

Falco Builders Letter



First Flight G-CYLL

by Neville Langrick

It is difficult writing a first flight article on our new Falco G-CYLL without reviewing and reflecting on the one that I wrote 23 years ago on G-BYLL. One thing is for sure, Alfred is putting the same pressure on me now as he did then to get some print to him.

The most often asked question is, why build another? I can only explain that the mind plays tricks after a long period of abstinence thinking that the experience was enjoyable all the time! I had definitely become obsessive about all things Falco and after retirement I was looking for a Falco refurbishment project rather than starting

from scratch. I looked at two factory-built projects in Eire and Germany plus a partly completed Sequoia project in the UK but I had difficulty evaluating them.

At this time a friend, Alastair Newall, who had been flying with me in some aerobatic training and obviously taken a liking to the aeroplane, borrowed my plans and started building wing ribs on his own. He

initially asked me so many questions that my mind recalled the pleasure of making the timber parts and I suggested we work together. Alastair, his father and uncle are all light aircraft enthusiasts, builders and professional pilots so we had a good knowledge base.

We started in the spring of 2006 and the first flight was on the August 15, 2011 making it the 93rd Sequoia Falco to fly. Alastair carried out the first flight at our base, Brighton Airfield, North Yorkshire, and it lasted the usual 20 minutes with gear down and without a hitch. We have now flown eight hours and completed our UK Light Aircraft Association flight test programme and are awaiting the issue of the full Permit to Fly. In the meantime the aircraft is grounded giving us the opportunity to catch up on some of the minor

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Dimensions, Weights and Characteristics

| | | | |
|--------------------------|------------------|---------------------------------|---------------|
| Span | 30 ft. 2 in. | Surface speed | 14 mph. h. |
| Length | 21 ft. 4 in. | Maximum speed | 300 mph. |
| Wing Area | 107.00 sq. ft. | Fast cruising speed | 170-180 mph. |
| Aspect ratio | 5.4 | Maximum speed with 100 mph. | 400 mph. |
| Laminar profile at 40% | | Initial climb at full load with | |
| WACA service | | Automatic propeller | 300 ft. min. |
| Empty weight | 600 lbs. | Initial climb at full load with | |
| Useful load | 1,107 lb. | Aeromere propeller | 1070 ft. min. |
| 2 persons | 200 lb. | Service ceiling | 10,000 ft. |
| Full power to 30,000 ft. | 180 ft. | Start to climb | 300 ft. |
| at | 25 ft. | Start to climb | 300 ft. |
| climb | 44 ft. | Start to climb | 300 ft. |
| Rate of climb | 1070 ft. | Rate of climb | 300 ft. |
| Wing load | 25 lbs. sq. ft. | Range (with 10% reserve) | 500 miles |
| Load for 100 | 100 lbs. | Wing area of engine power | 200 miles |
| Load for 100 | 11.5 lb. sq. ft. | Wing area of engine power | 200 miles |

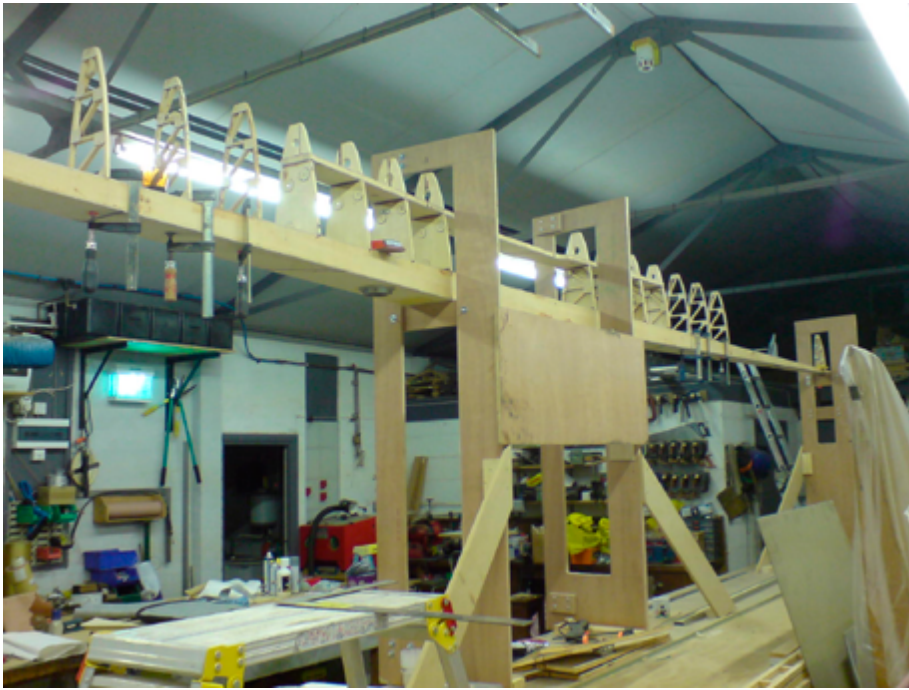
Top and above: Front and back of 1960's postcard of Aeromere Falcos.
Left: How much spruce does it take to build a Falco?



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Articles, news items and tips are welcome and should be submitted at least 10 days prior to publication date.



Top: Grandchildren Charlie and Kate are “helping hands.” Above: Kate at two years old.



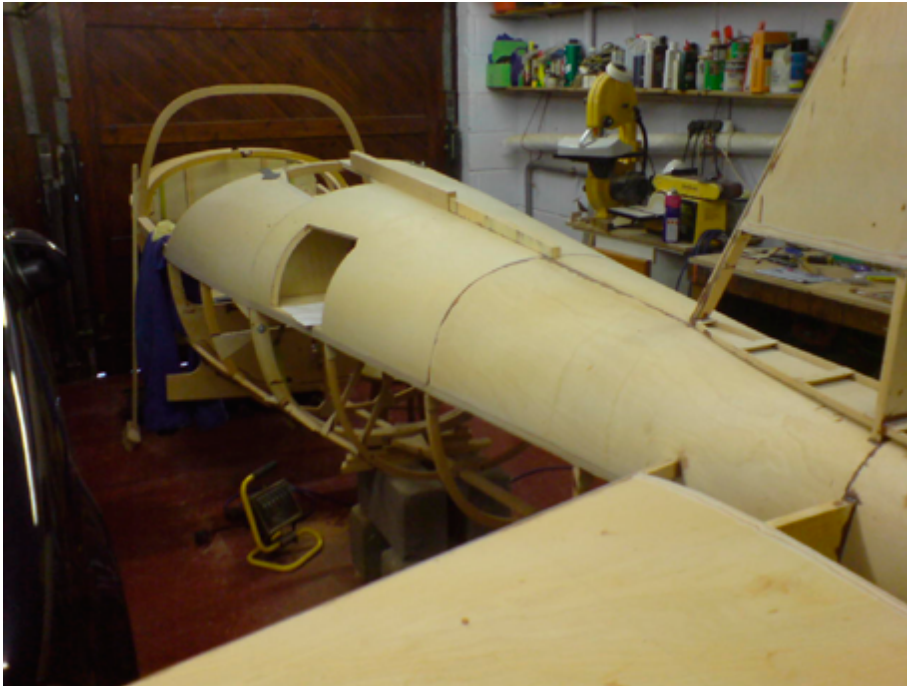
issues such as inflating the main gear oleos and replacing the o-rings in the nose gear which have continued to leak.

Performance is always interesting.

The aircraft was weighed professionally and came in at 1199 pounds (lighter than the factory built Series 4 which weighed 1212 pounds). It is fitted with an IO-320-B1A built by a very helpful Jody Arch at Norvic Aero Engines using new ECI parts and a MT three-blade propeller. It has a standard canopy and gear doors only. The flying controls are fabric covered and weigh in within the balance limits without additional weights, which we wanted to avoid. The finishing products are Stits Polyfiber with the exception of the final paint coat. In this configuration and AUW of 1880 pounds it achieves a TAS of 158 knots at 75% power, 154 knots at 65% and 162 knots at full power. Rate of climb in full power AUW for a constant five minutes is 1100 fpm.

The decision on the engine had to be changed at the eleventh hour when Superior got into difficulties but, as Norvic were already involved, a change to ECI parts was relatively simple. The propeller was also a late decision and as Alfred says the three blades are a “man thing” and whilst in our view slightly modernising the aesthetics, not improving the cruise performance but possibly improving take-off and climb performance.

A further plus was the decision to collect the propeller by road and to drive across Germany in December last year to the MT factory in Regensburg where we were given



a guided tour of the factory by the enthusiastic Eric Greindl. I persuaded my wife Shirley to join me on the promise of a visit to a traditional Christmas market in the grounds of Regensburg Castle before snow chased us back to the UK.

The decision on the covering was probably made by the earlier one to cover the flying controls in fabric, followed by the Stits claim to be the best and lightest available and my reluctance to work with fibreglass products.

The colour scheme is easily recognizable as an original Aeromere Series 3 factory scheme which I have always liked and may have something to do with it being the scheme on the first Falco I flew in G-AVUJ. This scheme is also shown on the advertising postcard attached when we had our own Falco agent here in Yorkshire in the early 60's. We were lucky to have a friend, Les Clark, who is a professional finisher with premises in nearby Selby. We moved the aircraft there in two parts where we had the luxury of a heated booth where we spent three months over last winter flattening and preparing with final coats applied by the experts. It was painted, separated at frame 8 and we have not attempted to cover the joint, hardly noticing it now.

The main differences in BYLL and CYLL are: the engine being 160 injected compared with 150 carburetted, three blade MT prop. vs two blade Hartzell, Cleveland wheels and brakes vs Rosenhan/Matco wheels and brakes and a MGL glass panel which I have yet to be converted to but understand Airbus pilots can't do without.

We had decided to do our own woodwork but were no longer able to buy spruce cut to kit size in the UK since the demise of Doncaster Sailplanes. We visited a timber importer with a timber specialist, John Thompson who has a workshop at Brighton with the equipment required to convert it. We selected two 37 foot baulks 9"x 4" in section held for boat masts and had them chainsawed in half to avoid premium transport rates back to Brighton. The quantity worked out exactly, apart from a little extra for a couple of spoilt spars so if anyone asks the question, how much spruce is required? we have the answer although Alastair has still not recovered from the shock of the quantity of sawdust waste in the conversion process.

From this we made all the timber parts us-

ing Aerodux resorcinol glue (now Dynea Prefere) which we bought in 2 x 25 kg tubs. As neither of us had machining skills or facilities we used all Sequoia hardware kits being able to buy as required to coincide with fitting requirements in the construction manual.

Both projects took just over five years each. Early optimism made me think the second could be shortened to four years but reality crept in after the initial rapid airframe progress when we were able to work at our individual homes but slowed down when we started assembly and fitting in a workshop on the airfield which meant travelling for both of us. I was not helped by one heart attack, having to take more holidays since retirement and Alastair's "part-time" flying job.

I mentioned last time that "old Falcos never die" and to update I can confirm that the engine from G-AVUJ was bought by George Brothwood who is just putting the finishing touches to Alan Powell's project in Liverpool and the remainder of the salvageable hardware went on again to Bob Sothcott's project to be finished by David Thomas in G-CCOR in 2007.

What have I learned from building a second? That memory lies to you at times and Shirley has requested written confirmation from Alfred not to sell me any more parts. You still make mistakes, some the same, some new, but still a tremendous satisfaction on completion of the challenge and having a brand new quicker and lighter Falco—from which Shirley sees "more baggage allowance."

Finally, why CYLL? At my age it is sufficient to remember only one letter change in registration and to give me a clue our grandson is Charlie.

On a general note, light aviation in the UK appears to be in the doldrums with a shortage of young people showing interest in our type of aeroplane. Our home-built/experimental regime is definitely the way forward with fully certified aircraft becoming less popular due to high maintenance costs especially if it's an EASA type. Added to this is the spiralling cost of Avgas, about £1.90 per litre (about \$11 per US gallon) forcing people away from traditional aircraft engines towards more economical alternatives. In this climate it is difficult to assess the future of the Falco as an on-going kit-build but one thing is certain, that it will remain a *classic* and I always marvel that the prototype flew over 55 years ago.







Alastair Newall, Neville and Shirley Langrick after the first flight.

22nd Annual West Coast Falco Fly-In

by Doug Henson

Falco owners, builders, and lovers attended the 22nd Annual West Coast Falco Fly-In September 15-18 at Livermore, CA. Beautiful weather with clear blue skies attracted five Falcos, a Lancair Legacy, a Cessna 170, and 26 people. It was hosted by Doug and Shirley Henson with help from friends Dennis and Janice Johnson who live nearby in Pioneer, CA.

The event was kicked off in fine style when Dan Dorr arrived Thursday morning in his award-winning red Falco. Dan, who normally flies a much bigger aircraft (Southwest 737), gave us the Falco version of an Air Force Thunderbird fly-by down the runway followed by a beautifully executed right closed pattern to full stop landing.

Later that day we welcomed Ray Hecker and his Falco from Southern California, Jim Petty and his Falco from Oklahoma, and the Nasons and their Falco from Washington. Other attendees arrived throughout the event by various means. All had one thing in common—to share the Falco experience. Typical war stories, building dos and don'ts, and flying adventures were shared by all.

Ryan Vaughn who lives nearby in Sunnyvale brought several of his wood and metal Falco parts for our examination and inspection. Ryan is building his project from the ground up and it is obvious from the meticulous construction that his aircraft will be a beauty when complete.

One highlight of the fly-in was a tour of the National Ignition Facility at LLNL. NIF is the world's largest laser facility which has been in operation for a few years. It houses 192 laser beams which are capable of focusing all energy on a BB-sized experiment in the target chamber. Plans are in progress to achieve nuclear fusion in the laboratory in the near future.

Other news of interest:

Tom Langston's Falco project is nearing completion. He has reached that point of construction where he must decide the color and paint scheme, as well as plans for first flight. We may have a new Falco in attendance at next year's fly-in.

Jim and Jane Quinn agreed to host next year's event in Fredericksburg, TX (T82). Planning is already underway for September 20-23, 2012. See you there!





Opposite page top: A common scene observed at every Falco gathering. Center: One of the most important criteria when building a Falco is headroom. People come from locations near and far just to try out the different options. Tamera Nason on the wing. Bottom: Dan Dorr arrives.

This page top left: Ray Hecker never found that cotter pin and castle nut that fell off a brake cylinder, but a short piece of lockwire put him back in business for his return flight. Top right: Ray Hecker. Center left: Jim Petty, Doug Henson and Jim's Falco. Center right: Doug Henson takes on fuel. Left bottom: Jim Petty, Doug Henson and Dave Nason.





The One That Didn't Get Away

by Bill Nutt

I guess it was finally our turn. Charlie and I were thrilled to get N767CN to Oshkosh in 2007—getting 40 hours on it in less than six weeks to get it out of flight test was definitely a challenge. We showed up as is, minus gear doors and lacking any detail work and were more than surprised to win Reserve Grand Champion that year. If we would have had the gear doors on and some of the other details done, who knows?

Since then, Charlie and I continue to make our annual father/son pilgrimage just as we've done for the past 20 years. Of course, it's much more fun to be there with an airplane on the flight line, and we always look forward to seeing fellow Falco owners, builders and enthusiasts.

Our routine is pretty much the same year to year—fly-in, tie down and register, then out to Camp Scholler to get our camper set up and enjoy the show. The following days, we come back to the flight line after breakfast, dust or dry the Falco, enjoy the day, and then back to the campground for a couple of cold ones.

Despite this rather lax approach to judging (since we didn't build the Falco to win awards anyways), we always seem to be on the judges short list.

Recently I stumbled across Stephan Wilkinson's article *I Came, I Saw, I Lost* first published in the Feb/Mar 1993 issue of *Air and Space* on the Sequoia website. After reading it, I realized we had been doing it all wrong too. Shortly after landing, the judges would be swarming around our Falco—still plastered with bugs from flying halfway across the country, exhaust stains and oil on the belly, and the cockpit still full of a week's worth of camping stuff, charts yet to be refolded, and half empty water bottles (I have to be careful there—the Falco can easily outlast me!).

This year was really no different, although we did take the time to get the bugs cleaned off right away. Prior to the show, we did a little painting (since we've been flying for four years now) to touch up some scratches and chips. We added wing walks to cover those pesky hairline cracks that start to appear on the wings over time. And that was about it.



We're not sure if those minor tweaks made a difference this year, but Charlie and I were thrilled to receive "the envelope" inviting us to the awards ceremony. Of course, we were skeptical after what happened last year (see *The One That Got Away* in the June 2010 FBL), but the judge made sure to let us know that this year wasn't a mistake. So, Charlie and I are honored to be in the company of all the other Falco award winners. The new homebuilders hangar has permanent banners hanging of all previous Grand Champions, and it's impressive to see the Falcos so well represented!



Construction Notes

Gordon Cook's Wing Jig

For the past couple of years I've been working on a second Falco—Dan Martinelli's. Because of my restricted work area while working on my Falco I was unable to mate the wing and fuselage as suggested in the Builders Manual, since Dan has lots of building room he went with the suggested jig. I've found my jig to be much simpler for building the wing and much easier when it comes to attaching the wing to the fuselage.

Without the wing attached to the fuselage the advantages are: (1) Easier to skin the fuselage between frame #1 and frame #6. (2) Easier to fit the canopy and wind shield. (3) Easier to fit the fuel tanks, cockpit lining etc.

So, for what it's worth, here's how I did it.

Lay the main spar on supports with the forward side up. Using a water tube level check several places along its length to be sure it's not sagging between the supports. The photo (sorry for the poor picture) shows the jigs in place, however I started with the ribs aft of the main spar. It doesn't matter which side of the spar is done first. All holes for the hardware that attaches to the spars should be drilled on a drill press before attaching the ribs.

Lay out ribs #1 and #14 on an appropriate sized piece of 3/4" particle board or plywood including the chord line. Drill a small hole on the chord line about 2mm above the point where the rib meets the leading edge. This is for the tight line (dental floss works well) between ribs 1 and 14.

Cut slots where the leading edge, main spar and the aft spar will fit. This should be a sloppy fit since the angle iron that bolts to the jigs will provide the accuracy of the placement. Where the ribs 1 and 14 meet the forward side of the main spar, bolt a 1-1/2" to 2" x 1/8" steel angle to the jig being careful to place the angle iron exactly on the line that represents the vertical piece of the rib that meets the spar. Slide the particle board jigs over the spar and clamp on the chord line, the jig chord line should match the chord line on the spar, this will align the jig in the same place the rib will fit.

Place a tight line between the two jigs through the holes above the chord line. This line should be two mm directly above the rib chord lines. The 2mm provides clearance so there will be no interfer-





Nick Turner has recently repainted G-BVDP. The Falco is based at Biggin Hill (EGKB), England. Below: No one was hurt when this Falco crashed in Palermo, Italy. Opposite page: Bjørn Brekke's Falco takes shape in Norway.

ence between the ribs and the tight line and a piece of 2mm plywood can be used to gauge the height of the rib. The leading edge of the ribs must be sanded to the correct angle to accept the leading edge.

Glue the ribs in the appropriate places along the spar ensuring they are 90 degrees to the spar and ensuring the chord line on the spar lines up with the chord line on the ribs and the chord line on the forward end of the rib and the tight line.

When ribs 2 to 13 are in place flip the wing over and do the same on the other side of the spar. Do not install rib #1 between the main spar and the aft spar at this time, it will interfere with fuselage frame #6 when the wing and fuselage are mated. This time both ends of the ribs must be sanded at an angle to properly sit on the main spar and the aft spar. Glue the ribs with the rib chord lines lining up with the chord lines on the main spar and the aft spar. Rib # 2 can be installed using the chord lines on ribs 3 to 14 to position them.

Using the tight line method again, glue the trailing edges of rib 1, 2 and 14 to the aft spar. The trailing edges will provide a guide for the ailerons and flaps when it's time to install them. The jigs can now be removed. Install the wing walk supports between trailing edges #1 and #2 as soon as possible since the trailing edges break off very easily when bumped and the supports add a little strength to them. The same is true for #14 but in this case a brace clamped to the trailing edge works OK until the wing tip lamination is installed.

After all the internal work is complete the wing can be skinned.



When building the fuselage ensure that the frames that attach to the wing spars are exactly the same distance apart as the spars that contact them. Do as much construction inside the cockpit as possible prior to installing the wing. Slide the wing under the fuselage and lift into place.

Level and triangulate from the wing tip and a point on the tail, (check that the fuselage is perfectly level also) location mark, drop the wing and apply the glue. Lift the wing into position using the location marks, clamp securely and recheck the wing and fuselage for level. The center sections of ribs 1 and 2 can now be glued in place and skin applied.—Gordon Cook

This method of building the wing as a separate assembly and then fitting it into the fuselage that has been assembled but with the bottom center longeron left out is a method used first

by Bjørn Eriksen as a matter of necessity since he was building the Falco in a one-car garage. Many others have used this method with success. Whether one method is better than the other may simply be a matter of personal choice and convenience. However when I was developing the construction sequence outlined in the Falco Construction Manual, I polled many builders about the method they used. What I found, to my amusement, is that to the man, they thought the method they had used was the right one and were not able to form a dispassionate view of alternative methods. Of course, no one ever wants to admit to having a closed mind.—Alfred Scott

Nose Gear Tires

Duane Root reports that Aero Classic now makes a very high quality tire of the same size that we use on the Falco nose gear. The original Lamb tire was first made by a Rockwell engineer for a KR2 and was a scaled-down version of the 5:00x5 tire.





More photos of the two Falcos being built by Juliano and Eduardo Napolle and Antonio Chicomato in Brazil



Coast to Coast with Susan

In November, 1910, Eugene B. Ely was the first pilot to take off and land on a naval ship (the USS Birmingham) in his Curtiss Pusher biplane. I find it an incredible concept so early in the history of flight. No one had even thought of aircraft carriers at that point in time. A few years ago, Bob Collbaugh, a retired US Navy pilot and commercial pilot, decided to build a replica of the historic airplane.

On a warm and sunny afternoon in September, I had the thrill of watching Bob fly his replica into our tiny airport in Williamsburg, Virginia. Bob had been away from home for seven months on a cross-country tour of US Naval airshows in celebration of the 100th anniversary of US naval aviation. He had even made a stop at Oshkosh! From our town he was heading toward Oceanna Naval Base, another 50 miles away.

His travel is no small feat considering his little airplane has a bit more horsepower than the original 50-horsepower, that he has to “hop” about 50 miles from airport to airport and that his 1,000 pound biplane is only airworthy in perfect weather. He also has to avoid *clouds* in order to not be torn to shreds, so he flies as low as 1,500 feet.

There were about 50 people at our airport to greet him. Most of the guys were retired military pilots. Everyone stood in awe as he approached the field. A gust of wind caught him, and he had to circle back around. Once he landed, everyone clapped and then a few designated people had to race down to the end of the runway to help him *push* the airplane back to the hangar area. The airplane rolls on large bicycle type wheels.

After securing the airplane, we were allowed to have a close up experience of the wonderful craft. If you guys are thrilled about building a airplane out of wood, what do you think about bamboo? Yes, I said bamboo. He had used everything exactly as the original even managing to procure the necessary bamboo from the original supplier, who happens to still be in business. He has changed the engine



and is using a 60-year-old Briggs & Stratton with more horsepower. No brakes, just a giant metal claw underneath the plane. The original plane used this to “dig into” the ground or pasture to stop—there were no airfields or runways. He has attached a few instruments and a Garmin GPS to help his navigation. He found it impossible to hold a map and try to steer the aircraft. Of course, Ely required no maps or navigation devices, since he was only traveling a few miles from home.

Bob gave an interesting and entertaining talk about his plane and answered a lot of questions. I stayed around until everyone had left. I wanted to take a picture without the crowd around. I asked his permission, explaining I wanted to mention the plane in our publication. He asked what company and I told him. Well, he gasped and said, “Oh, the Falco? The wooden rocket?” He continued to talk in awe of our plane and how fast and beautiful it is and that he could not think of trying to build a Falco.

Can you imagine?

Then, he surprised me and asked if I wanted to sit in the “driver’s seat.” Well, nothing like adding to my “First Time” list but I also felt honored since he had not asked anyone else except a young boy. It seemed an impossible situation. I could not figure out how to get through all of the wires and up into the seat, which was about the size of a child’s horse saddle. And that is when he said to get up just like you would mount a horse! It was not a graceful effort, especially since I needed to remove my sandals and attempt it with bare feet. But, once in the seat I realized how terribly vulnerable and brave these early pilots were—nothing to hold you in, no cockpit, just a steering wheel—literally the wind in your face. It was a moment to get in touch with the progress of aviation. If you want to know more about Bob’s adventure and the airplane, be sure to check out his website: www.elycurtisspusher.com

—Susan Arruda

Mailbox

Well, it's been one year, three months and four days and the pain is still there and getting worse. If I were 72 instead of 82 I would build another one in a heartbeat!

Enclosed are before and after photos of my restoration of a 1956 Mercedes 190 SL. It is a poor substitute for the Falco but it has served to keep me from thinking about how much I miss N63KC. It is a fun car to drive and, I think, aesthetically matches the Falco in its timeless beauty.

*Cecil Rives
Houston, Texas*

Sorry to hear of Frati's death. I did meet him, courtesy of you, at Oshkosh a number of years ago. I was fascinated to read of the Mini-Frati, and the fiberglass Falco.

Incidentally, I saw Jack Lange's Falco project recently. He is back on it after having not been able to work on it through his wife's long illness. The engine is installed, and he is working on the cowl. The canopy is essentially done. Most of the construction work is done, but of course, there is a lot of finish work to be done. Jack is 88 (three years older than I) and so it goes slowly.

My old timer's hobby the past seven or so years has been a project of building five historic scale sailing ships, one each for my five great-grandchildren, all age one to five, and all here in Ft. Collins. I spend as much as a thousand hours on each one. They are essentially done. The pictures will give you an idea.

Ours has been an enduring friendship fashioned out of some stress. I introduced you to Guido Zuccoli of Australia who built a Falco. I am still in contact with Lynette.

I have lived a great life blessed with many gifts including especially great friends. I had a bit of the Tom Sawyer life growing up on the farm during the great depression. I learned as an army medic in WWII that I wanted to be a doctor. I would not have traded my professional career with anybody. I had a wonderful avocation in aviation, and I have treasured friends in all of these areas with whom I still communicate, going all the way back to high school, and extending to Europe and Australia.

*Dean Hall
Ft. Collins, Colorado*

Dean Hall has been a friend for many years. He learned to fly in 1946 and was an active pilot for 62 years. He was on the Board of



the EAA for 15 years and he built two home-built airplanes. You may have spotted him in "Confessions of a Now-Retired Aviator" (June 2008 FBL) flying under bridges and rock arches.

Dean just happened to be wandering by when Robert Cumberford was curious about Paul Poberezny's salary and whether he was paid enough—and this set off a bit of a dust-up. He introduced Guido Zuccoli to the Falco at Oshkosh '88 and later flew to Australia at Guido's invitation to fly the Falco to the Mangalore air show, Australia's "Oshkosh" (see his "Mangalore Dispatch" in the June 1993 FBL). Dean Hall died in September. He was a wonderful friend.—Alfred Scott



Two SF.260s spotted in the wild. Above: Dean Hall's model ships.



Top: Dean Hall. Center: Doug Henson landing. Above: James Tseliki with his more-headroom Falco, originally built by Bjørn Eriksen.