

Falco Builders Letter



Jan Waldahl lands his Falco in Sandane, Norway.

First Flight: Jan Waldahl

The latest Falco to break wind did it in far-away Norway. This one belongs to Jan Waldahl, who admits that he's always been an airplane-freak. "I had my first ride in a Cornell at the age of six, and I have been bitten by the bug ever since. My childhood was dominated by model airplanes of all sorts. Later when I should have joined the air force, I was too old, and I joined the Navy, and did my service in a submarine, of all things!"

While in the Navy, Jan started taking flying lessons, and then after leaving the service, he went to Sweden to study at the Scandinavian Academy of Aeronautics. While he was there, Jan did a lot of flying between Sweden and Norway, flying other students home for the weekends, and built up a lot of flight time.

During this time in Sweden, Jan took a two-week trip to the U.S. to get his instrument and commercial ratings at a cram course at American Flyers on Long Island. After finishing the school in Sweden, Jan started flying seaplanes for a company on the west coast of Norway, and he has been there until last year.

Jan tells of his first sighting of a Frati airplane: "In the early seventies, I saw for the first time the SF.260. That one really hit me hard, but I did not have the money then. It is funny to think that the price of the SF.260 then was less than what's in front of my Falco's firewall today! I did not know about the Falco, until I saw your advertisement in *Sport Aviation* in 1979. Building my own airplane has always been one of my dreams, so when you came up with the Falco, I knew that's it!"

Jan ordered the plans in 1980, and began ordering spruce from California and plywood from Finland. And then he started building jigs. Lots of jigs. "I threw out the bed in my bedroom and made it into a workshop! Sometimes it's nice to be single."

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Two years went by building wooden and metal parts. Jan's employer allowed him to build an insulated Falco hangar inside the seaplane hangar. "At this time, I came to know Björn Eriksen who was just starting his own Falcomania in northern Norway. We have been working very closely ever since. Happily, Tony Bingelis started building his Falco at that time, and his articles in *Sport Aviation* helped me a lot. We did not have the complete builders-manual the builders today can enjoy."

"The years went by without too many problems. It was actually very educational, but if I had to do it once more, I would not have made the metal parts myself. It is too time-consuming, especially the landing gear. In Norway, we can't buy any prelaminate wooden parts, as the CAA will not approve it.

"More years went by, and the Falco started taking shape. The most interesting part was installing the electrical system. After years of wood and metal, it was something different.

"As I'm using the IO-360-B1E, I had quite a problem locating that engine. I finally made a deal with T. W. Smith in Ohio. The cowling needed a lot of work to house that engine. I spent almost two years installing the engine and the rest of the bits and pieces. During those years, I built a hangar at the local airport, and moved it there for final assembly.

"Finally in March of this year, I could call the CAA and have the man do the final inspection. He had nothing to complain about. The Falco was ready for roll-out.

"The weather did not cooperate until late April, and then I could start the taxi-testing. It was not easy to do much high-speed taxiing, as the runway is only 2,600 feet long and both ends of the runway end in a fjord. It was like operating on an aircraft carrier. My only problem has been leaking shock absorbers. Every day I had been out taxiing, they had to be refilled." Jan traced this to a problem with one of the pistons, and we replaced it. This is a problem, unfortunately, that has been fairly common,



and we have replaced the pistons for many other builders.

"One day the weather was perfect, and the Falco and I were ready to take to the air. The local newspaper was there, a friend with a video camera, and the usual crowd.

After a very careful inspection, I started the engine and taxied out for the first flight."

"There I was, at the end of the runway after close to 9,000 hours of work and 11 years. Well, there was only one thing to do to find out if it was the well-flying airplane

it should be—fly it! Björn Eriksen flew his Falco before me, so he gave me a lot of good advice and combined with a very good flight-manual, I felt ready for the big moment. This moment has been described by so many, so I'm not going to repeat it. It flew beautifully."

"For every flight I have done since, I appreciate this aircraft more and more. You are right in every aspect, this aircraft is something special. I have been to another airport only once, and every mechanic on the field came out to have a look. When the Falco is sitting there on the ramp with its sleek lines, it is impossible to take your eyes from it. Thank you, Stelio Frati, for designing this wonder, and thank you, Alfred, for making it available to homebuilders."

After getting his Falco into the air, Jan had to put it aside almost immediately. He started his own seaplane operation at a new location in Norway this spring. After 14 years of flying airplanes for another company, it was time to start on his own. That has kept him busy for most of the year, and as of now Jan only has about 10 hours on the Falco, so he says he doesn't have much to report. He says it seems to be doing about 170 knots at 65% power at 8,000' without nose gear doors.

Jan's Falco has the 180 hp IO-360-B1E engine and a constant-speed prop. The plane weighs 1,247 lbs empty with a red leather interior under a Nustrini canopy. As he mentioned, Jan's Falco is largely scratch-built, but there were also many kits that he purchased. It was a long process, and at one point in the construction Jan paid a visit on us here in Richmond. He was spending all of his spare time working on the Falco, and he couldn't remember what he did with his time before the Falco.

Congratulations, Jan, on a beautiful Falco. Many happy landings.—Alfred Scott

The Falco Builders Letter is published 4 times a year by Sequoia Aircraft Corporation, 2000 Tomlynn Street, Richmond, Virginia 23230. Telephone: (804) 353-1713. Fax: (804) 359-2618. Publication dates are the 10th of March, June, September and December.

Subscriptions: \$12.00 a year, \$15.00 overseas.

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

Around the Falco Patch

Oshkosh

In 1888, a tiny Italian boy arrived at Ellis Island in New York. Eleven-year-old Amedeo Obici, who spoke no English, was traveling alone, and he wore a shipping ticket. His widowed mother, unable to bear the expense of raising three children, had sent Amedeo to live with his uncle in Scranton.

He went to school and began working at odd jobs immediately, and at the age of fifteen he left school and Scranton for nearby Wilkes-Barre where he first worked for another Italian immigrant selling fresh fruit at a street stand. Since he was very poor, he asked some of the other Italian boys what he could get to eat that was cheap.

People can sometimes be very cruel to each other, and the boys suggested he buy *arachide*—a kind of nut that they sold in large bags. True enough, they were very cheap, and he bought a bag of what was, in fact, hog food. No one ever ate the stuff, and the other boys must have gotten a big laugh out of it. The nuts were bitter-tasting and raw, so Amedeo tried boiling them. That made them mushy, and he added a little salt. Better. Then he tried roasting them and adding some salt. They were pretty good, and a few days later he ran into his 'friends' who asked him how he liked *arachide*. They're quite good, he said, and gave them some to try.

Soon this little boy was roasting them and selling them at his own fruit stand. This hog food nut is the peanut, and by eighteen he had made enough money to bring his family over from Italy. The peanuts sold so well that Obici started his own company, Planters Nut and Chocolate Company. That's how the famous Planters Peanut Company got started—with a cruel joke that backfired into a fortune.

I thought about Amedeo Obici at Oshkosh as I wandered through the ultralight displays and stared in disbelief at the 'suitcase ultralight' of Victor Dimitriev who only a few years ago was a bus driver in Russia. Like the Italian engineers at Piaggio who spent \$250,000,000 designing the Avanti around the personal desires of the fictitious J. R. Ewing, Dimitriev has designed the perfect commuter plane for that Master of the Universe, Sherman McCoy.

It's a tiny featureitis-infected mosquito of astonishing complexity. The wings have

double-slotted Fowler flaps and retracting leading edge slats—stuff you only see on Boeing jets. The seat bottom is a tiny stainless steel Atends, and there's a similar piece of aluminum pop-riveted to the welded-steel tubing frame that serves as the 'seat back'. A two-cylinder two-cycle engine sits directly behind the pilot driving a pusher propeller.

As you might have guessed from the name, the entire machine folds up into a little package so you can haul it home. How it all works—or even if it flies at all—is beyond me. Apparently, Dimitriev thinks that Wall Street stockbrokers, terminally pissed at the notion of waiting for a subway will pop this little baby out of their briefcase, fire up the engine and buzz off to Easthampton. Nevermind that the pilot's necktie would catch in the prop and strangle the unfortunate arbitrageur before he cleared the sidewalk.

As you stare at this zany device, you have to marvel at the ingenuity of the design. And you wonder if this is a form of insanity to be savored and appreciated like a fine wine, or whether this is the future—aviation hog food served up to us by a penniless immigrant who will build his fortune on such a device.

As I looked at the crazy little machine, at another part of the Oshkosh airport, Harvard-educated Steve Wilkinson was enduring the embarrassment of having a young Italian visitor explain that the *Aeronautica Militaire* legend that emblazoned the tail of his phony Italian warbird was not spelled correctly. There's no *i* in *militaire*. And this for a writer who has so often mocked foreigners for misspellings in their attempts to write in English.

Steve had a terrible time getting a place to park at Oshkosh. First, someone directed



Suitcase Ultralight of Victor Dimitriev & Steve Wilkinson's typo-tailed Falco.

him to warbird parking, then to classics, and finally Steve just shut off the engine and got out and hollered at the flagmen, "This is a Falco!" They finally parked him with the other homebuilts, in what had to be the single best parking spot in the custom-built area, right up by the announcer's stand next to the runway.

Steve was there to do an article for *Air & Space* on taking his Falco to Oshkosh (look for it in the December issue) and also another for *Pilot* in England where his report is the cover story of the October issue. Steve was an Oshkosh cynic, who had seen it only from the standpoint of an aviation writer before. On this occasion, he got to see it from the perspective of a participant, and it completely changed his view of Oshkosh. He even mumbles about possibly fixing the plane up and actually trying for an award. For a guy who once swore he'd never go to Oshkosh again, this is quite a conversion.

It didn't hurt that the whole style and flavor of the Oshkosh show is changing. Long before I stumbled across the bee's nest of stories that lead me into the audit thing, I had never cared for the over-personalization of things and the heavy EAA message that seemed to blare at you from every loudspeaker. It seems almost absurd to consider that just a few short years ago, we were routinely hearing 'President Paul' on the loudspeakers, abiding the fawning adulation of sycophant EAA employees who stood at attention in the presence of the man, and watched as the self-appointed, take-credit-for-everything Babar of the Homebuilders orchestrated it all.

This is all just a matter of style, but I think everybody except Paul hated it. I remember one night during the audit, one of the regular airshow announcers called me and rambled on interminably about how they all hated being made to sing that tune. *Flying's* writers used to sit on the steps of the magazine's trailer making up songs mocking it all. When we first brought the Falco to Oshkosh, Parke Smith and Neil Johnston were so turned off by all the President Paul stuff that they started calling me "President Al".

This year there was none of that, in fact, on the two days we were there, we never once heard Paul's name mentioned by anyone, on the loudspeaker or in normal conversation. And there was no message on the loudspeaker. I hate to use such a banal word, but it was all so nice. The whole flavor of the thing is now the way you always wished it would be.



The EAA has hired an outside firm to sell advertising to the five magazines they publish. It's a sensible decision, because the advertising revenue for their magazines has been lower per page than any aviation publication. As part of this change, they had an open-house tour for advertisers that included a tour of the editorial offices, film library, video production facilities, executive offices and the museum.

It was a very interesting tour, and we had lunch in one of the restoration areas. Tom's wife, Sharon, showed up to welcome everyone. We had a nice talk. Tom, Sharon and all the EAA employees go out of their way to be nice to me, and I do the same thing. It's exceptionally pleasant to see everyone getting along after the painful experience of a few years ago.

Before she gave the welcoming talk, there was a huddle of marketing types around Sharon, coaching her on what to say, and one of them actually put his finger in her face and said "Now, don't screw it up." Here's one of aviation's nicer ladies getting a lecture from someone who only a year before was selling advertising for the *Iowa Corn Farmer's News*, and he was telling her not to screw it up. What did he think she was going to do, take off her clothes and start throwing spaghetti at everyone?

But she bore it all with grace and gave a nice little greeting. Sharon calls herself the 'Stealth Poberezny' because she's the only Poberezny that's never worked at the EAA. Later during lunch, as she passed behind me, I asked her, "Sharon, did they really tell you not to screw it up?" "Yes!" she said, shaking her head and seething with astonishment and disbelief.

I went to Oshkosh with Jack Amos for two days of just wandering around and enjoying

ourselves. After years of working at the Falco booth, it was wonderful to do as we pleased and enjoy the show. After lunch at the EAA, we wandered back to the airshow by way of Pioneer Air Park, and by chance we crossed paths with Tom Poberezny, who stopped his car, and we had a short chat.

Jack asked if Paul was still having trouble letting go so Tom could run things. Tom said something very diplomatic about how it takes a type of entrepreneurial personality to start something and that Paul was now sitting back and letting him run things. He mentioned that he had talked to Tom Watson about his relationship with his father (the father-son Watsons of IBM fame used to fight like cats and dogs—there are many parallels). Tom still worries people think that he got the job only because of who he is and not because of his qualifications.

He said that he was having a problem with an EAA member who was putting up posters and sending faxes to EAA employees under the banner of "EAAer's for Accountability" who accused them of financial secrecy. Tom handles these sorts of things by simply pumping out the data to any question, and he rattled off his salary and all the numbers the guy wanted.

I had planned to skip the EAA annual meeting, but after hearing Tom talk, I decided to go to see if there would be any fireworks. It turned out to be anti-climactic. The guy did get up and ask some financial questions, and Tom handled it all by simply shoveling out the numbers. As all this went on, everyone was looking at their laps in embarrassment.

I hung around after the meeting and spoke to some of the directors. Those whom I

had met before were very friendly and the others lined up silently like schoolboys after a fight to shake hands. I saw Verne Jobst, shook his hand, and he said he had something he wanted to say to me, if I didn't mind. Of course, I said. He said that at the meeting last year, he had another meeting to get to and that was the reason for rushing off. He said he had read the things that I had written about him, he was sure my intentions were good, but in the future he would appreciate it if I would talk to him before printing anything.

It was all very friendly and a refreshing change in attitude from someone who in the past has personified imperial arrogance. Jobst has clearly seen that things are changing, and he now makes a point of very visibly buying his merchandise at EAA stores. He's one of those people who wants to be liked, be part of the mainstream and is weary of being the butt of jokes. He's learned his lesson, so I stuck out my hand with a big smile and said "Verne, it ain't never going to happen again"—indeed it won't because he's never going to pull any stunts again. We shook hands, and he left with a big smile on his face.

There was only one director who kept his arms crossed and ignored me—I give him one more year to soften up—but it's nice to see that most of them have the maturity to bury the hatchet and get on with life. And it's a credit to everyone that they get that bitter stuff out of their system and treat everyone warmly.

I've belonged to the EAA since the early seventies, partly out of interest and partly out of a sense of duty, but the cult of personality stuff and other quirks of the EAA have always turned me off. All of that is history now, and for the first time ever, I feel nothing but simple unashamed enthusiasm for the organization.

At the Falco builder dinner, I was distressed to hear from some of the SF.260 pilots that Homer Woodard had died in his SF.260 in July. Homer was one of the nicest men I've ever met, and he was a regular at our little dinner. The accident occurred when Homer was taking another pilot up for a ride in the SF.260. The engine threw a rod, and they were in the process of trying to land in a field when the airplane crashed into a culvert, killing both men instantly. There is some speculation about whether they shut the engine down, whether the windshield was covered with oil, and whether the airplane stalled.

On the chance that he hadn't heard about

the accident, I sent a note to writer Peter Lert, who replied:

"I had, indeed, heard about Homer's death. Somewhat eerie for me in that when I threw a rod and had to make an emergency landing in a Marchetti in Greenland in 1988, it was in an airplane I was ferrying in from New Zealand for Homer himself. I was pretty concerned at the time about whether the thing would light off on the ground (100 gal. ferry fuel in cockpit tanks) and was impressed at how well it stayed together. Ground run was paced off at 276 feet in a rocky field that trashed the wings and gear but left the fuselage virtually untouched (even the prop, which had stopped horizontal). The airplane was recovered and is, as far as I know, flying today. Threw the #4 rod right out the top of the case."

"Homer was, indeed, more than a gentleman. When informed that I'd pranged his \$100,000-plus-ferry-expenses airplane, his only concern was that I was OK personally. I can only share Frank Strickler's conjecture that they stalled in. I wonder if they were trying to make it to a road? I saw a picture of the wreckage, and it appeared to be at the edge of a field you could have landed a Phantom in."

It's a bit chilling to consider the number of people who die in airplanes. Our Falco builder dinner is a reasonably small affair, yet from this small group the following people have died in airplanes: Dave Aronson and John Holm in a Falco, SF.260-owner Erroll Johnstead in a formula one racer at Reno, SF.260-owner Frank Sanders in a T-33, and now Homer Woodard. It's a very sobering reminder that airplanes are cruelly intolerant of error.

3600 Nautical Miles on AA Batteries

Richmond, Virginia, to Coeur d'Alene, Idaho, is 1833 nautical miles at 311°—so says the Trimble Flightmate GPS. I flew out to the West Coast Falco Fly-In in September in the Corporate Disgrace, and I did the whole trip on a hand-held GPS receiver clamped to the right-hand stick of my Falco.

I knew companies like Trimble lend equipment to magazine writers, so I called them and popped the question if they would lend me one for the trip. One day before I left, a box arrived by Federal Express with this little jewel. At Oshkosh, prices of the Sony GPS were down to \$750 but that's strictly a lat-long machine, and by now even I know that the real utility in these

things is having an aviation database, which the Trimble has.

It's a simple device, looking like a slightly oversized calculator that someone bent in a fit of rage. The bent part contains the antenna, and it's supposed to be facing straight up in the ideal conditions. It runs for about 10 hours on four AA batteries. It has an aviation database that includes airports and VORs, nearest-airport features, and John Oliver just bought one mail order for \$1040.

Although I've been hearing people talk about lorans and GPSs for years, and have flown with people who used them, this was my first experience of actually navigating with one of these things. What a revelation it was.

I spent the night before, studying the manual and trying to make sense of it all in my living room. There are eight buttons: four cursor arrow keys, an on-off button, a 'menu' button in the middle of the arrow keys and two other buttons. In reading the manual, I came away with a rather strong sense that this thing isn't yet in the easy-to-use category that my Macintosh computer is. But I did get one thing stuck in my head, that you could mash the top-left button and then the top-right button and that meant 'Direct To'.

So the next day, I climbed in my Falco and headed west. With a big nasty front to the northwest, I had only a general plan to fly as far west as possible before sundown and skirt the front. Climbing out of Richmond, I tuned in the Lynchburg VOR and then

The Trimble Flightmate with the Grand Teton in the distance.



started fiddling with the GPS. To my surprise, I was able to get Lynchburg entered without any difficulty, and then I cross-checked the VOR and DME with the GPS. When I crossed Lynchburg, I dialed in Roanoke on VOR and GPS, and turned the DME off. When I crossed Roanoke, I turned the VOR off, and I flew the rest of the trip on GPS alone.

My trip took me to Bowling Green, Kentucky, then to Springfield, Missouri, for the night. The front was just moving into the north side of Springfield as I landed. The next day I flew to Hill City, Kansas, to Cheyenne, Wyoming, and then on to Jackson, Wyoming where I spent the night with Frank Christensen. By the way, Frank is every bit the compulsive neatnik that you've heard—I couldn't even find a trash can in their guest room! The next day, Jonas Dovydenas and I joined up at the Jackson airport and flew on to Coeur d'Alene, three hours away across the Montana and Idaho mountains.

It's on a leg like that the real value of GPS or loran really hits you. My Falco has only 34 gallons of fuel, and I normally want to land in three hours with a comfortable reserve. Sometimes I'll push it to 3:15 and maybe even 3:30, but never more. On a leg like this, I'll measure the distance on a wall chart with my fingers, compare it to other three-hour legs I've just flown and set off. Along the way, I'll monitor my progress and as the trip wears on, I'll break out my calculator, make an estimate of when I'll land and then the worries start.

Did I really figure that right? Out comes the calculator, and I do it all over again. There's always that nagging worry that the winds might have changed, or that I might have made a mistake. On the east coast, you can find an airport in 15 minutes of anywhere, but it isn't like that out west. The Montana mountains are rugged and beautiful, with a thousand bucolic valhallas, alpine meadows edged with groves of golden Aspen trees that look like a bed of goldenrod from the air. But if you had to put it down in many of those parts, you'd be in a world of hurt.

With a GPS, you can leave your calculator at home. This little battery-powered 32-bit computer is cranking out the calculations on a continuous basis. When you take off, you already know how far it is to your destination, and you fly a straight line course. With a VOR, the needle varies in sensitivity depending on how far you are from the VOR, but with a GPS the sensitivity never changes. Wander off the straight-line



*Top: Karl Hansen takes Dave Thurston for his first ride in a Falco.
Bottom: Al Aitken and Jim Baugh take off in the Sequoia 300.*

course and the CDI needle will register immediately, and it'll even tell you that you are 0.1 miles off course.

And you get a continuous readout of groundspeed and track angle, so you can always tell what direction you are flying. But the most comforting feature is the continuous calculation of time enroute and arrival time.

If you've been flying loran for a while, none of this is new to you, but for a novice like me a flight across the country with a GPS will forever change the way you think about navigation. Gone are the days of trying to figure if you can make it to Des Moines on the remaining fuel—man, you know. Gone are the days of trying to find an airport in the middle of nowhere.

After thirty hours of flying across the U.S. and back with the Trimble Flightmate, I come away with a sense of how antiquated the VOR system is, not to mention ADFs. I'm such a novice at these things, I can't weigh the merits of one design versus another, but the low cost and ability to work

on battery power when your aircraft's system fails is very desirable. By the end of the trip, I had become reasonably proficient at using the Flightmate to navigate to VORs and airports, but there are entire other functions such as nearest airport or setting a user waypoint that I never explored.

For the kind of trip I took, the Flightmate seems ideal. For heavy use in crowded areas, I'd want something that would mount in the panel and would be easier to flip back and forth between waypoints. Everyone raves about the NorthStar being the easier to use. Then I look at the King unit with a moving map display, and I want it all in one package.

Jonas and I sailed into Coeur d'Alene to find a hearty group of Falco pilots shivering in the cold wind. John Harns, Perry Burholm, Larry Black, Jim Slaton, Karl Hansen, Rex Hume and Ray Purkiser brought their Falcos. Jim Baugh had his Sequoia 300 there, and Al Aitken had just completed about eight hours of putting the airplane through a series of engineering test flights to explore the handling qualities.

Dave and Evelyn Thurston came out for the event, hoping to get a ride in the Sequoia, but the next day proved to be very windy, and for most of the day everyone sat around the airport drinking coffee, chatting and watching the sand storm that continued for the whole day.

We'll have a more complete report on the Sequoia 300 from Al Aitken later, but it appears that when the few bugs are worked out, it will be an excellent airplane to fly. Most disturbing was a very serious problem with ground-handling. The airplane has a tendency to get into pilot-induced-oscillations on the ground, to the point where Al Aitken was skidding the tires on landing roll. It was more difficult to steer, he said, than any taildragger he had flown. We've since fixed the problem with stronger springs in the steering system. Also, while the airplane is stable in pitch, the stick-force gradient is rather shallow.

The speeds that we are seeing on the various Falcos are all over the map. I own the slowest Falco in the world, and I was burning 7 gph at 12,000' over the Montana mountains while Jonas was burning 5.5 in his 180 hp Falco flying in formation with me. Jonas routinely indicates 155 knots at cruise with full gear doors. Rex Hume indicates 165 knots with the same engine.

Dave Thurston finally got his first ride in a Falco, with Karl Hansen, and he landed to report that they were indicating 182 knots at 25/2500 at 5000 feet. It all sounds like fiction, until you talked to someone who's flown formation with Karl and has tried to keep up. Dave was amazed.

At one point, back in the hotel, a Canadian EAAer wandered in and introduced himself. He was thinking about building an airplane and wanted to know about the Falco. He didn't know what the airplane looked like, so Karl Hansen whipped out his wallet and showed him a picture of his plane. Just so the guy wouldn't come to the wrong conclusion, as he was studying the photo, Karl chimed in with, "It flies better than it looks".

I got a short flight in Larry Black's Falco. It's a beautifully built Falco—but then so were all of the others there. We had a problem on takeoff, Larry has a couple of Porsche seat tracks and while they lock firmly in position in the forward-position Larry uses, they slipped back on me. We took the airplane north of the field for a little spin.

I've flown a lot of homebuilt Falcos, and I

think Steve Wilkinson has achieved the lowest control-system friction of any that I've flown. This is mainly a matter of keeping paint off the ends of bushings. Larry Black's Falco was nearly the same, and the rate of roll was higher than that of any homebuilt Falco, though not as fast around an aileron roll as mine.

Larry says, "I like to think I built the Falco to fly the way Frati intended" and it's hard to argue with that. He's proud as a peacock of the fact that his Falco is perfectly trimmed out without a single external tab, but I suspect he's got a rubber band in there somewhere.

We had about forty people at the dinner on Saturday night, and it was in many ways like a normal party, but then you would sidle up close to a couple of guys sitting around talking and realize they were deep into construction techniques. "They're talking about part numbers again!" said Barbara McMurray as she fled the scene as Dave McMurray, Cecil Rives, Dan Martinelli, Craig Bransfield and others a-building chatted away.

We took an informal poll of the personalities involved. Dave and Evelyn Thurston

Top: Jim Shaw holds forth.

got the award for coming the farthest. Craig Bransfield was the hands-down winner for the most compulsive—if he continues his present pace, by the time he finishes his airplane his photo album will weigh more than his Falco! We decided Jimmy Shaw won the piece-of-work category, and everyone agreed that Gene Glenn was the no-contest winner of his category—although no one could agree what that category was!

I headed out the next day due east and ran into all kinds of nasty clouds over the mountains, so I peeled off and flew down over McCall, Sun Valley and landed at Pocatello. Then it was on to Cheyenne, Des Moines for the night, and home the next day. Jonas went south to visit friends in Nevada and when he got home he called to say that he got a great tailwind that took him from Minneapolis to Lenox, Massachusetts in 5.5 hours.

Never mind that he had to sit on the ground in Minneapolis visiting relatives for three days waiting for the weather to clear. When you're figuring your groundspeed with a tailwind, you never should count such things.

—Alfred Scott



Construction Notes

With ribs now being shipped, we're getting questions about those things. Our wing ribs, like those made by Trimcraft, are assembled by stapling the gussets and plywood plates in place while the glue dries. So the inevitable question that is raised is whether to pull the staples out.

For years the conventional wisdom with wood aircraft has been that you do not pull the staples out. All of the production Pitts Specials are flying with staples still in the wood. The theory is that you may do more damage to the wood than you save in weight, plus the staples probably add some strength.

Falco builders, however, have always found a reason to rationalize taking the staples out. This starts with concerns about the reception of the internal antennas. The staples may have some effect, but we don't know for sure. Then there's the concern about weight. We've had a number of builders pull the staples out of the wing ribs, save them in a jar and then weigh them. They all report that you save nine ounces by pulling the staples.

Some builders worry that the metal staples could rust in time and cause rot. Nonsense. A staple buried in the wood and varnished over is as protected as the wood, and if the staple oxidizes in time, that means that you have some iron-oxide particles in there, but they don't attract water.

Finally, there's the subject of appearance. Even though it's inside the airplane, and most of the ribs can never be seen once the wing is finished, Falco builders tend to be compulsive about this sort of thing. (Remember the difference between addiction and compulsion: The addict can't help himself. The compulsive knows it's wrong and does it anyway!) My guess is that every single Falco builder has pulled the staples out, each rationalizing it in his own way.

With the wing ribs that we are making for the kits, we are using full plywood plates on both sides of the rib on any rib that had a full plywood plate on one side. As a matter of making the parts in production, this is the only way we could make sense of things. This creates a few more closed areas than before.

When I was drawing the wing ribs, I drew a lot of vent holes in the ribs so that the interior compartments of the ribs could 'breathe' to allow the pressure to equalize



when the plane flies at high altitude. As a practical matter, I doubt that it's necessary to do this everywhere, just on the larger compartments.

Where you have an unavoidable hole, such as for the control cables, I'd slosh the rib with some varnish and then drain it. When you have a small hole in a rib where a wire passes through it, I'd glop some epoxy around the wire on each side to seal it up and keep the wire from moving, and not attempt to seal up on the inside.

John Harns now has about 750 hours on his Falco, and recently noticed that the nose gear rocker arm (P/N 663) was moving slightly on top of the nose gear. After taking it off, he could see that the hole for the 3/16" bolt was slightly ovalized. He replaced it with a 1/4" bolt. Jim Slaton has the same number of hours on his plane, and after hearing this report, he pulled his off and found the same phenomenon—which is called brinnelling if you want to sound educated.

I suspect this is something we will see more of. While hardly serious, this sort of thing can be cured by using a larger bolt, welding a washer on the outside of P/N 663 to increase the bearing area of the bolt in P/N 663, or by using a taper pin. Larger bolts are certainly easier.

Pawel Kwiecinski recently had a problem with the nose gear. He now has about 250 hours on the plane and the other day, when he retracted the gear, it wouldn't come all the way up. The circuit breaker popped, and then he had to crank it about ten more turns to get it up.

Later when he put the gear down, he had additional problems, and had to crank it

again. On landing, he found the nose gear screwjack end and the nose gear adjustment screw were both bent—to one side as you looked at it from the front and with the gear down. After talking to Pawel, it was evident that the same thing happened to him that also happened to Jonas Dovydenas (see March 1992 FBL, page 14).

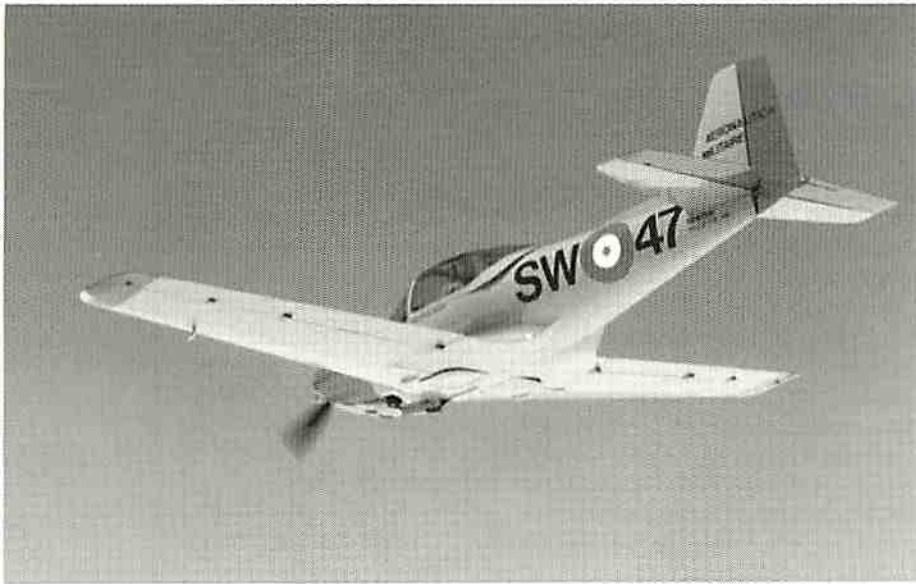
Pawel said that he had read about Jonas's problems, but hadn't checked his airplane. Other than a couple of bent parts which needed to be replaced, there was no damage to Pawel's airplane, but it's quite clear that this syndrome will repeat itself with regularity if you do not tighten the nut tightly and check it often.

The little dab of paint that you put on a nut like this comes in a tube and has the delightful name of Torque-Seal Inspector's Anti-Sabotage Lacquer. All of the mechanics at your local FBO will have a tube. They get it from Aviall. I've never noticed it on any of the homebuilder's supply catalogues.

Another place to put some Anti-Sabotage Lacquer is on the big nut on the nose gear. Jonas Dovydenas had this loosen on him with the result that the O-ring was ruined.

Ian Ferguson writes from Australia, "I had some trouble drilling the tail spars after clamping the hinges in position. My solution was to run a little cyano-acrylate under the hinges in a couple of spots after they were positioned. This held them while drilling. No doubt there are other and better ways of skinning that particular cat."

Another question from Australia came from Wayne Milburn, who is Tony



Chamberlin's coworker building Guido Zuccoli's Falco. The airplane is almost ready to fly and when they were balancing the ailerons, they found they needed to add weight to the leading edge. With the plywood covering of the ailerons, this has been a fairly common experience, but there are some builders who have not needed to add weight.

I don't really see any point in doing much ahead of time to anticipate this, because there's no knowing for sure how you'll end up. It makes more sense to just balance them when they're finished. The method that Wayne used was to drill some holes in the ends of the aileron leading edge strip—from each end and at each opening—and then fill the holes with lead shot and epoxy. Since you know the weight that's needed, it's quite easy to figure out in advance how much lead shot you need.

On the plans, each side of the rudder spar is shown with a bevel sanded on the forward edge of the spar as clearance for the elevator. Many builders have reported that this is not necessary, or at least to the extent shown on the drawings. I'm not sure what the history on this is, but it's certainly not necessary to cut any more than you need for clearance. So I'd suggest you just sand on it as necessary when you put the rudder in place.

Steve Wilkinson has been going through a debugging saga with his gyros. At first, he blamed it all on IFR, who graciously replaced his DG. The new one didn't seem to be any better, but then Steve began to think it might not be IFR's fault, because the artificial horizon was also sluggish.

Chuck Flickinger of IFR said that the problems Steve described could be in the instru-

ment, or could be caused by a restriction in the vacuum system lines. Hmm, Steve remembered that Jonas Dovydenas had given him a couple of plastic quick-disconnects for the vacuum system, and these had an inside diameter of 1/4".

Steve took these out and found that the artificial horizon was suddenly much better, but the precessing problems with the directional gyro continued. Then one day it began to dawn on him that the 'precessing problem' might really be a compass problem, so he checked the compass and found it was way off, and had a huge error.

After talking to some avionics people, Steve concluded that his compass problem was being caused by magnetism being generated by the CDIs of the VORs. Steve found there is something called mu metal, that you use to insulate compasses from the magnetism generated by the CDIs.

Steve writes, "I don't see how any Falco builder with an IFR kit has avoided this problem of the CDI magnets interfering with the mag compass, since Narco, at least, says you should by no means mount one of their CDIs within any less than 11 inches of the magnetic compass without insulating it with mu metal, and ours is certainly much closer than that. Can it be that nobody is bother to swing their compasses? Or that avionics shops are doing the installations and taking care to insulate the CDIs?"

"The mu metal was a bit more expensive than I'd been told: \$36 for a 4" x 15" sheet. It's almost weightless, very soft and malleable—sort of like thick tinfoil. It's sticky-backed on one side, when you peel the protective paper off it, and the way you're supposed to use it is wrap one or two thick-

nesses right around each CDI can (which is why it comes in those odd dimensions; one sheet apparently wraps exactly around a CDI can). I, however, simply cut the sheet in half, doubled the two thicknesses and stuck them on the underside of the glareshield, between compass and CDIs."

Steve briefly reported that "It seems to have totally cured all mag-compass error." But that was before he put the #1 CDI back in, however when all of the components were back in, he said, "It's a lot better than it was, but it's still off an unacceptable amount. (The error averages seven degrees, with some cardinal headings being spot-on and others off by as much as a dozen degrees, but that's a lot better than it used to be, and at least it's useable."

"I think what I'm going to have to do is not only insulate the mag compass with the double thickness of mu metal, but wrap another piece of mu metal around the #1 CDI, which is, of course, the one closest to the magnetic compass. I wonder if the problem I'm having is due to the fact that the more expensive King CDIs with rectangular needle movements (as opposed to the typical "windshield-wiper" needle movement), like mine, have bigger magnets. And that a CDI that includes a glideslope, like my #1, has a second set of magnets. I don't know why I should be having this problem and nobody else has noticed it."

Steve has a manifold pressure backup system for his vacuum system, and I noticed that the large plastic hose that goes to it was partly flattened where it took a slightly too-tight turn. He's since straightened that section out. Things are better now, but Steve's not yet through his little battle. The other day, on the way back from a trip, the DG suddenly switched about 45 degrees in level flight.

After writing all of the above, I finally took a look at the instruction sheet that came with the mu metal. It was pretty clear to me that Steve hadn't installed it according to their instructions. I don't know beans about magnetism, but their instructions say to wrap the 'can' of the CDI completely and that the mu metal foil must overlap. It appears to me that this is not a line-of-sight phenomenon. Steve concedes the point and will try it that way.

On that trip, Steve flew for about 45 minutes in heavy rain and his NorthStar loran worked beautifully through it all. Lorans are notoriously susceptible to precipitation static, but there seemed to be none. He

called NorthStar and asked them if possibly the fact that the Falco was wood, had an internal ground plane and other factors specific to the Falco might mean that his Falco was permanently immune from the normal P-static problems associated with lorans. NorthStar didn't know for sure, but they said it "could be."

I flew in formation with Steve back in August, and took a look at his gear doors. The main gear doors seem to be pulling open about an inch at the outboard trailing edge. The doors themselves are exceptionally stiff, and we think this is being caused by some movement in the linkage itself.

I was also surprised to see that the left nose gear bay door was fully open. Steve checked this out, and found it was a problem with the wooden block he had installed on the spring. Many builders have found that it's a good idea to clamp a wooden 'saddle' at the top of the spring in the middle. This takes care of all adjustments of the spring, because rather than trying to get things right by bending the spring, you can just make the spring tool long and use a wooden block clamped around the spring. The adjustment is accomplished by sanding the block to a shape to fit the nose gear cylinder.

I think Ray Purkiser was the first to use this device, and it's a good idea. Ray's is made of hardwood and works well. Steve's was made of spruce, and this turned out to be the source of the problem. The spruce is simply too soft for this application. The groove that the spring was trapped in became sloppy, and the block had shifted out of place. Steve replaced this with a phenolic block.

As some of you may remember, Jimmy Shaw was the third homebuilder to fly his Falco. He was stationed in Mesa, Arizona, at a training base in the USAF, and he *had* to get the airplane flying within a certain amount of time. He did it, but it was a bandaid-and-baling wire contraption. The nose gear bay was wide open, and he could throw his Twinkie wrappers out the hole.

Jimmy is now settled down north of Dallas, and he's finally getting his Falco fixed up. In attaching some accessories to the firewall, he drilled a hole and put some bolts through frame No. 1. On removing his fuel tank, he found that one of these bolts had been rubbing on the tank and had almost rubbed a hole in the tank. (We're careful to use washer-head screws in this location, but it never hurts to put a piece of rubber over the screw head, just in

case.) Also, Jimmy didn't have padding on the straps for the front fuel tank at the upper aft face, and the straps were rubbing and wearing the tanks.

Stuart Gane was alarmed to discover a warning that West System 410 Microlight filler is sensitive to elevated temperatures and that the material can swell when hot. Stuart writes, "I have been informed by Brian Knight of Gougeon Bros that the filler is probably going to be OK in the temperate climate of the UK, if I were to paint my Falco red. However, he did warn me that if I were to fly my aircraft to, say, the Mediterranean or wherever the air temperature exceeded the 70-80°F range, I could expect the sanding marks left by the rubbing-down process to show through the paint or, even worse—where there is a substantial thickness of Microlight filler—a swelling of the filler could occur, because the filler is a thermoplastic material. Only light colors would overcome this problem." Glass and phenolic microballoons are not affected in this way.

Cecil Rives has added some new wrinkles to the business of installing the canopy on the canopy frame. Steve Wilkinson had mentioned that he found it difficult to exactly locate the point where the canopy was touching the canopy frame, and as a result, some of the holes he drilled were a bit off. To find the tangent point, Cecil squirted water in between the tubing and the plexiglas. Capillary action draws the water to the narrowest point between the frame and the plexiglas, and it made it easy to drill the holes spot-on. If there was too much water, you could just use a paper towel to wick some out.

Cecil started at the top center and put the first four screws on each side before getting the foam P-strip into the act. You can't go much further than that, though, because the foam increases the 'circumference' that the canopy takes, and you will have major hole-alignment problems if you try to drill these holes without the foam strip in place.

After he had all the holes drilled, he took the canopy off and painted the frame. When he put the canopy back on, the danfernal thing didn't fit. Some of the holes were off by as much as 3/16". Cecil was pulling his hair (such as it is) out over this, until he finally retraced his steps. When he installed the canopy, the canopy frame was clamped to a wooden frame, and on this frame the weight of the plexiglas canopy was enough to distort the canopy frame. After he put it back on the same support, the pieces went back together perfectly.—Alfred Scott



Inspection Panels for Your Wheelwells

by Steve Wilkinson

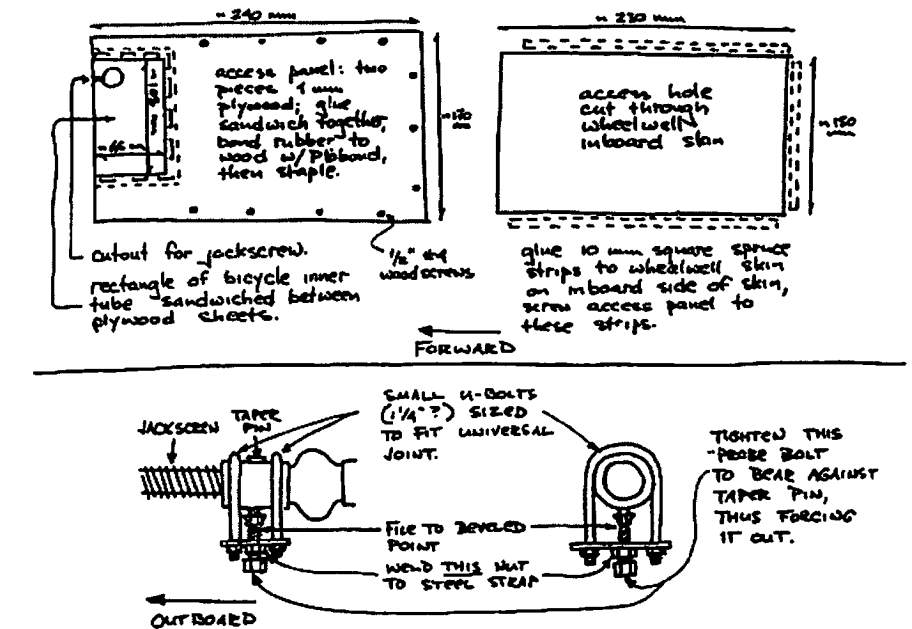
This modification is guaranteed to increase your airspeed by not one single knano-knot. But if, like me, you're only happy when you're working on your airplane, it'll give you something to do and postpone briefly that dreadful day when your Falco is utterly, completely, totally finished. And it's harmless enough that management doesn't mind if you perform this modification.

At least two builders—Jim DeAngelo and I—have, after our airplanes were “finished” and flying, been forced to gain access to a universal joint securing a main-gear jackscrew to the retraction-system gearbox. Each of us bent a jackscrew during a confrontation with a crosswind, and each of us had to remove that jackscrew for replacement (Jim) or repair (me). At least DeAngelo bent it on landing, which is the more demanding maneuver; I botched the takeoff.

It should be added that the cause of our bent jackscrews was not some fault in the gear-retraction system but the fact that apparently, neither Jim's nor my gear-extension downlocks were going fully over center; neither would pass the Scott “kick test.” (Look for the drawing of the small Army boot on your landing-gear system blueprint, and you'll see what I mean.)

In my case, and I assume Jim's as well, the malfunction meant cutting away enough of the inboard wheelwell skin to get at the universal joint with a device to drive out the taper pin. (See diagram.) Once I'd carved away with my utility knife—the skin is only 1mm plywood—I realized that it would be nice to not only have permanent access to the “utility tunnel” through which all the fore-and-aft wiring and hoses run, but to fabricate a device that would seal the holes through which the main-gear jackscrews pass. Those holes are sources of chilly air leakage in winter, and I've always thought it a bit inelegant that dreck from puddles and whatnot might get splashed up into the airframe—into the “utility tunnel”—through those open holes.

So I made a pair of inspection panels with rubber seals intended to accommodate the slight vertical motion of the jackscrew as the gear retracts yet seal the holes against the ingress of dirt and water during taxi, takeoff or landing. The panels can be re-



moved at any time you want to retrieve loose change, missing tools or fried wires from the utility tunnel.

Each inspection panel—one for each wheelwell—consists of two pieces of 1mm plywood sandwiching between them a rectangle of rubber through which the jackscrew passes. Bicycle inner-tube rubber seemed to me just the right thickness, but then I'm a bikie anyway. These panels are then secured with small roundhead wood screws to strips of 10mm spruce glued to the inside—i.e. inboard—of the remaining wheelwell skin, and because the rubber gasket is slit through on one side (see diagram), the panels can be removed and replaced without affecting the jackscrew. Admittedly, I only had to deal with the flat-walled wheelwells designed to accommodate wheelwell doors; for those of you who have open wheelwells with curved interior skin, it's be more of a challenge, but certainly not a terminal difficulty.

It's important to make the rubber gasket large enough to accommodate the linkage that actuates the wheelwell door, since in the fully retracted position, that linkage flattens into an extreme 'vee' and extends into a position slightly inboard of the wheelwell skin. So it needs to come up against bike-tube rubber rather than wood. (It's another reason why you should use relatively thin rubber for the gasket, so it doesn't resist the retraction of the door linkage.) Don't assume the measurements shown on the diagram will automatically be right for your airplane; there may be minor differences between our airplanes—I know, I know, there shouldn't be, but this is the Real World—so you should make a cardboard template before cutting wood.

If you ever do have to remove/repair/replace a landing-gear jackscrew, driving out the taper pin that secures the screw to the universal joint will be the biggest challenge. A simple device fabricated with the help of basic items that all Falco builders have in their kitchens, such as small U-bolts, steel plate and welding torches, will ease the pain, but you may still have to do a certain amount of rapping, banging, knuckle-skinning and Mouse Milk-applying.

The diagram below should tell you how to make and use the thing. Once you've got it made, to coin a phrase, mount it in place on the universal joint, after slacking off the jam-nut that secures the taper pin, and locate the “probe bolt” of the device in the center of the slacked-off nut. (Don't remove the nut completely, for it helps to retain the probe in place as you apply pressure to the taper pin.) Then slowly wrench away on the bolthead of the probe, and one of two things will happen: (1) The taper pin will pop loose, or (2) the cute little tool you've just made will terminally deform because the taper pin isn't going anywhere.

If you find yourself in situation #2, administer Mouse Milk, sharp raps to the probe bolt with a mallet and socket-wrench extension, or—in extremis—heat. Of course, you'll probably set your Falco on fire, but so what? Then you'd get the chance to build another one.

Confused overseas Falco builders should not attempt to massage the teats of pregnant mice—Mouse Milk is a trade name of a common penetrating oil. There are other brands as well; Nuts Off, Liquid Wrench are only two.—Alfred Scott

Right on Schedule

by Wayne Rampley

When someone asks me how the airplane is coming along, I tell them it is right on schedule. Of course, my schedule is to work on it whenever I feel like it and have the time. I understand the time will come when that feeling no longer applies and a builder just wants to get finished. Perhaps that foolish notion will one day claim me as a victim, but as yet I remain blissfully unaffected by such impatience. With no phone calls, customer demands or other distractions, I enjoy working on an assembly, and I am occasionally surprised at the amount of time that has passed when a stopping point is reached.

This is my first project and construction began in January so I am still very much a rookie. So far, I have completed the framework for the rudder and elevator. My intention is to bend and fit the skins, so that when dry they can be installed with a minimum of clamping. A builder mentioned this in one of the letters, and it seems to be the logical way of doing it.

I am impressed with the elaborate jigs that some of the builders have constructed, particularly Marcello Bellodi. What becomes of those things when a builder is finished with them? Are they cut up for scrap, kept as conversation pieces, or what? Perhaps

there is a sentimental attachment which makes it difficult to let go, but it seems that it would be nice if there were a way to pass them along to other builders. Any ideas?

Regular masking tape is almost the same color as bare wood, making it fairly easy to skip a rib when preparing for varnishing. Blue masking tape (I don't know if this is a new product or not, but I only recently discovered it at a hardware store) provides a nice color contrast which makes it much easier to see that all those rib edges are covered.

Pieces of plastic bags work very well to prevent clamping blocks from sticking to the work. Just lay a piece between the work and the blocks before clamping.

After trying the West epoxy for varnishing the tail section, I gave up in frustration. I would mix a batch and begin painting it on, only to find that it would become too thick to apply after only a few minutes, even using the slow hardener. I was left with several epoxy pucks which pop right out of the mixing bowls after curing and look kind of neat, but are absolutely useless.

Then I tried Stits epoxy spar varnish and found it to be much easier to apply as it gives about five hours of working time. Without benefit of an extended test period, I can't make predictions of durability, but my highly unscientific backyard tor-

ture-tests indicate that both products provide good protection against water, and the Stits epoxy is a bit more pliable.

Before ordering 1/4" tinned copper braid wire from one of the aircraft supply houses, try a local electrical supply instead. While no one had it in stock, one man was happy to order it for me at \$39.00 per 100' roll. Aircraft Spruce charges \$0.84 per foot or \$67.00 per 100' roll, and Wicks charges \$1.01 per foot.

Thanks are extended to Alfred and Brenda, who continue to provide a quick response to my cries for help. Also to Howard Benham, who has given me lots of ideas and encouragement. By being the builder nearest me, Howard has the dubious distinction of receiving numerous phone calls from me, and he is always eager to assist. After our last conversation though, I must question his mental faculty. It seems that building an airplane does not in itself provide enough challenge for him, so he is now building a new house as well.

Several questions remain unanswered. Should I choose the standard canopy or the Nustrini? The 180 hp or the 160 hp engine? The A or B model gear motor? Cleveland or Rosenhan landing gear? These are important considerations and final decisions must be made at some point, but not today. Today I will float sand this elevator.



Goings On at Sequoia Aircraft

Rib production finally got going this summer. For much of the summer, we had an assortment of high school and college students back in the warehouse spreading glue, whamming away with their staple guns, chewing tobacco, listening to rock music and making ribs.

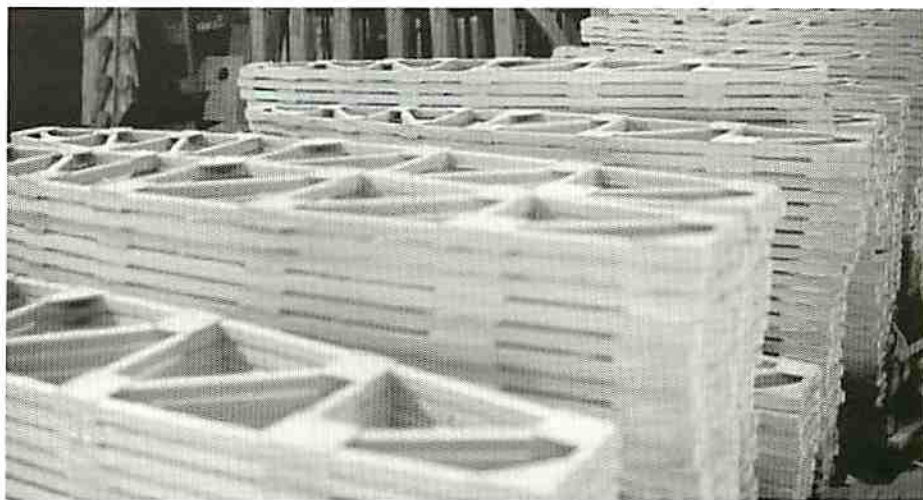
It had been my original intention to knock out about ten of each and then ship them to the builders who were waiting, but it didn't work out that way. Even though the jigs were 'finished' and all the parts were cut, there was still a fair amount of work that had to be done to each jig to mount the stop blocks for the gussets, installing clamps, etc.

While making ribs for fifty Falcos may not sound like much, the numbers are surprising. We cut up the plywood gussets and put them in bags. They weighed 120 pounds, just for the little squares of plywood. Fifty airplanes translates into 1,500 ribs. At an average of 180 staples per rib, that's a total of 300,000 staples. With four people making ribs, we were using about 2.5 lbs of Aerolite powder a day, and turning out about 75 ribs a day.

Generally speaking, the ribs went together well. The jigs and assembly process is efficient and accurate, and all follow-on production will be a piece of cake. All of the hundreds of cutting fixtures are done. Next fifty sets, we're going to put a college kid down in the shop for a month cutting up pieces, and then have four of them assembling ribs.

At this time we're finishing up a few tag-ends on the ribs, and then it's on to the fuselage frames. In the meantime, poor Brenda has had her hands full shipping kits. We've been very busy this year, and all signs are for this to continue. I'm looking forward to getting some real progress in updating and adding to our construction manual, and I've been working a lot lately on a number of ancillary things.

I must return, reluctantly, to the subject of modifications. From the beginning when we started selling the Falco plans and kits, we have had a strict policy regarding major changes to the Falco design. While I know lots of you like to kid me about this, it's really a necessary thing and all companies in our business are forced to impose some sort of discipline on builders. Without it, the well-understood result is a free-for-all with all sorts of crazy changes.



There's a guy in Canada who is building a Falco with a hydraulic retraction system, 6.00x6 tires, a Mazda rotary engine and Lord knows what else. We don't wish him any harm, but we've always refused to sell parts to anyone that we knew was making major changes to the airplane.

This subject came up recently. One of our kit builders approached me at Oshkosh and told me he had decided not to install our retraction system (even though he had purchased the kit). There was little I could say, because he had just finished buying the last kit from us that he intended to buy. I assumed that he knew the price of doing this.

Recently he called to buy our cowling (he had intended to make his own but didn't like the looks of the one he was making), and I had to explain that our policy was that we don't sell parts to go into modified Falcos. There is no joy in this for me, because I like the builder in question, but a policy is meaningless if you don't enforce it uniformly.

Our system and airplane isn't perfect and never will be, but it boggles my mind why anyone would reject a system designed by Stelio Frati, a designer who's recognized around the world as one of the best in the field, and instead turn the design over to someone who has never designed a landing gear system before. In short, a complete amateur.

The typical hydraulic retraction system designed by incompetents inevitably fails the simplest of tests: Do you have a downlock? Well, no. When you hear that and the argument that follows, you should just throw up your hands and walk away. Ask Dave Thurston what he thinks of someone who designs a hydraulic retraction system without a downlock, and he'll fall out of his chair laughing.

Whether you love or hate this policy, one of the things you should keep in mind is that one day you may want to sell your airplane. Whenever a Falco comes on the market, I always get calls from prospective purchasers who want to know if there's any 'bad news' about the airplane. If an airplane has been modified to the extent that it's on our 'no parts' list, then we would explain that we are not willing to supply replacement parts for that airplane.

In the immediate case, it appears that our builder has changed his mind and will be installing the Frati-designed system in his Falco and, if so, that's a happy ending for all. But in case there's any confusion on this, please contact me if you 'have a few ideas of your own' and want to know if they are something we object to. I'm tolerant of many small and harmless changes, but it's so easy to get into trouble.

This same builder once proposed chrome-plating his engine mount. Sounds harmless, but it's a dangerous thing to do. Plating of any kind traps acids on welded parts, and if you've got a drop of acid trapped in a weld under the plating, it will just eat away the steel. If you're chomping at the bit to change something, try working on a new paint scheme or upholstery.

As Brenda mentions, we now have the exhaust port horns available. The purpose of the part is to smooth out the flow of air as it exits the engine compartment. Their only purpose is to make the airplane faster. Theoretically, they should give you some additional speed. Karl Hansen has them installed in his Falco, and he thinks they did something, but he can't measure it.

I'd like to hear what they do for your airplanes. If the consensus is that they do nothing, we'll drop them in the future, but if they give you a knot or two, then they're well worth it.—Alfred Scott

Sawdust

• Not dead yet. Worried about where we'll all get our engines of tomorrow with aviation going all to hell? The answer is—*surprise!*—Lycoming. For a company that was all but declared dead by cynics, Lycoming is astonishingly healthy. All of their production lines are open and they are now producing 2000 engines a month. With 240,000 engines in the field, there's a steady flow of engines coming back in for overhaul or replacement. Plus, Lycoming now has a competitive new cylinder program that means that if you're overhauling your engine, for slightly more money you can just purchase new cylinders instead of overhauling the old ones. With Textron and Cessna now under the same ownership, Cessna president Russ Meyers is now talking in terms of when—not if—they will re-start their piston engine airplane production. The first, most likely, will be the big twins.

• Send more tail. Pity Australian builders of the Lancair 320 whose airplanes are permanently grounded pending a redesign of the airplane for greater longitudinal stability. Amateur-built aircraft in Australia must meet FAR Part 23 stability requirements, and the Australian test pilot (a graduate of the U.S. Navy Patuxent River Test Pilot's School) who flew the plane published this assessment in *Aircraft & Aerospace* magazine: "Lancair 320 VH-LPD displayed unacceptable handling characteristics in several areas. It displayed unacceptable longitudinal stability characteristics in all configurations, poor lateral static stability, unacceptable pitch trim changes with sideslip and unacceptable stall warning."

• You can never be too careful. One of the side effects of producing a highly detailed construction manual is that builders become totally dependent on them and end up like some musicians who can read music but can't hear the tune. When the Christen Eagle kits were first introduced with their encyclopedic 300-page-each, 30-volume set of assembly manuals, Christen issued *weekly* revisions. Every question from a builder, no matter how small, resulted in a change to the manual. This process went on for four years until all possible questions were exhausted. During this process, Frank Christensen received a call from a brain surgeon in Boston. He had a problem. He was installing the wooden stringers that are mounted on standoffs from the tubular steel structure. These stringers give the fuselage its shape, once the whole thing is covered with fabric.

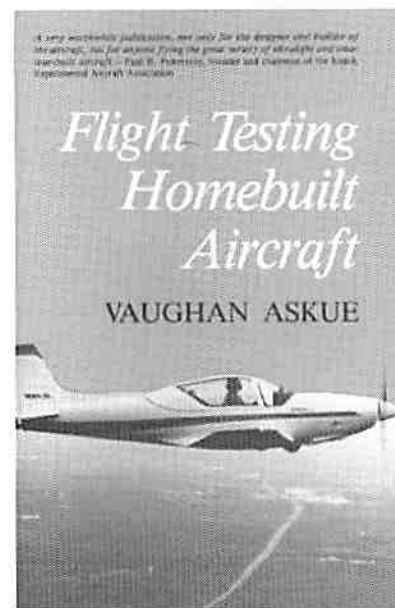
The doctor had installed the stringer on the left side without difficulty, but the stringer on the right was 1/32" too long and wouldn't fit in the standoffs. "Well," said Frank, "I'm marking up the page right now, and we'll get a revision right out on that, but in the meantime all you need to do is to sand a thirty-secondth of an inch off the end of the stringer. You can just go ahead and do that now." To which the doctor replied, "Nah, I'll just wait for the revision to come out."

• Mine's bigger than yours. *Flying* magazine calls itself "World's Most Widely Read Aviation Magazine" and for many years it's been true that their circulation has been larger than that of any of their competitors. No longer, the Smithsonian's *Air & Space* magazine has now overtaken *Flying*. The irony is that *Air & Space* is edited by an old *Flying* writer, George Larson, who Steve Wilkinson hired when he was at *Flying*. Now Steve writes for George, who has a collection of stringers that include many of the best writers in aviation. If you're a snob like me about writing and enjoy articles simply for their writing style, you'll continue to read Peter Garrison and Nigel Moll in *Flying*, but you'll find more arm-chair reading pleasure in *Air & Space* than any other magazine short of James Gilbert's *Pilot* magazine in England.

• Gone to England. Charles Gutzman's Falco is now in England, having been purchased by Matt Clark of East Herrington, Sunderland, England. Matt Clark had previously contracted to buy Mike Shield's Laverda Series IV Falco, G-AVUJ, but before the deal went through a member of Shield's flying club suffered a nervous breakdown and set a hangar-full of airplanes ablaze, including the Falco. Clark saw the article on Gutzman's Falco in *Sport Aviation* and agreed to buy it, sight unseen. The plane traded hands at \$89,000, plus ferry costs and England's 15% 'value-added-tax'. The flight across the Atlantic went well and took 25 hours and 10 minutes, but the ferry pilot was so cramped in the plane with the ferry tank that he said he didn't have room for a coffee cup.

• Oysters and airplanes *do* mix. Save yourself from drugs, street crime, religious conversions, football and raking leaves—there's only one like it: the Great Oyster Fly-In and Gathering of Stelio Frati Airplanes will take place on November 7. If you plan to spend the night, bring your sleeping bag and air mattress. True addicts arrive on Friday afternoon and hit the town of Urbanna for an evening of wandering about. The Urbanna Oyster Festi-

val is getting huge, with upwards to 80,000 people descending on this town of 500.



• Testy book. Three cheers for Vaughan Askue who has written one of the most valuable and long-needed books about homebuilts. His just-released "Flight Testing Homebuilt Aircraft" ought to be required reading for the builder of any homebuilt airplane. Askue brings his expertise and experience as an aeronautical engineer and former flight test engineer to bear on a subject that's been badly neglected, and the book lays out an organized approach to how take a new airplane through the flight testing process. The only 'bad advice' in his book is his advocacy of 'land-backs'—a brief liftoff in ground effect which all flight testing schools strongly argue against. The rest of the book is life-saving stuff—less important to Falco builders who have our flight test guide than to other homebuilders. The book, which features Jim DeAngelo's Falco on the cover, is published by Iowa State University Press, 2121 S. State Avenue, Ames, Iowa 50010-8300. Telephone: 515-292-0149. It's available for \$15.95 from the publisher, Zenith Aviation Books, or your local bookstore.

• Lower the landing gear, bozo. German researchers are developing an artificial intelligence system that would follow the actions of a pilot, compare them to the flight plan and give verbal advice to the pilot. The system, called CASSY, is a computerized back-seat driver that's being developed for the airlines, but such a system could also be developed for general aviation. BOSSY? I doubt we'll be doing much with it for lack of time—I've volunteered to be a beta test site for a Virtual Sex System.

Brenda's Corner

It's that time of year again. Remember Hartzell raises the price on the propeller and spinner every year on January 1. The price increase is effective on any propeller and spinner delivered after January 1, not the order date. Hopefully, this will reach you in time since your order should be placed by October 15. Even that is not a sure bet that it will be delivered before the end of the year.

Over the years, we have had numerous requests to order transfer punches and tapered reamers for builders. In our continuing effort to make your life easier, we have added a 3/16" and a 1/4" transfer punch to the tail group equipment kit and a Brown & Sharp No. 1 tapered reamer to the landing gear retraction equipment.

At long last, we have the exhaust port horns in stock (part of the cowling kit). The exhaust port horn seemed to be an impossible part to make in aluminum, and we now have them made in fiberglass. We had two made by hand several years ago and gave them to Karl Hansen to install. Our plan was to eliminate them from the kit and refund the cost if they did not give his Falco additional speed.

Karl and Alfred decided they did have some benefit so we left them in the kit. If you purchased the cowling kit and would like these, please let us know, and we will send them on. We discovered some time ago that we had never factored a price into the kit for this part; so if you are not going to install them on your plane, please don't ask that we send them to you. Remember it's not like you paid for something and are not getting it.—Brenda Avery



September 1992

Mailbox

I've been working sporadically on a Falco for a few years now. Both the cost of building and the time involved have caused the work to go slow, as with so many others. I currently have on hand about half of the airframe and systems components. I've read plenty about the Falco, but until a few weeks ago, I'd never seen one.

Two years ago, I visited Larry Black to take a close look at his nearly completed Falco. It was encouraging to see one so far along, and Larry had done a beautiful job of construction. After reading in the newsletter of Larry's first flight, I was anxious to see the completed airplane. I contacted him again, and he was as eager to show it off as I was to see it. One Saturday morning I drove to Frasier Lake Airpark, which is a small grass strip about half an hour south of San Jose. As I turned down the row of hangars to meet Larry, I saw the Falco parked outside. It was an awesome sight—the kind of image that makes you realize you made the right decision when you decided to build a Falco. I walked around it several times taking a close look at every detail. I took a lot of pictures and asked a lot of questions.

After the sun had burned off the thin cloud cover, Larry said "Let's go flying." We got in and closed the canopy (the head room was a little tight for my 6'3" size, but Larry's seats are installed a little higher than standard) and taxied out to the grass strip. After the takeoff, Larry gave me the controls, and for the first time I got to sample the wonderful flying qualities of the Falco that I'd read so much about.

The handling is truly smooth and crisp. I had pretty high expectations, and I wasn't disappointed. We did some rolls and some lazy eights. I remember something I read a long time ago about the comparison of the Falco with other light, single-engine planes in the Falco brochure: "a stallion among plowhorses". That's an accurate description.

We landed at a local airport for fuel, and while we were on the ground, several people walked over to the fuel pumps to get a look at the Falco. It's amazing the way people are drawn to it. We took off and headed back to Frasier Lake, where Larry greased it onto the grass strip. I hung around for a few hours and talked Falcos with Larry, and then I drove home with a big smile on my face all the way.

Dan Dorr
Sunnyvale, California

When he is not building his Falco, aeronautical engineer Dan Dorr is a pilot with NASA.—Alfred Scott

I have made all the components, but the biggest bit is still the main spar! Moving house has slowed us down and child number 2 (due 1st December 1992) will probably bring the project to a near standstill for the next year. We are still determined to finish it and still have enthusiasm!

James Dowe
Ipswich, Suffolk
England

Receipt of the latest *Falco Builders Letter* reminded me that I have intended to write a fan letter for two or three years. Literate, stylish, pungent and informative. Even gracious when it applies. And fun, too. That is a great deal more than many magazines accomplish. Good work (and please keep me on the list as one of your charities).

Back in the March issue, you wrote an article on proficiency and knowledge ("How to Kill Yourself..."). I hope you will proceed with the familiarization guide and training curriculum. The Falco may be a pussycat to you, but to a 172 driver, it is a P-51.

Same with almost any other breed, factory built or not. (Although, from my experience, weight and balance is a bigger concern with homebuilts.) Arrow pilots shouldn't climb into a Mooney without skilled transition training, or Seneca or Baron pilots into a 310 (and look what NTSB just announced about the Malibu).

Edward G. Tripp
Cedar Rapids, Iowa

Wing and tail group are assembled in the jig. I hope to start skinning soon. I'm currently working on the landing gear legs with a machinist friend. This mill and lathe stuff is quite an education for a person only familiar with woodworking tools. What have I learned? Buy it (parts) if you can afford it!

Stay tuned for details on a proposed overwater, range extending modification (don't you love that word, Alfred?) for the Falco. Details to follow soon!

Rick Fitzwater
Van Nuys, California

I smell a P-tube in the works.—Scott

Things are still progressing on my Falco. It's in the painting process at this time. If

everything goes well, it should fly this fall or winter. The Falco is hangared at the Chino Airport now—hangar #61. I moved it from our two-car garage about two months ago. Lucea is really excited about being able to use the washer and dryer without getting on her hands and knees.

*John Shipler
Huntington Beach, California*

On the transponder reception, I have noticed a blank area when I am reasonably low, toward the fringe in range and have the receiver on the port side. I assume that the signal is being deflected some by the retracted gear being in the way. I have mainly noticed this with the Sacramento station when letting down into Ranch Murietta. Normally, it is okay. Com is good in all directions.

*Karl Hansen
Roseville, California*

I'm facing lots of problems with the Falco when it's finished, since the German authorities lowered the maximum permitted noise level to 68 dBA for smaller size aircraft. Actually, the noise limits are weight dependent. I will have to find some way to get my Falco registered. I'm in the process of skinning the fuselage. The wing and tail section is completely finished.

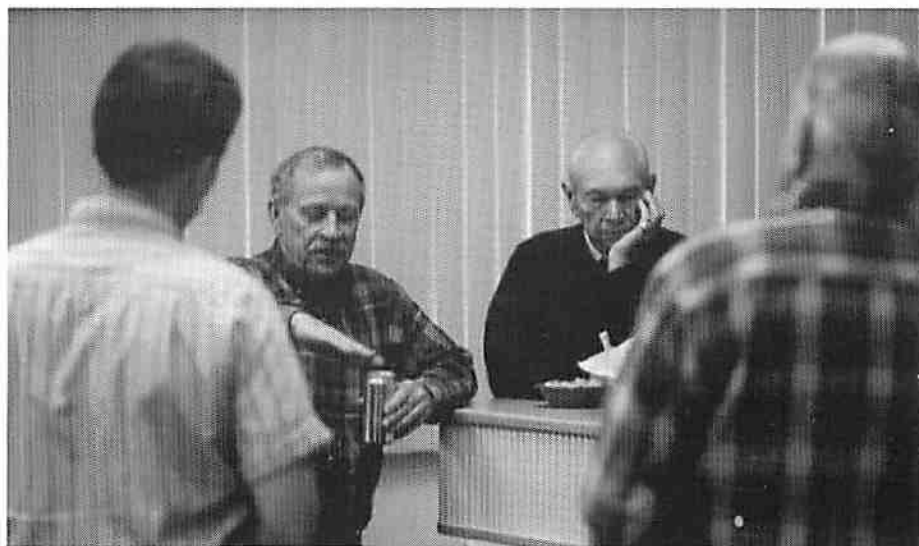
*Cipriano Kritzinger
Wegberg, Germany*

I'm getting re-started on the Falco now after a break of a couple of years working on my other airplanes. The biplane is an Isaacs Fury, a 70% scale replica of the 1930's Hawker Fury fighter. My Falco project status: All wood parts complete. Rudder skinned. Elevator, tailplane (stabilisers are things wee kiddies have on their bikes!), ailerons and flaps complete less skin. Next: skin the above, clear out the workshop to begin wing assembly.

*Chris Barnes
Basingstoke, Hampshire
England*

My project is about ready to fly or flop, with a few minor things like fairings and landing gear doors (also the prop leaks and the right-hand cowling door will not close after installing the blister for the #1 cylinder). Of course, it's about time after about eight years of agony.

I don't feel too bad, though, when I consider Alfred's photographs of the wing fillets in the September 1988 Builders Letter. I made my fillets (rough as they are), and four years later, Alfred says, "At long last, we have shipped the wing fillet molds to



At the West Coast Falco Fly-In. Top: Ray Purkiser, Jimmy Shaw, Cecil Rives, and Larry Black. Bottom: Jimmy Shaw, Larry Black, Jim Slaton and Rex Hume.

our supplier". All I have to say is, "Thirty Years Ain't Enough!"

*Allan Hall
Vista, California*

I flew back from Oshkosh at 17.5, finally getting to use the oxygen. Superb flight: I did the 670 nm in 3+55 and landed with just over an hour's fuel remaining. The lineman said, "Funny, I just refueled a Bonanza that also came back from Oshkosh nonstop, and he took exactly twice as much fuel as you did—62.4 gallons to your 31.2."

There wasn't all that much tailwind up there—maybe a 15 knot component—but the engine was really loafing. It took me 27 minutes to make a leisurely cruise-climb to altitude, and I was still getting a solid 300 fpm at an indicated 95 knots when I leveled off. Performance up there, at 15.5 inches/2400 rpm, was just a hair under 162 knots true, and I burned exactly eight gph including the climb. The only thing that suffered was my toes, in my stylish Teva

sandals. I ended up lounging quite comfortably across the cockpit, my feet on the floor just ahead of the copilot's seat, flying sideways with a marvelous view out the bubble to the side and back. Great fun.

The rear tank took forever to run dry—I thought the engine was somehow sucking from the front tank, too—but there was no problem when it did; took about 15 seconds for the engine to stop stumbling and recover fully, but there was never any danger of it stopping.

What I'm going to do is fill the heater muff with stainless-steel mesh and see how it does in absorbing and dissipating heat. Fuller Brush sells marvelous stainless-steel pot scrubbers that last forever, and I'm going to order a dozen of those and pack as many as it takes in there loosely. That's going to be a lot easier than brazing fins on the exhaust pipe.

*Steve Wilkinson
Cornwall-on-Hudson
New York*