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Carb Heat

NEWSLETTER

Hot Air and Flying Rumours
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March 2000

Inside:

Next Meeting:
Thursday Mar. 16, 2000 8:00 PM
National Aviation Museum

Presentation by our very own
Gary Loubert
who will explore the myriad of electronic engine instrumentation options
open to today's homebuilder

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Carb Heat

March has started like a lamb; hopefully it won't finish like a lion! Our good fortune on the weather front continues, although February saw enough snow to make the skiers happy. Surely Spring is just around the corner!

As usual, we always seem to have some thoughtless individual that insists on turning the grassed area in front of the row hangers into a muddy quagmire. Dick and I have placed some saw horses and a ladder to block access for the next month or so. It sure would be nice if the individual(s) responsible for the current mess were to clean it up.

So please, over the next month or so while the frost leaves the ground, please park in the First Air lot and walk across to the chapter hanger. The exercise will do you good and give the grounds a rest. Enough of the soap box; on to more peasant topics.

February Meeting Summary

Pat Floyd shared with us the fascinating adventures of a mythical young pilot / AME in the real world of international ferry flights. Those of you who have read Garth Wallace's books, particularly his biography of Charlie Vaughn, will recognize many of the plots and subplots. Fortunately no Transport Canada spies were in attendance, and we had an intriguing insight into the real meaning of the word resourceful! Thanks Pat for this look at flying as it really is, not as some desk bound bureaucrat imagines it.

Carp Airport Lease

On February 24th, George Elliott and I met with the Airport Authority board of directors, and were given the opportunity to present our chapter's views on Airport expansion, and explore options for a new lease arrangement.

A committee has been established to make a recommendation to the board, and I expect we will be able to obtain a new lease that secures a firm future for EAA chapter 245 at Carp. As progress is made on this front, I will be reporting back to the membership.

AR-5 Tapes

We recently received a new addition to our chapter Video library; the AR-5 tapes. The AR-5 is a one off design of Mike Arnold that set a world speed record for it's class in 1992 I believe. Running with a totally stock 65 HP Rotax 582, and fixed gear; the single place AR-5 recorded an amazing 213 MPH.

The AR-5 was the subject of an extensive analysis by noted Aero Dynamicist, Bruce Carmichael published a couple of years ago in Sport Aviation. He calculated that the AR-5 had broken the magic 1 square foot equivalent flat plate drag; an amazing feat for a fixed gear aircraft.

There are four tapes in the series.

The first tape provides an overview of the aircraft and specifically the record attempt and the aerodynamic features responsible for its efficiency.

The second tape provides an overview of the mold-less composite construction techniques used by Mike to build the AR-5. Mike is a master at composite construction, and I was surprised to see that one of the techniques I used on the Lancair was also a favourite of Mike.

The third tape shows how to build a pair of aerodynamically efficient wheel pants as used on the AR-5. This was a good overview of both the theoretical aspects as well as the practical fabrication.

The final tape is for the truly committed as it details how to create production quality molds for complex parts. In this case it is a streamlined under wing cargo carrier for an RV-6. Alan Tolle, the consummate RV builder and fiber glass hater would cringe to see his beloved aluminum wing skins mated to a smooth pod, no matter how beautiful and sexy.

I have enjoyed reviewing the tapes, you can contact George Elliott to borrow any title from the video library.

March 16th Meeting

Our March 16th meeting will be held at the Bush Theatre at the National Aviation Museum; 8:00 PM start. Our featured speaker will be our own **Gary Loubert** who will explore the myriad of electronic engine instrumentation options open to today's homebuilder. This presentation will appeal to the electronically inclined portion of our membership, looking for new and better, non traditional ways to monitor the health of their engines. It will also outline choices open to the less electronically inclined as well. This one should be very interesting, I look forward to seeing you there.

Gary

CHANGING AIRCRAFT TIRES

by Garry Fancy

Last fall I changed the main wheel tires on my 1970 Piper Cherokee, C-GCQE. This is an owner-maintenance item permitted under the CARS and what I thought would be a simple straightforward operation

The worn left tire was a McCreary AirHawk (6.00-6 6 ply) and the worn right one a Goodyear Flight Special (6.00-6 6 ply). After jacking the aircraft up, and before removing the wheels, I spun them both, just for curiosity. I was surprised to find that each tire was out-of-round by about 1/4". According to the Piper Owners Magazine, out-of-balance main wheels may cause nose wheel shimmy symptoms, and since my Cherokee suffers from mild nose-wheel shimmy, I thought I might have discovered the cause.

When I removed the worn tires, I weighed them; the weights were as follows:

Goodyear Flight Special: 7 lbs., 10 oz.

McCreary AirHawk: 6 lbs., 6 oz.

The next decision, was what tires to buy and install? New tires are not cheap. Wag-Aero prices around are $50-$60 U.S for McCreary AirHawks (6.00-6 6 ply) and almost double that for equivalent Goodyears. The Ottawa Flying Club had Wilkinson/Goodyear retreads for about $60, each. Recalling that the CF-104 tires were usually retreaded or recapped several times, I was not too concerned about the safety and longevity, if properly recapped and Wilkinson's are a reputable tire dealer.

B.F. Goodrich states “retreading is a general term meaning reconditioning of a tire by renewing the tread, renewing the tread plus one or both sidewalls. There are actually four different types of retreading for aircraft tires, depending on the need or process used: Top Capping, Full Capping, Three-Quarter Retread, Bead-to Bead Retread” (ref.: B.F. Goodrich booklet "Care and Maintenance of Aircraft Tires)

The downside with the retreads, I discovered later, is that they are somewhat heavier than new tires. The Wilkinson retreads weighed in at 11 lbs. 12 oz and 12 lbs. 4 oz.not even consistent. Aircraft Spruce and Specialty catalogue gives the weights of new tires as follows:

McCreary Air Hawk 6.00-6 6 ply: 7.0 lbs.*

McCreary Air Trac 6.00-6 6 ply: 7.0 lbs.*

Goodyear Flight Special 6.00-6 6 ply: 7.7 lbs.

Goodyear Flight Custom 6.00-6 6 ply: 7.6 lbs.

* McCreary's catalogue gives these weights as 7.8 and 6.5 lbs respectively.

The difference in weight between old and new tires is obviously due to the depleted/worn rubber on the old tires.

In the event, I purchased the Wilkinson retreads. Next came the installation. But first, with the wheels and tires removed, now was a good time to clean and regrease the main wheel bearings and check the tubes condition and leaks.

McCreary's installation instructions for mounting tube type tires on split wheels are as follows:

1-Wipe inside of tire to make sure it is clean

2-Inflate tube until it is rounded

3-Dust inside of tire with the correct talc

4-Insert innertube into tire with the "arrow" on the tube next to the red dot on the tire

5-Put the tire and tube on the outside wheel half with the valve stem through the valve hole

6-Put inside half of wheel into tire. Match up bolt holes

7-Insert wheel bolts, washers and nuts and tighten to correct torque, as set by manufacturer. Work in a criss-cross pattern when tightening

8-Follow safety rules when inflating. Inflate tire to correct inflation pressure. Deflate tire (*tube*) to let tube adjust to proper position. Reinflate to correct pressure and install valve stem locking nut. Tire will have to have pressure adjusted in 12 to 24 hours. Check carefully for leaks. When tire is correctly inflated and leak-free it can be installed on aircraft". (ref: McCreary Tire and Rubber Company bulletin)

Goodyear gives the following advice regarding wheel tire assembly/balancing:

It is important that aircraft wheels and tires be as well balanced as possible. Vibration, shimmy, or out of balance is a major complaint. However, in most cases, tire balance is the cause. Other items affecting balance are: installation of wheel assembly before full tire growth, improperly torqued axle nut, improperly installed tube, improperly assembled tubeless tire, out of balance wheel halves, poor gear alignment, bent wheels worn or loose gear components, flat spotted tires."

Balance marks are placed on many tubes to indicate the heavy spot of the tube. These marks are often paint marks about 1/2 inch wide by 2 inches long. When a tube is installed, this mark must be aligned with the "light spot" balance mark of the tire (red dot). If the tube has no balance mark, place valve adjacent to the tire balance mark (red dot). When mounting tubeless tires, the balance mark on the tire is aligned with the wheel valve, unless otherwise specified by the manufacturer."

With some split wheels, the light spot on the wheel halves is indicated with an "L" stamped on the flange. In assembling these wheels, position the "L"s 180 degrees apart. If additional dynamic or static balancing is required after tire mounting, many wheels have provisions for attaching accessory balance weights around the circumference of the flange."

"Good wheel balancing is essential to comfortable safe aviation. Wheel balancing and propeller balancing fall into the same category for small aircraft. Many basic balancing units that are suitable for

one can be used for the other." (Ref: Goodyear International Corp., Aviation Mechanics Journal, 1979)

I would add the following to the above procedure:

- to ensure that the tube is not pinched between the wheel halves, lightly tap the two halves together after the tube and tire is installed. A metallic sound indicates no rubber is trapped; however if a muffled "rubber" sound is heard, do not tighten the bolts but undo and check further.
- spin the new tires to check for out-of-round, and correct axle nut tightness.

Following the above installation procedures, I spun both main wheels whilst the aeroplane was still on jacks; there was still a bit of out of round condition - perhaps less than 1/8 inch.

In conclusion, I discovered that there is much more to tires and tire replacement than first meets the eye; there are many factors to consider, and cautions to observe. Certainly if weight is a factor as on smaller, lighter aircraft, retreads may not be as attractive as the lower price would first indicate. One other thing: the nose wheel shimmy symptoms still persisted on my Cherokee.

Aging Aircraft, Younger Pilots
by Michael Maya Charles

This Article was taken from the Avweb website.

As the U.S. general aviation fleet continues to age, few major problems seem to be cropping up. These were the basic findings of an FAA meeting on the subject last month in Kansas City. Still, minor considerations can become major ones if the signs of aging -- whether in aircraft or in humans -- are not recognized and addressed. AVweb's Michael Maya Charles learned that lesson the hard way during the annual inspection of his Cessna. Here's some of what he discovered and some suggestions to help address the planned obsolescence of our planes.

A couple of weeks ago, the FAA and the general aviation industry held a meeting in Kansas City to discuss our aging general aviation fleet. *AVweb*'s own Editor-In-Chief, Mike Busch, was there and reported on the event. Much to their credit, our industry convinced the FAA with statistics that our aging aircraft are not unsafe, so let's not "create a solution looking for a problem." Instead, the group collectively decided to let the statistics dictate the solution when and if required.

It's encouraging to witness this rational, intelligent approach to problem solving. My hat's off to the members of this group for not creating more reasons to sell the airplane and buy a sailboat. But a recent experience with my own aircraft gave me a different perspective on aging aircraft.

Annual Time

I began the annual inspection on my Cessna 185 Skywagon with the clear impression that this year would be a real cinch; there were a few things I wanted to do while I had the airplane pulled apart, but the Skywagon had been performing reliably and admirably. I figured the annual would be done in three or four days of solo effort, at most. I should have known better.

The usual compression test kicked off my inspection. This has always a non-event for this airplane; the 450-hour engine has always had high compression readings -- perhaps even a little too high, in fact. Readings of 79 pounds over 80 are not at all uncommon for this engine. But when I performed the test, I was stunned to find two cylinders at 35-40 pounds (over 80). The steady breath of air from the exhaust stack told me that the exhaust valve was not fully closed.

It's not uncommon to have a bit of carbon stuck under an exhaust valve or a buildup of lead deposits which prevent the valve from seating properly, allowing the compressed air to escape. Sometimes (my average is about one out of 10), you can even "fix" this problem by removing the rocker cover and "spiking" the exhaust valve to seat it firmly. I tried this on both of my leaky cylinders to no avail.

Jugs Coming Off

There isn't much to do when this happens. I pulled both cylinders (numbers 1 and 5) and took them to Firewall Forward for rework. The exhaust valve guides were shot and the valve stems were worn beyond limits. I replaced the guides and installed serviceable valves on the two weak cylinders, then found the same wear on the remaining four cylinders and replaced the same parts. It appears the overhaul I had inherited with my "new" aircraft some 4-1/2 years earlier had been less than stellar. So much for the easy annual.

Inspection Time

While I had the engine partially disassembled, I looked carefully at some of the aging parts on it: the rubber engine mounts were sagging and the rubber hoses to the fuel controller were also looking like they had seen better times; all understandable since most of these parts were over 20 years old.

I also found a rather ratty-looking hose that connects the dipstick to the engine block. What if, I wondered, this hose failed in flight?

The ignition harness, though much newer, was beginning to wear in spots where rubber grommets had hardened and failed. Several of the "cigarette tips" were corroded. Know how much rubber grommets cost? About 50 cents each.

Though I consider my 1979 Cessna 185 to be a "late model" aircraft, that perception is based on Cessna's production cycle, not real calendar time. It was obviously past time to remove and replace some of these aging parts.

Metal Ages, To

It wasn't just rubber parts that showed signs of aging, either. The aluminum baffling along the upper rocker covers was beginning to corrode, crack and in some spots had worn through from rubbing against the adjoining piece. Repair where possible; replace where not.

One of the aluminum heat shields that keep the exhaust from damaging the adjoining engine mount was cracked and worn. I made a new one out of new stock and replaced it, too.

Recently, I replaced all the brakes lines, since they had been on the aircraft since new and were looking dry and brittle. Losing brakes on a tailwheel airplane is usually a lot more than an inconvenience. I don't want to go there if I can help it. Replacing the hoses was pretty simple -- dirt-cheap in fact, compared to the price of rebuilding a wingtip or gearbox.

As I performed this work I was reminded that our airplanes are aging. But signs of age are primarily found on the parts we can change easily, if not relatively cheaply. While it's true that our metal structures are aging, too, we don't see a rash of in-flight wing failures due to fatigue in our NTSB files; we have no instances of the cabin roof tearing off in flight, as a Boeing 737 did over Hawaii years ago. For the most part, we are not wearing out our airplanes like the airlines do with their repetitive cycles -- we are allowing them to deteriorate mostly due to lack of use ... and time. That's easier to fix.

Two Schools

There are two distinct schools of thought among pilots, owners and mechanics: One is: "If it ain't broke, don't fuss with it." Then there's the more conservative, in-it-for-the-long-term crowd: "Throw a little money at it now, or a lot later." Do we wait for something to fail before replacing it? Or should we be more proactive, choosing to replace it before the failure catches us in a compromising situation?

I studied a fatal accident recently involving a 30-year-old Cherokee whose vacuum pump failed while flying over a lake at night in instrument weather. The pilot lost control of the Piper and crashed, killing himself and a passenger. The vacuum pump had over 1,200 hours and 17 years on it at the time of failure. That is certainly longer than we can expect a vacuum pump to serve. How many hours and years does your vacuum pump have on it? The pump costs about $350; installation should take less than an hour. Cheap insurance.

Though there are many times when I'd rather belong to the first group, times when I'd rather stick my head in the sand and hope it all goes away, I believe that avoidance eventually catches up with us. Pay me now ... or pay me later ... perhaps with your life, as this Cherokee pilot learned.

The Rewards

What do we get when we inspect, repair and replace ancient parts? Peace of mind, certainly; and a larger maintenance bill than if you ignore the obvious. But you don't have to do all this at once; you might spread the cost and of this over several annuals or inspections.

You also gain a sense of pride when you look under the bonnet or inside the inspection covers of your pride and joy. And there is no doubt that safety is certainly enhanced with more new parts.

There's another benefit to all this scrutiny: You have a great opportunity to discover other things that should be taken care of. An example on my annual was finding the weather-checked hose on the oil dipstick. If you don't look, you can't tell.

Hardware Is Cheap

Of course, when you do this work, it's a good time to replace hardware. I've never understood why pilots, owners and mechanics reuse old hardware, especially the high-wear screws, lock nuts and exhaust bolts, for example. Hardware is relatively cheap, especially when compared to the labor and hassle it takes to remove a screw that is frozen in place, or a bolt that is rounded out so badly a vise grip is required to liberate it -- if you're lucky, a chisel if you're not. Having a supply of common hardware on hand to change out screws, bolts, nuts and washers just makes good sense. There are even pre-made kits available from places like Aircraft Spruce, Chief or Univair. You don't need to be an A&P to replace much of this hardware, either. Appendix A to FAR 43 allows owners with at least a private license to change hardware with this listing:

(26) Replacement or adjustment of nonstructural standard fasteners incidental to operations.

Advisory Circular AC 61-23C, The Pilot's Handbook of Aeronautical Knowledge, encourages us to do these kinds of simple maintenance operations when it says:

14 CFR part 91 places primary responsibility on the owner or operator for maintaining an aircraft in an airworthy condition. Certain inspections must be performed on the aircraft and the owner must maintain the airworthiness of the aircraft during the time between required inspections by having any unsafe defects corrected.

In other words, it's not only legal to do the work as an aircraft owner, you are expected to do it.

What Does "Annual" Mean To You?

Perhaps the participants in the recent Kansas City conference were right: We don't need any more stinking regulations to keep us from killing ourselves with our aging aircraft -- yet. Statistics show that we're mostly managing to deal with the problems of aging aircraft all by ourselves. But this reprieve just allows us an opportunity to deal with the aging aircraft issue aggressively and proactively -- before our aging parts leave us in a bad situation, or before we create statistics to drive some really dreadful regulation.

Yes, my annual is taking a lot longer to complete this year because of all this. I'm beginning to understand why we call these inspections "annuals." But this increased scrutiny and willingness to replace the old, the tired and the ugly in our airplanes is an important part of preventative maintenance of old airplanes -- and they're almost ALL old. I firmly believe this kind of maintenance allows me to operate my airplane most of the time without surprises and with a higher level of safety.

Of course, when we have these discussions about aging airplanes, it reminds us of the steady march toward our own Final Approach. I know some of my own parts are aging, I just can't for the life of me remember which ones.

Famous Pilot Biographies:
Anton Fokker
1890 - 1939

Anton Fokker was born in 1890 on Java, in the (then) Dutch colonies. The family moved back to Holland for his education when he was 11, but he was not a very ardent student, and he only made it through his high school exams by means of a self invented crabbing-machine. He went to Germany to train in a car manufacturing school but decided on the spot that he preferred a newly started course in aviation. The one plane he and his class built was crashed by a pilot that couldn't fly and the course crashed with it. Instead of going back he built his own plane with money his father sent him. In 1910 he flew it for the first time; in 1911 he was giving demonstrations and joy-rides in it to make a living.

He became an aeroplane manufacturer and show pilot, constantly worried by financial difficulties. Then war broke out and Fokker came into his own. Fokker planes became loved and feared. After the war the Dutch government still hesitated to buy aircraft from Fokker, so he sold the salvaged (German) surplus war production to Russia. A second main Fokker factory opened in America and Fokker became the largest civil aircraft manufacturer of the twenties. He wrote his autobiography 'the Flying Dutchman' in 1931. The all-metal Douglas DC1 of 1933 meant an end to the Fokker supremacy. A last brilliant stroke was the beautiful twin-tailed G-1 fighter of 1936, nicknamed the Reaper. Fokker died in America in 1939. The company went bankrupt in 1996.

books:
de Vliegende Hollander; the Flying Dutchman (1931): autobiography

on the web:
a pre-war history of the Dutch Air Force with lots of pictures of Fokker planes
rules for the war game Fokker Fodder from the Humberside Wargames Society

Plane Writing special feature:
the Flying Dutchman

Notice

Arnprior airport (NP3) has apparently changed its unicom frequency from 122.8 to 122.7 MHz

Classifieds

Place your ads by phone with Charles Gregoire @ 828-7493 or e-mail to cbgregoire@sympatico.ca Deadline is first of the month. Ads will run for three months with a renewal option of two more months.

The West Carelton Airport Authority (Carp) advises that they are taking names from those interested in renting space in a proposed 20 bay T-hangar bldg. They have about 11-12 names, and are looking for a 75% initial occupancy before they commit to breaking ground. Cost looks like $175-$200 per month. Those interested can call 839-5276 or fax 839-5390 for an application or further info.
Maj.GT.Rippon
DMP 4
(613)995-2684
e-mail: mail094a@dnd.ca

Wanted, One Pre-Amp coupler for a King 8002 Loran, rectangular type. Ernest B. Colbert,
E Mail: ecolbert@mfi.net or
Phone or Fax 1-352-625-3793 03/2000

For Sale/Trade
- Continental C90-12 with logs for sale or trade for Lycoming O-320 (may consider O-290D or D2)
- Vacuum pump and drive for Continental O-200.
- Pair of new 500X5 Rosenhan wheels, brakes and tires.
- Some 4x8 sheets 1/16 & 3/32 aircraft plywood
Lionel Robidoux 613-738-1066 01/2000

Homebuilt glider for sale, Miller Tern C-GWKW. Wood construction, amateur built in 1978. Aircraft has always been hangared at Pendleton. No accidents. Total Time 845 hrs. L/D 34:1 $6500
Juergen Weichert (613) 746-7685
juergen@accolade.ca
More information at http://accolade.ca/glider 10/99

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 send me an e-mail attachment at:

cbgregoire@sympatico.ca 01/2000

EAA Chapter 245 Membership Application

NEW:___ RENEWAL:___ DATE:__/__/__
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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
Newsletter subscriber ____: $30.00 Newsletter
Note Associate and full members must also be members of EAA's parent body in Oshkosh WI, USA

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