NEWSLETTER

# Carb Heat

Hot Air and Flying Rumours
Vol 34 No. 03

Published by EAA Chapter 245 (Ottawa) P.O. Box 24149 Hazeldean R.P.O., Kanata, Ontario, Canada, K2M 2C3

## *Mar. 2004*

*Inside:*

**President's Page: by Gary Palmer**

*Next Meeting:*
**Thursday, Mar.18th 8:00 PM**
**Canadian Aviation Museum**

**Inside**

**Trivia Testers**

**&**

**Night Moves**

**By**

**Jeff Pardo**

**Feature Presentation**

**My Tuned Exhaust System**

**By**

**Charles Martel**


| | | | |
|---|---|---|---|
| **President:** | **Gary Palmer** | **596-2172** | **gpalmer@nortelnetworks.com** |
| **Vice President:** | **Martin Poettcker** | **271-6113** | **poettcker@rogers.com** |
| **Ops, Publishing, Tools:** | **Dick Moore** | **836-5554** | **rjmoore@uottawa.ca** |
| **Membership:** | **John Montgomery** | **599-1240** | **1arm@rogers.com** |
| **Secretary:** | **Curtis Hillier** | **831-6352** | **the_hilliers@yahoo.com** |
| **Treasurer:** | **George Elliott** | **592-8327** | **gelliott@igs.net** |
| **Editor:** | **Rodney Stead** | **836-1410** | **stitstmp@sympatico.ca** |
| **Webmaster:** | **Russell Holmes** | **820-8572** | **Russell.Holmes@city.ottawa.on.ca** |
| **EAA 245 Website:** | http://eaa245.dhs.org/ | | |

## *President's Page*
## *by Gary Palmer*

With the impending arrival of Spring, it is time to once again take extra care when manoeuvring on chapter grounds whether by car or aircraft. We have placed a couple of concrete blocks at the end of the access road to serve as a reminder that the ground is becoming too soft to support vehicles. Nonetheless, we already have a couple of ruts from some vehicle that just had to drive right up to the hanger door. Please take care over the next 6 weeks or so, to keep the grounds in good shape at this critical time of year; the exercise of a 50 yard walk from the parking lot to the hanger will be good for you.

**Phil Johnson's Cozy MK IV engine run Saturday Feb 21 a huge success**:

**Phil Johnson** hosted a display of his **Subaru SVX powered Cozy MK IV** which despite a last gasp winter storm, turned out to be a roaring success. Roaring as in the sweet sound of a 230 HP Subaru SVX engine generating 500 lbs of thrust. A large group of chapter members were salivating over Phil's project which demonstrates uncommon levels of innovation in all aspects of its construction. As advertised, Phil fired up the engine for an extended engine run, and a tug of war with a load cell provided by Curtis and Glenn Hillier. After checking the extensive engine data and load cell data via computer, the verdict was a solid 500 pounds of thrust at 4300 engine rpm. Phil is looking forward to a solid 2,000 fpm ROC at full gross when the ultimate flight test day arrives.

**2004 Membership Renewals last call March 31st**

John Montgomery has reminded me that as usual, **March 31st represents the cut-off for membership renewal**. If you haven't renewed by the end of month, you will no longer enjoy membership privileges.

In order to keep our records up to date, **full** and **associate** members must provide their **EAA national membership numbers** as well as their latest membership **expiry dates**. This is not required for subscriber members. It is also recommended that you carefully review your **email address** to ensure our database contains your current address.

**February 2004 meeting summary**

**Adam Hunt** gave another of his entertaining talks, which, as advertised, gave a very well illustrated look at the **Canadian ultra-light scene**. Adam covered the **rules**, and the different **categories** of aircraft that can be found flying as ultra-lights. Adam's talk included lots of great **pictures** showing the wide **diversity of ultra-lights**. Attendees now know the answer to the question: Ultra-lights - Why bother? **It's great fun!**

**Upcoming meetings/Events.**

| | |
|---|---|
| **Mar 18** | **Charlie Martel** will discuss his experimentation with tuned exhaust systems to gain power while keeping noise to acceptable levels. |
| **Apr 15th** | **Claude Roy and Russell Holmes** will discuss their respective pilgrimages to Kitty Hawk, Claude in his Challenger ultra-light prior to the historic re-enactment; and Russ will have video he shot on site Dec17th 2003, at the centennial celebrations. |
| **May15th** | **Annual Spring Cleaning Saturday May 15th.** We are holding this a week earlier to avoid conflict with Victoria day and the start of the fly-in season. Dick Moore will be doing his usual great coordination job. Plan for a 9:00 AM start |
| **May 20th** | **Martin Poettcker** will provide an update on the early testing of his Subaru engine conversion for his CH-601, along with the reduction drive and harmonic resonance damper. |

**Thursday March 18th 8:00 PM: Charlie Martel - "Tuned Exhaust System fabrication"**.

**Charlie Martel** will discuss his experimentation with tuned exhaust systems to gain power while keeping noise to acceptable levels. Charlie in addition to having over 1,000 hours on his 2+2 Sportsman, continues to experiment and constantly improve his trusty steed. I am sure his talk on his latest project will be just as entertaining as his tales of interesting and exciting flights throughout our great land, see you there.

*Gary*

## TRIVIA TESTERS

By Jeff Pardo

**This Message Was Brought To You By the Letter "E"**
Pilots rightfully have something of a vested interest in that benchmark of assessing their visual acuity: namely, the eye chart. Why is it that the letter E is usually the topmost letter?

. This is a trick question; it actually isn't.

. Because it has the greatest number of lines for the space it occupies, it is actually the hardest of all upper case letters to differentiate. (The fact that it gets top billing is simply its "handicap".)

. The reason is that Dr. Hermann Snellen found that the letter "E" shares several qualities with the greatest number of other letters (e.g., B, F, P, etc.)

. The letter E appears atop most eye charts only because it is the most frequently used letter of the English alphabet.

. It's because it most closely mirrors the attributes for testing vision (a series of parallel lines) that had been used by the predecessor of the famous Dutch professor of ophthalmology, Dr. Snellen, also the originator of what we now see (with varying degrees of success) as the modern eye chart.

*Answer:* The answer is E (appropriately enough), because the letter E (as upper case), has three horizontal lines and white spaces between. This forces an observer to distinguish between white and black, and is perfect for measuring how small an image a person's eye can perceive and still identify the characteristics of that image. (Some letters are actually more difficult than others, such as the relatively easy letter L, with its open spaces.) It also most closely resembled the formulas for visual acuity that were based on parallel lines, which were developed by the Director of the Netherlands Hospital for Eye patients, Dr. Frans Donders, who was, in the mid-nineteenth century, the world's leading authority on optics. He based his fairly complex geometric algorithms quantifying how the eye resolves and differentiates between what it sees on this letter. His successor Dr. Hermann Snellen actually first used the letter "A" atop his eye chart in 1862, but soon switched to the letter "E". Actually there are only a limited number of letters (perhaps ten) on Snellen charts, in order to minimize the range of difficulty, and the letter E in fact does not always get top billing. This well known Snellen quotient relates to a person's ability to identify letters of a certain size at a specified distance. They give no information as to whether or not any meaning is obtained from them, how much effort is needed to see them clearly, or whether or not both eyes are used, as opposed to each eye individually. In the Snellen fraction 20/20, the first number represents the test distance (20 feet). The second number represents the distance that the average eye can see the letters on a certain line of the eye chart. So, 20/20 means that the eye(s) being tested can read a certain size letter when it is 20 feet away, as well as a having what is considered normal vision. (The standard definition of normal visual acuity, or 20/20 vision, is the ability to resolve a spatial pattern separated by a visual angle of one minute of arc, or 1/60 of a degree. In most people who have normal abilities for spatial resolution, their limit is derived from the fact that each degree of whatever they see is projected across 288 micrometers of their retinas by their eye's lenses. In most people, within this 288 micrometers dimension, there are 120 colour sensing or central vision cone cells. Thus, if more than 120 alternating white and black lines are crowded side-by-side in a single degree of viewing space, they will appear as a single gray mass to the human eye. Some folks like Ted Williams or Chuck Yeager, in addition to their eyes having had nearly optimal optics, were just blessed with more.) By the way, in case you're wondering, getting the top line right at your next flight physical isn't much to brag about. (That's 20/200 vision.) But if you get the bottom line, well, that is. That represents 20-10 vision. (And you don't have to be Chuck Yeager, either. A little-known standard dictates that credit is given if you succeed in identifying only a majority of the letters on a given line.)

# Night Moves

By Jeff Pardo

If you are a VFR-only pilot, you'll soon see that night flight is (or, in a heartbeat, can be) much like flying on instruments -- because you may *have* to. You might find this out soon after you point your nose skyward on your first night fright...I mean, flight. But there's more to the story.

**AFRAID OF THE DARK**
I live in the mid-Atlantic region, and I fly single-engine fixed wing and rotary wing aircraft. This isn't the plains of Kansas though, and there isn't much of a reassuring probability that I'd blithely glide into a flat field somewhere, ***if*** that single engine were to quit. (The world doesn't really change at night, but because we can't see as well, our ability to deal with it sure does. That's what spooks *me*.) Consequently, I get a tad more apprehensive whenever I fly after sunset. My friend and co-worker, Bill, one who is well on his way to becoming an "*old pilot*", *won't even fly* single-engine at night. So I *know* I'm not alone.

Most of us do **not** fly much at night. I know *I* don't. I usually don't find myself carrying passengers at night, and if I knew there *would soon be* a chance of the flight extending toward sunset (let alone an hour afterwards) I'd do some circuits and bumps to a full stop an hour after the sun went down, as per CFR Title 14, Part 61.57. . . blah, blah, blah. But again, there's more to it than that.

**THE DARK SIDE**
After the requirements for a pilot certificate have been met, how many of us seek dual instruction after the day is over and the night is young? How often do we practice groping for the runway with a blown landing light, or inoperative panel lights? How familiar are you with a high-workload landing in night IMC after a four-hour cross-country flight? Are you ready for an engine failure at night? Aside from finishing that last *hour* of a cross-country flight that sometimes ends with a single night landing, or the three times around every 90 days, how many of us *take off* on a night cross-country? Aside from the freight dogs flying cancelled checks, and a few of us who prefer living the night shift, not a whole heck of a lot of pilots are up to the task. Close to 50% of all pilots do not have an instrument rating. How many of them know how it feels to be deprived of most of their familiar visual references, even though the air is crystal clear? The challenge goes up and our odds go down, the hazier it gets.

***Did you know*** that the fatality rate for night IMC accidents is 60%? If you have an accident at night your chances of survival are less than 50/50. (At least, that's what it was in 2001, according to the latest AOPA Air Safety Foundation Nall Report.)

**SONG OF THE SIREN**
True, the air is usually smooth as glass. Other aircraft are ridiculously easy to see, what few of them there are up there. Controllers are easy going, compared to the ones we hear during the day. Frequencies are considerably less crowded. But although the primal fear of engine failure at night is most common, the greatest cause of accidents at night is ***continued VFR into IMC. Why is that?***

First of all, the horizon is harder to see. (The same is true for terrain in general.) When you can't see as much on the ground below you, flight by visual references, becomes difficult to impossible -- it's easier to get disoriented and just plain lost.

Most of us are not night owls -- are bodies and minds are less active and more relaxed at night. Unfortunately, if ever a pilot should operate with a heightened state of awareness, it's at night.

Most airports are located outside of, or at the outskirts of, populated areas. These are precisely the hardest airports to find: an airport outside of a small city with an unpopulated approach path and little in the way of visual references (or perhaps none at all).

***Inside Information:*** Without visual cues, most new pilots approach too steeply, and too fast. This is the realm of the dreaded black hole, of course. At night, optical illusions abound.

The *biggest* excuse for blundering into clouds is that we can't see a cloud coming anywhere near as well as we can during the day, so inadvertent IMC, well, it happens.

**WHEN IT'S ALMOST OVER ... IT GETS WORSE**

The next greatest fear, believe it or not, is the flare and touchdown. Most of us seem to know quite well that our peripheral visual cues won't be around to help us sort through this phase of flight (or if we don't, one time is enough to convince us so). And most of us rely on what we see in the landing light in front of us in order to judge our sink rate. The Flight Training Handbook, now in print as the Airplane Flying Handbook, suggests looking out toward the landing lights further down the runway, and waiting until you see pavement markings (skid marks, cracks, etc.) before starting the flare.

***What you can do to improve safety of flight at night...***

**If you can't see it *and* identify it, don't trust it.** Avoid long straight-in approaches at night, as tempting and available as they may be. Descend from higher up; keep within a safe gliding distance if you prefer, until you're at a normal pattern altitude. This is especially true if the destination airport is surrounded by higher terrain. **If any lights on the ground suddenly twinkle or go out, climb!** It might have been because they disappeared behind a hill or trees. Whenever it's available, use the VASI or PAPI and be sure to fly no lower than "*red over white*". And always be absolutely sure that what you think is the airport really is an airport!

**Altitude is your friend.** To compensate for my own fear my own solution is flying higher at night. I like to make those "*cones of safety*" as wide as possible. And **altitude is time**. Your terrain and obstacle clearance should be all the greater, and your radio reception will be, too (especially useful, should you need it). Not that I advocate a lawn dart approach, but I do keep my descent angle equal to or greater than the airplane's glide angle. (Three degrees is only about half of what you would need to make the airport during an engine out glide in most single engine airplanes.) Note that I said "*airplane*" and not "*aircraft*"; the best glide ratio of the Robinson R-22 is about 4:1 for example, which would translate to a *14-degree* approach angle! And I pay close attention to the traffic load on roads beneath me, as well as any indication of telephone poles and other overhanging wires.

**Take note of that time of the month.** I strongly suggest that whenever you're planning a long trip that will not likely conclude before the day does, try to do it with a full moon (or some phase close to it). Obviously this would exclude non-discretionary mission-critical types of flying.

**The five-mile legal minimum is better off doubled.** It won't go without saying (because I won't let it) that for nighttime newbies, having great visibility will also make life a whole lot easier ... and possibly longer.

**Forget energy conservation.** When over-flying airports en route, click on the pilot controlled lighting. Airports can make great inter-active way points at night. Sure, you may waste some electrons, but a lit airport makes a great landmark, and if you should suddenly need it, well, there's your own personal marquee waiting for you.

**Speaking of lights, light your own.** You'll have a few seconds more advance notice for any clouds lying in wait, and other night fliers (birds included) will see you better. (If you're in snow though, you might feel like you're doing Warp Five, so it isn't *always* the right thing to do.)

***References:*** chapter on night flying in FAA's FTH, ASF publication "*Night Flying*"

## ??????

Do you have a favourite web aviation sight? Would you like to share it with other chapter members? If so please forward it to your newsletter editor via email and I will assemble them into a report in a future newsletter.

## Items for Sale:

| If interested in these items call Hugh Glynn at 613-225-7356 | | | Asking C$ | | Value |
|---|---|---|---|---|---|
| Item | Qty | Description | Ea. | Lot | US$ |
| Flight Computer | 1 | Jepson Tech Star Ser#14238 | | $80 | $100 |
| Fuel Testers | 2 | ASA 1used, 1 new | $3 | $6 | $6 |
| Vertical Speed indicator | 1 | Pioneer Model A57S # AC20662 | | Make Offer | |
| Aircraft Spruce Controls | 1 | 2 lever throttle quadrant | | $25 | $40 |
| Tillitson Fuel Bowls | 2 | Gascolators | $20 | $40 | $50 |
| Primer | 1 | unknown | | Make Offer | |
| Cabin Pressure Altimeter | 1 | 2 1/4 " panel mount | | Make Offer | |
| Turn & Bank Indicator | 1 | Ball style | | $30 | $39 |
| Panel Airspeed Indicator | 1 | unknown | | Make Offer | |
| E L T personal portable | 1 | Narco Avionics Battery operated | | $185 | $185 |
| Magnetic Compass | 1 | New Airpath CB2100-T4 | | $100 | $120 |
| Aircraft Intercom - Flightcom | 1 | Voice activated 4 place II2GX new | | $125 | $150 |
| Dynamic Microphone | 1 | New | | $60 | $87 |

**For sale: 1998 PELICAN PL, 63 TT, nosewheel, VFR & engine instruments, Icom A4, 2 hdsets, ELT< GPS, electric trim, cabin heat, 100 hp Subaru EA-82, 3 blade Warp Drive Prop, PSRU by reductions, 10/10 in & out. Always hangered. Airframe and kit fob factory $32,000. This one complete for $40,000, located Northern NB.**

**03/04 Email Bob @ melvilla@nbnet.nb.ca**

**Wanted: 3 wire screw on connection for RC Allen model A2475-2 turn and bank with 5/8 x 24 pitch thread.**

**02/04 Carl Bertrand @ 613-837-7412**

| | |
|---|---|
| **For Sale: Federal 1400 Skis, 10 inch wide.** | **$900.00** |
| **Set Continental A65 exhaust pipes** | **$175.00** |
| **2 New Avcom headsets model AC200** | **$150.00** |

**01/04 Brian Mckinley @ 613-487-2451 or 613-299-8424**

| | |
|---|---|
| **For Sale: McCauly prop DTM533 73 x 57 1A170 8 bolt** | |
| **Fits Continental 0300** | **$600.00** |
| **Wheel Pants for Cessna main gear pointed end style no backing plates** | **$100.00** |
| **Stromberg carb. For 65-85 HP Continental** | |
| **With air box** | **$100.00** |
| **Baffles for 85 HP Continental** | **$50.00** |
| **Soft Com 4 place intercom** | **$100.00** |

**01/04 Call Jim @613-830-4317**

| | |
|---|---|
| **For sale: Lycoming 0235-C1, firewall forward with all logs SMOH 1500 hrs. Removed from wind damaged aircraft. Compression good, one new cylinder.** | **$4995.00** |
| **Engine mount from Fleet Canuk for 0-235** | **$350.00** |

**01/04 Peter @ 613-729-0683, piper909@magma.ca**

## Articles wanted

**I am always interested in receiving submissions for this, your Newsletter. You may bring articles to the monthly meetings, or mail information to the post office box, or**

**e-mail stitstmp@sympatico.ca**

## EAA Chapter 245 Membership Application

NEW:___ RENEWAL:___ DATE:__/__/__
EAA NUMBER:.....
EXP Date:__/__/__
NAME:.....
ADDRESS:.....
CITY/TOWN:.....
PROV:.....PC:.....
PHONE:(.....).....H (.....).....W
EMAIL:.....
DISTRIBUTION Preference: email..... post.....
AIRCRAFT &
REGISTRATION:.....
.....

OTHER AVIATION AFFILIATIONS:
COPA:____ RAAC:____
OTHER:_____

**Annual Dues**: January 1st to December 31st. (porated after March31st for new members/subscribers).
Associate Member ____: $30.00 Newsletter plus Chapter facilities
Full Member: ____: $55.00 Newsletter, hangar, workshop, tiedowns. (Note: there is a one time $200 initiation fee when you become a Full Member)
Newsletter subscriber ____: $30.00 Newsletter
Note Associate and full members must also be members of EAA's parent body in Oshkosh WI, USA

Make cheque payable to:
EAA Chapter 245 (Ottawa)
Mail to - P.O. Box 24149, Hazeldean R.P.O., Kanata, Ontario, K2M 2C3

**Place your ads by phone with Rodney Stead @ 613-836-1410 or e-mail to stitstmp@sympatico.ca**
**Deadline is first of the month. Ads will run for three months. You may request a two month extension.**