Should I build a plane? If yes, then what should I build?

For me, the answer to the first question was easy. I had studied Aerospace Engineering, worked summers and weekends in aircraft maintenance shops and could never remember a time when there wasn't an airplane or airplane project in my life. Dad always seemed to have a project in the basement or a plane in the hangar. These included a Hawker Hurricane (yes, a real one!), Citabria, Cessna 185 and Cessna 180 on floats. Even now, he's building a Murphy Rebel that will go on floats. My father is a great influence in my life and I'm pretty sure he had me vaccinated with AvGas at some point!

So, for me it was natural to decide to build a plane. What to build also seemed to be an easy choice at the time. The main purpose was to build a single seat plane for Dad and I to fly in when we were not interested in burning 12 gph in the 180. Given my

financial and family standing, recent university graduate and quite single, scratch-building was the only choice. This led me to the Christavia. Inexpensive, good on floats, and with a rear seat for the occasional overnight hunting and fishing trip (the tent had to go somewhere) or maybe a passenger.



The Wag-A-Bond

That choice seemed to be the most logical one. However, time has a nasty habit of bringing major changes to ones life. In the time since I started the project in '89, I've found a woman crazy enough to marry me, and moved from St. John's to Calgary away from my father's well equipped shop and his Cessna 180! This meant that the earlier choice of aircraft didn't fit nearly as well. Tandem seating is something my wife is definitely not fond of. Neither am I for that matter. I'd certainly prefer Renee to be sitting next to me where she can keep me fed and fold maps on those longer trips. It also occurred to me that the only way to enjoy float flying on the prairies is with amphibs, something that the Christavia can't do very well as the useful load will leave me with a single-seat aircraft.

So, now I face the same choices again. First, should I build a nother plane? Obviously, we realized that we would like an aircraft that is more in line with the mission we have. However, there are production aircraft that would fit the need just as well. I'd love to own a Cessna 180 or even a 170, for example.

My wife and I have talked it over and she agrees that I would not be happy without a project to work on in the garage. Also, our time management and lack of kids means that there is little chance of AIDS (Aviation Induced Divorce Syndrome). She enjoys working on crafts and pottery while I work on the plane. We make time each week for a date night and usually spend Saturday and Sunday mornings together running errands and finding nice spots for breakfast.

I also made the choice early on to include her in the building process and she has become quite good at fabric work (as a result another choice is that the next aircraft also has to be fabric covered). Involving the family is a must at this stage. Without their support, either the project or the family will fail.

This solved the first choice. However, the second choice was to be a time consuming one: What should I build? This choice will be one I'll have to live with for a long time, both in the shop and in the air.

I did have some criteria to work with. It had to be side by side and have a useful load enough to carry 3 hour fuel + reserves, and enough camping gear for a week at Oshkosh or Arlington (about 100 lbs). I also wanted something that could cruise comfortably at the 100-110 mph. It also had to safely operate out of the typical 2000' grass strips that surround Calgary. The ability to handle amphib floats was a bonus. Finally, I did not want to work with composites or have a plane with a wooden fuselage structure.

The early favorites were the:

Bearhawk - A 150-260 hp monster STOL bush-plane seating 4, cruising at 140 mph with a 180 hp Lycoming and a useful of about 1250-1300 lbs! It can be built from plans or as a kit. Amphibs are a breeze. Operating costs are on the high side though and the build times are high unless you opt for the expensive kits available from Avipro.

**Wag-A-Bond** - A 65-115 hp Piper Vagabond replica exactly meeting the (continued on page 4)



### Choices - continued from page 3

above criteria. Inexpensive operating costs and medium build times were a definite bonus along with the fact it used the same, familiar construction as the Christavia. Many of the difficult or time consuming parts were available from Wag-Aero. Float performance is marginal and amphibs are pretty much out of the question.

Murphy Rebel/Elite - An 80-180 hp, all metal high-wing. As with the Wag-A-Bond, it closely matched my criteria and Murphy even builds a pair of amphibs to fit the Rebel and Elite. Kit costs are about double that of scratch-building and plans are not available. Also I am not a fan of using 6061 and Avex rivets for structural components. This is a personal opinion, not a professional one.

Vans RV-9 - A 115-160 hp all metal low wing. This also matches all the above criteria and does it at well above 170 mph! The kit is excellent and uses 2024 and solid rivets throughout. However, as with the Murphy, kit costs are a lot more expensive than scratch-building and plans are not available. Floats, strait or amphib, are not common on the RV aircraft, but both have been installed on RV-6's, and it is said to perform quite well. Given the

better STOL performance of the -9, this it should even work better than the -6.



The Vans RV-9

The first choice that had to be made was whether I wanted to part with my time and scratch-build, or part with my money and buy a kit. I eventually came to the realization that I love to build and I take



The Murphy Rebel

great pride in the fact that I build from scratch. Also, by building from scratch, more money is available for better quality engines and radios. This left 2 aircraft, the Wag-A-Bond and the Bearhawk, both of which I purchased plans for.



Ken's choice - the Bearhawk

Since I knew that the Bearhawk would do everything on my list, but at a higher operating cost, I only needed to verify the capabilities of the Wag-A-Bond. First, with help of Al Botting's and his Vagabond, I was able to determine that Renee and I

were a fit. Next came talks of performance. The 65 hp was definitely out, not being powerful enough for our requirements, so we concentrated on the 115 hp. I found out that the 108 hp Colt shared the same basic airframe with the

exception of having a nosewheel, shorter ailerons and columns in place of sticks. After reviewing the flight manual and talking to a couple of owners, I decided that the performance would be too limiting to operate out of our higher elevation grass fields on warm days.

That left the Bearhawk. With one of the smaller recommended engines, a 180 hp engine and CS prop, it would perform well even at the 2500 lbs gross weight. With two on board and full tanks, you'd still have around 550 lbs to haul extra people or cargo. It could be used as an aerial "ground crew vehicle" for those weekend runs with the Dragonfly flights. However, that's still several years away.

From a building perspective, it does have a high build time. However, this can be

offset by purchasing some of the partial kits available. With its all metal wing (2024 and solid rivets throughout), it does require new skills and tools, but that is part of the appeal of starting a new project.

The point is that one of the bigges choices you will make is "wha plane should I build?" This should be thoroughly researched to determine how the aircraft will fit your budget, flying habits, airstrip limitations, load requirements, building material requirements and

most importantly, the impact on your family. If you're like me, you'll find this process most enjoyable. Hopefully, my experience can help in deciding on your next project.



### Sticks & Rudders

compiled by Allan Botting

The following are extracted from the excellent book "Stick & Rudder" by Wolfgang Langewiesche. I highly recommend you search out this book in the used and new book stores. You old timers may have or read this book first published in 1944 and renewed in 1977.

### Maneuvering Speed

Maneuvering speed is that speed, or rather slowness, which will protect your wings from structural failure in rough air and acrobatic maneuvers. If you fly slowly that, when the aircraft begins to bear down on its wings, the wings will not attempt to

support the additional weight but will stall instead, thus relieving themselves.

In most airplanes the maneuvering speed is arbitrarily set at twice the normal straight line stalling speed. If you fly at that speed, you know that, whenever the ship begins to bear down on the wings with more than four times its normal weight, the wings will stall.

Most small airplanes are built to stand up structurally under g loads

up to six, that is, the wings are six times as strong as they need to be for flight with normal load in smooth air. Hence, if you fly at twice normal stalling speed, you know that your wings will stall rather than break.

If you are travelling at three times your normal stalling speed - which is about top speed in most airplanes - and get into really rough air or start getting really rough on the controls, your structure can fail. For at that speed, your wings will not stall until the weight on them becomes nine times

normal. And, since your wing structure is built to support only six times the normal weight, your wings will break rather than stall.

If you want to get rough or it gets rough, slow down to twice your stalling speed or less.

### Bernoulli or Newton?

What makes an airplane fly? What is the answer to this simple question. What you were taught or assumed is often misleading and often just plain wrong. Lift is due to the wing diverting air down. Forget Bernoulli, and before you start writing letters to this editor read the following and the references at the end of this article.

The main fact of all heavier-than-air flight is this: the wing keeps the airplane up by pushing the air down.



Allan Botting with his lovely Vag-a-Bond

It shoves the air down with the bottom surface, and it pulls the air down with its top surface; the latter action is the more important. But the really important thing to understand is that the wing, in whatever fashion, makes the air go down. In exerting a downward force upon the air, the wing receives an upward counterforce - by the same principle, known as Newton's law of action and reaction, which makes a gun recoil as it shoves the bullet out forward.

So, how does a wing generate lift?

Newton's first law states a body at rest will remain at rest, and a body in motion will continue in straight-line motion unless subjected to an external applied force. That means, if one sees a bend in the flow of air, or if air originally at rest is accelerated into motion, there is a force acting on it. The wing must change something of the air to get lift. Changes in the air's momentum will result in forces on the wing. To generate lift a wing must diver air down, lots of air.

The natural question is "how does the wing divert the air down?" When a moving fluid, such as air or water, comes into contact with a curved surface it will try to follow that surface. Hold a water glass horizontally under a faucet; instead of the water flowing straight down, the presence of the glass causes the water to wrap around the glass. This tendency of the fluids to follow a curved surface is known

as the Coanda effect. From Newton's first law we know that for the fluid to bend there must be a force acting on it. From Newton's third law we know that the fluid must put an equal an opposite force on the object that caused the fluid to bend.

There are many types of wings: conventional, symmetric, conventional in inverted flight, the early biplane wings that looked like warped boards, and even the proverbial "barn door." In all cases, the wing is forcing the air down, or more accurately pulling air down from above. What all of these

wings have in common is an angle of attack with respect to the oncoming air. It is this angle of attack that is the primary parameter in determining lift. The lift of the inverted wing can be explained by its angle of attack, despite the apparent contradiction with the popular explanation involving the Bernoulli principle.

Pumping, or diverting, so much air down is a strong argument against lift being just a surface effect as implied by the popular explanation. So how does a thin wing (continued on page 6)

### Air Adventure Tour -Impressions of a "First-timer"

by Bert Lougheed

It seems to me that Adventure Tour 2003 will be a hard act to follow. We had five days of great flying, marvellous fellowship, several interesting tours, and fantastic ground support. As Stu so often impressed on us, professionalism, safety, and fun were the objectives. They were really well met. A big "thank you" to all the organizers and planners for a job well done.

Many of us are eagerly looking forward to Air Adventure 2004 and are wondering about the planning. Some thought has been given to the idea of flying out each day from a central home base. This would enable us to stay at the same motel for the four nights. The non-flying partners could explore the local area, go shopping etc. If arrangements could be made for fuel at the destination airports the fuel crews would not have to travel so far. However, maybe everyone likes the big circle tour.

I've been looking at the map of Alberta

that I keep near the breakfast table and have been speculating about interesting destinations, whichever way we to choose to go. If we based near Edmonton, for example, a 120 mile circle would include such interesting places as Swan Hills (dangerous goods disposal), Calling Lake (good fishing), Lake Wabamun (giant power plants and open pit coal mines), Drayton Valley (forest products plant), and probably many more that I don't know about. These places, however, are not directly aviation related. If we did another big circle tour it could possible go to places like St. Albert, to Athabasca. to Lac La Biche, to Conklin, to Fort McMurray, to Wandering River, to Athabasca, back to St. Albert. At this point I'm not sure that there is a landing strip at Conklin or Wandering River. We would need one stop half way up to Fort McMurray.

If you are thinking of going on the 2004 trip the planning committee needs your input. First, do you like the idea of a central hub tour or do you prefer the big circle tour

Secondly, do you know of interesting places to arrange a tour that are close to an air facility? Please send a note or an e-mail to Stu or Mac so that the real planning can begin.



Bert Lougheed flew his amphibious Sea Rey on the Air Adventure Tour 2003.

### Sticks - continued from page 5

divert so much air? When the air is ben around the top of the wing, it pulls on the air above it accelerating the air down, otherwise there would be voids in the air above the wing. Air is pulled from above to prevent voids. This pulling causes the pressure to become lower above the wing. It is the acceleration of the air above the wing in the downward direction that gives lift.

Typically, the lift begins to decrease at an angle of attack of about 15 degrees. The forces necessary to bend the air to such a steep angle are greater than the viscosity of the air will support, and the air begins to separate from the wing. This separation of the airflow from the top of the wing is causing a stall.

OK, now this clarification will be much harder to explain compared to popular The primary Bernoulli principle. advantage of that description is that it is easy to understand and has been taught for many years. If we do a simple calculation of this Bernoulli principle we would find that in order to generate the required lit. for a typical small airplane, the distance over the top of the wing must be about 50% longer than under the bottom. If we look at the wing of a typical small plane, which has a top surface that is 1.5 - 2.5% longer than the bottom, we discover that a Cessna 172 would have to fly at over 400 mph to generate enough lift.

The important lesson in this discussion is that lift is dependent on the angle of attack of the wing!

Another reference for this discussion is "How Airplanes Fly: A Physical Description of Lift" by David Anderson & Scott Eberhardt. This paper is available at <a href="https://www.aviation-history.com/theory/lift.htm">www.aviation-history.com/theory/lift.htm</a>

## Ski Season Part 1

by Andy Gustafsson

The snow is falling early this year and it looks like it will stay for a while. Plowing runways is quite a chore so why skis on your airplane and explore our

airplane and Alberta winter have 8 winters once you have y o u

The explore our wonderland. I of ski flying and tried ski flying are hooked. air is dense, stable like those

sunny

when the tempe rature hovers around - 10° C. The snow is sparkling white and untouched. But, how do you go about getting a set of skis for my airplane? Could you build them yourself? Here's what I did.

days

The amount of snow here in southern Alberta varies greatly from week to week. Therefore, I needed a ski that would let the wheels stay on and could be installed and removed in minutes. I came up with a



Andy's Merlin, sans skis. Photo by Stu Simpson.

design where I could roll the plane right on to the skis and simply strap them down. Limiting cables holds them in the position that I want, and a bungee cord system keeps the tip of the skis up when flying.



Mystery ship? This Gyro-plane was spotted at Arlington 2003. Photo by Ron Nichols.

The material of choice is aluminum for its strength to weight ratio and ease of construction. I started with a strip of 3/16"x16" wide and 40" long aluminum plates purchased at Calgary Metals. I used 2" 6061 T6 aluminum angles for stiffening the ski length wise, and also to fasten side plates that make up a "boot" where the wheel rolls into. The wheels are resting

against 11/2" in. alum. pipe at the front that also holds the "wheel-boot" together. The wheels are strapped down with heavy-duty straps hooked to tie down anchors from front to back, and the entire installation is completed in a matter of minutes. The strap-down allows for a quick install that is secure, and at the same time flexible because of the soft tire.

One problem with aluminum skis that I encountered in my earlier days is the frost forming on the bottoms because of the friction and then freezing them to the snow after you land. The remedy for that is simple, just wipe on kerosene or in

my case, diesel fuel. The thin coat prevents freeze-ups. Next comes the ground testing of my new skis before I take to the sky. Stay tuned.

### Just for Laughs

Jim and Edna were both patients in a mental hospital. One day while they were walking past the hospital swimming pool, Jim suddenly jumped into the deep end. He sank to the bottom of the pool and stayed there. Edna promptly jumped in to save him. She swam to the bottom and pulled Jim out.

When the medical director became aware of Edna's heroic act he immediately ordered her to be discharged from the hospital, as he now considered her tobe mentally stable.

When he went to tell Edna the news he said, "Edna, I have good news and bad news. The good news is you're being discharged; since you were able to rationally respond to a crisis by jumping in and saving the life of another patient, I have concluded that your act displays that you have a sound mind".

"The bad news is, Jim the patient you saved, hung himself with his bathrobe belt in the bathroom. "I am so sorry, but he's dead".

Edna replied, "He didn't hang himself, I put him there to dry".

### **December Meeting**

Our speaker for the December meeting will be Moe Baile, from Transport Canada system Safety. Moe is well known for his entertaining presentations on Pilot Decision Making and other safety topics. Moe's presentation will qualify for your bi-annual recurrency.

December is also our annual officer election meeting. Come prepared to volunteer or be volunteered!

### **January Meeting**

Our speaker for the January meeting will be Steven de Bruyn from Flightrex Inc., which markets GPS and WX linked flight planning.

### Membership Renewal Raffle

Once again this year we will hold a membership renewal draw at the February meeting. This year there will be First, Second and Third prizes so more of you will win. The prizes will be a selection of high-quality power tools currently being acquired by our Treasurer, Carl Forman. The prizes will be on display at the December meeting and will be highlighted in the January issue of Skywriter.

To enter the draw you must be a paid-up member for 2004 (\$20.00 membership) and you can obtain tickets from Bernie Kespe at the meetings or by contacting him at 403-255-7419. Tickets are \$10 each.

### The Ultralight Pilot's Credo

"It doesn't matter how fast you're going if you're already where you want to be."

- Submitted by Ken Beanlands

The Executive of the Calgary Ultralight Flying Club, COPA Flight 114, and the staff of Skywriter would like to wish you a very happy Christmas season.

# Fly lots and fly safely!

