

Falco Builders Letter



Above: Stelio Frati and Napo.

Frati Finale

by Alfred Scott

In Spain on any Saturday afternoon, a bull runs into a ring. There, he circles the arena, charging men with capes, who taunt and excite him. Following a brief testing period, the pageant of death begins. First comes the *picador*, atop an enormous horse, and as the bull charges the horse, the *picador* drives a lance into the bull's shoulders, to weaken him and make him lower his head. Next are the *banderilleros*, fleet-footed men who race at the bull, and leap into the air over the horns and drive spikes into the bull's shoulders. Finally the *torero* takes the bull through an elegant series of passes with a cape and then finally kills the bull with a single thrust of his sword.

The fighting bulls of Spain, when viewed from the safe vantage of the arena seats, are impressive and powerful, but until you have been in a ring with one, without benefit of fences and distance, you cannot imagine the power of the animals.

I ran with the bulls once. In the early morning hours, I raced through the cobbled streets of Pomplona from the mouth of the holding pen to the bullfighting ring,

a distance of perhaps half a mile. At the entrance to the arena, I saw a man gored into the fence only feet from me. Then inside the ring, I watched a bull charge at full speed through a crowd of men, flicking one into the air like a paper doll snapped by an enormous finger.

Until you run beside a bull in the street, or stand with one in a ring, only then will you come to know the terror they strike in your heart, a fear of imminent death, and a feeling you'll long remember as a moment in your life when you walked to the edge of danger. It's a feeling I've not had since, that is, until I rode through the streets of Milan with Stelio Frati at the wheel.

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Like the bulls of Spain, I too was softened up and prepared for the finish by lesser talents. Andrea Tremolada was my *picador*, charging with me through the suburbs of Milan in his Porsche Turbo S, dashing around trucks on back streets with abandon and racing along the bypasses north of the city. Then Ernesto Valtorta was my *banderillero*, taking me through the madness of downtown Milan. Italian men have discovered cell phones, thus allowing them to pace, posture and talk at the same time. And also while driving. I feel my anxiety rise as we maneuver through the traffic, and then the telephone rings, Valtorta grubs into this coat pocket, unfolds his cell phone and continues his hair-raising maneuvers through the street while I do my manly best to hide my fears.

But the ultimate irony is that Stelio Frati—the designer of the SF260 and the Falco, the man who has defined control harmony for a generation of light aircraft, the Mozart of the control stick—is easily the worst driver I've ever encountered.

Behind the wheel of his Audi, he charges forward, changes gears with abandon and always too early, then jams on the brakes, then lurches forward again. With only one good eye, he lacks depth perception and lunges toward a car ahead, brakes suddenly, stabs his finger at a button on the dash, impatiently tries to pass and then settles down at an even cruising speed on the highway. The eye of the hurricane.

On our way back from his shop, we follow the most bizarre path, often turning down a tiny side street, reversing direction, and sometimes, it seems, that we've just gone around a block. Valtorta is in the back seat, sometimes on his cell phone and sometimes discussing the way through Milan with Mr. Frati. We stop, double-parked, and Mr. Frati gets out of the car and walks off. It is raining and after some time, Valtorta explains that Mr. Frati has gone to his office to do some work.

Ohmygod.

Meredith and I were in Milan, after a week's vacation in Paris, to see Mr. Frati



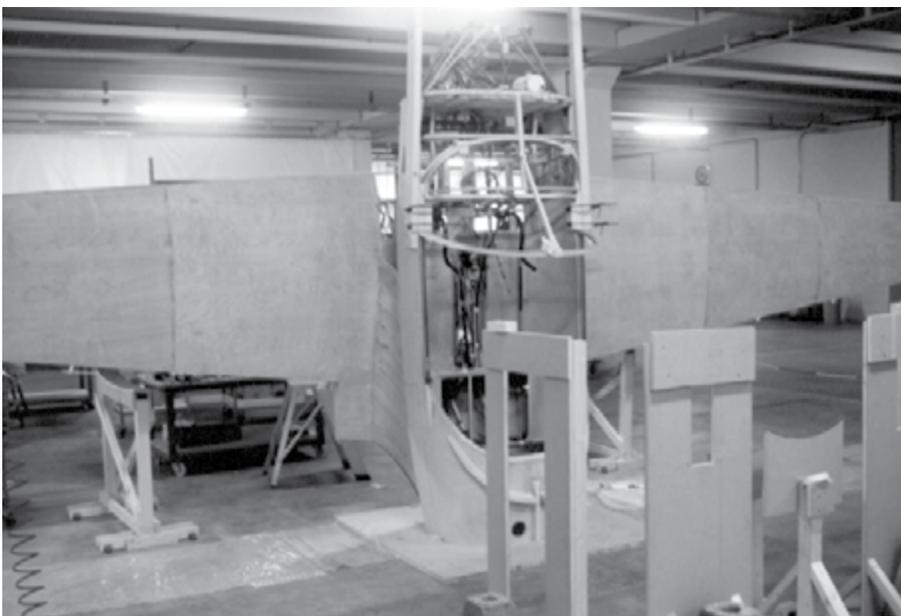
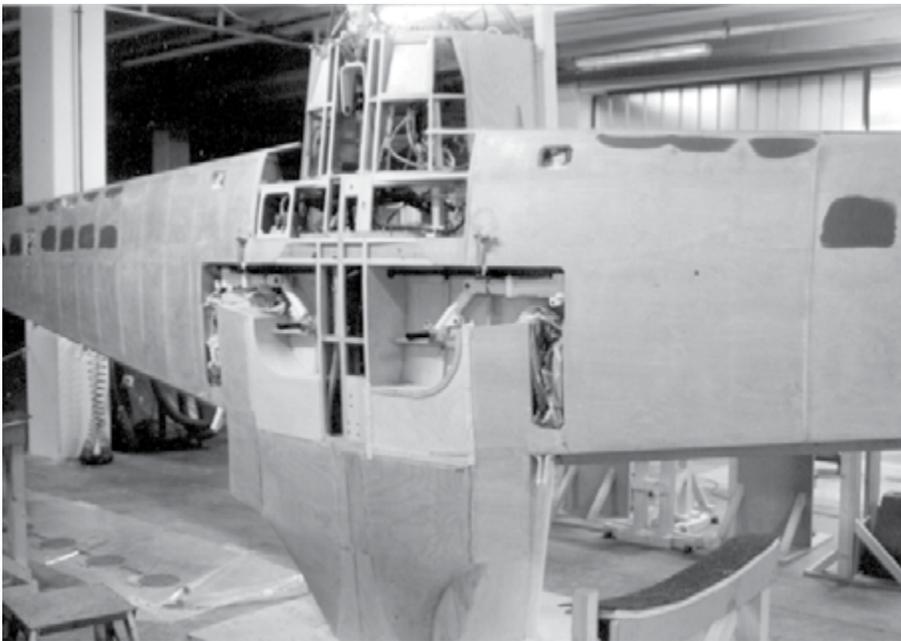
Left: Andrea Tremolada inspects an F.15E Picchio. Center and bottom: Andrea's Falco project.

and Andrea Tremolada. Andrea is the marketing manager of Gianni Versace, the preeminent Milan fashion house, and he manages a huge advertising and promotion campaign for Versace. Driven, intense and always on the go, Andrea has been mad about Frati airplanes from his boyhood years, when he helped his father build a model of the Falco. He owns an SF260, is restoring a Stampe, and he took me to a hangar to see his old production Falco.

In a dimly lit hangar, the Italian planes slept. A muscular aerobatic plane with a 400 hp engine raised its arrogant nose above a LongEZ and a Lancair. Behind Andrea's old Falco was the sole remaining F.15E Picchio, a 300 hp Frati design that Andrea says is faster than an SF.260. An occasional Piper was sprinkled among the eclectic assortment of Piaggio trainers and odd one-off designs that never got beyond the prototype stage.

Andrea took me to the furniture factory where they are building his Falco. Epi-fanio and Giovanni are doing the work and before working on the Falco, they had only experience as woodworkers in the factory. For the first couple of months of the project, both men had difficulty sleeping because of worries about doing something wrong on the Falco.

But they are doing a beautiful job, and as I look over the plane, I notice a box of wood screws that they use for making jigs. They have an unusual bright yellow appearance, and I find that they are, in fact, gold-plated 'ornate' screws. And later, on the floor above, I watched as workers applied gold leaf to strips of molding. All this to decorate the habitats of arab shieks and



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movie stars, who also get a tour of the Falco project when visiting the factory.

Andrea then took me to see the shop where they are restoring his Stampe, in which he hopes to fly to Australia and retrace the flight of Francis Chichester in his Tiger Moth—but without the ditching in the Tasman Sea. There we were joined by Ernesto Valtorta, an old friend and pupil of Mr. Frati, who took me to see Frati at his office.

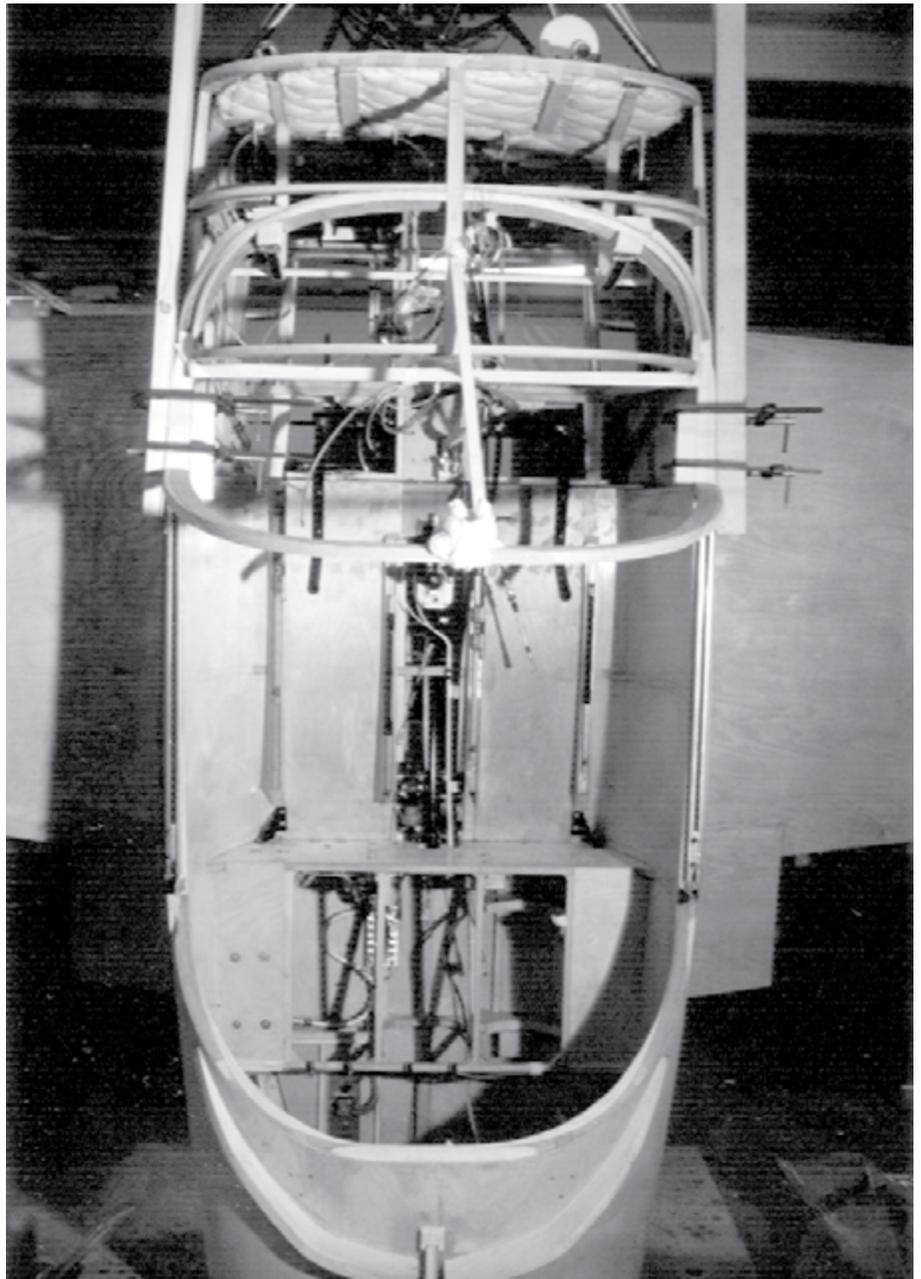
Mr. Frati now works out of his office below his apartment in Milan. When we join him, he is waiting for us, alone and in suit and tie. Mr. Frati adores cats, and he rushed off down the stairs to retrieve a cat he is thinking of adopting (one does not purchase a cat in Milan; they are everywhere). After a few minutes, he reappears with 'Napo' (short for Napoleon), an enormous, yellow, schizophrenic street-cat with a terminal underbite and protruding lower fang. Napo glares at me suspiciously while Frati cooes.



Mr. Frati has been reading the Falco Builders Letter and noticed in the CAFE Foundation report on Larry Black's Falco, that they always give the landing gear an extra turn of the crank to make sure on gear extension. This, he has concluded, is because we are using the wrong thread for the screwjack, a standard Acme thread instead of the metric square thread he has always used. His voice thunders as he lectures Valtorta on what we are doing wrong, and as I hear the room filled with Italian words, it begins to dawn on me that Mr. Frati is very, very angry, and what we have done is wrong, wrong, wrong. I dare not argue. Indeed, when precisely would I get an opportunity to say anything? I smile weakly and listen. Mr. Frati gives me some drawings, and then suddenly is smiling again. I relax. So I am not to be thrown from the fifth floor window, after all.

Mr. Frati gives us a tour of his office. In all there are three rooms, his office with a

Right: Giovanni, Andrea, Epifanio and Mino.



desk and bookshelves, a central office with a computer (which he refuses to use) and a drafting room with two large drawing boards and ancient drafting machines.

Mr. Frati took Valtorta and me to his old shop in Pioltello. It's closed now, and Mr. Frati's General Avia company, now under new ownership, is selling the real estate. The electricity is turned off and the old office cats keep vigil over what might have been. We wandered among the machinery, testing equipment, heat-treating oven, drafting rooms, offices, and the shop filled with old aircraft parts and prototypes. It seemed more a morgue than a factory floor, with a stripped-out Airone prototype, an aluminum skeleton of a Squalus and Pegaso in a corner, and the still-born embryo of the commuter jet fuselage in a jig. As I step over a huge engine hoist, I marvel at how essential such machinery is when needed, and how worthless when not.

As we waited in the car after Mr. Frati disappeared, Valtorta explained that he thought Mr. Frati was going to get a present for Meredith. The garage attendant got in the car, started to move it, then Frati was back outside the car, they seemed to argue, the rain had turned into a downpour, the attendant's dog circled our car and then a watersoaked Stelio Frati was back in the car and off we went again into the streets of Milan. We waited for an opportunity to pull out into the traffic. As cars flicked by on my right, I was visited once again by the terror of the streets of Pamplona, shielded my vision with my hand and said a brief prayer.

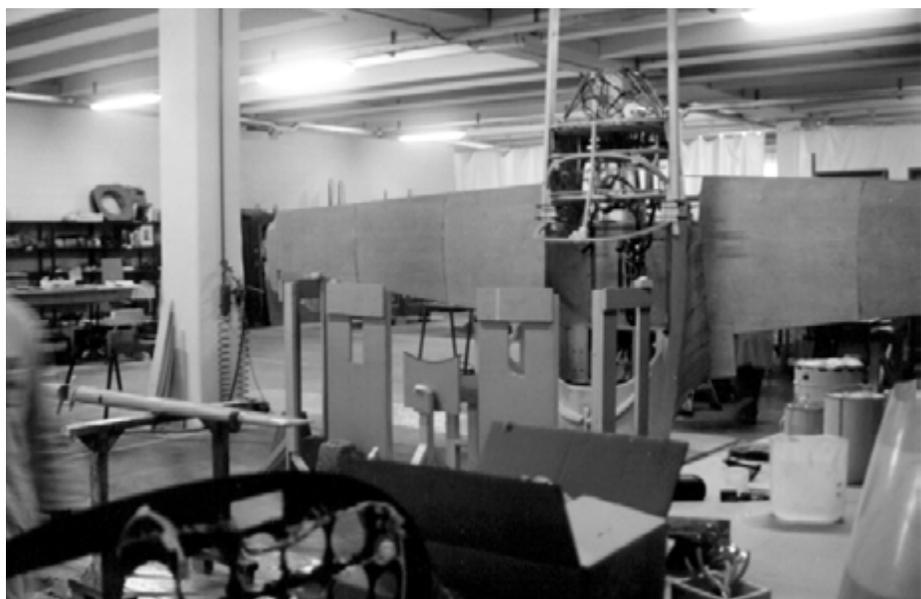
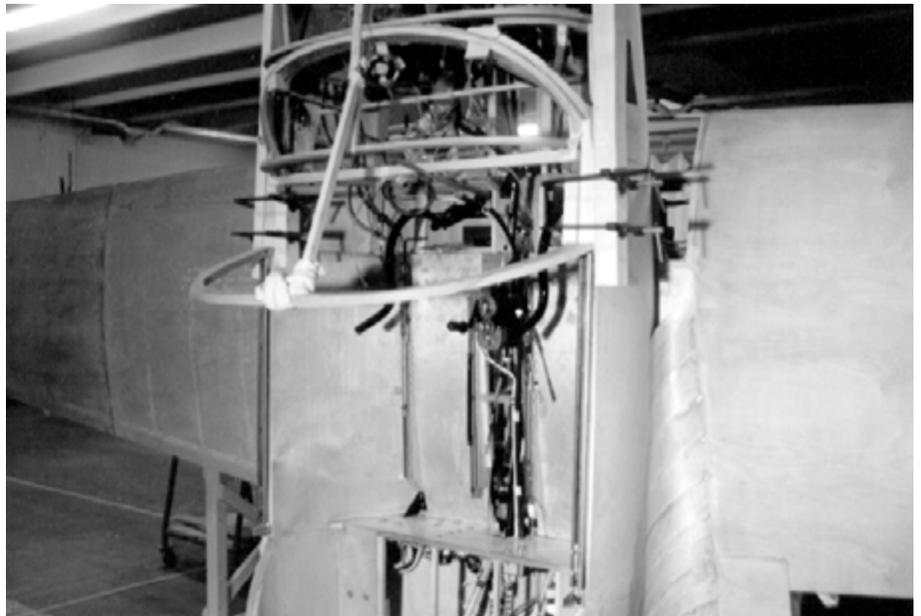
At dinner, we were joined by Andrea Tremolada once more, and we began to talk about the practicality of wooden aircraft, and how long it should take to build the Falco main wing spar in production. Mr. Frati had one figure (quite high), Valtorta another very close to our actual time, and I told them how long it actually took us, using our Gonzales machine. Mr. Frati was very surprised. "Would you like to know how we do it?" I asked. They would. I took out a piece of paper to draw on.

Mr. Frati took out a piece of paper.

I took a pencil from my pocket. Mr. Frati got out his pencil.

First, I explained, we scarf the boards.

Boom! Suddenly Mr. Frati was off, out of the gates and running! He was drawing the next step of the process, talking furiously and with fingers stabbing the air. How It Should Be Done.



Top: 1926 Caproni seaplane, the oldest still flying in Italy.



Top: Ernesto Valtorta and Stelio Frati. Above: Frati with his 260 hp four-seater.

I waited until I had a chance to continue and once I began a few words, Mr. Frati was off again, madly drawing, gesturing, stabbing the air, head rocking.

“Does Mr. Frati know what *listen* means?” I asked Andrea. Everyone just smiled as our seated dervish continued in motion, stabbing, drawing, talking.

It finally became a contest of wills with Mr. Frati to get him quiet, and I only succeeded by pulling on my ears and saying “Mr. Frati! Mr. Frati!” with my ears stretched out like a frightened tree-monkey. At long last, Mr. Frati stopped, folded his hands and smiled as if he was rather amused by himself.

Later the conversation turned to the state of the aircraft industry, and Mr. Frati smiled and offered “Building airplanes is the best way I know to lose money.” Now he tells us!

Stelio Frati is 80 and in excellent health. I asked him if he would come to the 45th and 50th birthday of the Falco at Oshkosh. Yes, he would come to the 45th birthday at Oshkosh 2000, but he didn’t want to commit on the 50th just yet. He comes from a family of long-livers, and he will just have to see how his health holds up.

With his old shop closed, is this the end of Frati aircraft? Hardly, it’s simply the beginning of the final movement, the *finale* as it’s called in music.

There can be no doubt that we’ve had the pleasure of watching a great mind at work. Falco builders are at work all over the world on his classic design. The SF.260 assembly lines are due to restart shortly. Somewhere in Russia, there’re a dozen Picchios someone just built. The Pinguino continues and the Squalus design is now in Canada, awaiting a resurgence. Who knows what other Frati designs are being proposed in the low-cost labor market of eastern Europe?

Stelio Frati is thinking of returning to wood again and has a 260 hp four-place on the drawing board. The commuterliner is on his other drawing board. He has done some initial work on a ‘Falco Jet’, a four-seat Squalus-like design with a single Williams engine and is waiting on data from Williams International. If you would like an airplane designed for you, write: Dr. Ing. Stelio Frati, Via Noe 1, 20100 Milan, Italy.

And if you’d like to send Mr. Frati some photographs of your Falco project, I’m sure he’d love to hear from you.

Goings On at Sequoia Aircraft

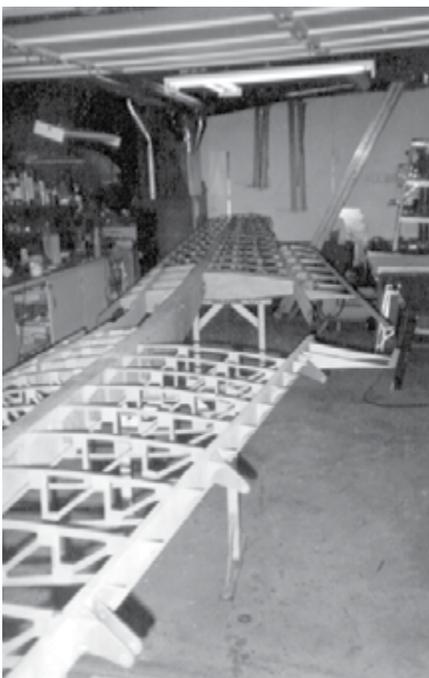
by Alfred Scott

I have one message to all of you—particularly those of you who are presently building your Falco—get on the Internet. We are getting ready to enter an exciting phase in the history of the Falco, and I think it will prove to be the most important one.

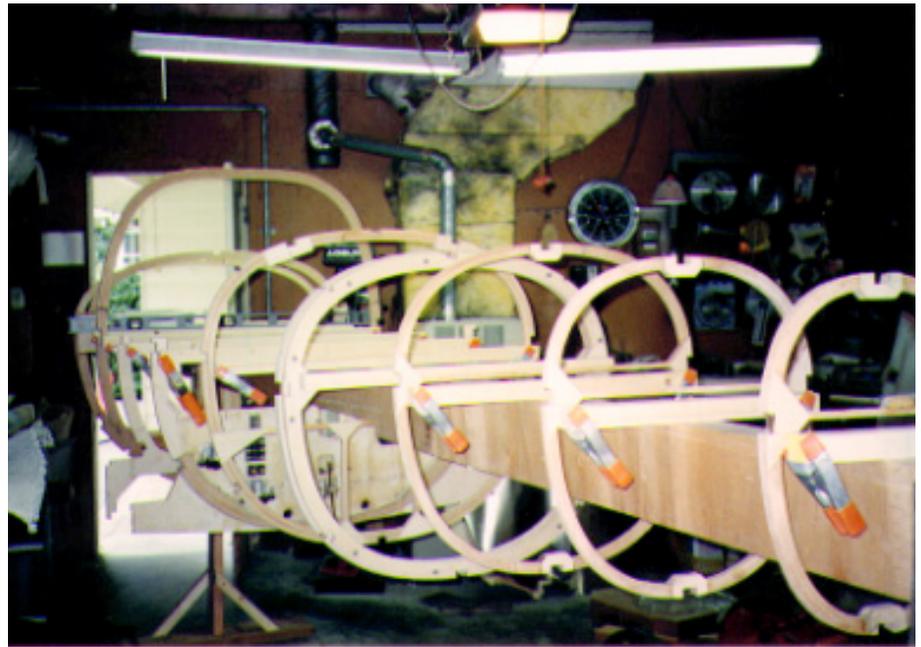
When I began work on the Falco, I spent a huge amount of time working on the drawings, designing the kits, writing the construction manuals, illustrating the construction manuals, etc. There is no way I can describe to you the enormous effort that goes into something like this, both in terms of the thought-processes involved or in the process of getting the concepts down on paper in words and drawings.

At some point in the process, I became overwhelmed by the physical demands of producing work that would advance the Falco building process in any meaningful way. I didn't have the tools available to me to do the work I wanted to do. My drawings were done with ink on mylar, and the lettering was typed on a computer and then pasted on the mylar with rubber cement. As you can observe, the drawings are of a very high quality, but they require an exceptional effort to produce, and they are hopelessly difficult to revise.

As many of you know, I've spent a lot of time in the last six years or so working on my WildTools CAD programming. I began



Gordon Cook's Falco takes shape.



Top: Pierre Wildman's fuselage. Above: Celebrating a Falco moment with sister Renee.

by dealing with the frustrations of drawing on a computer and the lack of ability to do things on a computer that I could easily do on the drawing board. When I began working on WildTools, the process of drawing on a computer was extremely frustrating and I wanted to put my fist through the computer screen every ten minutes or so.

I began by eliminating frustrations and then as things progressed it became a game to see how fast I could make the process. Today it is normal for users to report that they have doubled their productivity in drafting because of what I have done. Let me say that again: in the course of an eight-hour working day, it is normal for people to report that they produce twice the amount of work. Drawing on a computer today is

now *fun*, and the most commonly-used word to describe it is "unbelievable".

I tell you all this because writing WildTools was not so much a matter of me sitting in a room writing a bunch of programming but more a matter of me refereeing a fight about drafting. In some ways, it was the most extraordinary adventure I've ever been on. I would sit in the middle and work with people all over the world who were interested in this subject, and we would exchange ideas and suggestions. We communicated with each other largely by email and sometimes by telephone.

I finally concluded that what I was doing was spreading fertilizer on a brain farm, and I had people waking up every morn-



Above: Pierre mounting the rudder pedals. He's single, you know.

ing thinking about things they wanted me to do in the software. It's nothing short of unbelievable what you can accomplish when you work like this, but to make it possible, the people at the other end have to feel involved, to feel that they are co-authors of the software, and that their ideas are rapidly put into place. There's something magical that happens when you work like this, one idea leads to another, and then another. I read a quote once that "All of us is smarter than one of us" and that's certainly what I've seen happen with the process of writing software.

I am now going to apply all I've learned in the WildTools experience to the Falco. As a promotional tool, I first saw the Internet through the eyes of a cynic, but once I got

past that, I then saw it as a poor cousin to the printed page. Certainly, the photographs are grainy compared to a finely printed brochure, and you can flip a page quickly while you often have to wait for a web page to come up.

But despite its obvious shortcoming, I now regard the Internet as a vastly superior promotional tool, and I'm not sure anyone has really mastered this medium. To me, the Internet is free color printing, with unlimited distribution. I began by reproducing our brochures on the web and now our web page has grown dramatically. I now have a much clearer vision of what our web page should become, and I'm only part-way through the process. I expect it will be another three or four

months before we really have something to crow about—but already the Internet is, by far, our best source of new builders. The Internet is exploding, and its importance for the Falco is growing daily.

My vision for the web page is to make people fall in love with the process of building a Falco. As you all know, building a Falco is much more than buying a product from a company. You get the parts from us and you put it all together, but there's a human element that's equally important. You get to know other Falco builders, make friends, compare notes and workmanship, talk about me, and become part of the Falco-builder family.

You have all felt this human element of the Falco experience, and you get it through the Falco Builder Letter. To make people fall in love with the process of building a Falco, I want to humanize the web page, to show the people involved and put them up front. This is why I've created the Falco Workshop and the Falco Hangar. In a short period of time, you can 'go around the world', meet Joel Shankle, Marcelo Bellodi, Stephen Friend..., see their airplanes, see what kind of people they are, look at their construction photos, and hear what they have to say. And in the Falco Workshop you can meet people who are building their airplanes. We've just gotten started with the Hangar and Workshop, and I hope you'll all contribute to this in time.

With regard to the Falco Hangar, there's an issue I'm unsure how to handle and which I'd like all of you to think about. What do we do in the case of the builder who is no longer alive or who no longer owns the airplane? It seems to me that the focus for a particular airplane should be on the original builder (Karl Hansen, Ray Purkiser or Guido Zuccoli, who have died, or Bjoern Eriksen or Charles Gutzman who have sold their Falcos). I think we should focus attention on the original builder and give them the recognition they deserve—but how do we do it in a way that's appropriate to the situation? Your thoughts, please.

But for all of you who are building a Falco, the exciting part will be in the Falco Skunkworks. At this time, I'm going through back issues of the Falco Builder Letter and collecting articles, hints and tips on construction, tools and building techniques. I'm arranging these by topics, which are roughly the same as the chapters in the construction manual. I will also be including suggestions that you email me,

as well as questions we get here. These will then become the feedstock for the new chapters of the construction manual.

As I work on a new chapter, you will be able to print out your copy and comment on it. When I move a suggestion, tip or comment from the 'feedstock' into the new chapter, I will delete the original. When we print and ship a new chapter, we will then delete the 'proof copy' from the Skunkworks, new suggestions and comments will come in, and the process will begin again. At any one time, you can check into the Skunkworks to see what recent suggestions people have offered.

For the existing construction manual, there is now widespread opinion that the manual and the construction steps involved are pretty bulletproof. However, the manual is heavy on text and could use more illustrations. Many people have trouble visualizing the assembly in three dimensions, and I plan to add both three-dimensional depictions as well as photographs.

In the past, we've produced our construction manual using Microsoft Word, however in the future we will use Quark XPress. While our next copies of the construction manual will be produced using traditional black-and-white offset printing, the manuals will be composed as color manuals, since it's clear that color printing with on-demand printing systems is not far down the road.

We've recently purchased an Olympus D-600L digital camera so we can take a photo of a part and have it on a printed page in a few minutes and on the web the next day. Some of you may want to get a similar camera, and regardless of the type of computer you use, you will be able to take a picture in your shop, email it to me for inclusion in the manual or web.

As you can see, our ability to all 'work in the same room' is going to change the way we all think and operate. Anything that goes into the Falco Skunkworks will be available to everyone throughout the world. That includes photographs, drawings, comments, suggestions, questions-and-answers, sketches or even jokes about our everlovin' president.

I hope all of you can see the potential of this, and how it can work to our mutual advantage. For it to work well will require that a lot of people participate in the process. In both drawing on a computer or in building a Falco, I've noticed that there is a consistent tendency of people to think that the way they are presently doing some-



Top: Richard Clements' Falco. Above: Tom Towle at Oshkosh.

thing is just fine and probably cannot be improved in any significant way. It's always difficult to conceptualize how something could be dramatically improved, but I can assure you that there will be huge benefits that will come out this process.

When I began this process, my intent was to begin mailing out monthly updates to the manuals and plans. However, as I began working on this process, it became clear that there was a lot of preliminary work that I had to do first. Much of this is a matter of reorganizing the basic materials: photos, notes and articles from old Falco Builders Letters. I am now well into the process of bringing this material together, and you can see much of it in the Falco Skunkworks. Once I get it all together in there, then I can begin work on the revised chapters.

It is also becoming clear to me that photographs will play a very important role in all of this. Many of you have photo albums of your construction process, and I hope you will be willing to share these with everyone. We've already published Joel Shankle's photo album on our website, and it's a great help to everyone to be able to 'watch' a Falco being built.

I'm sorry to report that Francis Dahlman died in September. In the early days of the Falco, Francis supplied the wood kits for the Falco and many of you got to know him well. He was a very fine man. He developed Alzheimer's disease and was in bed for the last five years, but he followed the activities of Falco builders through the Falco Builders Letter. If you would like to write Wanda Dahlman, her address is P.O. Box 314, Lyndon Station, WI 53944.

Construction Notes

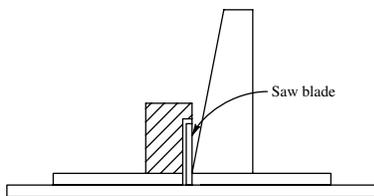
by Alfred Scott

Jeff Morris reports that the specified welding rod Lindy 65 is no longer available because Lindy was purchased by another company, Esab. Jeff says the equivalent to Lindy 65 welding rod is AWS# ER70S-2.

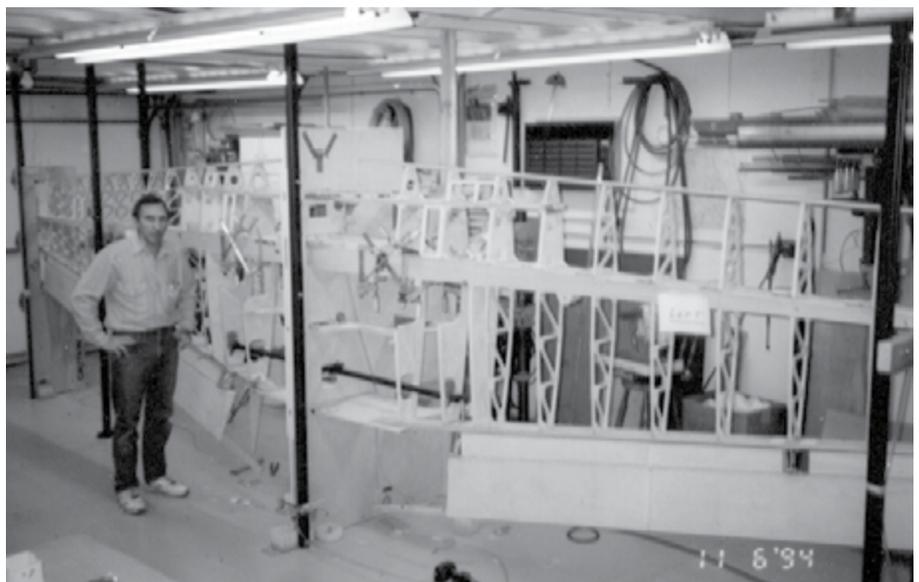
Ben Owen at the EAA reports that he recently purchased some Penacolite glue from Borden, the new manufacturer of our favorite resorcinol glue. In the process, he had to chase down a retailer of the glue, and he passes on the retailer's name for Falco builders: Jeff Pitcher, Custom Pack Adhesives, 11047 Lambs Lane, Newark, OH 43055. Telephone: 1-800-454-5583, fax (740) 763-2888.

Garry Wilburn writes "I have mistakenly and prematurely glued seat supports, P/N 206-7 in position prior to getting the cockpit flooring (inboard wing skins) glued in. Maybe others have done the same thing. I have a concept to save the situation without removing (and destroying, in the process) these P/N 206-7. I would propose to glue in 10 mm square ledgerstrips alongside the bottom seat supports, P/N 206-8 & 206-9 to provide a gluing shelf on which to affix the plywood underseat cockpit flooring, which then necessarily would have to be installed piecemeal in approximately five individual pieces per side. I am unable to evaluate the amount of stress these inboard top wing skins might have to carry, so I turn to you for the proper action. What say you?"

This is a difficult situation. I understand the problem, but I don't have any way of evaluating the stresses involved either.



While visiting with Andrea Tremolada, I noticed the rig that they used for scarfing plywood. It was a simple lightweight table saw set up for the purpose. They had clamped to the top of the saw a wood scarfing jig. A carbide saw blade sits in a recess cut in a block of hardwood with a rectangular cross-section. To the other side of the saw blade, an angled block of hardwood is the 'fence' that the plywood runs on. To scarf a piece of wood, Giovanni and Epifanio simply push the plywood through.



Top: Epifanio and Giovanni scarf a piece of plywood. Center: Neil Aitkenhead. Above: Al Dubiak and his project.

9th Annual West Coast Fly-In

by Cecil Rives

The West Coast Fly-In was held this year in Eureka, California, and was hosted by Barbara McMurray with occasional assistance from her husband, Dave.

Weather was perfect—no fog to speak of—and the mid-day temps were in the seventies. Only five Falcos were present (Burholm, Black, Harns, McMurray and Rives). Jim Kennedy was there in his F-22 which added(?) something to the gathering. (Jim, you're going to have to get a Falco. We can only carry you so far on your wit and good looks).

Thursday evening we were treated to a bar-be-que dinner at the McMurray's. Their lovely home is nestled in a grove of—SEQUOIAS! What else? In the last century the largest old growth trees were harvested and all that remains of these giants are the stumps which are as much as 20-30 feet in diameter!

Friday morning the City of Eureka hosted a continental breakfast for us at the Eureka Inn. The local newspaper that morning was graced with a photo of Ann and Larry Black arriving in their Falco. The paper announced that a total of 42 Falcos were expected. 37 never made it.

The rest of the day was devoted to flying, lying, exaggeration and dissemination of questionable aeronautical knowledge.

Our dinner that evening was held in a magnificent old (circa 1880) Victorian mansion now occupied by the Ingomar Club. The interior of ornately carved wood was particularly impressive to this Falco builder.

A fly-out breakfast to Shelter Cove (about 45 nm south) on Saturday morning provided an opportunity to see something of the rugged northern California coast. Shelter Cove airport perches on a narrow spit of land at about sea level and is bounded on the east by rapidly rising terrain. The approach on both ends of the runway is over water and there is a warning of downdrafts. Bill Russell was my passenger and this enabled us to simulate a carrier landing. (Alfred, the oleo struts are leaking, again.)

Local fauna was in attendance represented by bees, seagulls, seals and sea lions. The

*Center: Perry Burholm and Cecil Rives.
Bottom: Cecil and Fred Doppelt.*





Above: Eureka (Murray Field)

bees joined us for breakfast devouring the “sacrificial” cinnamon rolls that were set out for them. The bulls in the sea lion colony held a competition to see who could sound most like Bill Clinton calling interns.

Upon our return to Eureka we were greeted by the local airshow in progress. The Falcos were put on display which, along with the nearby hamburger stand, drew a nice crowd.

The Baywood Golf and Country Club was the site for the banquet Saturday evening and marked the close of the Fly-In. It should be noted for the record that several of the attendees, after over-grossing on adult beverages, failed miserably in their attempt to entertain the group as stand-up comics.

I have to say that this was one of the best fly-ins that I have attended. Barbara and Dave were most gracious hosts and spared no effort to make the event memorable.

One disappointment was the absence of Judy and Jim Slaton. Jim recently sold his Falco to Jim Quinn. I hope this does not mean their continued absence. Once a Falco builder, always a Falco builder!

It seems to me that all fly-ins end too soon. Certainly this was one. I can only echo Alfred’s sentiment that one of the joys of building a Falco is meeting the folks involved. You really are great people!

Next year, the 10th Annual West Coast Fly-In will be held in Durango, Colorado, and will be hosted by Ruth and Fred Doppelt. Exact dates are yet to be announced but it will be in September. I urge all of you to put this on your calendar and make every effort to attend-especially those of you on the East Coast. Durango is located in one of the most beautiful parts of Colorado and there is lots to do and see. Fishing, golfing, Indian ruins, narrow gauge train rides, whitewater rafting and jeep rides in the mountains are just a few. You might want to come early or leave late-or both.

Top: Lake Powell. Center: It’s rumored that Dave McMurray is planning to build a very, very large Falco.



Hey Buddy, Wanna Get Weighed?

by Stephan Wilkinson

This article originally appeared in The Aviation Consumer.

When was the last time your airplane got weighed? Back when Ike was golfing, when it left Lock Haven or Wichita, right? Meanwhile radios have come and gone, engines been overhauled, changed and re-accessorized, seats been replaced—or perhaps removed entirely—and the interior renovated. Perhaps you've had a couple of things 337ed aboard with some quick arithmetic to recalculate weight and balance. Who knows what your airplane really weighs in 1998? Certainly not you.

I didn't know either, it turns out, though my homemade Falco was 'carefully' weighed as recently as 1991, when I finished building it. In time-honored home-builder manner, I borrowed half a dozen bathroom scales from friends, spanned pairs of them with short planks out on the relatively flat ramp ("gee, that's interesting, look how the numbers fluctuate when the breeze comes up!") and lifted the airplane's three wheels onto the boards: 1,231 pounds. Sounded about right, and I was delighted that I'd done such a good job building it that the airplane came out weighing what the world's more carefully constructed Falcos generally do.



Well, I was 94 pounds low, it turns out, and about an inch too far forward on N747SW's CG. I discovered that last spring by flying the Falco to Reeves Air (401 596-8559), a Westerly, Rhode Island shop that has sophisticated, accurate, biennially recalibrated electronic scales and advertises its aircraft-weighing services. For a flat singles-and-twins fee of \$250, Reeves put the Falco inside its hangar sheltered from the wind, totally defueled it, emptied the cockpit of non-essentials, carefully leveled the airplane both laterally and longitudinally (which ultimately involved strapping down the nose gear scissors and partially deflating



Above: Ed and Michael Reeves hook up the scales.

the nosegear tire—certainly something I'd never considered doing) and used its \$5,400 electronic truck scales to come up with a wheel-by-wheel total weight of 1,311 pounds. The entire process took three men about two hours—much of it consumed by laborious defueling and refueling of my nearly full tanks—and left me officially signed off with a computer-generated sheet listing the Falco's new weight and CG and defining the calculations used to compute the CG.

That's a bargain in the airplane world, especially since the job usually takes about an hour longer on a more complex airplane. If I were on the verge of selling my airplane, it would be money well spent as part of the paperwork package with which to reassure a prospective buyer. As it is, I'm confident knowing my airplane's actual to-the-pound weight and, more importantly, its balance.

Oddly enough, homebuilts have no gross-weight limitations. The requirement is simply that the airplane is loaded within its balance envelope and that safe climb performance for the mission being flown is retained. (As a certificated, factory-built Italian design in the 1960s, the Falco had an official maximum gross weight of 1,800 pounds, but homebuilt versions have flown considerably heavier than that. Indeed, the well-known Italian Falco modifier and racer Nustrini once lofted his entire family—four small children, bambino, wife and himself—in the two-seater. Don't believe it? He took an in-flight wide-angle photo to document it, which you can see on the Falco website, www.seqair.com.)

Part 135 airplanes require re-weighing ev-

ery 24 months, but Part 91 operators can get away with having new weights and CGs calculated arithmetically and signed off as a continuing revision of the airplane's original factory empty weight. (You do have to get your airplane reweighed, however, after a major STC installation such as different engine.) And we homebuilders, of course, can for better or worse do it all ourselves from the outset.

To have a professional do the job correctly requires their either defueling the airplane or determining the specific gravity of the fuel aboard. Only then should they do the arithmetic to figure out exactly how much to subtract from the indicated scale weight. Michael Reeves, who with his father, Ed, operates Reeves Air, says, "On something like a Cessna 402 with full tanks, you can be as much as 20 pounds off if you just assume six pounds per gallon and get the specific gravity wrong. Also, who's to say what's 'full tanks'? One guy's full might not be as topped off as another pilot likes them. And with bladder tanks, you can have a wrinkle and not be carrying as much fuel as you think you are."

Planning ahead to arrive for the job with minimal fuel makes sense, particularly if, as in the case of the Falco, the operator uses the airplane's on-board electric fuel pump to empty the tanks, flowing the gasoline into a plastic drum about as fast as a half-open bathroom tap. Even using the quick drains is anything but quick. "The worst was a guy with a 310 who came in from Groton [an 11-nm flight from Westerly] with every tank in that airplane topped—wing tanks, locker tanks, tip tanks—and he'd had the appointment with us for two weeks," Ed Reeves groaned.



Above: Positioning the Falco on the scales.

Worse yet, Reeves puts the drained fuel back into the tanks by using a small aircraft electric pump driven by an old battery and some jumper cables, the whole horrifying process taking place amid spilled gas and fumes, atop the half-filled fuel barrel. My little wooden airplane never looked so much like a tinderbox. Even an old-fashioned hand-cranked centrifugal pump of the sort my local hardware store uses to dispense kerosene would be far faster and safer, guys.

Some jobs are a lot bigger than a toothpick homebuilt, of course. One that sticks in Mike Reeves's mind is a Huey: "5,927 pounds empty," he says, consulting his notebook, "and I never want to do that job again." The helo was a bear to jack and level, as was a Cessna 206 on amphibious floats. "It was hard to get four wheels onto three scales—we had to bridge between the two float nosewheels—and it was just a pain working up that high." Though Reeves Air's scales are good for a total of 12,000 pounds, they don't get customers in that empty-weight range because it's uneconomical to take a relatively large Part 135 airplane out of revenue work long enough to fly it to a weighing site. It's cheaper for such an operator to own a set of scales or to deal with somebody who will bring the scales to the customer.

As does Chester, Connecticut weighing specialist Eric Propper (203 269-9634), who flies his scales and equipment hither and yon throughout the Northeast in a Cherokee Six. Propper uses not flatbed scales but highly accurate strain-gauge load cells that fit between an aircraft's jacks and its jacking points, which allows him to relatively easily weigh aircraft as

heavy as commuterliners and Gulfstream Ivs. Propper's GA rates run from about \$250 to \$500, depending on gross weight, plus \$75 an hour for the Cherokee time required. Propper is leery of doing homebuilts, however, for many of them don't have well-defined jackpads that can interface with his load cells.

The Reeveses have, of course, seen a variety of object lessons in the efficacy of updating aircraft weights. "One of the worst we ever got was a plain old 172, in fact," says Ed Reeves. "It left the factory 35 years ago, and whenever anybody did any work on it, they apparently just pulled numbers out of the air. The owner brought it to us expecting to gain some useful load, what with the more modern equipment that had



Above: Hanging a plumb line to locate the datum.

been installed over the years, and he ended up losing 70 pounds."

"Worst of all, though, was a Riley Rocket 310 conversion," says son Michael. "Somebody had screwed up the weight and balance after the big engines were installed, and when we redid it, the owner was shocked to discover that he had a six-seat airplane with a 500-pound useful load with full fuel."

Another twin that Mike remembers was a Seneca II. "The guy who owned it also had a Seneca III, which of course has 220-horse engines in place of the II's 200s, yet the II supposedly had a higher useful load. It had been reweighed only three years earlier, but near as we could figure, somebody had completely miscalculated the fuel aboard at the time they weighed it. Probably two guys doing the job and failing to communicate with each other."

Mike Reeves considers the salient parts of a good job to be "getting the airplane into a clean, dry hangar and taking your time to level it perfectly, especially longitudinally. Don't ever say 'close enough.' Misleveling won't throw off your empty weight, but it can foul up your CG calculation. Also, getting all the fuel out is important. A lot of people probably think I'm crazy, because they just leave the fuel in and subtract six pounds a gallon. If you do that, at least top it off perfectly and calculate the specific gravity. It may be 5.98 pounds per gallon on that day at that airport in that airplane."

Aircraft weighing isn't a service that every shop provides, but any good local FBO will know the location of the nearest facility with scales. And I highly recommend it as a useful undertaking for EAA chapters hanging a bunch of airplanes weighed on bathroom scales.

Calendar of Events

The Great Oyster Fly-In and Gathering of Stelio Frati Airplanes. November 7 at Rosegill Airstrip, Urbanna. Contact: Dr. Ing. Alfredo Scoti at Sequoia Aircraft.

West Coast Falco Fly-In. September 16-18, 1999 at Durango, Colorado. Contact: Fred Doppelt (970) 884-0843, email: fredd@animas.net or at 298 Mushroom Lane, Bayfield, CO 81122

Oshkosh 2000. Plan now to attend the 45th Birthday Party for the Falco. All Falco owners are ordered to attend. Expect a massive turnout—Stelio Frati says he will be there.

A Nutter Falco Hijacked

by 'Anonymous'

It was July 13, my birthday. I was 63. Bob, my test pilot, and I had been up on another familiarisation flight, he had been critiquing my approaches.

We were sitting in the hangar having a coffee. Bob's dog was on a long lead, an electrical extension wire. Bob's wife had left him in charge of the dog while she visited a new grandchild. Weighty matters, like the weather and what we were going to have for our evening meals were being discussed. I was taking the family out to dinner.

My back was to him when the stranger walked through the open personnel door. "What's the dog's name?" he asked Bob.

"Millie."

He then made an inconsequential, out of line, remark, like "Well, if you must" and walked out.

Bob looked at me and said "A nutter."

The intrusion did not upset the span of subjects under discussion. A short while later we heard a throaty aircraft engine burst into life, at full throttle. It did not immediately dawn on me that it was my aircraft, but when it did, I ran out of the personnel door and there it was heading straight for a sign post.

Oh my God, 15 years of work up shit creek.

It missed the sign post and zeroed in on my Audi. I'd just bought it from my company.

Hells bells! Oh no! My aircraft and my car, all on my birthday—£90,000 worth.

The engine cut. I was sprinting to the aircraft and whipped the keys out of the ignition. I was unable to say anything to the man sitting in the passenger's seat. Bob had by that time got to the other side.

"What the f— are you doing?" This language was out of character for Bob.

"Making a mistake."

He stood up, got out, and walked off behind the hangar, seemingly unconcerned. I got onto Security on the mobile, spluttering incoherently, but they eventually understood. With incredible alacrity, in 15 minutes, a van with one man drove round the



Above: 'Anonymous' sent along this from the Prestwick, Scotland, newspaper.

perimeter. We gesticulated to the driver that that, over there, was the miscreant, unconcernedly sauntering round the other hangars. He was invited on board the van and chaffered to the terminal building.

The man was known to Security. He had been questioned on a previous occasion when he had been seen to be acting suspiciously in the terminal building. He had refused to give details other than that he was employed by Military Intelligence.

The police discovered that he was not MI5, but a patient who had wandered out of the local nut house, through a gate which must have been left open on the high security perimeter fence of the airfield. I would have loved to have heard the phone call to Whitehall, our equivalent to Langley.

The Airport discovered that they were in a shitload of trouble with the Ministry of

Transport, the CAA and a lot of others. I was asked to keep it quiet, to which I agreed, providing they cut the grass around my hangar.

We, in the UK, generally don't own but hire aircraft from a flying club so there is a tendency to leave the keys in the airplane for the next pilot. Luckily, I had switched the fuel cock to off on shut down. Our MI5 man had got in, pushed the throttle to full and switched the starter on. When the engine burst into life at full belt, the torque must have turned the aircraft through 270 degrees, luckily missing the sign post and then my car before the carburetor emptied, and it shut down. I would have had some explaining to do to the insurance company, having left the key in the aircraft, and I later found that my car was not insured airside.

I don't leave the keys in my aircraft any longer.

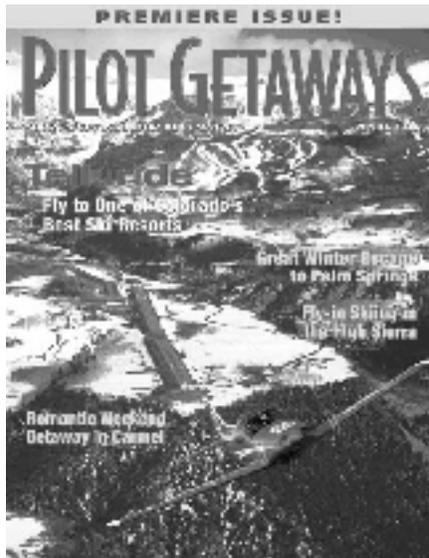
Susan's Corner

As usual, Oshkosh '98 was great. The weather cooperated beautifully, the airshows were breathtaking and the organization of the whole project was second to none. Good food and good friends made for very successful builder dinners on Thursday and Friday nights. But also as usual, never enough time. Pushing our time right to the edge, reality sets in and we headed for home. Do begin thinking about Oshkosh 2000 though. If I have anything to say about it, we'll have one whopping big time!

We have some super nice sweatshirts for sale now. We don't have many, and I don't expect they'll last too long because for now it's just a trial thing. But they're the kind that are mostly cotton and feel so good against your skin. Some different than the polyester of yesteryear that felt like you were always wearing a raincoat.

We're toying with the idea of doing some other promotional stuff, so if you would, share your ideas with me about what sort of things you might like to see or would be interested in. You can e-mail me at SeqAir@aol.com

The status of business and projects stays pretty steady out in the warehouse, except I'm finding I don't always have as much time as I'd like to do all the things I want. I'm coming up on a 5 year anniversary here at Sequoia, and if it hasn't been "put in a box and labeled" by now, then I must



Above: Eric Wierman and his Falco on the cover of the premiere issue of Pilot Getaways magazine.

not be finished. But the beat goes on and eventually I'll get it all done.

I'm rather glad to have the cooler fall weather settling in, as I'd about had my fill of the hot, humid weather that we were blessed with this past summer.

Remember to keep us posted on the progress of your Falco projects. We always enjoy hearing what's going on out there in 'builder land'.

I hope everyone has a wonderful and safe holiday season this year.

—Susan Stinnett

Dear Ms. Lewinsky

Ms. Monica Lewinsky
Watergate South
700 New Hampshire Avenue N.W.
Washington
DC 20031

Dear Ms. Lewinsky:

It is probably a mistake to even be writing this letter at all, because the last time we invited someone to be our special honored guest at the Great Oyster Fly-In (Col. Mu'ammur Qadhafi, in 1994) that a-rab didn't even have the decency to reply. Can you believe that?

But since we never seem to learn from our mistakes, we'd like to invite you to attend, as our guest of honor, at the 18th annual World's Only Oyster Fly-In and Gathering of Stelio Frati Airplanes, held in conjunction with the Urbanna Oyster

Festival—said to be the biggest small-town event in the United States—on November 7 at our private airstrip on the Rappahannock River, Rosegill Farm, Virginia.

You're going to have a great time, and there's so much to appreciate. If you've never had an oyster, I'm sure after trying one, you'll agree that they're the best thing you ever put in your mouth.

And you're going to love the Falco. It's the neatest airplane you'll ever fly in, and once you get up in one of these babies, I'm sure you'll never want to go down again.

So we'll be looking for you on November 7. And bring along any friends because any friend of yours is a friend of mine.

Sincerely,
Alfred P. Scott

Sawdust

- Media watch. The Falco is featured in the October 1998 issue of *CustomPlanes* magazine, and the article focuses on Bob Brantley of Santa Barbara, California who is building a Falco and John Shipler of Huntington Beach, California who finished his Falco some years ago. And the cover of *Pilot Getaways* premiere issue depicts the runway at Telluride and the flagship of the Bach Corporation, Falco N241TE. In the Falco are pilot and chocolatier Eric Wierman and passenger Caryn Puma.

- Above average. Kim Mitchell recently passed his final inspection. The FAA inspector said it was the nicest homebuilt he had seen in 40 years.

- Two Virginia universities took top honors in the 1998 design competition sponsored by NASA. The awards were announced at Oshkosh, and top honors went to the Virginia Tech team for their 'VicTor' single-engine four seater. A team from the University of Virginia were honored for developing a computer program that predicts resistance to airflow in the design of a small passenger airplane. In their design, they based the program on the Falco, which they developed into a three-dimensional model to study the flow of air about the airplane. The UVa team was lead by James McDaniel, professor of mechanical and aerospace engineering.

- Engine clones a-coming. With Superior and others manufacturing parts to overhaul Lycoming and Continental engine, it has only been a matter of time before the aftermarket companies made the few remaining components and sold an entire engine. It's finally happened and Superior has announced the the XP 360-1, a Lycoming O-360 kit for experimental airplanes that you will be able to buy both assembled or in a build-it-yourself model. The engine is still under development, and they plan to offer refinements of the engine design. Initially, the engine will be available in a carbureted version only, but they plan to offer an an IO-360, a TIO-360, and eventually the 540 series as well. It's far too early to form any assessment of this engine, but it will be worth watching.

- Start planning now. In Milan, we asked Stelio Frati if he would come to the 45th and 50th birthday parties for the Falco at Oshkosh. He's making no commitments yet on the 50th since he wants to see how his health holds up, but he said he'll come to the 45th birthday party at Oshkosh 2000.

Mailbox

Over the last half-dozen years, I've assiduously scanned *Sport Aviation's* monthly "What Our Members Are Building" photo section, anxiously awaiting the appearance of a single finished or even under-construction Falco to appear. Nary a one. Ever. It seems that every Lancair, Glasair, RV, Kitfox, powered hang glider and re-covered Piper Pacer that takes to the air gets lauded by its proud builder, yet one of the most craftsmanship-intensive kitplanes out there is totally ignored. (After all, we're about the only ones who don't get the benefit of a "fast-build kit.")

Is it possible that not a single one of us has ever sent a birth-announcement photo to *Sport Aviation* editor Jack Cox? It's too late for me to submit my dinged-and-dented 400-hour-old 747SW—it'd have to go under the "What Our Members Forgot How They Built" section—but is it possible that nobody else has been proud enough of their birdie to share it with the EAA? I wonder.

*Stephan Wilkinson
Cornwall-on-Hudson, New York*

Things have become pretty hectic over here... grandparents departing, grandchildren arriving, too much work, not enough time, too hot/cold/wet/dry, blah, blah, blah. I think we should just give these excuses numbers—they would be easier to list out!

Anyway, the Falco project is still under way. I'm now working on the center section of the wing framing, assembling the landing gear retraction mechanisms, etc. Just yesterday, I began gluing the intermediate ribs #1-4 between the main and forward wing spars.

As busy as I am, I'm beginning to wonder if having the Falco in its own hangar isn't actually slowing me down. The problem is that it keeps so well. I don't worry about letting it stand for long periods of time. When it was in the garage, I had to constantly defend it from familial encroachment and attrition. This kept me constantly vigilant, and working!

*Craig Bransfield
Bakersfield, California*

Ruth and I have agreed to host the 10th annual West Coast Falco Fly-In next year. This is to announce that it will be held 16-18 September 1999 in Durango. Aircraft will use Durango La Plata airport (KDRO) for their activities. We will use the good services of the Durango Air Service.

Great activities are planned, with a flight to Taos, a Durango town visit, trips to Mesa

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Center: Cecil Rives's Falco. Above: Richard Clements at Oshkosh.

Verde Cliff dwelling, ride on the Durango-Silverton coal railroad, going through the Animas valley and a visit to the mining town of Silverton. Of course, there will be the usual hangar flying activities, great meals and other side trips which can be

planned to suit individual needs. It's a great time of the year to visit the four corners area. Plan for it now!

*Fred Doppelt
Bayfield
Colorado*