EAA 245 OTTAWA , ONTARIO

NEWSLETTER

REPLY TO: EAA CHAPER 245 , TERMINAL BOX 8412
OTTAWA , ONTARIO
K1G 3H8

CARB HEAT - Hot Air and Flying Rumours

Meetings - 3rd Friday at the National Research Council Building Auditorium
100 Sussex Drive, Ottawa, 8 pm

March '85

VISIT TO THE NATIONAL AVIATION MUSEUM
Feb 15, 1985

About 35 members and guests were fortunate to be given a behind-the-scenes tour of the new National Aviation Museum workshops in the renovated STOL hangar and facilities which have been occupied since the move from hangar 68 three months ago. Ed Patton the Assistant Curator, who has been with the Museum since 1971, showed off the reconstruction of the Curtis HS2L and the repair and restoration of a Spanish version of the ME109 as well as equipment and facilities used by the staff.

The Curtis HS2L was of particular importance to Canada in opening up the North and apparently a lot were built and used extensively in the early bush flying days. The HS2L under construction by the museum is based on G-CAAC that crashed in 1930 near Kaspuskasing at what was called Fossil Lake where it landed during a storm. The lake turned out to be too small to take off from again - the pilot, in circling after lift-off in an attempt to get clear, caught a cliff overhang. The plane spent 50 years in the lake before it was retrieved. Surprisingly the bits and pieces all proved very valuable to supplement detail that drawings couldn't provide. The reconstruction incorporates the original prop., tail, struts, flying controls and instruments. The original tool kit was also retrieved intact except for the hammer! The engine is also original along with the radiator and cooling screen. The Liberty engine incidentally, was designed and built in 72 days (within earshot of the Liberty Bell - hence the choice of name). The new fuselage was made here and the wings in California. All cables of course are new - spliced in the original fashion, and the wood is the same as that used in the original manufacture (very expensive!). Apparently three HS2L's have contributed to the one under construction.

The museum is fortunate to have many original drawings but they are a mixed group - some are for the HS1L, and careful attention has to be paid where pieces are supposed to fit together - they don't necessarily do so! Luckily there are still some people around who flew them, and who have provided a lot of help. One remembered exactly where all the fuel valves were positioned.

When the time comes to move the HS2L to the new museum (construction is about 3 months behind - latest estimate is December 1985), it will have to be dismantled. Assembled, it's too large to go through the hangar doors. Zinc chromating will be done and the fabric covering applied before it is reassembled. Then it will be ready to fly - but Ed Patton says no way! After all that work (about three years) one can hardly blame the museum for not wanting to risk any damage. It will be given registration G-CAAC and marked LAURENTIDE AIR SERVICE.

The repair facility is marvellously equipped. The new paint shop has just been finished and has a separate furnace to keep the temperature up as air is sucked out by the exhaust fans.

The evening concluded with a side trip to the old facility (hangar 68) which is crammed with stored aircraft (Canso, Chipmunk, Harvard, CF104, Voodoo, Anson etc. plus the Zenair CH300 (C-GOVK) that Red Morris flew non-stop from Vancouver to Halifax).

Tidbit: Ed Patton noted that stored engines can be corroded by the acid in the oil. He suggested the use of flyaway oil (Shell 2F aeroshell) that can be used for example to fly an aircraft to storage for the winter and back to base again and then replaced.

THE TWO CHAPTER NEWSLETTERS

I find most interesting are Halifax and Vancouver. These groups both have property. (Read that as problems).

Delta, B.C. has the misfortune of being very closely located to the official Dot general avaiation facility called Boundary Bay. This requires traffic coordination. The high price of real estate on the lower mainland of B.C. requires high utilization to justify the cost. One response is that there are club owned amateur-built aircraft available to rent. I hope to study this further during my visit in April.

The story on the East Coast has some parallels, they also find their sky too small. The business of sharing Stanley Airport with gliders has caused controversy. Some members prefer that the forced approach types stay off the main runway and out of the powered circuit. A joint committee however has come up with a set of compromises involving installation of radios and the use of rotating beacons. This whole approach I find very commendable. They have the foresight to realize there is a risk, and the flexibility to accommodate their aeronautical neighbors.

NEWS

- Clipper aircraft has filed for Chapter 11 (financial reorganization to accommodate creditors).

- Ted Slack is presently working on approval of the Barnswallon (Canadian Quickie Derivative).

- An oil pump gear for a Continental A-65 can cost $200!

- Our assessment has jumped from $20,150/1975 to $27,350/1980. The good news is that as a result of reduced mill rates our taxes should now be $435./1985 as opposed to $450. last year.

- Our maintenance workshop is on, Saturday, May 11th, 1985. Topics demonstrated will include weight and balance, compass swinging, magneto timing pitot static testing. Ted Slack has offered to cover weight and balance using the new Dot approved format. Les Deane will cover engine cooling systems.

- Andy Douma gets credit for attracting the most new faces to our tour of the Air Museum. He, like the rest of us, wants to shape the lawn mowing.

- Guests at our February 15 meeting included:
  - Jack Coutts and Catherine Easton, who are presently flying rented iron from Arnprior.
  - Kevin Coutts, who is offering his help in return for experience in construction.

- The chapter will be selling short sleeve golf shirts with pockets, collar, and Chapter crest. Tell Dick Moore your size - cost will be $16.00.

ACTUAL SIZE OF CREST

- Rudy Snoenberger, BMW enthusiast.
- Hector Ewing, Ex Rockcliffe pilot
- Serge Boucher is rebuilding a Cessna 120.

- For those of us 4300 who didn't have enough "right stuff", I've included some of Dr. Tryggvason's qualifications
  - Born in Iceland, but went to High School in Nova Scotia and B.C.
  - Engineering Physics graduate from U.B.C.
  - One year Meteorologist for AES in Toronto.
  - Has worked at the Disaster Prevention Research Institute, Kyoto, Japan and the James Cook University in Townsville, North Queensland, Australia.
  - Worked on the Ocean Ranger inquiry wind tunnel simulation.
  - Ph.D. in Aeronautical Engineering from University of Western Ontario.
  - Instructor and ATR. A bad year is when he can't put in 500 hrs on the plus side. He now has monthly jaunts in the National Aeronautical Establishments T-33. Bjarni is getting share in a twin engine airplane and was also seen at the recent microlight show in Toronto.

TECHNICAL TIPS

by

Garry Fancy

WOOD/FABRIC WINGS - THE LEADING EDGE

Leading edge material is .018"-.020" 2024-T3. Thicker aluminum would resist dents better but would be more difficult to form and fasten. It is easier to make the leading edge in two lengths rather than all one (i.e., length of one wing). Arrange the lengths so that they meet in the middle of a nose rib or where a landing light might go.

To form the leading edge all that is necessary is to make a radius in it equal to or a little greater than the radius of the tip of the nose rib - see Figure 1. This radius can be formed in a simple jig as shown in Figure 2. But be sure to make the radius in the correct location. Otherwise the top or bottom will be too long or short.

The jig is constructed of straight 2x4 of a length equal to the length of the leading edge piece to be formed. The 2x4's are nailed or glued to a solid base of at least 1/2 inch plywood or aspenite. The 2x4's are spaced apart just enough to allow a pipe of a little longer length than the aluminum. (The radius of the pipe will determine the radius of the leading edge so it may be necessary to experiment a bit to get the correct size).

Force the pipe between the 2x4 with the aluminum in the correct location. Do this carefully to prevent the aluminum from "oil canning". To get the required force, it may be necessary to use a screw jack between the pipe and something solid such as the basement ceiling I-beam.

It is only necessary to put a radius on the leading edge. Do not attempt to curve the aluminum leading edge to the wing leading edge profile. If the aluminum is curved just a little more it is ruined (see Figure 3). Either before or after radiusing the leading edge bend the edges of the aluminum in so that it will not rub on the fabric.

Fastening the aluminum to the leading edge is relatively easy. Using some type of clamping system (strong rubber bungies, for example) press and hold the aluminum to the radius of the leading edge tightly. Then simply press the top and bottom of the leading edge onto the spar top and bottom and fasten and fasten at appropriate intervals. The spar has to be built up between each rib with a filter strip to the same height as the spar and the leading edge is actually fastened to these filter strips. These strips are glued to the spar. To fasten the aluminum to the filter strips small copper or brass brads or nails are often called up. I prefer to use small (No. 3) flat-head brass screws. The aluminum is countersunk to accept these screws which are 1/4" or 3/8" long. I also like to put a dab of white glue in the holes before putting in the brass screws.

Where the two pieces of aluminum meet, leave a little space (1/32") to allow for aluminum expansion during hot days. This joint can be covered up with a strip of adhesive tape.

Aircraft Spruce and Speciality (California) sells aluminum leading edge material, 1 ft by 12 feet rolled. This is a handy way to ship the material providing the leading edge is 1 foot wide or less.

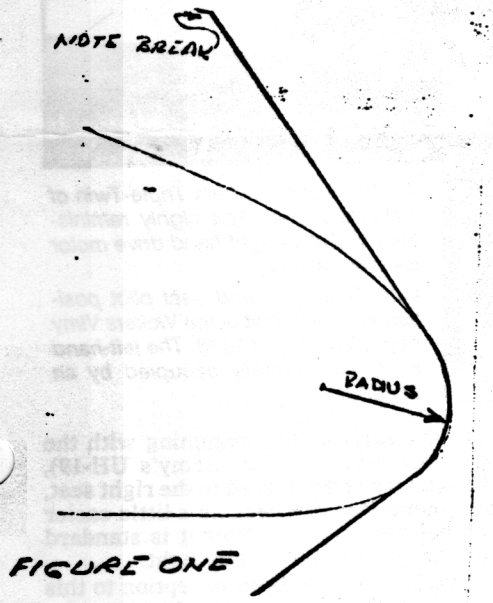


FIGURE ONE

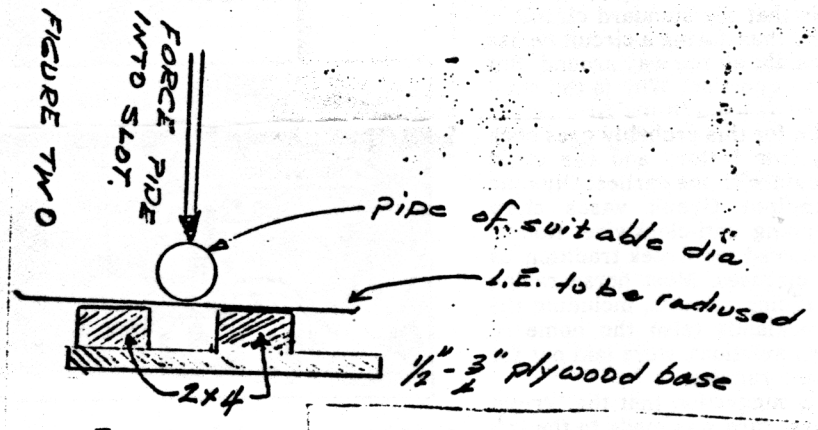


FIGURE TWO

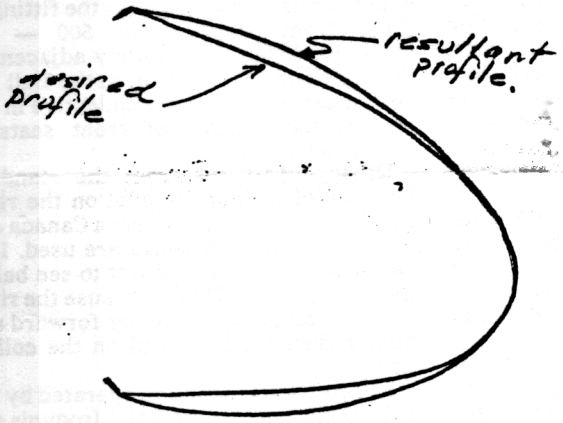


FIGURE THREE

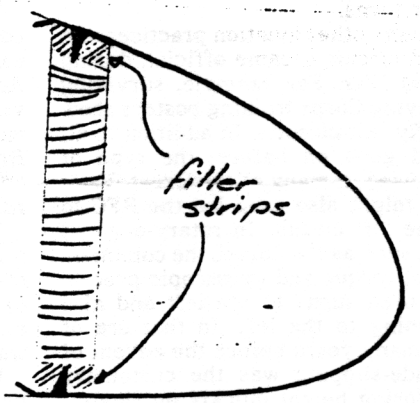
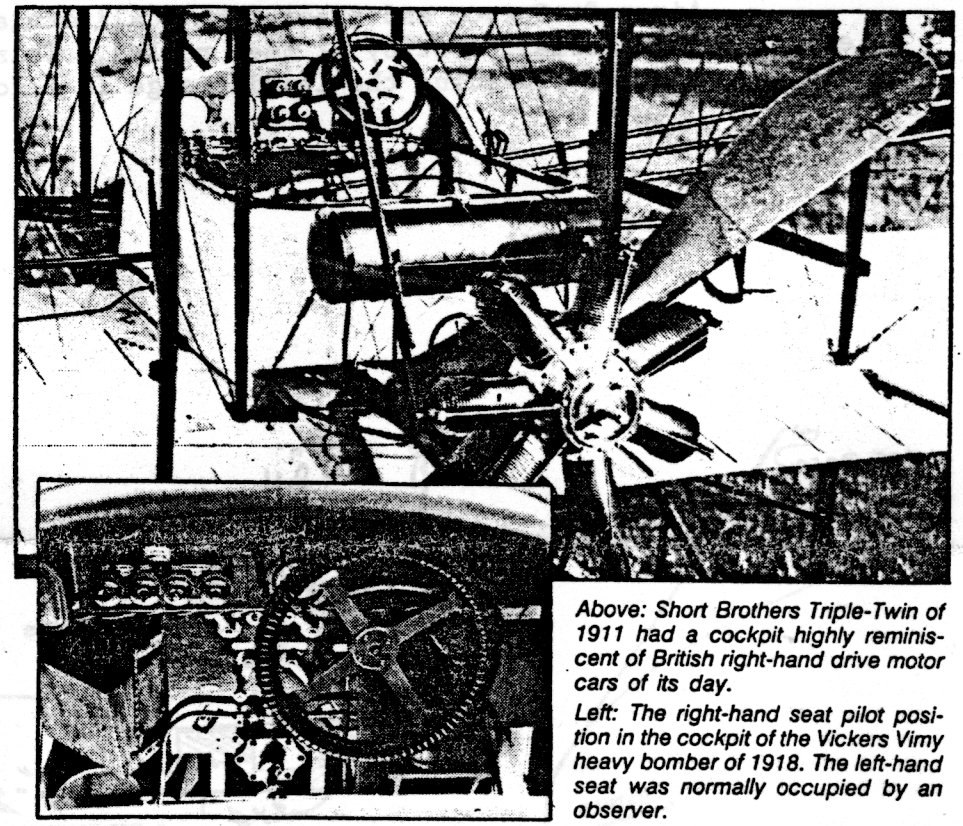


FIGURE FOUR

Why the left-hand seat?



Above: Short Brothers Triple-Twin of 1911 had a cockpit highly reminiscent of British right-hand drive motor cars of its day.

Left: The right-hand seat pilot position in the cockpit of the Vickers Vimy heavy bomber of 1918. The left-hand seat was normally occupied by an observer.

THE most usual explanation of why the captain of an aircraft occupies the left-hand seat is that the standard circuit is left hand and thus during a circuit he has the field in sight all the way around. But this begs the question: Why is the standard circuit left hand in the first place?

The reason for this probably goes back a long way into history and one could probably begin with the earliest Olympic Games. Ancient Greek vases show athletes running anti-clockwise. Roman circuses followed the Greek tradition, as do today's circuses. Most horse racing and motor racing circuits, including the famous Brooklands (also the home of early British aviation), were laid out for anti-clockwise running.

There is a suggestion that the Wright brothers' first turn was made to the left and certainly the majority of photographs of their Flyers during the first few years of powered flight depict left turns. Could this have led the organisers of aviation events, such as at Rheims and Monte Carlo in 1909, to rule that the courses would be flown anti-clockwise? All the Schneider Trophy series of races, held between 1913 and 1931, were flown with left turns.

Like many other aviation practices, the left-hand circuit became official, during the Great War. For example, surviving Royal Flying Corps training posters show how to fly left circuits. In addition to all that had gone on before, the type of engines used in many of the Great War's aircraft might also have led the RFC to adopt the left circuit. In rotary-engined aircraft, such as the Camel, the combined effects of torque and gyroscopic precession favored turns to the left and also side-slipping to the left. In that era of course, many years before the advent of flaps, side-slipping was the customary way of losing height quickly on finals.

Under the impetus of the Great War, with combatants on both sides continually striving for air supremacy, there was tremendous advancement in aircraft design. It is interesting to note that although designers on the opposing sides were of necessity isolated from one another, Allied and German aircraft advanced along the same lines. However, there was one departure from these two parallel streams.

Although the twin-engined German Gotha bomber was flown from the left hand seat, its British counterparts — the Vickers Vimy and the Handley Page V1500 — had the pilot's seat on the right-hand side and the throttles on the right side of the cockpit, away from the companion way to the nose compartment which was placed on the left. Some aver that the reason for the British cockpit being laid out in this way was related to Royal Navy influence, where the captain of the ship traditionally stood to the right of the compass, the starboard side being senior to the port.

The British stuck to the right side concept for a number of years. For example, the Armstrong-Whitworth Argosy, operating the London-Paris service in 1927, had the captain's seat on the right. This was despite the fact that Britain had accepted the internationally adopted "keep to the right of airways" rule on October 13, 1919.

However, by the mid-1930s, the captains of all large aircraft were occupying the left-hand seat and so it has continued to today, though there were World War 2 exceptions — the B17 Flying Fortress was one of them.

It is different in helicopters. In most helicopters today, the pilot sits on the right. Yet it was not always so. In the first Sikorsky R4 in the early days of practical helicopter flying, the pilot sat on the left and this practice was continued on the Hiller 12 and Bell 47. But helicopters were awkward to fly from the left hand seat because the more sensitive control — the cyclic — was naturally in the dominant right hand.

This meant that to adjust the altimeter or change radio frequencies one had to take the left hand off the relatively stable collective and twist grip throttle, transfer it to the cyclic, and then use the freed right hand to make the necessary adjustments on the centre console.

In the early 1950s, beginning with the Sikorsky S-55 (the U.S. Army's UH-19), the pilot was transferred to the right seat, and thereafter life became a little easier for helicopter pilots. Now it is standard for the pilot to be on the right.

The Hughes 500 is an exception to this rule. Whereas its military brother, the OH-6A, is flown from the right, the civil version is flown from the left. Hughes decided this way as it allows the fitting of three front seats in the 500 — the collective being immediately adjacent to the left door. By contrast, in the Bell 206 JetRanger which has the collective in the centre, the number of front seats is restricted to two.

Other departures from the standard practice of having the pilot on the right occur in logging operations in Canada and the U.S. when long slings are used. It is easier to lean out to the left to see below than to the right. This is because the right hand on the cyclic is further forward and higher than the left hand on the collective.

In two-pilot helicopters operated by the U.S. Army, such as the UH-1 Iroquois and CH-47 Chinook, the aircraft commander sits on the left but most of the flying is done from the right seat. In the RAAF, the choice of seats in these helicopters is left to the captain concerned.

It is perhaps best to end on a note of caution. For whatever reason(s), the standard circuit today is left hand. Even so, for various local reasons, many airfields stipulate right-hand circuits for some runways and for certain types of aircraft. So check your ERS, Notams and other sources of information well before joining. This will save embarrassment — if nothing worse!