

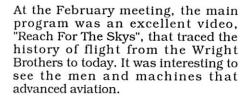
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Monthly Newsletter of the Calgary Ultralight Flying Club

February 1991

View From Above

by Paul Hemingson



The business portion of the meeting nvolved creating three new committees. Ron Sondergaard and Howard Bowie will head up a PR committee. Their mandate is to put together some of the "props" that can be used for public events. For example, a portable display booth, club banner, hats, jackets, etc. I am sure they will come up with lots of good ideas to keep the PR team warm and dry, or cool and comfortable.

A Technical Committee will be headed up by Don Rogers and Doug Ward. Their mandate is to select a timely maintenance tip and give us a five to fifteen minute show and tell at each meeting. They may contact you in the course of their surveys.

The third committee is the Social Committee for which Don Richter volunteered his wife. Her mandate will be to help organize social events and be the liaison when outside sources are required.

Please help all committee members if you are called upon. Thank you to the folks who volunteered for these jobs. The Club will be better for your efforts. hanks also to John Collins for his generosity in designing and making available a "wing patch crest" to all who attended the Christmas party.

Well, the cold weather has finally



broken. Last Sunday, I heard the sound of a low flying aircraft. I always run outside to see who it might be. This time I was pleased to see Gord Keegan and his pretty Beaver against an "Alberta Blue" sky. A perfect day for winter flying, with only a small north breeze, crosswind to the runway. I watched as Gord wisely dragged the strip looking for drifts and obstructions on the runway. The sight and sound of an aircraft banking overhead never fails to give me the urge to get my own machine up... to drop everything I was doing and share the feeling of flight. Anything to regain the satisfaction and post-flight euphoria that comes over one who has had a perfect flight on a perfect day. Gord had to gracefully tighten his downwind and base legs to turn short final and line up with the runway. With a short rollout the Beaver taxied up to the house. We then shared a few cups of coffee before I watched Gord take off quickly in the dense winter air. Again, the irresistible urge to get airborne overcame me. Maybe next weekend. The hour was getting late and I would have had to hurry to get my machine ready for some flying in with the last rays of light. And if there is one thing you must absolutely not do, it is yielding to the temptation to rush prepping your aircraft for flight. Too many incidents happen as a result of this mindset.

Fly Paper



by Gord Keegan

Fond memories

I was recently sitting in front of a warm fire at home on a chilly winter night and my mind started to wander back to warm summer days of the past year. Specifically, our trip to the Red Deer Airshow 1990. It is funny how rich experiences become richer over time and the fond memories become fonder. This trip last summer was probably the most pleasant experience I have had to date in my ultralight. Beautiful weather, perfect flying conditions, machine working well and most important of all, good friends.

To plan, execute and fully enjoy a flying experience such as this with your friends from the club, is something that I hope everyone, particularly our newer members, will be able to experience soon. These fond memories are the things that make the long winter, when flying time is hard to come by, bearable.

Dreams of warm summer days to come in the new year, smooth, calm days when the exhilaration of flying your machine makes you want to shout with joy as you skim across the tree tops or the fields of grasses and crops. That, in my estimation, is what flying is all about. The dreams of things to come and the fond memories of fine times spent with good friends.

Brochures Now Available

Our new CUFC brochures are now available. If you would like a few to pass out to interested friends or at various functions, contact Paul Hemingson - 931-2363.

Quebec Chronicle

by Paul Pontois



Ultralight Flying Farmers in Quebec - The Hivon Family

First Contact

In the summer of '84, I had just gotten my ultralight license and, in the early mornings, I would fly a rented Quicksilver over our small Louisville Airport (a small airport, but with a very convenient 4,000 foot runway and friendly to ultralighters). One day, I saw two young fellows taking two Mitchell B2 flying wings out of a trailer. They were Andre and Alain Hivon, who are cousins from Ste. Anne-de-la-Perade, a village famous throughout Quebec for ice fishing. Alain was an experienced ultralight pilot and we enjoyed flying together. At idle, the Mitchell was easily able to fly circles around my Quicksilver. Andre, however, was a beginner and taxied endlessly back and forth on the long

One morning, the wind was rather strong. Andre was so used to taxiing

his B2 that he was not paying attention to the wind. Suddenly, before my terrifed eyes, he was in the air - he made a few sharp left turns over the runway - the wing tip a few feet from the ground. I was expecting the worst, but he gained some altitude, inadvertendly stopped the engine, and made a perfect landing. When he came out of the cockpit, he was pale and shaking and so was I.

These were my first contacts with the Hivon family. Later on, I heard that Andre never again flew his Mitchell (he had been so scared!). He later bought a Beaver and became a very safe and prudent pilot.

Alain's flying wing was destroyed during a storm when a hay wagon crashed into the plane. When I was told the news, I thought I misunderstood, but that was the truth! The plane was safely tied down but the wind was blowing so strong that the hay wagon literally flew over the field and crashed into the plane. This kind of accident must be very rare! (continued on page 3)



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Meetings of the Calgary Ultralight Flying Club are held the first Wednesday of every month at 7:30pm at

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(Quebec continued from page 3)

The Air Bridge

The following spring, as I was building my Sky-Pup, I heard that another Hivon, Andre's brother Jean Claude, was also building a Sky-Pup in Ste. Anne. I drove there (1 1/2 hour of driving), and, near the 1st farm of the village, I saw two young and pretty girls in swimsuits, sweeping, scraping, and cleaning the swimming pool. I stopped to ask for directions and that's how I learned that all the northern parts of Ste. Anne belonged to the Hivon family, brothers, cousins, uncles, all Hivons! Finally, I spent the afternoon with Jean Claude, his wife, children, parents, and relatives - such nice people! The Sky-Pup construction was well advanced, and that day, Jean Claude was carving the propeller. His Sky-Pup made its first flight the following year, more or less at the same time as mine.

I went back to Ste. Anne during the winter, having been invited to an ice fishing party. Jean Claude has a cabin on the river, like everyone else in Ste. Anne (you dig a hole through the ice and you catch hundreds of small fish). As well, and that is less usual, he had installed skis on his Sky-Pup and made a sort of air bridge between the frozen river and the farm - his wife Martine was frying fresh fish for the guests - air delivery by Jean Claude's Sky-Pup and Alain's Mitchell. That was certainly a premier! It was rather cold this day. Look at Jean Claude in the picture.

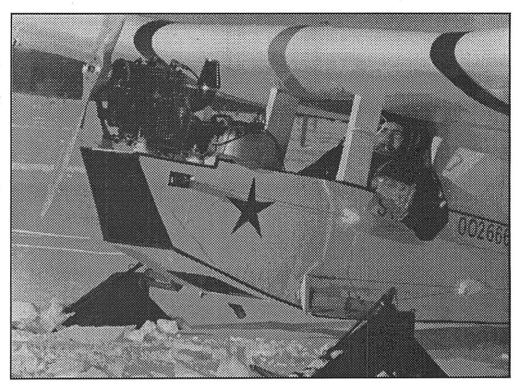
The Last Wish of a Dying Homebuilder

Jean Claude has many friends. One of these friends, Rejean Carion, an experienced model builder, designed and started building a two-seat ultralight, looking a little like a cubmade of wood and foam like the Sky-Pup. The project was halfway through when Rejean developed cancer and was obliged to stop building. Rejean knew that he was going to live just a few more months and he was sorry to die before flying his plane or, at least, seeing it fly. Jean Claude was aware of this and continued the construction. During the period, he worked days and nights to finished the project.

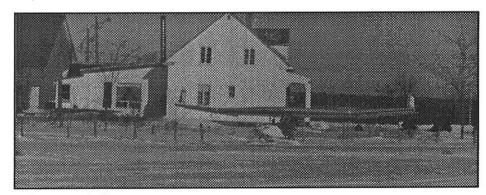
One week before dying, Rejean could see on a VCR from his hospital bed, the first flight of the plane. Jean Claude called it CARONET in his friend's memory. This unique design flies very well with a 40 HP Rotax, maximum speed 90 MPH, stall speed 30 MPH, very docile. Look at the first picture of the plane. Is this not a unique friendship story?

I would like to thank Paul Pontois for this very interesting article. Paul has agreed to become a regular columnist for Skywriter and keep us up to date on the Ultralight seen in Quebec.

- Editor



Jean Claude's Sky-Pup



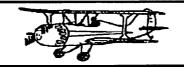
Alain's Mitchell



Rejean Carion's "Caronet", completed by Jean Claude

One Pilot's Opinion

by Bob Kirkby



Antenna Installation

Last month I identified the installation of the "antenna system" as a very important part of the overall radio installation in your airplane. Your radio talks to the outside world throught its antenna, so lets see how we can give your radio a fighting chance.

The first thing we need to do is understand the relationship between frequency and wavelength. We are going to "tune" our antenna to work best at the radio frequency we have chosen to operate at. These principles are the same no matter what kind of radio we are using. They apply equally to VHF and CB radios; transmitters, receivers and transceivers. In this article we will only consider the VHF since most of us are starting to use it.

The frequency that our VHF transceivers operate at is in the range of 118 to 135 Mhz (million cycles per second). This is the frequency of the carrier signal onto which our voice signal is modulated. Even though our radio will operate over a range of frequencies, we will have to choose just one to tuned the antenna to. Most VHF antennas are tuned to 121 Mhz. This is approximately mid-way in the mostused range of channels. A channel is simply a discete frequency setting. VHF radios have channel increments of .5 Mhz or .05 Mhz, depending on vintage. We will tuned our antenna to 121.00 Mhz.

In order to do this we have to calculate the wavelength of the radio waves at this frequency. The wavelength of any wave is equal to the velocity of propogation of the wave divided by the frequency (w=v/f). The velocity of propogation is simply the speed of light. After all, light is electromagnetic radiation just like our radio waves are. This is approximately equal to 300,000,000 meters per second. Therefore, the wavelength at 121.00 Mhz is:

 $\frac{300,000,000 \text{ mps}}{121,000,000 \text{ cps}} = 2.5 \text{ m}$

Now that we know this, what do we lo?

Well, to start with we need the antenna. We can either make our own or buy one. The antenna is nothing more than a conducting rod or wire of the correct length. The ideal antenna length is 1/2 of one wavelength. The antenna will pick up many millions of radio waves of different frequencies that strike it all the time. What we want it to do is pick up the frequency we are interested in better than any others. By making it exactly 1/2 wavelength the antenna will resonate at the frequency we want. By doing so, it will pick up the desired frequency much better than any other.

On an airplane, 1/2 of 2.5 meters (1.25 meters) is a bit long. By using a proper ground plane we can achieve almost the same results by making the antenna only 1/4 wavelength (I will explain how this works shortly). The difference in amplitude of the signal received is small and the antenna is much easier to handle, so normally we will make our antennas 1/4 wavelength in length. The important thing is to make the length as close to 1/4 wavelength as possible. In our case that is 0.625 meters (1.91 feet or 1'-10 & 15/16").

If you wish to make your own, select a suitably weather impervious conducting rod, stainless steel or

brass, and cut it to 0.625 meters. From an electronics parts store you can pick up an insulated mount so that you can mount it to the airframe without an electrical connection to the surrounding surface. Drill and tap a small hole in the base of the rod and attach a solder lug with a machine screw. Our lead-in cable can then be soldered to this lug. Personally, I just bought an antenna for \$35.00 from Aviall. They can be ordered from cataloque shops like Aircraft Spruce or Wag Aero for about the same price.

Before drilling a hole and mounting the antenna we need to consider location and a ground plane. The ground plane is a conductive reflecting surface, ideally metal, at the base of the antenna, but insulated from it. The electromagnetic signal which strikes the antenna gets converted to an electrical signal conducted by the antenna. The ground plane gives us a reference ground for this electrical signal. If you think back to your basic electricity in high school, you will remember that in order to measure a voltage difference you must measure between two points. Usually a "hot" contact and a ground. It's the same basic principle here. A metal ground plan will also reflect the electromagnetic radiation which hits it. This has the effect of doubling the length of the antenna to 1/2 wavelength. That's why we can get away with only a 1/4 wavelength (continued on page 5)

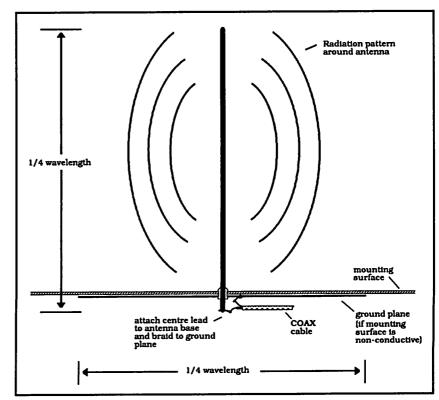


Figure 1. Antenna mounting detail.

(Opinion - continued from page 4)

antenna. To understand how this works, visualize a mirror lying norizontal and a stick extending vertically up from the mirror. When you look at it you can see the reflection of the stick in the mirror, as well as the stick itself, such that the stick actually looks twice as long as it really is. The light waves are acting in the same way that radios waves will act when we have our antenna positioned vertical to the ground plane.

On a conventional airplane the skin is usually aluminum which provides a natural ground plane. With ultralights or homebuilts the skin is usually fabric, maybe with some fiberglass or wood in spots. On some ultralight there is no skin (except the wings - we hope). So select a suitable hardsurface location. If you don't have one, you will have to make one between tubes. On my airplane I have a fiberglass turtle- deck running the full length of the fuselage, which is perfect. Once you select the location, make a ground plane out of lightweight aluminum or a fine mesh. Make the groundplane at least 1/4 wavelength in diameter. It doesn't have to be round as long as it is at least this large. Fasten it to the underside of the hard surface with glue and drill a hole through the hard surface and the groundplane large enough to accomodate the insulated base of the antenna, then mount the antenna through this hole (see Figure 1).

I've put the cart before the horse here since we haven't selected the ideal location yet. Here's how to do this, and hopefully you will find a hard surface right where the ideal location is! Firstly, we want the antenna to be as far away from the engine as possible. This is because we want to put some distance between our "ears" and the major source of RF interference in the airplane (next month's article will discuss this). If your engine is in front the best location will be on the back part of the fuselage. If your engine is a mid-ship pusher, you may be better off locating it at the front of the inter-wing gap or on the nose, if you have a cowling. The antenna must be vertical for best reception and transmission. Note the radiation pattern in Figure 1. If the antenna were horizontal you can see that reception from forward and aft of the airpane would not be good. In the vertical orientation we will not have good reception from directly below, but this is not important since, if our target station were directly below us, it would only be a few hundred feet away!

Commercially available antennas are generally bent backwards at about 30 degrees to the vertical. This reduces drag and also prevents the antenna from bending under the air blast. If you are making your own, bend the rod about 3 inches above the mount. Do not bend it more than about 30 degrees. (This also make your airplane look pretty hot!)

The next consideration is the vertical stabalizer, if we are locating the antenna on the aft fuselage. The antenna should be at least 1/4 wavelength in front of the vertical stab (.0625 meters). This will reduce the width of the "shadow" cast by the stabilizer from the rear and also will reduce reflections from the vertical stab. Remember what happens when your TV antenna picks up reflections? That's right, you get ghosting. The same thing can happen with audio signals which results in a blurred reception. Now that you have finally selected the ideal location, go ahead and drill that hole.

But we're not finished yet. Now we need to get the signal from the antenna to the radio. We do this with a length of Coaxial cable. Not just any Coax cable! It must have the correct characteristic impedance to match the radio input impedance. I won't go into explaining impedance. It will suffice to say that most radios have an input impedance of 50 ohms (consult your manual to verify this). The correct Coax to use is called RG58 which has a characteristic impedance of 50 ohms. If you were to use the wrong one, for example 75 ohm Coax which is used for TV's, you would have an impedance mismatch between your lead-in cable and your radio. This would result in attenuation (reduction) and distortion of the signal. So use the right one. Next, cut it to the correct length. The lead-in cable must be in increments of 1/2 wavelength (1.25 meters). If 1.25 meters is too short to reach from your antenna to your radio, then make the cable 2.5 meters long. This should be long enough, but if not make it 3.75 meters, etc. Got the picture?

Finally, you have to terminate the Lead-in cable. Most radios use a BNC type connector for the antenna input. This can be obtained from the same place you got your RG58 wire. Terminate the radio-end with this conector. At the antenna end, solder the inner conductor of the Coax to the solder lug at the base of the antenna. Attach the braid of the Coax to the

groundplane. This is most easily done by soldering the braid to another lug and attaching the lug to the groundplane with a small bolt and nut. If you bought a more expensive antenna than the \$35.00 one I did, it may come with a BNC connector at the base. If so, you simply have to terminate the antenna-end with a BNC connector as well. A good termination is important, so don't do a sloppy soldering job or a sloppy crimping job on the BNC. A bad connection will result in an impedance mismatch, again.

If you follow all these rules you will have an ideal antenna installation, under the circumstances. Locating an antenna several hundred. or thousand, feet above the earth is far less than ideal. But, if we are going to fly our airplanes, we have to make the best of it. Remember what I said last month. Each of these steps will result in a little better reception or transmission of the signal. It may be hard to tell the effect of any one step. but the accumulated effect of all these steps will make a significant difference to the distance over which you can communicate.

Next month I will discuss what you can do to minimize the bad effects of RF interference from your engine. Stay tuned!

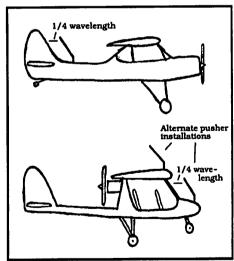


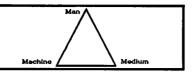
Figure 2. Suggested antenna locations

Coax cable and connectors are available from Alberta Computer Cable Inc. We will make the cables for you or supply you with the parts. We offer a 20% discount to CUFC members.

291-5560

Safety Corner

by Paul Hemingson



Baby Pictures

So, you want a few good photos of your little baby??!

Picture this. Your new baby with its pug nose, and fat underbelly sits and grins at you through the open hanger doors. You just bought a new little airplane, and you want a photo to capture its newness...before it grows up into the dirty, pockmarked adolescent that comes with mileage and hanger rash. You pull it out of the hanger and into better light. Their it sits, at high noon....and you just gotta snap a few pix to send to friends, to magnet to the fridge, put in the wallet, or whatever. You even had a friend snap a few of you while you were fondling the spinner, or had one hand around the prop, or leaning against it like a '57 Chevy. But, when you get the photos developed you're disappointed with the results.

When it comes to aviation related photos, there are a variety of types. Air to air, air to ground, ground to air, and round or still photos. In this article I am focussing on still-photos of standing aircraft. This is the most common type of photo for most of us sub-amateur camera owners.

This article is about photo tips for fumbel fingered photo types. If you're like me you don't know a lot about f-stops, or apertures, or filmspeeds, or frame finagling. Most of us only occasionally pack a camera, a fully automatic camera. In fact its so automatic, you begin to think that it automatically takes bad pictures. But with a few tips, you can take an excellent photo of your airplane. All it takes is a little thought, and planning ahead...right??

I am not a photo-nut. But I do know what I like....and what I don't like.....when I see it. And so do you! Most of what I have to say was learned from trial and error...and from observation of photographs of aviation related things in publications. In any flying related magazine you can see examples of the best....and the worst of photography.

can through any flying magazine and nentally judge the quality of the photographs based on their appeal to you. First impressions count here. Don't analyze them yet. Simply pick

out those photos that appeal to you and those photos that don't.

Now its time to analyze them a step further. A little analysis of the good ones versus the bad ones should prove to you that you have an eye for selecting or framing a good photo. Chances are, the ones you like have a few simple things in common, and the ones you don't like also have a few things in common. Once you know what criteria you're using to judge the good from the bad and the ugly, then you simple need to keep these criteria in mind the next time you snap your own photos.

Photo type people often talk about negatives. Maybe the best way to learn how to take good photos is knowing what a bad photo looks like. Accordingly, I will get a bit 'negative' here. By contrasting the "do's and do nots" it will soon become apparent what the critical elements are.

Photos #1,3,5,7, and 9 show some bad photos. I know they're bad, because I took them and buried them in the bottom drawer. In this article I am giving them all odd numbers, because they are so odd they belong in the bottom of the drawer. They are excellent examples of what not to do. The even numbered photos are good...or at least better.

Photo #1 is one I took without planning ahead. In fact all the bad photos show a lack of planning...a common characteristic. Photo #1 was taken showing the shady side of the aircraft, and is consequently underexposed. Snow is bright and we usually think there is lots of light, but this photo proves that you should overexpose a bit even with a snowy foreground and background. Otherwise the snow comes out gray. and the aircraft is dark. Another fault of Photo #1 is that the back ground terrain interrupts the line of the wing. Contrast Photo #1 with Photo #2. Photo #2 was taken within minutes of Photo #1. But, this time I shot from the sunny side and got down a little lower so that the background terrain did not interrupt the line of the wing. I think you will agree that Photo #2 is much better. All it took was a little planning.

Now, lets look at another good-bad set in photos #3 and 4. Photo #3 was taken one frosty morning when the (continued on page 7)



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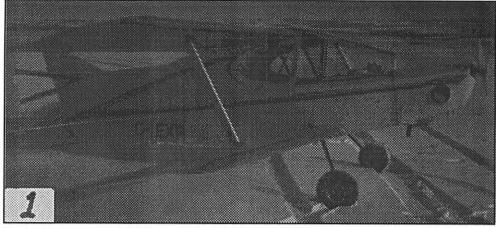
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(Safety - continued from page 6)

trees glistened with hoar frost. But, note how the trees appear to be growing out of the top of the topwing. ot to mention the fence post rising out of the verrical stabilizer. And the horse. Jeez, it implies their is 1 Horsepower under the cowling. And what sane man would photograph a white aircraft against a white background. Not what I wanted to capture at all. The mistakes in this photo are poor planning, a cluttered background and what can you say about the unflattering shadow cast by the wing. Contrast photo #3 with photo #4. Photo #4 ain't perfect, but its better. There are still trees in the background but I got down lower so the line of the wing was clean. But, a little too low as the line of the wing gets lost behind the cowling. Still, the lowangle view is more interesting than the standard broadside photo. Lets push

Photo #5 is a poor shot for a number of reasons. One day, a group of flying friends came into my place and I thought I would snap a photo. The basic mistake was trying to get too much into the photo. As a result, my freinds are not easily identifiable. Secondly, all the aircraft appear to merge together as well as into the ackground. A more focussed effort would have given a much better photo. Perhaps, by moving closer and capturing the group in front of one machine would have been much better. Lets contrast this with photo #6. Photo #6 was taken one memorable day when Gord Keegan and I participated in a Search and Rescue practice mission. Basically, they were training spotters, and Gord and I were instructed to land in a remote area of the Foothills of the Rocky Mountains and wait to be found. We waited all day, and no one found us, as the air was too rough to carry out the exercise. We found this out firsthand on the way home later that day. That's another story. But this photo does capture our aircraft in a mountain meadow with an ominous sky. With the closer view than Photo #5 the results are much better.

Photo #7 shows another classic error. This one was taken at the Red Deer Airshow and the photographer tried to capture an aircraft. Can you spot it? Obviously, another cluttered background, and foreground. The trick in getting good photos at irshows is to go early or stay late then all the people are gone. In addition, the man standing in the observation tower appears to be (continued on page 9)





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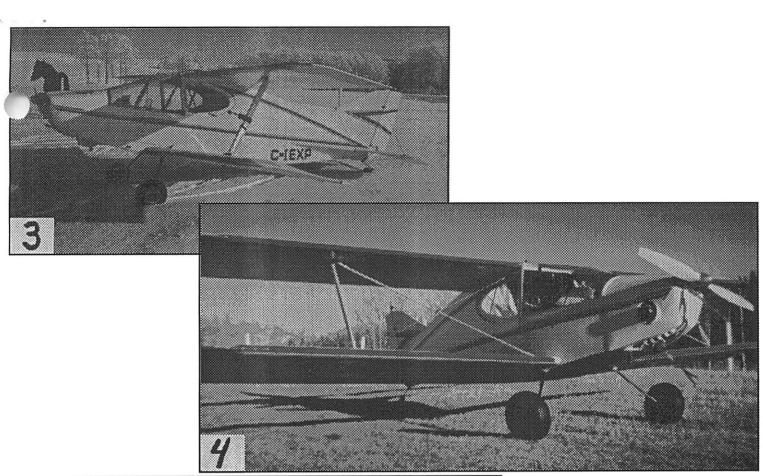
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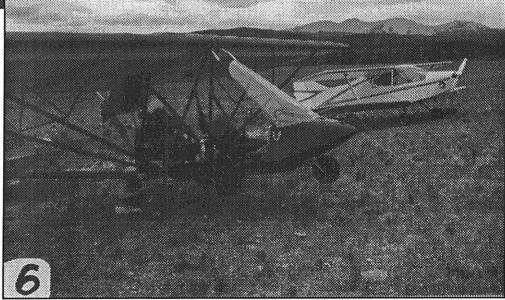
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(Safety - continued from page 7)

springing out of the wing like some ind of "Jack in the Box". Contrast this with photo #8. In photo #8 I tried to capture a Merlin. This was a difficult photo to take with the light from behind, bright snow underneath, and a white cloud filled the sky. A deliberate over exposure was necessary, to fairly capture the beautiful lines of this aircraft.

Photo #9 illustrates another error. I managed to get my own shadow in the frame. But just look at the background. Cluttered or what. The posts, poles and trees do not form part of the interwing braces at all. The head on view does not really illustrate much of any virtues of my machine. Poor planning again. Photo #10 is much better. Here I caught my friend Bill Clark and his Spad when he flew in one beautiful summer day. Simply by climbing onto the top of my truck, I captured the lines of this aircraft against an evenly textured verdant pasture, with its proud builder-pilot.

In summary, here are a few simple rules for getting good baby pictures.

- 1. Choose an angle so that the background is uncluttered. Posts, poles and trees growing out of the airplane look terrible.
- 2. Film is cheap, and not all moments are recapturable. Better to take lots of different angles, and one or more of them is sure to turn out better.
- 3. Use the low angle light of early morning, or early evening to highlight the lines of the aircraft with soft shadows.
- 4. Use an evenly textured and preferable contrasting background to accent the lines of the aircraft.
- 5. Try to fill the viewfinder of your camera with the object of the photograph. Don't try to get too much into the photo by standing too far away.
- 6. Watch out for objects in the

- foreground that distract from the object of the photo.
- 7. Consider exposure before you push the fool button. Most aircraft photos occur in highly contrasting situations and a deliberate overexposure is usually better to highlight the aircraft.
- 8. Try to capture an atmosphere in each photo. For example a man and his machine, a dawn flight, the soft shadows of early evening. Use the effect of light and shadow to accentuate things.
- 9. Think about 'balancing' your photos. Think about the texture of the background, the colors, the contrasts, the arrangement of things.

Thats all there is to it. With a little planning and practice, you too can take excellent pictures.

