



NEWSLETTER

Carb Heat

Hot Air and Flying Rumours

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OCTOBER NEWS LETTER

Next Meeting

Thursday October 17th , 1991

7.30 p.m.

At the

NATIONAL AVIATION MUSEUM
BUSH THEATER

Featured Topic

Starting a Homebuilt!
Different types of construction.

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PRESIDENT'S CORNER

Another summer of good weather and socializing at Chapter 245 has come and gone. There was lots of pleasant flying and hangar flying each weekend at Carp Airport. Even that last cold and gusty weekend in September, I was surprised to find a substantial crowd out at the airport enjoying the warmth of the club house.

The big news this month, is our October meeting which, for the first time, will be held at the National Aviation Museum. I can't think of any surroundings more pleasant for an aviation-oriented group like ours. We are indeed fortunate and privileged to be welcomed by the Museum staff.

With so many new members starting building projects, it is time to have more meetings which deal with technical subjects such as welding, rivetting, covering, AN hardware, engines, painting, etc. None of us are experts in these fields, but there are many of our members who have a great deal of experience which can be passed on to those of us just starting out. So if you are one of the "experienced" types, please volunteer to participate in passing on your knowledge of what to do (and, especially what NOT to do) at one of the meetings. Our first technical meeting will be the October one where a number of builders will talk about the merits and pitfalls of the various types of aircraft construction. At later meetings, we will go on to other technical subjects if speakers are available.

October is also our election meeting. This is an onerous task, but a vital one for the good of the Chapter. Without the people on the executive committee and their good work and ideas, the Chapter would have folded long ago. You don't need to be a genius or have a degree in management to serve on the committee. All you need is the will to come out to an extra meeting each month, offer some ideas on what we should do, and put in a few hours of work in the particular office that you hold. Positions are normally held for two years. Then it's

someone else's turn to carry the ball while you concentrate on finishing your project or enjoying some distraction-free flying for awhile.

The positions to be filled this year are Vice President, Treasurer, and Membership Director. All of the incumbents have done more than their fair share of the work and deserve to relax for a few years, so don't be afraid to accept a nomination for one of these positions.

While I'm on the soapbox anyway, I might as well make a pitch for the newsletter. I've seen what other chapters put into their newsletters to make them more interesting. The sort of items which can make a newsletter entertaining are a few pictures with captions, a small cartoon of a funny incident, announcements, or short articles on anything at all such as a first flight, moving the airplane to the airport, a trip to a fly-in, an easy annual inspection or whatever. Submit your material to any member of the executive committee; they'll see that it gets to the Newsletter Editor.

Finally, I can't end this column without commenting on the Breakfast Fly-In which the Chapter hosted on September 15th. How in the world do you stage a delicious Sunday breakfast, get totally rained out so that not one aircraft can take off or land, and still sell 80 breakfasts and end up with \$135 profit? Well, the answer is that you take an experienced and cunning organizer like Gord Standing, a dedicated set-up and cooking crew (most of whom I noticed paid for their own breakfasts, contrary to tradition), a loyal following of Chapter members and friends who drove in with spouses, kids, dogs, neighbours and in-laws, and finally, one clever university teacher like Dick Moore who brought out his drenched, but hungry Civil Engineering class to do some soil experiments behind the hangar. That's how! Well done, everybody; give yourselves a pat on the back!

That's it for this month. 'See you at the Museum!

Lars

Minutes of Sept. 19 Meeting Held at Carp International

Pres. Lars Elf called the meeting to order at 7:56 and welcomed the guests.

ANNOUNCEMENTS & OBSERVATIONS

Lars began with our breakfast fly-in. The bad news was that we hit an all-time low for aircraft attendance--ZERO, 0, NIL, NONE, ZILCHO-- thanks to very low ceilings. The good news was that our sizzling bacon, gently fried eggs, aromatic coffee, tantalizing toast, musical beans, mouth-watering pancakes, freshly-squeezed frozen orange juice and Gord's Gang of enthusiastic helpers enticed some 80 people to sample our justly famous and bargain-priced breakfast. A sincere thank you to all who participated and helped us turn a profit of \$135 for the event.

Next Meeting:--National Aviation Museum, Oct. 17, in the Bush Theatre.

Subject? show and tell on the major types of aircraft construction: tube and fabric; aluminum; and composite. We may also hear about some aspect of engines for homebuilts.

Open Houses

Plans are afoot to repeat this previously successful venture. The idea is to have interested people visit projects illustrating the various major methods of construction. Potential builders get an informative look at what lies ahead for them and those suffering from "long-term builder's blahs" get a much needed dose of enthusiasm. If you would like to volunteer your project, contact Lars. As soon as he has the details in place, he will announce the dates and venues of these thoroughly enjoyable get-togethers.

FAA FLIGHT-TEST HANDBOOK

Ted Slack received a number of these and has kindly distributed them to the EAA chapters in Canada. Our copy is available from Lars.

MANDATORY PROPELLOR INSPECTION

A recent letter from Rem Walker contained the welcome news that DOT has relented on its rule involving propellor inspections. Previously, props required a full shop inspection every 5 years. Now, an AME can remove the prop and inspect the hub, flange, and bolts for cracks and corrosion. The maximum interval remains at 5 years.

EAA INSURANCE

Previously excluded from EAA fly-in insurance, Canadian chapters now qualify. The coverage is limited, however, to the activities involved in the arriving, parking, or departing of aircraft. Competitive events such as flour bombing, spot landing, ribbon cutting, etc., are not covered.

EAA VS RAA

A questionnaire distributed at the meeting asked for feed-back on this difficult and sensitive issue. Please help the executive by returning your completed form by the next meeting. Respondents need not identify themselves but may do so if they wish.

FLYING FARMERS ASSOCIATION

Jim Bradley spoke briefly on some of the benefits of joining the organization. Delicious corn roasts, grass roots flying, excellent maps and another excuse for frequent cross country hops were among the attractions he mentioned. And you don't even have to be a farmer to join.

ELECTIONS

October is election month in our chapter. Positions to be filled include: Vice-President, Treasurer, Membership Secretary, and Recording Secretary. **Henri Beaudoin** graciously consented to another tour of duty as **Kaptain Kaffein**, thus reducing the positions requiring arm-twisting.

FAILED GLUE JOINTS

Ted Slack recently brought to **Vice-President Gary Palmer's** attention the fact that glue joints in a composite aircraft failed after it crashed. Gary stressed the importance of degreasing, cleaning, and roughening surfaces prior to bonding to ensure maximum strength in the joint.

FINANCES

Treas. Deric Dods reported that we are in good shape financially. Please submit proposals for repairs, renovations, etc., to him as early as possible so he can budget for them.

CHAPTER CREST DESIGN CONTEST

Sec. Luc Martin announced that he was definitely underwhelmed by all 2 of the designs he received. He is hoping the winning entry will result in a crest costing under \$10.

TOOL CRIB

Tool Tabulator **Andy Douma** noted the recent additions: 1) a mag synchronizer 2) a swage gauge 3) a spark plug gapper. The combination for the the tool crib lock is available from Andy or **Dick Moore**.

FEATURE PRESENTATION

Rodney Neufeld, Zone Commander for CASARA (Civil Air Search and Rescue Association) briefly traced the history of the organization. In recognition of the fact that the locals know their own terrain better than the military, a national civil organization of 6,500 members with 1,000 plus aircraft became a reality in 1986. Despite the "Rescue" in the title, the group largely confines its activities to searching, especially for missing aircraft, or responding to ELT alarms. The program saves tax payers about \$6,000,000 a year (including \$2,000,000 spent in administering the program).

For practical and administrative purposes, Canada is divided into 4 major areas. Ontario is similarly divided into 12 zones, Ottawa being no. 12.

Throughout the program, the emphasis is on safe procedures. When we learned that a search plane such as a Cessna 172 usually carries 4 people at or near gross and typically searches at 700 feet AGL, the reasons for meticulous weight and balances and pilot proficiency become very obvious. Two of the four are spotters, the third is the co-pilot, and the pilot concentrates exclusively on flying. Recommended training includes First Aid, CPR, and survival techniques.

The search technique usually involves "Creeping Line Ahead"--a series of closely spaced and parallel zig zags--or the "Expanding Square"--a series of expanding squares flown around some adopted starting point. Sometimes, however, the crew is asked to do a "Track Crawl"--fly the route of the missing plane.

Volunteers on missions receive reimbursement for all out-of-pocket expenses. Those who rent aircraft recover the entire rental fee; those who fly their own receive payment according to a formula. Insurance covers the volunteers from 1 hour before leaving home to 1 hour after returning. This insurance is of a secondary nature, however. It covers reasonable shortfalls arising from one's immediate insurance.

In addition to training volunteers and flying search and rescue missions, CASARA actively promotes safety through the highly successful Pilot Decision Making Course--a superb and very worthwhile course--safety literature, etc.

Anyone interested in becoming involved in this exciting and challenging cause should contact **Rodney Neufeld** or **Eric Taada**.



Your faithful scribe,

Roger Fowler

**A REPORT ON THE RAA AUTO ENGINE CONVERSION
SYMPOSIUM HELD AT BROCKVILLE ON SEPT. 21, 1991**

1. Hans Mayer on Auto Engines for Aircraft

Why auto engines? About 40 interested parties gathered at St. Lawrence College to listen to Hans Mayer talk about the advantages and problems of using auto conversions in aircraft applications. Hans used a variety of charts and chalk board illustrations to make his general point that auto engines are about 30% more fuel efficient and getting lighter and more dependable all the time. Mass production, extensive computer assistance in design work, tougher cylinder wall linings, computer controlled fuel metering and engine monitoring, multi-valves, and a growing list of all-aluminum power plants make the auto engine more attractive than ever. By way of contrast, Hans noted that the last full aircraft engine certification in the U.S. occurred in 1947. As manufacturers strive to meet government-imposed efficiency levels thought impossible a few years ago, they are continually improving both fuel consumption and power output. The even better news is that many of these newest engines develop more horsepower at lower r.p.m. than their predecessors, thus increasing the reliability of both the engine and its accompanying reduction drive.

Which one and how big? As for which particular engine to choose, Hans was non-committal. Instead, he strongly recommended careful study of spec sheets on the various engines available in a particular horsepower range. A couple of warnings were in order. Don't think that you can buy a junked engine rated at 85 h.p. and miraculously produce 135 h.p. just by removing the catalytic converter (a 5% increase) and the pollution equipment (about 10% increase) and tinkering with the timing. Modern engines are already so finely tuned that significant gains can only be had by major internal alterations involving expensive test equipment.

Imported ponies might equal American horses. Horsepower ratings themselves also need careful scrutiny. German, Japanese, and European ratings are based on the engine as it is installed in the car; i.e., with air filter, limited coolant, etc. American manufacturers tend to quote crankshaft horsepower but not in the car configuration--outside source of coolant, no air filter, etc. Be sure that the figure you are relying on will translate into the horsepower you really need.

I got the heart: what other organs do I need? Once you locate the desired engine, make sure you also obtain all the relevant gauges and computer components, especially the "idiot light." This little dash light will give you an instant visual warning that the computer has registered a problem and will limit the engine's output to about 60%--the "limp home" mode. At normal cruise settings, you probably won't even notice --UNLESS you suddenly need full power. The warning light lets you plan ahead and prevents nasty surprises. Some newer cars also offer fuel metres which read litres/km, m..p.g., or gals/hour. This too is worthwhile taking. In short, err on the side of completeness. You can always discard unnecessary sensors later.

Hey Doc! My motor's fine but the computer says it's sick. The bad news about engine computers is 1) they don't usually specify when and how the problem occurred and 2) they need to be told-- electronically--that you have cured the snag. If, for example, after a quick landing and shut down, you immediately left the cockpit, a sensor might register an overheating problem. A subsequent run-up or test flight would be normal with all engine gauges in the green--despite the @\$*! idiot light.

The good news about engine computers is that with a digital voltmeter and a detailed manual (such as Hurst or Chilton's), you could quickly trace the problem to the overheating sensor by comparing actual with recommended voltage readings. If you discover a defective sensor, you replace it. If you suddenly understand why the "problem" occurred--as in our quick shut down instance--there really isn't a problem.

The other good news is that, unlike kids, a car computer is easy to talk to. You "tell" it that you have cured the ailment (real or imagined) by disconnecting the battery for about 20 seconds. This saves your sanity but makes the computer lose its mind (actually, its memory). It forgets it ever had a problem and the idiot light goes reassuringly back to sleep until another snag develops.

Which formula and which oil for my new baby? Your auto engine was designed to burn inexpensive (by aviation standards, at least) unleaded fuel and that's what it likes best. This fuel is widely available at or near your average airport. The question of using av gas in the auto engine didn't receive much attention but can't be a major problem or the

likes of Steve Wittman (and his Olds V-8 Tailwind) wouldn't be happily traversing the U.S.

For oil, Hans strongly advocated a good synthetic brand. He used synthetic oil in one of his own vehicles for 85,000 km before changing it and experienced no ill effects. He also urged the installation of a magnetic oil plug so traces of metallic wear can be detected during oil changes. Even aluminum particles tend to experience partial contamination with other, ferrous metals and so appear on the plug as a furry coating, thus indicating the need for a diagnostic oil analysis.

C'mon, baby, light my fire! On the subject of ignition, Hans strongly recommended CDI (capacitor discharge ignition). By referring to charts, he showed how the traditional magneto takes so long to built up its spark-jumping voltage that the plug is perilously close to fouling before the spark actually occurs. CDI, by contrast, is in the order of 10-15 times faster. With its hotter spark (higher voltage), CDI ignition can also handle bigger plug gaps and thus reduce plug fouling on two counts while also improving cold weather starting--what pilot wouldn't like that?

Cool it, man! Aluminum radiators disperse heat several times better than the usual copper varieties found in most cars. (Incidentally, superior heat radiation is another advantage of the all-aluminum engine). Here, Hans' preference was for the VW Golf which has 3 sizes of rad. If you need an even larger size, use the Golf Diesel version.

Slow down! You're going too fast! That's what Hans feels is wrong with most of today's propellers. What we need, he argues, is wider blades turning at WWI speeds. This would reduce noise, increase efficiency, and eliminate many problems of balance and destructive resonant frequencies found at the higher r.p.m ranges we operate in today.

In short, Hans is a mine of useful--and highly entertaining--information. He brought examples of his own reduction units, both installed (on a Ford Escort and and Ford 2.3 litre V-6), and unattached. He also brought samples of starters and alternators (the differences in weight, size, and cost were enough to make owners of certified Lycomings break down and cry!)

To Hans' credit, he never once turned his witty and knowledgeable presentation into a plug for his own product. He can be reached at:

Huron Aero-Marine,
110 Everton Rd., Box 18, Site 5,
Sunnyside, Midland, Ont., L4R 4L9.
(705) 526-6863.

2. Jamie Alexandre's one-of-a-kind small 2-seater high wing

For his original design plane (resembling a Kitfox), Jamie chose the small (1 litre) 3 cylinder Suzuki engine commonly found in Sprints and Fireflies. His 70 hrs so far have been largely trouble-free except for recurring ignition coil breakdowns. Guessing that excess heat might be the problem, he moved the coil back to the fire wall and took steps to keep it cool. It still failed. It turned out that this particular coil is only partially filled with oil and depends on its nearly horizontal position for internal insulation. Jamie's next coil was full of oil and the upright position ceased to create difficulties. The lesson here is to duplicate as closely as possible the installation found in the car.

The video of the plane in action made Jamie's claims of a 28 m.p.h. stall and a 70 m.p.h. cruise quite believable. The quietness and low fuel-consumption (1.5 g.p.h.) also proved to be very appealing. This essentially unmodified engine installation contributed to an overall \$7,000 price tag for the plane and had people pressing him for plans. Jamie is still tinkering with the design, so we'll just have to wait. Expect to hear more about this cute and impressive little bird, however, before too long.

3. Ron Newburg, Canadian Aero Engine and Stephen Wilcox, Aviation Mogas Club

After explaining the advantages of the cermicrome process--more power, faster break-in, lower oil consumption, less expensive overhauls, etc.--Ron floored the audience by casually asking if anyone was interested in flying, as he does, for 40¢/litre? The solution, he pointed out, is to use auto fuel, but to do so shrewdly and very carefully. Anyone whose plane is eligible for an auto gas STC can get by on about 59¢/litre, even at Ottawa's extortionist prices. The secret to reducing the rest is to buy in bulk and to get back the provincial road tax. Most of us don't burn enough fuel to warrant bulk orders, and recent changes in the procedures for claiming the road tax have greatly increased the necessary paperwork. Ron has recently become a registered tax collector and this permits him to deal with the local supplier of auto gas in a manner which passes the tax savings directly on to the individual. Stephen, the Manager of the Mogas Club, will make all the arrangements once he has been informed of which supplier the individual or group wishes to deal with. The Mogas Club will even sell gas-dispensing equipment at substantially reduced costs. A further benefit to membership in the club is that Transport Canada's restrictions of 24° C. and 6000 ft. maximum can be lifted--if you possess the appropriate STC for your plane--because you will be using gas which has been tested/certified to meet the American standard (ASTM D-439). Use of uncertified auto fuel beyond the temperature and altitude limitations imposed by Transport Canada also jeopardizes your insurance

claims in terms of the validity of your C of A, not the sort of thing you want to be worrying about as you prepare to land your vapour-locked airplane on a rock pile! This road-taxless fuel, of course, can not legally be used in your car. To discourage would-be cheaters, Ron and Stephen suggested that a group/chapter sell the fuel at corner garage prices and put the roughly 15¢/litre profit into whatever activity or cause the group decides is best. It sure does sound inviting. Interested parties can contact Ron Newburg, President of Canadian Aero Petroleum Products, Box 118, Rama, Ont., L0K 1T0. (705) 326-1366. FAX (705) 326-8105, OR, Stephen Wilcox, Manager, The Aviation Mogas Club, Box 704, Haliburton, Ont., K0M 1S0. (705) 457-2421. FAX (705) 457-3115.

In short, the FAA-sponsored symposium on auto conversions and related topics was highly informative, well organized, and entertaining beyond belief. Hopefully, the next time they plan such a venture, they will have a much larger audience. Congratulations on a job well done!

Roger Fowler

CLASSIFIED SECTION

AIRCRAFT FOR SALE:

Homebuilt Super CUBy. Completed 1988. 100 hrs TTAF. Lycoming O-320, 100 hrs SMOH; set up for auto fuel. Full gyro panel; 2-20 gallon wing tanks. Excellent condition. Contact Henri Beaudoin at (613) 749-9720.

PROJECTS AND PLANS FOR SALE:

Baby Great Lakes Project: Fuselage 90% complete; all ribs and spars; Continental C-85; MacCauley metal prop; all instruments. \$6500. James Oliff 724-6123.

Zenith CH 250, 75% complete. trike gear. Signed off by DOT, ready to finish closing. Wings and tail nearly complete. Includes gear, cowling and fairings. Call Jim Robinson at 830-4317.

Davis D2A plans. Call Russ Robinson. 831-2485.

PARTS FOR SALE

Brakes and wheels. Rosenhan. Suitable for Vari-Eze, Davis, etc. Offers welcome. Eric

Taada 749-4264.

Vari-Eze landing gear legs. New. Contact Peter Plaunt, Carp, Ont. (613)839-2283.

Randolph butyrate dope in unopened gallon containers: 2 gallons clear; 1 gallon Juneau white; 1 gallon Piper Lockhaven yellow (Maule yellow); 1 gallon Insignia blue.

- 2 large oil coolers (approx 8"x9")
 - 1 hydraulic pump
 - 1 vacuum pump
 - 1 Lycoming dual accessory case adapter for above pumps
 - 1 spinner, 11" base diam; pointed type
 - piston rings for Continental E-165-3.
- Contact Garry Fancy at 836-2829 for any of the above items.

WANTED

Aluminum needed. 2024-T3, 2 pieces approx 22"x52"x.040". If you can help, contact Ron MacMillan at 837-6865.

Classified Editor: Lars Eif 837-6680.

Carb Heat October 1991.