

Experimental Aircraft Association



TALESPINNERS

Chapter 174

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President: Tom Jenkins (513-244-2393)
V. President: Todd Winemiller (513-625-1530)
Secretary: Lee Jewell (513-471-7188)
Treasurer: Phil Cady (513-528-2282)

Tech Counselors: Gary Collins (513-231-3025)
Howard Wells (513-683-1657)
Flight Advisor: Don Fairbanks (513-732-5852)
News & Web Editor: Norm Beaudette (513-247-0347)

Builders' Logbook

A Weekend Education at Corvair College

by Neil Hulin

On the weekend of 18 - 20 June, Gary Collins, Garry Howell, Russ Mintkenbaugh and I traveled to Alliance, Ohio, just south-east of Akron to the home base of EAA Chapter 82 at Barber Airfield (2D1 on the Detroit Sectional) to attend William Wynne's Corvair College. Many Chapter members know that Gary and I are building up Corvair conversions for our Carlson Sparrow and Zenith Zodiac respectively. William Wynne has been running workshops on Corvair engine conversions for a number of years now and they have become known as "Corvair College". This was the seventh such Corvair College. The opportunity of getting together with William and a number of Corvair engine builders so conveniently was not to be missed.

We arrived at about 3:30 on Friday afternoon and were greeted by Kip Gardner the president of Chapter 82. During the afternoon more engine builders and some local chapter members arrived. The chapter members worked very hard in the weeks prior to the Corvair College preparing a doublewide trailer as their chapterhouse and workshop. The facility they provided was very appropriate to the purposes of the weekend with two 8x4 steel-topped work tables down the center of the room plus a couple of two foot wide work benches along the side. One chapter member loaned a solvent bath for parts cleaning, and a drill press and small compressor were set up.

My objective for the weekend was to be able to view firsthand the complete building of an engine and to get a really good understanding of the build order and assembly subtleties. Things like "install the oil gallery plugs before installing the camshaft", "install the lower heat shrouds before installing the pushrod tubes", and "make sure the stud runs all the way in before trying to assemble it with Loctite" are a few of the good tips I learned. It was also good to see just how much and where various sealants were applied to ensure a leak-free engine. I also wanted to spend some time



Garry Howell (left) and Gary Collins at work on Gary's Engine.

discussing the flight characteristics of William's recently completed and flown Corvair powered Zenith Zodiac and to talk through some of the engine installation issues.



The Focus of the Operation

During Saturday morning more engine builders arrived and the pace started to build. Some engines were being pulled down and cleaned, some head studs were being replaced, while others were being inspected prior to assembly. I don't have the final numbers but there were about 40 engine builders and at least a dozen engines in various stages of conversion as well as a number of completed engines that had been brought in for finishing touches or just to show. Although William has produced a number of videos of the engine conversion, which are an excellent resource, there really isn't any substitute for a weekend like this where a wide variety of problems can be encountered during the pull down and rebuild of these engines. We were able to see firsthand the difficulties of extracting head studs from the engine case, inspecting parts, Helicoiling the head studs, an almost complete assembly (Gary's), plus examine in detail a number of engines that had been completed. Unfortunately there was no test stand so none of the engines could be run.

At various times William would gather everybody around to demonstrate a particular part of the construction or a technique. Gary's engine generated a lot of interest as it was the only one that was expected to be completed during the weekend. He got stopped when only 5 of the 16 rocker arms he had were judged suitable for use. He has since resurfaced the valve end of each rocker and they are now in place. William used it to demonstrate how to "settle" the engine case after each round of case bolt

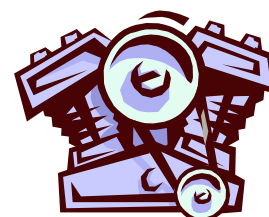
tensioning. The Corvair uses no sealant on the case halves, yet they almost never develop leaks at the seam. Gary says maybe he will start pounding on his Continental cases during assembly. We were also able to see a demonstration of how to set the hydraulic lifters correctly. There seems to be much confusion and misinformation around about how this should be done and it is reassuring to see that it really is as simple as commonsense would suggest.



Gary and Garry Settling the Engine Case. Not everything is a nail when all you have is a hammer.

I returned from the weekend even more confident of the applicability of this engine for my Zenith Zodiac. I was also able to garner information about the practicalities of installing the engine in the Zodiac and am now rethinking some of my choices regarding the location of the oil cooler and alternator. The combination of Corvair power and the Zenith Zodiac result in a very economical step to owning your own aircraft. The engine is, as I call it, "dirt simple" and should prove to be a very robust power plant in this application.

Kip Gardner and the guys of Chapter 82 were wonderful hosts for the weekend and I think everyone had a profitable as well as enjoyable time. I think they are planning to make this an annual or bi-annual event and I'm looking forward to being able to fly my Corvair powered Zodiac 601 up there.





This little Titan T-51 flew in while we were in Alliance. The pilot was on his way to an airshow in Akron. Looked good, but the sound of the Rotax 912S just didn't fit when he took off. A Corvair would fit and probably sound better! *Gary Collins*

June Chapter Meeting Minutes

The June meeting was a breakfast meeting. No minutes were provided.

178 Seconds

If you're ever tempted to take off in marginal weather and have no instrument training, read this article first before you go. If you decide to go anyway and lose visual contact, start counting down from 178 seconds.

How long can a pilot who has no instrument training expect to live after he flies into bad weather and loses visual contact? Researchers at the University of Illinois found the answer to this question. Twenty students "guinea pigs" flew into simulated instrument weather, and all went into graveyard spirals or roller coasters. The outcome differed in only one respect ; the time required until control was lost. The interval ranged from 480 seconds to 20 seconds. The average time was 178 seconds – two seconds short of three minutes.

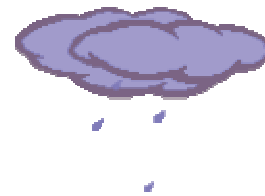
Here's the fatal scenario ...

The sky is overcast and the visibility poor. That reported 5-mile visibility looks more like two, and you can't judge the height of the overcast. Your altimeter says you're at 1500 but your map tells you there's local terrain as high as 1200 feet. There might even be a tower nearby because you're not sure just how

far off course you are. But you've flown into worse weather than this, so you press on.

You find yourself unconsciously easing back just a bit on the controls to clear those non-too-imaginary towers. With no warning, you're in the soup. You peer so hard into the milky white mist that your eyes hurt. You fight the feeling in your stomach. You swallow, only to find your mouth dry. Now you realize you should have waited for better weather. The appointment was important - but not that important. Somewhere, a voice is saying " You've had it - it's all over !".

You now have 178 seconds to live. Your aircraft feels in an even keel but your compass turns slowly. You push a little rudder and add a little pressure on the controls to stop the turn but this feels unnatural and you return the controls to their original position. This feels better but your compass is now turning a little faster and your airspeed is increasing slightly. You scan your instrument panel for help but what you see looks somewhat unfamiliar. You're sure this is just a bad spot. You'll break out in a few minutes. (But you don't have several minutes left...)



You now have 100 seconds to live. You glance at your altimeter and are shocked to see it unwinding. You're already down to 1200 feet. Instinctively, you pull back on the controls but the altimeter still unwinds. The engine is into the red – and the airspeed, nearly so.

You have 45 seconds to live. Now you're sweating and shaking. There must be something wrong with the controls; pulling back only moves that airspeed indicator further into the red. You can hear the wind tearing at the aircraft.

You have 10 seconds to live. Suddenly, you see the ground. The trees rush up at you. You can see the horizon if you turn your head far enough but it's at an unusual angle – you're almost inverted. You open your mouth to scream but...

... you have no seconds left.

*Reproduced from the FAA web site:
<http://www.faa.gov/fsdo/fil/178sec.htm>*

Potential Chapter Program for October

Carl Pieper has arranged for Terry Hessler of Dayton to bring his replica Wright engine to the October meeting to discuss the engine and to actually run it. We hope to have more on this in the September newsletter.

Technical Counselor Reports

by Gary Collins and Howard Wells,
Chapter 174 Technical Counselors

Duane Bentley, RV-6. Inspection on May 5, 2004. This was the final inspection on this airplane. Duane had rented electronic scales and weighed the plane himself. It weighed 1,092 pounds. The engine installation was complete and we went over it in detail. We looked at all systems. This plane is sort of a twin of Scott Hersha's RV-6. Same engine, same propeller, very similar panel. We determined it was ready for inspection by the FAA pending completion of some very minor last details.



Howard Wells and Gary Collins, assisted by Don Reasoner, weighed two RVs at Butler County airport on July 7. Ron Gielegem's RV-8 shares a hangar with Scott Hersha's RV-6. By positioning their props just so, they can get both planes in one hangar and get either plane out of the hangar without moving the other. Ron's RV-8 has a Lycoming O-360 set up with fuel injection and everything needed for aerobatics including a new Hartzell prop. I did not retain my notes but as I recall it weighed about 1070 and the empty fuel CG was right at the forward limit which is OK for a tandem airplane as everything you put in it shifts the CG to the rear.

Jon Thocker's RV-6A is his third RV. He is still amazed at the difference in kits between his first RV-4 and the current kits. The detailed CAD drawings are very helpful to understanding how the details should be done, especially in the engine compartment. His airplane has the ECI version of the Lycoming O-360 assembled by Penn Yan Aero. This engine has all new FAA/PMA parts but has not yet been certified as a complete engine. It has all new accessories. Superior just got their version of the engine (made with their FAA/PMA parts) certified and got the certificate during Sun-n-Fun. We haven't weighed many nose wheel planes and we had to

Aviation Web Site of the Month

Here's a neat web site for practicing your VOR navigation skills. Check out "Tim's Air Navigation Simulator" at:

www.visi.com/~mim/nav/

lower the nose and raise the tail to get a plane level. We let air out of the nose wheel but that was not enough so we had to put blocks under the main wheels. It weighed 1029 pounds and we left it to Jon to figure out the balance part.

With his RV experience, the plane is exceptionally well thought out and finished. He was still working on the last details in the engine compartment and control linkages. It has a Digiflight autopilot, a Dynon EFIS, and a Garmin 430 nav/com/gps. Nice airplane. (Note to Mark Webb – in the back of Jon's hangar is the completed horizontal stabilizer of an RV-10 and the elevators are in progress – will save you a trip to Columbus, IN to see one. His hangar mates are building it.)

I would sure like to convince the chapter to buy some electronic scales. While the beam system utilizing bathroom scales does work, they are very awkward and heavy and just a tad touchy to get good precise weights. After Scott Hersha had his plane painted, he and Duane Bentley, who is building a very nearly identical plane (*see tech report above*), rented some electronic scales. Scott's plane put on 60 pounds over the weight we originally determined. But of more concern is that the heavy side changed. Scott thinks this comes from very minor mis-location of the wheel on the weighing pad of the beam system or perhaps some binding.

The lever action of the beam system magnifies (or reduces) the indicated weight. The tail weight only changed +3 pounds. It was weighed directly each time and is probably an accurate reflection of the weight of the paint. The upshot is that Duane's plane bare weighed 14 pounds less than Scott's with paint which is about what the paint weighs on an RV. As I recall, the last time I brought this up a set of electronic scales cost about \$1000.00 and the price may have come down by now. We could recover the money by asking for a nominal donation each time they are used and at the rate we are weighing airplanes, they would be paid for in a few years.

Hangar Flying

with Stu Faber

July, 2004



BILL LEAR. Been reading a book about Lear. He was a self-taught electrical genius from early on. He loved the challenge of being told something could not be done. Bill had a violent temper, expected his employees to work long hours like he did, and couldn't stand people who couldn't understand his ideas. He invented a large number of electrical instruments and mechanical devices for aviation including direction finders, auto pilots, blind landing instruments, electric screw control surface actuators, and many others. He was an inventor and not a manufacturer and started a number of businesses, most of which were successful for a time but could not compete against the larger companies with government influence.

Mr. Lear often solved problems in days that others had spent months on. He loved to dazzle people with his solutions. He was a great salesman, a non stop partyer, a womanizer, and a big spender either for fun or to develop his latest idea. He loved to fly and many of his inventions started with the needs of private pilots. He made and lost several fortunes and had many ups and downs. The LearJet was his crowning accomplishment and set a trend for aviation.

SURPRISE. Returning from Springfield, OH on 25 June I passed the Springfield Airport and drove in to see what it looked like. There sat a restored B-17 which was allowing tours of the plane. I looked it over carefully and talked to some of the men with it. It belongs to the Yankee Air Museum at Willow Run airport at Detroit, MI and appeared to be very well restored. It is a G model which had served as a crop sprayer and fire fighting tanker. There were very few looking at it. I was told the Museum has upgraded recently. Near the end of WW II the Ford plant at Willow Run was turning out a B-24 every 59 minutes 24/7.

MORE MUSEUMS. In late May, on a trip to the northwest I visited several aviation museums. I had heard great things about the Museum of Flight at Boeing Field in Seattle but I guess I expected too much. It was very well done and had several interesting planes. Part of the Museum is an old wood building called the Red Barn, which it is. It was moved from the waterfront, where it was a boat building operation, to be the first Boeing plant. There was a Boeing 80 Trimotor of tube and fabric. Outside was one of the Concorde and an early Air Force One. Both of those could be walked through. A number of planes were at other locations and the restoration shops were closed for the next week. A new wing of fighters was set to open soon, West of Portland, OR. It seems that it is mostly from the Champlin Fighter Museum which closed in Phoenix.

I visited the museum at Tillamook. It is on a former Navy blimp base which patrolled the ocean just off shore during WW II. The museum is in the blimp hangar which is an interesting building in itself. It is of wood construction built of arched trusses some 150 ft. tall. The collection was mostly WWII warbirds.

Also stopped at McMinnville, OR to look at the Spruce Goose. Unfortunately they have had to restrict access to the inside to one viewing platform due to the wear and tear caused by the public. One problem – seems too many viewers had to scratch the paint to see if it was really wood. I got a better look when it was at Long Beach CA. The rest of the collection was well displayed in a very nice new building but was nothing unusual.

The P-40 Museum at Nampa ID, near Boise, has moved from nearby Caldwell. It is a better facility and has several restored P-40s plus a P-51 and a P-40 with some of the skin removed showing the construction.

On the return trip, I stopped at the Ellsworth AFB Museum near Rapid City, SD. Some WW II planes and some later Warbirds mostly outside. Not too interesting.

TECHNOLOGICAL PROGRESS? Professor Shane Ferritor of Univ. of Nebraska has developed robot orange barrels for the road construction industry. They may be able to move with the work so as to eliminate miles of barrels with no work going on. Terrorists could shut down the country with a remote control.



Upcoming Events of Interest to Chapter Members

- **Every Friday in July and August.** Behind the Scenes Restoration Tour, USAF Museum, Wright-Patterson AFB, Dayton, OH, 12:15 pm. Free tour, pre-registration required; all visitors must be at least 12 years of age. Call 937-255-3286 for more information.
- **July 17, Sat.** C-40 Flying Club Fly-In Lunch. Serving Lunch from 11:00 a.m. to 2:30 p.m. Sloppy Joes, hot dogs, baked beans, chips, cookies, soft drinks. Miller Airport (C40), Bluffton, IN. Call 260-824-1544.
- **July 17-18, Sat-Sun.** Dayton Air Show, Dayton International Airport, Dayton, OH.
- **174 July 18, Sun. Chapter Meeting.** Old Terminal Building, Clermont County Airport, 2:00 pm.
- **July 27-Aug 2, Tue-Mon.** EAA AirVenture 2004, Whitman Field, Oshkosh, WI.
- **July 31, Sat.** US Air Force Thunderbirds Airshow, Greenfield, IN.
- **August 13-15, Fri-Sat.** Summer Heat Air Festival, Muncie, IN. Call 765-284-2700.
- **174 August 15, Sun. Chapter Meeting.** Old Terminal Building, Clermont County Airport, 2:00 pm.
- **August 27-29, Fri-Sun.** Annual WACO Celebration & Reunion Fly-In, WACO Field (1WF), Troy, OH.
- **August 27-29, Fri-Sun.** EAA Mid-Eastern Regional Fly-In, 2004 (MERFI), Marion Municipal Airport (MNN), Marion, OH.
- **Sept 4, Sat.** 14th Annual Fly/In Cruise/In, Marion Municipal Airport (MZZ), Marion, IN. This annual event features antique, classic, homebuilt and warbird aircraft as well as vintage cars, trucks, motorcycles, and tractors. An all-you-can-eat Pancake Breakfast will be served, with all proceeds going to the local Marion High School Marching Band. Contact Ray Johnson at 765-664-2588 or email FlyInCruiseIn@indy.rr.com.

Next Chapter Meeting

Sunday, July 18th, 2004, 2:00 PM



Double Eagle Fuselage Show & Tell

Dennis Teague will bring in his project and be available to answer any questions and

Demo of Corvair Engine Construction

Gary Collins will have one of his Corvairs torn down for inspection

Old Terminal Building, Clermont County Airport
All aviation enthusiasts welcome!
