CALGARY ULTRALIGHT FLYING CLUB

Skywriter

Monthly Newsletter of the Calgary Ultralight Flying Club

November 2001

From the Cockpit

by Brian Vasseur

It's Wintertime! For most of you it's probably too early to put skis on, but definitely time to start wearing the warm winter woolies. I was thinking back to when I got my license at Blue Yonder, in February, and Wayne in the back seat complaining that his feet were freezing. I'm having a hard time picturing myself out in that kind of weather, but if you're doing something you really like then I guess it's easy to ignore minor gripes such as frostbite.

At our last meeting Buzz took a few minutes to describe a couple of near mid-air collisions that occurred here. These weren't the 200 foot separation perk-you-up warnings, these were close enough to count rivets in the other airplane. Safety is a concern of mine and it's why quite frequently I write about it in my President's column. In this case these incidents really scared me.

All of us fly under Visual Flight Rules, which in summary means each of us is responsible for seeing and avoiding other aircraft which may be in the vicinity. In order for this to work effectively there are a number of procedures which we are required to follow. These are not complicated, but the fact that they are simple does not make them unimportant.

First, and most important, is to be where other pilots are expecting to find you. This means that when you depart to your destination be at the right altitude for easterly or westerly headings. Doing this will help to ensure that another aircraft converging on you should be at eye level and won't be heading towards you, giving you more time to change your heading. You will still find that there may be other pilots sightseeing who aren't on any specific heading or altitude, but by staying at an appropriate altitude you make yourself easier for other pilots to spot you.

Second, is to follow the circuit procedures all the time without exception. On a 10 minute flight from Indus to Chestermere it may be tempting not to spend 5 more minutes doing the circuit correctly, but it's the only way to ensure that you can be easily spotted. Takeoff's and landings consume more of your attention and you absolutely have to be where you're expected to be. In uncontrolled airspace you cannot enter the circuit wherever you want to.

Circuits are straightforward, you cross over the field from upwind and above circuit height, and then enter the downwind at circuit altitude. You'll be able to spot anyone else in the circuit and they'll be looking for you to enter at this position.

In the case of Indus and Chestermere there are special circuit procedures to address the issue of slower ultralights and controlled airspace above the field.

At Chestermere all circuits are done to the east of the field, which means a right hand circuit on Runway 34. There is a horse farm to the west of there which doesn't want aircraft spooking the horses. Circuits are done at 500 feet for ultralights and 1000 feet for spam cans. If you're an ultralight entering the circuit you need to be at about 750 to be above the ultralights, and below the bigger stuff. If you're in a spam can you can't enter at 2000 feet and descend into the downwind as this puts you in controlled airspace, directly in the approach path for Calgary International runway 28, so stay below the ceiling. The same 500 foot circuits for ultralights applies at Indus. As an ultralight pilot you need to be looking for other aircraft both at your altitude and above you before turning on final. Being lower may technically give you priority but in practice this only applies if the higher aircraft knows you're actually there.

I could go on about intersecting runways, procedures in and around airways and air routes but I think you get the picture, and the information on what you should be doing is easily available. The alternative to this is that we all have to install transponders and VHF radios at approximately the cost of our airplanes. Adding collision avoidance instruments would bankrupt most of us. Me, I'd prefer to spend another gallon of gas just to do the full circuit. ✈

For Sale

Renegade Spirit - TT 270, excellent condition, always hangared, see pictures and details at www.skywalker.ca , $27,000 with new Rotax 582, or $22,000 with Rotax 532 70SMOH, or $20,000 w/o engine, Bob Kirkby 403-569-9541 (10/01)

Plywood - 4 sheets, 1/8" x 4' x 8', 3 ply, Okoume Mahogany Plywood. Made in Israel this plywood is certified "void free". $52.50 per sheet, free delivery. Guy Christie 253-6498 (10/01)

Accessories - New GSC 60" 3-blade prop $500. Used GSC 64" 2-blade prop $200. Rotax 503 DCSI, 15TTE, A-box cagless bearings, exhaust, fresh tuneup, $2600. Russ White 250-353-2492 (09/01)

Skyseeker 2 - 1983, less than 20 hours on Rotax 503 and airframe. Very good shape, stored since new but needs new skins. Skis and long range tanks included. Engine can be sold separately. Asking $3200, Darren Reeve 239-5334 or e-mail: reeve_darren@hotmail.com (9/01)

Accessories - Pair of aircraft skiis, high quality, axle-mount type, great condition $500. Call Stu Simpson at (403) 255-6998 or e-mail at simpsont@cadvision.com (9/01)

Trailer - Custom 24 ft aluminum trailer ready to enclose. Buy for cost $2500. And get the airplane inside for free. Russ White 250-353-2492. (8/01)

1995 TEAM Himax.- 314TT, 60hrs SMOH on Rotax 503DC, 2-blade ground adjustable prop, good panel, spinner, speed fairngs, VHF antenna, large cockpit, always hangared. Great performance and handling. Only $9500. Call Stu at (403) 255-6998 or e-mail simpsont@cadvision.com for pics and info. (6/01)

Avid STOL - 250 hrs as US Experimental N17AF. 5 hrs since total rebuild and new 582 E-Box. $18,000 or $11,000 without engine. A 503 would be more than adequate for this aircraft. Will take new or late model Rotax 912 in trade. Ed D'Antoni 403 247-6621(5/01)

Zodiac CH601 for rent - $65.00 per hour with instructor, or $50.00 per hour wet. Aircraft can be kept at Indus or Springbank. Please call 40-617-1831 for more details.(5/01)

1999 Chinook Plus 2 - Advanced Ultralight, always hangered, 34 hrs TTSN, Rotax 503, DCDI, electric start, oil injection, 3 blade prop, extended cabin, hydraulic brakes, tundra tires, new skis, excellent condition, $23,000 OBO. Jim (403) 547-6714 or venturae@home.com. (4/01)

Flying-Flea HM-293 - famous Mignet Aircraft redesigned by Grunberg as an ultralight. More than 100 flying. French plans and brochure with English translation, $110.00, mailing included. Paul Pontois, 1890 Rang des Chutes, Ste-Ursule, Quebec J0K 3M0 819-228-3159 (4/01)

Super Koala - Rotax 503, DCDI, Culver wood prop. Airspeed, Altimeter, Tach, CHT, EGT, Hour meter, Fuel gauge. Heated cockpit. Less than 200 TT on new engine and airframe. This is an attractive, predictable and easy to fly taildragger. Open to any serious offers. Dale (403)293-3826. (4/01)

Forward ads to Bob Kirkby 569-9541.

Ads reprinted from the St. Albert Flying Club Newsletter

Antique Skis - these are sure to be a collector's item. They have a lot of character (in fact they have been flown by a lot of characters). Suitable for single place ultralight. Approx. 8" wide x 48" long. Includes fittings, cables and bungies. $76.23. Marty Slater 780-481-3866 or email mslater@interbaun.com.

ICOM A21 Transceiver - comes with car cigarette lighter adaptor, PTT, protective cover, $425. Chris Barre 780-963-1598.

1984 Gentex heli flight helmet - has clear ratcheted visor, Sigtronics electrical with standard 2-pin connections and mike muff. In great shape. Perfect for open cockpit aircraft. $400 OBO. Chris Barre 780-963-1598.

Floats - with lockers, spray rails, water rudders and rigging. Suitable for ultralight or home built, weight 130lbs, $3000 OBO. Reg Lukasik 780-459-0813.

Hirth F-23 - used 6 hrs, 40 Hp, $2,800.00 Dan (780) 452-2491

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: kirkby@skywalker.ca

Assistant-editor: Bernie Kespe (see below)

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: Brian Vasseur 226-5281
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e-mail: kooyman-eng@home.com

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e-mail: forman.c@shaw.ca

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e-mail: mitchell@cadvision.com

Past President: Wilf Stark 935-4248
e-mail: wstark@compuserve.com

Visit the CUFC web site:
www.cadvision.com/cufc/

Propellers, part one

by Carl Forman

The subject of propellers has intrigued me for some time. It is a widely held belief that two bladed propellers are more efficient than three bladed propellers. I fly my Minimax with a 60 inch diameter, ground adjustable three bladed prop. I wondered what would happen if I tried a two bladed prop.

Before any changes were made to propellers, I wanted to establish the baseline airspeed with the existing 3 bladed 60 inch Ivo prop. I flew the Minimax and determined its top airspeed.

Carl takes off with his 3-blade Ivoprop as part of his propeller testing program.

My first experiment was with the Ivo prop. It consists of three individual blades which are bolted to a central hub. Hence, a three bladed 60 inch prop becomes a two bladed 60 inch prop when one blade is removed and the remaining two are positioned opposite each other. Rubber inserts are placed between the two blades. This procedure is approved by the manufacturer. The pitch angle with two blades is adjusted to a more course position than with three blades.

After the reconfiguration I did a static run up. The test showed 6200 RPM. As I taxied to the end of runway 16, I recalled reading an article that stated a lot of accidents happen when any work is done on propellers. I therefore carefully reviewed my pre-takeoff checklist, planned for a potential forced landing, said a hail Mary and opened the throttle. Despite the earlier static test, the engine achieved more than 6,200 RPM but the acceleration was pathetic. I debated the merits of aborting the take off. I recalled that it was better to be on the ground, wishing to be in the air than visa versa. Nevertheless I continued and the Minimax took off and climbed out respectably well.

At this point I realized that my baseline airspeed I had established earlier was not of much value. My Minimax has an open cockpit for summer flying and an enclosed cockpit for the winter. My baseline airspeed test had been done while flying with my open cockpit. The air speed indicator (ASI) grossly overstates airspeed when I fly with the open cockpit. I wasn't concerned about the actual airspeed and had planned only to note the differences in airspeed from one propeller to the next. Wrong! Any ASI will bounce around quite a bit in turbulence. Here I was, flying an under propped airplane trying to measure small differences in airspeed in turbulence with a seriously inaccurate ASI. I knew right then and there that I had to get back to terra firma and rethink procedures.

I decided to do no further testing of the 60 inch Ivo prop in the two bladed configuration. In my opinion there isn't enough propeller in the two bladed configuration and the prop stalls out on the initial takeoff role and unstalls after a little forward speed is achieved. I didn't feel very comfortable flying with it.

In order to get the ASI to indicate speeds that were close to actual and sufficiently reliable to produce results that could be duplicated, I reinstalled my enclosed cockpit. I did all flying in the morning or the evening to avoid turbulence. I calibrated my ASI using my GPS. Calm wind conditions were used and airspeeds were averaged after four different headings were flown. I had to be careful to keep the fresh air vent in the same position otherwise the ASI read differently. Under these reasonably controlled conditions, tests could be run several times with virtually the same results.

Before I measured airspeed with the different propellers, I adjusted their pitch so that my rotax engine would turn 6,500 RPM in level flight. A rotax 447 engine develops its maximum horsepower at 6,500 RPM.

With my 60 inch propeller in the three bladed configuration I obtained a top speed of 81 miles per hour. With a test of two different Ivo props, both 64 inch diameters with two blades, I was able to squeeze 85 miles per hour out of the Minimax. This is a significant improvement. Increases in speed are proportional to the square root of increases in power. Do the math. I was apparently getting 10% more thrust from the two bladed 64 inch Ivo props. Did I achieve the extra thrust because I had a two bladed prop or was the difference in diameter the cause for the change in performance?
y tuned. Stu Simpson and Bruce Piepgrass have been helpful in locating articles for me to read. I will summarize my findings next month. ✈

He is most free from danger, who, even when safe, is on his guard.

- Dave English
Slipping The Surly Bonds

Meeting Place Notice

The NE Armory now has a 24 hour military police presence. Everyone must enter through the main entrance.

Members must now show picture ID and leave their name and vehicle license number as they enter. Next meeting: Thursday, November 8, at 1900hrs.

Powder Coating Pros and Cons

Reprinted from EAA Experimenter, August 2001

Powder coating has many advantages. It is inexpensive, it comes in a wide variety of colors, and it is very tough. The Environmental Protection Agency likes it because you don't use a solvent. There is no sticky over spray, and you can buy the equipment to apply powder coating for less than $80 (US) and use it in your home oven. (Don't try this unless you are a bachelor!)

So what are the problems with powder coating? On steel, you must remove all corrosion before coating. Why? Because corrosion can continue to grow, especially if the powder coating film is breached and moisture gets underneath. It is hard to believe, but I lost a car to corrosion under the factory powder coating. The rear axle rusted so badly that a control arm bracket rusted and fell off, and the differential started leaking oil when it rusted through. Understandably, a car runs in a very different climate here in the Midwest, as roads are heavily salted in the wintertime.

What is the other problem? Heat! One of our local office equipment manufacturers bonds the powder at 425F for 18 minutes. Another source says, don't even try powder coating if you can't get 400F for 10 minutes. Both of these temperatures are fine for steel, but what about for aluminum?

Look at FAA Advisory Circular(AC) 43.13-1 B. Chapter 4 (paragraph 4-54b). On page 4-13, the paragraph warns you not to re-heat 2017 and 2024 alloy aluminum above 212F. "Re-heating of 2017 and 2024 alloys above 212F tends to impair the original heat treatment. Therefore, re-heating above 212F including the baking of primers, is not acceptable without subsequent complete and correct heat treatment."

Temperatures of 400-plus degrees will also probably affect the heat treatment of other alloys. FAA is trying to deal wit the issue of powder coating aluminum in field approvals and general inquiries from shops around the country.

If you want to be safe, use an etch, alodyne, two-part zinc chromate primer along with an Imron-type top coat on aluminum.

Remember, aluminum office chairs don't fly.

Quotes from "Slipping the Surly Bonds" by Dave English

It is a good thing to learn caution from the misfortune of others.

If you can't afford to do something right, then be darn sure you can afford to do it wrong.

Keep the airspeed up, lest the earth come from below and smit thee.

Insisting on perfect safety is for people who don't have the balls to live it the real world.

If you've ever faced a forced landing at night, turn on the landing lights to see the landing area. If you don't like what you see, then turn'em back off.

A check ride ought to be like a skirt, short enough to be interesting but still be long enough to cover everything.

GPS Receiver Roundup

by Bob Kirkby

If you're thinking of treating yourself to a GPS receiver for Christmas, read on.

I fly with an old Garmin 55 in my Cherokee and have been thinking of upgrading to a more modern, moving map variety. However, every time I put some effort into this thought process I end up completely perplexed by the incredible variety of products available out there.

Occasionally I buy items on the web at a pilot shop called AvShop.com and was delighted recently to discover that they have put together a comprehensive comparison of all the handheld GPS receivers on the market. They contracted with Keith Connes to prepare the report which is a synopsis from a book he has authored, *The GPS & Nav/Comm Buyers' Guide*. Connes reviews all the handhelds with detailed descriptions of their functionality and screen layouts. He also provides current list prices in US$ for comparison. I found it to be very valuable and since AvShop sells all models the information appears to be unbiased.

This is a very detailed report and too long to reprint here - it would take up 12 pages. However, if you have access to internet e-mail AvShop would be happy to send you a copy. All you have to do is send a blank e-mail to:

gpsroundup@avshop.com

and within a few minutes their server will e-mail the report back to you.

Connes concludes that the Lowrance AirMap 100 is the Best Buy at $500US.

Good luck with your Christmas wish list.

Kit of the Month

LM-5X-W SUPER CUB

By Light Miniature Aircraft

General Information:

Founded in 1982, Light Miniature Aircraft was one of the first companies to develop replicas of classic American designs as two place ultralight trainers and experimental class aircraft. Their flagship model is the 100% scale Super Cub. The original design is of bonded aluminum and fabric construction (LM-5X) and the latest design is all wood and fabric (LM-5X-W).

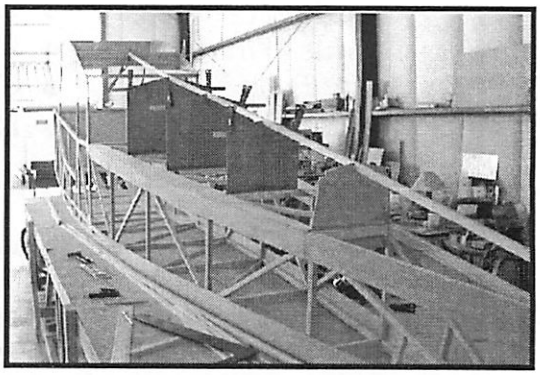
Engine:	Rotax 582
Materials:	Wood & fabric (LM-5X-W) Aluminum & fabric (LM-5X)
Average build time:	500 hrs.
Plans:	$275. US
Kit:	$14,975 US
Info Package:	$10 US
Wing Span:	35 feet
Wing Area:	180 sq. ft.
Aircraft Length:	23 feet
Gross Weight:	1024 lbs.
Empty Weight:	620 lbs.
Fuel Capacity:	10 US gal.
Seats:	2
Range:	160 miles

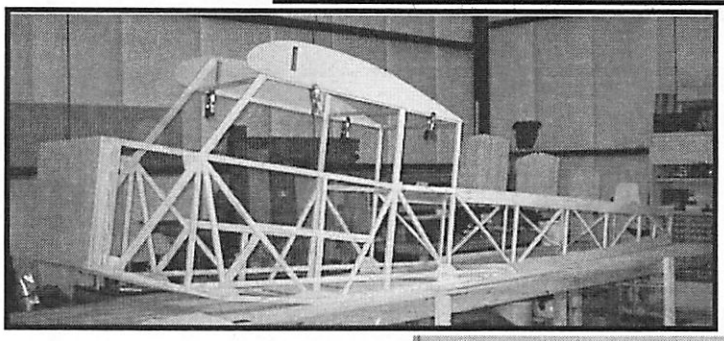
Performance

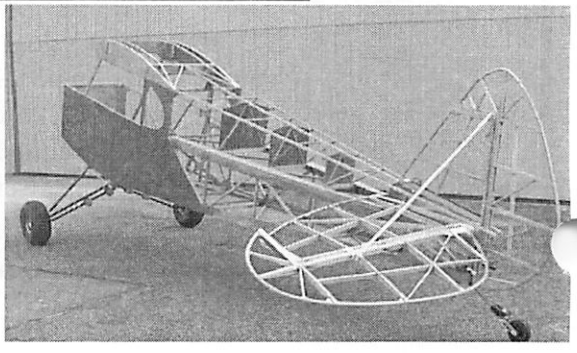
Takeoff Distance:	350 feet
Landing Distance:	400 feet
Vne:	95 mph
Cruise:	80 mph
Stall:	35 mph
Rate of Climb:	750 fpm.

Contact:
Light Miniature Aircraft
100 Airport Road
Pelion, SC 29123
Web: www.lightminiatureaircraft.com
Phone: 803-894-7256

LM-5X-W full-size Super Cub replica.



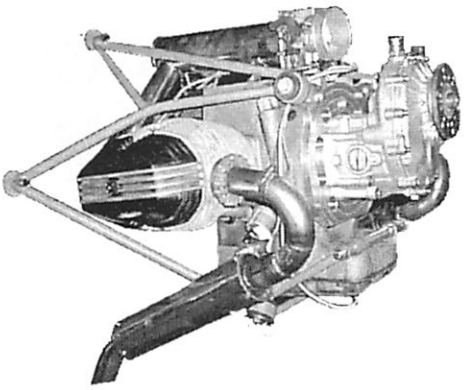




BMW R100

78hp Engine for Experimental Aircraft!

The BMW 1000cc twin cylinder, air cooled, horizontally opposed, 4 cycle "Boxer" engine as used in the BMW motorcycles has much potential for light aircraft use. The engine is readily available in Europe and is used in racing motorcycles in varying degrees of "tune". It has proven to be very reliable and the parts are readily available at reasonable cost. The engine is already flying in a number of aircraft in the UK, although possibly due to an unfortunate choice of tuning state and cooling, early experiments with this engine in the USA were apparently not successful.



Having looked at what was available for the lower end of the 4 cycle market we decided to capitalize on the lessons learned by those who went before us and produce a conversion kit to provide a simple and reliable 75+HP engine with an installed weight of less than 150lbs. Our engine was initially fitted into a couple of Avid Flyers. Our approach to the BMW R100 engine takes advantage of the fact that the cylinder heads can be reversed to keep the cool air flowing over the heads in the same direction as on the motor bike when used in tractor aircraft configurations. The only modification required for reversing the heads was the production of a new re-profiled camshaft with inlet and outlet cams reversed to allow for the new relative positions of the exhaust and inlet valves. It is also necessary to relieve the piston crown to accommodate the larger inlet valve where the exhaust valve used to be. To ensure the 75+HP, the other modifications required are cylinder head machining for twin plugs (commonly used on the racing motorcycles) and gas flowing of the heads to improve engine "breathing."

If the engine is one of the lower compression versions it is also necessary to raise the compression ratio to the highest production ratio of 9.2:1. This moderate state of tuning is known as "stage 2" in the UK. The motor cycle production engines have a continuous rpm limit in excess of 7000rpm but with "stage 2" tuning, the engines have been dyno tested to 78HP at 6500rpm. We are recommending that the propeller pitch be set to limit maximum rpm to 6500 or less. We are also recommending that the static rpm be set from 6000 to 6200rpm to enable economical cruise powers to be achieved at or below 5000rpm to give maximum reliability and durability. The standard BMW carburetors are used. The exhaust system can again be designed to fit particular installation requirements but for best results it is desirable to keep the primary pipe lengths tuned.

To transmit the power to the prop we have developed a PRSU based on an adapter that mates to a Rotax "C" type gearbox. Tests have proven that this gearbox is adequate to withstand 80HP. The Rotax gearbox mates to the engine by the use of an adapter casting and a drive coupling to the rubber donut.

Future developments include a new deep finned sump (ex racing cycle maybe) to allow for operation without the oil cooler and we are also looking at alternative reduction drives to replace the Rotax gearbox mainly due to cost/availability problems.

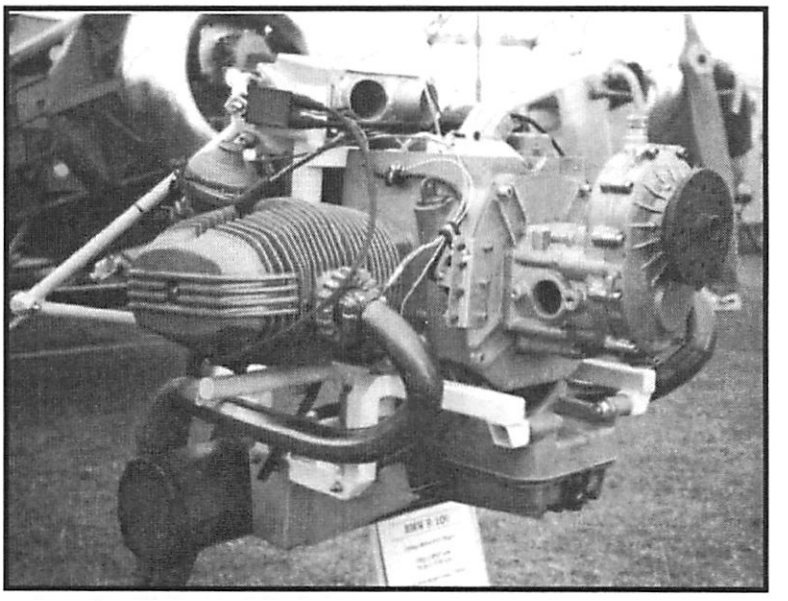
The engines being tested in an Avid are producing full power static thrust of 435lbs. By calculation this works out to be an effective 74HP engine at 5800rpm.

Tests with the 582 in the Avid produced about 330 lbs static, and with the 618 about 429 indicating that our numbers are reasonably accurate.

Prices and availability for all the modification parts are available. We offer a variety of options from "complete" ready to install engines or just the "bolt on" goodies, e.g. Engine Mount, Camshaft, Muffler, Adaptor Case, etc.

Additional information can be obtained from:

Airdale Flyer Co.
4317 Aviation Way #9
Caldwell, ID 83607
Phone: 208-459-6254
Web site: **www.airdale.com**



From the Editor

I would like to thank all those who have been contributing material to the newsletter this year. Many of you have taken pen to hand and shared a building or flying experience. That's what our club is all about - sharing experiences.

In particular I would like to thank Bernie Kespe. Every month Bernie scours the ultralight and homebuilder magazines looking for material to reprint that would be of interest to our members. All of the "Kit of the Month" and Engine articles, and many of the technical articles come from Bernie. Without Bernie's dedication and assistance I would have a much tougher job.

I would like to encourage more of you to make contributions. They don't have to be long. Give me a brief story of what you did and a couple of pictures and I can fill a page with a new experience everyone can share.

After 12 years of putting the Skywriter together every month I still enjoy doing it (there's 148 issues or 1184 pages in three 3" binders on my shelf). The only thing I'm short on is time to gather up articles of interest. So keep those articles and photos coming and we will continue to have one of the best flying club newsletters in Canada.

If anyone has a special request for information or an article on a particular subject let me know and I'll try to find someone to put it together. We need ideas too. You can e-mail me at:
kirkby@skywalker.ca

Visit the club's fantastic web site often. Webmaster Dan Mitchell does a wonderful job of keeping it up to date and full of information and links to everywhere in aviation. The URL is:
www.cadvision/cufc

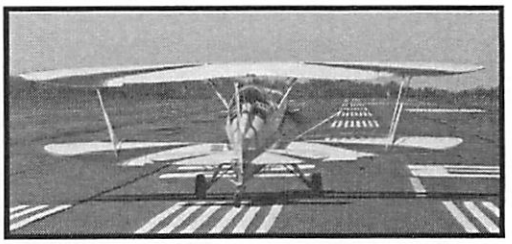
Visit my web site too. There you'll find many of the stories and articles I've written over the years and more. The URL is:
www.skywalker.ca ✈

Election Notice

Annual elections will be held at the December meeting. Positions to be elected this year are: President, Treasurer and Director at large. Give some thought to putting your name forward for one of these positions.

Club Crests Available

Only $6.00
See Bernie at the meetings



Bob Kirkby and his Starduster Too on takeoff roll - photo courtesy Jeremy Dann

Al Botting and his Challenger at the Vulcan fly-in breakfast, July 15, 2001. Photo courtesy Brad Lawrence.

Heritage Galleries
Aviation Art Event

Saturday, November 17th
1:00 pm to 7:30 pm

Southland Crossing Shopping Centre
Southland Dr. and Macload Trail SE
255-6233