

# Falco Builders Letter



Charles Wagner's Falco is now flying in Scotland.

## The Falco Story, G-CWAG

by Charles Wagner

During moments of escapism I dreamed of bringing a radio controlled model Vickers Viscount in to land in a really very small garden.

Years later, when we were going through a very touchy time in the business I had started, we had made a loss of £18,000 in 1975, in those days, big money. I needed something to take my mind off the pressures building up on us. I came across some people flying radio-controlled models. At first I was prepared to build these and let my new acquaintances fly them but inevitably I was drawn into flying them myself.

I would work till 3 and 4 in the mornings in the kitchen building these models. My wife became very upset as her kitchen progressively showed more and more traces of paint and the surface of the lid of the big box freezer we had in those days became scored and eventually destroyed when I attempted to clean a spillage of epoxy paint with some particularly virulent thinners. My wife has suffered many of my "magnificent obsessions" during the years she has endured with me.

I was not content with the usual models available and gradually began designing twin engine jobs culminating in a 10' 6" BAC 111 powered by two Webra Speed 60's. Previous versions had flown particularly well but this one was really something, 30 lbs. weight, and requiring CAA permission to fly. I remember one occasion where a previous brute I had built had got out of control and like an Exocet missile, speared a Mk 10 Jaguar belonging to an enthusiastic radio control spectator, who would turn up wearing WWI leather flying helmet and gear. As I ran over to the scene of the accident, very apprehensive,

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expecting all hell to break loose, I asked the owner how the car was. "Never mind the car," he said, "how's the model?"

Anyway, I took my Flymo up to the strip and mowed out an extended runway. The aircraft was tied to the roof of my TR7 sports car, the wings in the air, almost lifting the car at any speed. I balanced the pumped fuel system to each aircraft engine and tuned these until they were running flat out with that incredible harmonized beat which makes shivers run up your spine. I let it go. It accelerated down the strip and slowly lifted its long nose off, its wheels brushing the long grass at the end.

It was magnificent. She banked right and slowly dropped a starboard wing. I pulled full left rudder and ailerons, but I couldn't pick up that wing. She went into the ground. Those 15 seconds of flight were perhaps the most intense moments of my life. I remember looking at the broken plane in the double garage of the house I had built and thinking, shit, I could be sitting in the next one. That was fourteen or fifteen years ago. I never looked at models again until a few weeks ago when I thought that the big one could be redesigned and repaired for my 5-year old grandson. What else will I have to do when I finish working on the Falco? I was talking to another builder, Long-eze, Colibri and now a Bede. It's such an immense waste of knowledge and experience, never mind the bits and pieces and the tools, not to keep going and build another.

How it was that I got to know of the Falco I can't remember, maybe it was "Jane's All the World's Aircraft". I remember liking the looks of the Hovey Wing Ding and an appealing pusher, but of all the serious homebuilts I saw, the Sequoia which I mistook for the Falco, was the most interesting. The KR2 looked good, too. By this time, 1984 or 85, business had prospered again, and I could afford it. I bought the plans and got to know Brian Fox of Doncaster Sailplanes from whom I bought wood for the tailplane. The tail ribs were a massive bore and during the time I was making these I got to hear of the Glasair. A six-month flirtation followed

during which no work was done but in the end I decided to stick with the Falco.

Luckily I bought Trimcraft wing ribs from a builder who'd given up. Progress was made in fits and starts, whenever the mood struck me. An injury to my back, I had tried to lift my 6' daughter up to a hatch in the ceiling, immobilized me for six months. I started a new business making plastic milk bottles and that set me back a long time. My son and I used to work 18 and 20 hours a day, day in and day out until we gradually learned what we were doing. Then three disks removed in my back put me out of action for a while and, to end the tale of woe, a hernia operation... I was not as young as I thought.

When I started the Falco I met the usual bunch of homebuilders. "You'll never finish it. It's the most complicated, difficult aeroplane to build." It has taken a long time, but I have finished, while only one of those tire kickers has completed an aeroplane, the rest are still talking. It has not been difficult, in fact, in retrospect, it has been incredibly easy, and it's been fun and therapy and absorbing and kept me away from pubs and loose women. I don't drink much, but I remember that women were fun. I remember my friends suggested that we should go out with the boys. Why? I'd much rather go out with the girls. I am a loner, I must admit.

I finished building our house before I'd thought of the Falco. Consequently and unfortunately, the house was not designed about the Falco, otherwise the garage would have been those two or three feet wider. The problem was that the wings fitted diagonally across the garage, just and no more, the other wing tip finishing in the boiler recess. I did not see one wing tip for years. I had to make up wing supports on swivel wheels so that I could maneuver the whole thing out on very odd occasions.

At nights I'd come home from the office, have a meal and a glass of beer and fall asleep at the TV. Even a small beer would put me to sleep. As often as not, another night wasted. I remember talking to a friend about how dedicated Stuart Gane was. He pointed out that Stuart never drank and the bugger would work his nuts off. His workmanship is superb. I'll never park close to him. His wife was extremely understanding. I got hell for neglecting my wife.

Stuart and I agree that much more time is spent pondering how we should do things than doing them. Stuart proved the point when he built a second Falco within two



years, his first taking seven. Okay, he used all the kits, but it took him, alone, less than two years.

Last November I realized that the aircraft was only weeks from being finished. I shipped the two halves to Prestwick Airport, and it has taken fully seven months of hard constant work—well, nearly constant work—to finish. I retired in April. It is now June, and it is ready to fly, but not finished.

Looking back on it now, I feel that I wasted an awful lot of time making the metal parts. I'm a chemist, chemical engineer by profession and have had to spend time learning mechanical engineering operations like turning. I made all the components for the main gears and gave them to a foreman welder at British Aerospace at Prestwick who was going to jig and weld them. The welding was beautiful, but the jiggling was pathetic. The main gear had to be thrown out, as were the rudder and control stick

torque tube assemblies. The tanks were also beautifully welded, usable, but badly distorted. The welder was a welder, but he had only slept with a jigger.

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During the protracted construction period, I have made good friends with similar interests, met interesting people, had a few arguments with Alfred, and I was seldom bored. I am very grateful to Stuart Gane, Gary Montgomery, Neville Langrick, my PFA inspector Tim and many others for their help and advice. Here I must also mention Basil. Basil was one of my old model flying pals with whom I had lost touch. A couple of months ago I met him at the shopping arcade and mentioned that I had to go down to Prestwick to work on the Falco.

He was thunderstruck. He'd thought that the project had been a pipe dream and now found that he'd missed the boat. He has worked with me ever since, day in and day out, and has been an enormous help. "Basil, get this. Basil, get that." We can take the panel out and put it back within two hours (Alfred, why do you put the bolts securing the centre console to the panel

behind the centre console? These are a pig to get in. It would be much easier if the centre console had small lugs on either side which could be bolted to the panel outside the console.) He has a much better understanding of electrics and electronics than I and cleared up a few mistakes I had made. I have learned from him. I have realized only now how helpful it is having a building partner. My wife says that Basil and I are joined at the hip.

I'm trying to persuade him to get a pilot's license and build a Falco or even build a 33-foot sailing yacht to replace the one that the tax man took from him. We could do it in jig time.

My advice to new builders who do not come from an aviation engineering background, do exactly as the package advises, get the recommended engine, don't deviate or try anything smart, you'll land in very difficult territory. It took me months

designing control cable supports and heat exchangers to fit my O-320 E2A. I would not make any metal components myself again, I'd buy all of those kits.

Well, it is some weeks since I started this boring epistle at Alfred's insistence and the Falco has now flown. I told my wife, and she brought my two daughters down to the airport. Bob, the test pilot, ex-BA Captain, looked the airplane over. "It says in the book, no wheel doors for the first flight."

"But Bob, these aren't doors, they're half doors".

"Get them off," and he walked away. Basil and I looked at each other... typical BA Captain.

"Bob, are you scared?"

"Yes".

We heard him over the radio going up the coast north of Prestwick. He stalled it, played around and then switched to 123.450. "It's a nice airplane, Charles."

When he landed, someone said "Get the Changers out". My wife immediately opened her car boot (trunk), and there it was, a bottle plus glasses.

Since that day you can't keep Bob away from the aircraft. His only complaint is that it is noisy. It needed only a little trim tab on the aileron and a little one on the rudder. Until the flight checks are completed, the test pilot is not allowed a passenger. He did take me up however, as crew, to take notes. It flies like it is on rails. I could not believe that I had built something as good as this.

Basil, who has worked so hard on it, had a flight, also to take notes. We had to take a lot of notes. He got pretty excited. Can't stop the bugger talking about it.

We borrowed a parachute, and Bob did his Vne check and limited aerobatics. No bother at all.

"Bob, you saw the placard, 'Instrument Correction, Vne 200 kts.'"

"Oops," well, Vne 220 kts.

The aircraft is in primer, there are a few dings in the wing that need filling out, but I'll gradually work on that while I learn to fly it and have fun with it and leave the finishing touches till the winter.

## Stan Harper's Italian Spitfire

by Stan Harper

As a 16-year-old, I couldn't wait to reach the age when I could go and learn to fly a Spitfire. I remember clearly wandering round the ancient city walls of York with my mates looking for excitement and willing away the time when the three of us could join the RAF. Quite suddenly, a Spitfire shot by at what seemed like ground level and at an enormous speed. Of course, it was gone in a few seconds, but that impression was to stay in my mind forever.

Eventually, I did reach the age when all my dreams of Spitfires and the like would be realised—or would they? The RAF alas had proved to be too efficient and the war was virtually at an end and so too was aircrew training. It was therefore somewhat surprising to find myself a few years later piloting a Horsa glider, having had in the meantime enjoyed a full six weeks EFTS course with the RAF on Tiger Moths. However, the Spitfire still remains and always will be a dream.

Back in Civvy Street and after a brief flirtation with Austers at the local club, I swapped it all for a wife, a mortgage and a pram—you know, the whole calamity! With a growing family and following my work with the electricity supply industry, my flying interest had to take a back seat. Nevertheless, however, inevitably my wings began to itch until finally I gravitated back to the flying scene and renewed my PPL. The Spitfire was further away than ever by now, and I had to accept that the dream would never be reached. Then, out of the blue, or rather out of the pages of the aviation magazine came the prospect of at least owning a very attractive aeroplane. The Falco had now arrived on the homebuilt circuit.

Here was a VP.1 with curves, performance and, of course, a price tag to match! Could I afford it? Could I build it? Could I fly it? One requisite for anything like this project was to have married the right wife in the first place! This I had done, although she



was not and is not even now interested in flying, I received her blessing. So off I went on the enterprise, and I have to confess I regret it not one iota!

The shed was built, and I could now get down to the serious business of building my own flying machine. Although signals came from work of possible redundancies they didn't actually materialise so I had to plod along in the evenings. The whole exercise took a mumble of years, and I was well past retiring age by the time it was finished. However, it has been most enjoyable. I learned a lot along the way, including expletives in both English and Italian, but I also learned that I should have started the whole project years ago. Prospective builders—please note!

A couple of years back my language got stronger, the light at the end of the tunnel

was getting slowly brighter but my arteries were getting harder and eventually they won. I was knocked out of the race until the medics could sort me out, but unfortunately not good enough for flying. However, I was determined to finish the Falco and succeeded early this year and saw it fly for the first time. Success indeed!

Obviously, there were the inevitable hiccups along the way in spite of Mr. Frati's excellent design and Scoti's skillful interpretations. I have many people to thank for their assistance and help. To them I am eternally grateful. My message to those of you now involved is—keep at it! The final result is well worthwhile the effort, and the feeling of success is quite indescribable.

Having built and flown a Falco, who wants to fly a Spitfire anyway?



Center: Stan and son Chris. Bottom: First flight celebrations! Austin (pilot), Stan, Kathryn (daughter) and John (son-in-law).

## It All Started in Our Bedroom!

by Margaret Harper

At last the decision was made—Operation Falco was to begin straight away. To my complete surprise, it was bricks, blocks, girders, concrete and roofing materials that were being delivered, when I expected—rather naively, I now realise—propellers, instruments, wheels and logos, etc. The latter was obviously the real necessities to get the job off the ground—I was wrong! The purpose-built shed was duly completed and winter followed.

The actual plane-building was now due to start, the ribs in fact. Fiddly, tedious and most time-consuming, I was given to understand—particularly in a bitterly cold shed. Hence, the title “It all started in our bedroom!” Yes, it did! Only a man’s mind would turn to the bedroom! The reasons were as practical and logical as ever. It was used only at nighttime—there was a large window giving good light—a large radiator to provide warmth and a convenient rest for a temporary bench—but joy of joy, a relatively new slumberland divan with a sprung edging to sit on! It was just right!

Like any other wife, I flipped. This was going too far, much too far—I was not having it. (The Italian expletives recently learnt from Stan, came in handy!) Then, little by little, and after the initial shock my attitude melted. Anyhow, I reasoned, if I relented, who would know—nobody. So the Falco really was started in our bedroom, and now everybody knows.

This incident, with so many more confirmed my belief that wives of Falco builder must have more than their fair share of forbearance, and a hefty sense of humour!



Margaret Harper

## Versace Falco, Part 1

by Andrea Tremolada

I started my Falco more than 10 years ago when I was just a 22-year-old guy straight out of college. I have to admit that I have always been a dreamer and that many of my dreams have come true with luck and perseverance.

I first saw the Falco at home since my father was already a “Falcoholic”, and I had grown up with an RC Falco model plane. Plus there were two Falcos at my airport so when the time came to choose which model to build it was a very simple decision.

As soon as Sequoia made the plans available I became aware of it by reading an aviation magazine that my father brought with him to the mountains one Christmas. The next year, my father bought it for me, and I proudly received plans No. 503. Although he bought the plans, I had to buy all the necessary kits. Just imagine this 22-year-old guy with this huge project going on.

I began the necessary paperwork with the R.A.I. (Registro Aeronautico Italiano) and initially they were not pleased to have such a young builder. Just after a long meeting, many calls and letters (even by Mr. Frati), I finally got my permission to build my very own Falco. Before this I had only built an RC model being taught by my father, who was skilled in building large scale models.

During those years in Italy, there was also Giovanni Fulchieri who was more advanced than I, since he had already completed the tail and was working on the fuselage and wing when I visited him in the winter of 1987.

I remember that day very clearly: I got very depressed coming back from his home since I understood for the first time that I would not be able to afford the project in my then financial situation. I realized that I would have to build my career first and then start building the Falco when I had more financial security and resources. I also decided to sell my Jaguar “E” type, that I had restored, in order to generate the funds to buy the tail section and to complete my commercial license.

I spent the summer working with my father on the tail section, and I was doing a pretty good job. Meanwhile, I got my commercial and multi-engine IFR licences, started my career in advertising and worked part-time as a corporate pilot. At this time, the Falco’s tail remained untouched in my garage for years. Every time I was getting in and

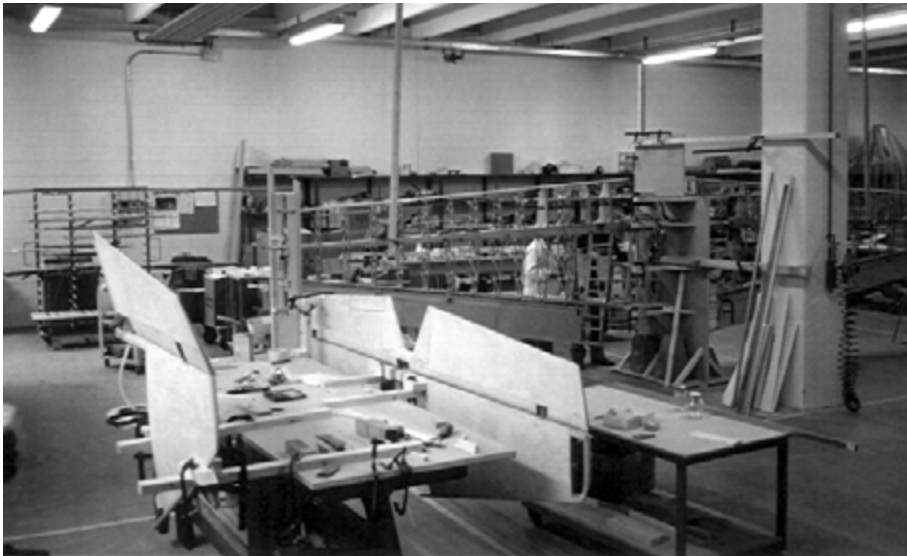


*Above: Giulio Meroni, Andrea Tremolada and Mr. Frati.*

out of my car, I would ask myself—when would I realize my dream?

But life went on, and I changed jobs many times (by character, it is difficult for me to stay at the same job or same place for too long), and in the autumn of 1994 I went to the U.S. for a vacation after having sold a small advertising agency that I had founded

with two partners. That moment changed my life. Traveling here and there, I decided to go to South Beach in Miami, and I saw Gianni Versace’s house. I thought to myself then—“I’ve never worked in fashion, and why shouldn’t I?” When I returned to Italy, I sent Versace my résumé and within a few days they called me for an initial interview. Six more interviews followed and within



**Above: Ing. Valtorta, Mr. Frati, Andrea Tremolada and Giulio Meroni.**

2 month I was hired by Versace. That was 4 years ago, and now I am their worldwide advertising director.

Gianni and I became really close friends, and he gave me many opportunities to express myself. He even accepted the fact that sometimes on particularly clear days (cavok is not very common in Milan), I

would be out of the office playing holes in the air with my production Falco.

This job fortunately did allow me to buy all the kits that I was able to procure. Every-time I went to New York, I would return with suitcases full of kits so as to avoid incredibly high import taxes that the Italian government imposes on these parts. And

Susan Stinnett has been very cooperative in this, following to the letter the incredible instructions I gave her each time.

By this time, I shared a Picchio and a Falco. Last June I bought a Stampe that I zero-timed, and in which I'll fly to Australia next December.

In Italy everything that is aeronautical has to pay incredible taxes, for example gasoline is \$5.70 a gallon. Then we have different possession taxes starting the day you buy the airplane until you sell, and this every year.

This is why our general aviation is simply dead. Nobody buys airplanes anymore. It's just too expensive. Instead we have a huge quantity of ultralights, and some are also nice to fly and this demonstrates that even here people love to fly, but it has become too expensive.

The only way to get by these new laws is simply just say yes, and then do nothing, or at least this is the way I do it. This past December, I decided finally to take action, and I spoke with a man who I had met three years ago while on a flight returning from a weekend trip. This is a story in itself.

The fact that I would meet this man was written even before I had even started to build my Falco. I had gone to Sardinia (a resort Italian island) and had missed my flight since I lingered on the beach to stay with friends. I arrived at the airport just in time to watch it take off. I luckily got on the next flight and took the last seat that was available. I took my seat which happened to be next to Giulio Meroni who owns one of the largest Italian furniture companies—called "Meritalia".

We started a conversation, talked about my job, his job and also corporate aviation since he wanted to buy a Citation. The time flew as we were getting to know one another, and we parted as old friends promising to call each other in two weeks so that I could visit his factories. As usual, these promises evaporated into thin air, and we just exchanged a few calls and Christmas cards from time to time. Then last summer, we finally decided it was time to meet again, and I went to visit his factories.

The factories were clean and orderly, and I was very impressed with the technologies they used to treat wood and metal. I went often to visit him, and we also spent a few weekends together in Sardinia.

Then right before last Christmas we met for lunch, and I asked him if he could give

me some space in his factories to allow me to build my "Little Wild Beauty". But he did much more than that. He gave me space in his factory and two wood experts to work with, so that I could finish my plane by July. Unfortunately, I will not be able to meet this deadline but I am very close. I took all the pieces I had to Cantu—where my beauty will be born—and in January I began to build.

The truth is that I was tired of flying old Falcos and Picchios, that although nice flying machines, they were all aged and not comparable to the ones I saw many times at Oshkosh.

I organized a group which included Ernesto Valtorta, an engineer that Mr Frati kindly recommended to me to use as a consultant.

Having worked previously at Air Macchi in the quality control department, Mr. Valtorta carefully studied my plans and was as precise as only an engineer can be. For the past five years he has been the head technical director of Sivel, a company that has certified the first JAR V1a airplane here in Europe called Sivel SV 27 (a sort of Katana).

He's also the owner of a Rondone and is actually restoring a Nibbio, so he knows very well all of Frati's designs.

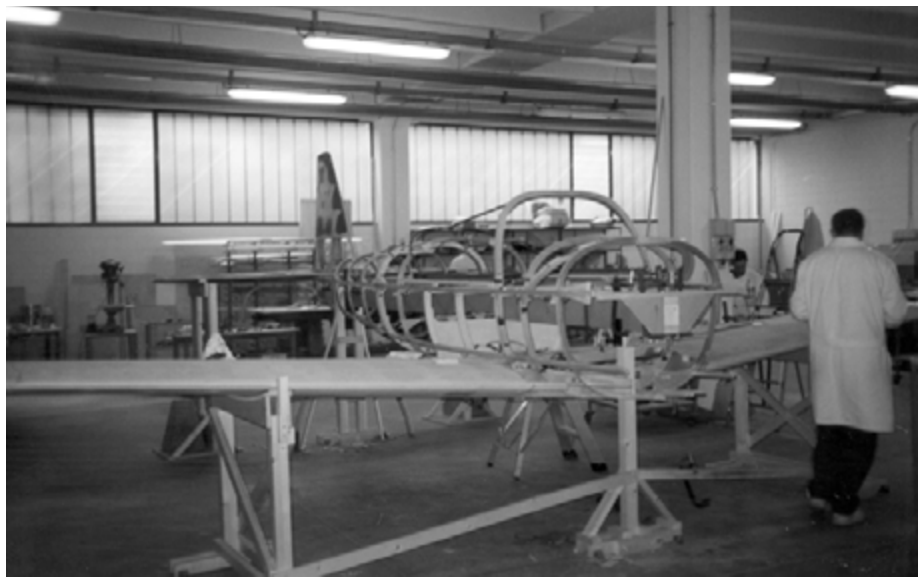
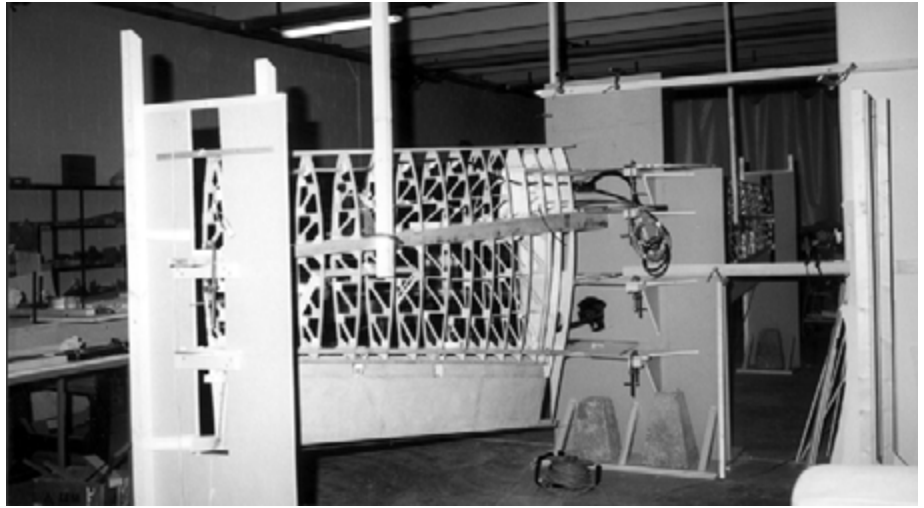
My distinct instructions were that no modifications had to be made and that the aircraft had to be built exactly according to the plans. But, we raised the canopy by two centimeters and added a bit more wood to the first frame to make it stronger.

Mr. Frati came to visit two months ago, and he was impressed by the quality of the construction. He checked many of the kits and seemed to be quite satisfied. He still remembers all the solutions he studied more than 40 years ago, and said that today it would be impossible to build Falcos in series because of the high price of labor—the only solution to own one is really to build it.

The craftsmanship—remembering, of course, that this is my plane—is the best ever. During its construction we did not even come across any particular difficulties. It just took a long time although we had bought all the necessary kits.

I go to work on my Falco every minute that I can even though it is 30 miles away, and I need to wake up very early in the morning to get back to the office on time.

My next dream is to fly the Falco around the world and for this we are installing fuel



*Mr. Frati and Andrea inspect the control sticks, while Mr. Giulio Meroni looks on.*

lines also in the wings so that when the wing tanks will be available, I'll mount them without too much trouble.

Looking back I find an enormous task to organize everything, and I really have a lot of respect for the builders who have done

everything by themselves although if I'd have had the time, I'm not sure I would have stayed on the project 12 years working just the week-ends.

In this group I have to thank also my president Santo Versace and his sister





**Ing. Valtorta, Epifanio, Mr. Frati, Giovanni, Andrea, Attilio, and Stefano Meroni.**

Donatella who has accepted me as I am, with my passion for flight, and also my assistant Margherita who has been very patient in working alone and keeping up my office (we plan more than 3500 advertising pages a year worldwide, plus television and outdoor advertising) while

I was away working on the Falco or the Stampe, staying in touch with phones and a portable lap-top.

Sometimes in fact, I would arrive at my office late at night, check everything and return to the Falco the next morning.

Anyway my job has not been affected, and I've followed the media planning probably better and with more attention than in a normal situation.

Now that I'm arriving at the end of this wonderful adventure I look back, and I'd start the whole story again, just to live the usual problems that all of us have encountered while building: nights wondering in the bed if that solution was right or not... Saturday afternoon studying the plans... hours spent searching for pieces left who knows where... the pleasure to touch and smell wood... small and great pleasures that fast plastic builders will never have the joy to know... so even if in the Falco you'll never be in the air after 1000 hours, who cares?

Yes, I would start again living my life as I did in the past eleven years, I was really a kid growing, no job, not a stable sentimental relation, not a good financial situation that after my father's death become even worse, but big dreams ahead of me.

The Falco I'm sure, has given me the power to fulfill all of my dreams, has given me the chance to meet the best and the most genuine people I've ever met, probably by sharing the same passion for flight, but also for the pleasure of learning again the old way of working, staying hours to admire what hands can make with a piece of wood. A sort of old craftsmanship that has been lost by modern technologies, and I've had the pleasure to learn again.

I guess it could have been the same as in restoring anything from the past, when the man was building any kind of stuff regardless the hours spent to build it, the convenience of the market, or the final price.

The Falco to me is as Bugatti and Ferrari has been for the cars, Chris Craft and Riva has been for wood boats, Lloyd Wright has been for architecture: a classic that even though it is no longer the fastest machine around, it still retains the best compromise between design and performance and will stay forever.

When I land in Italy with the Falco, there can be more expensive airplanes on the ramp, even the SF.260, but people appreciate more the sleekness and the pure design of this old little wild beauty.

All in all I would really thank Alfred for having made all this available and to have been able to convince Mr. Frati to give him the plans and the rights for keeping back in the air more and more Falcos.

## My Dual-GPS Falco

by Stephan Wilkinson

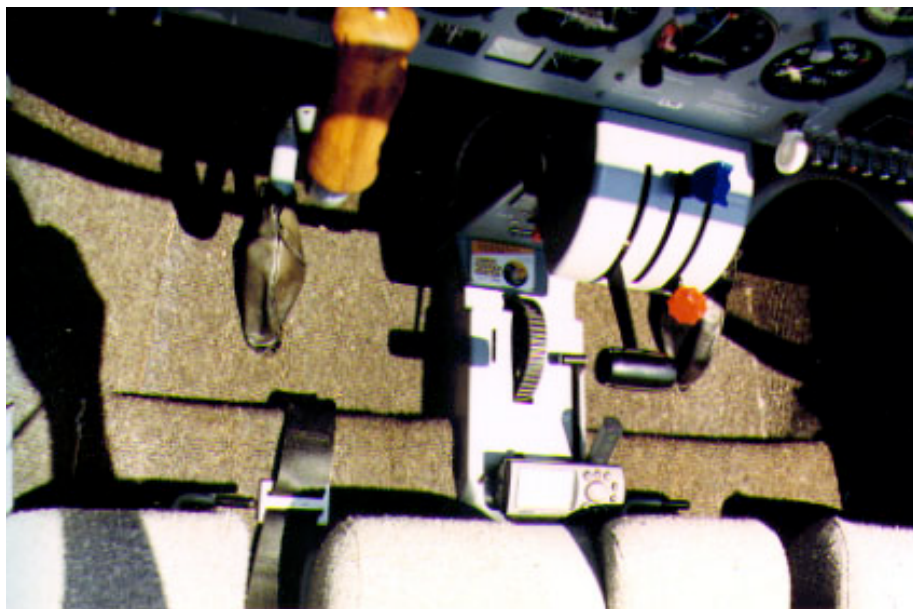
We've all seen those *Sport Aviation* articles about how yet another Lancair/Glasair/Tupperair owner has equipped his rocket with a \$60,000 glass-cockpit avionics panel with a direct downlink to Bill Gates's office, a moving-map display with a database that includes everything from all the IFR approaches in Ulan Bator to a complete Lycoming parts list, and a cellphone/fax/modem center that automatically dials up their rental-car reservation 10 minutes before touchdown. Well, this is my Falco-size equivalent: I am now equipped not only with dual navcoms, dual vacuum systems and dual attitude-indicator power sources but dual GPSes.

Where did I find the room? For a stand-alone box about the size and volume of two packs of cigarettes, on the center console, just ahead of the landing-gear crank cover. How much did it cost? Well, actually it was free (more about that later), but you can do the same thing for about \$675 through the Sporty's catalogue. What does it do for me? Provides me with alternative moving-map and HSI displays that my panel-mounted Northstar unit doesn't have, plus the all-important capability of navigating on the power of four AA batteries if I should have a total electrical failure.

The GPS that I installed is one of the new Garmin GPS III Pilot models, a splendidly compact, simple-to-operate unit that has a full Jeppesen database of airports, VORs, NDBs, intersections, special-use and controlled airspace, runway data and comm frequencies, plus a nice little moving-map display that shows lakes, rivers, coastlines, railroads, state boundaries and U.S. and state highways (plus all the aforementioned aeronautical points of interest). All Garmin units, from the inexpensive handhelds to the most expensive IFR panel-mount units, use the exact same 12-channel parallel receiver, so the heart of the Pilot III is really quite a bargain. (Ultimately, Garmin tells me, it's cheaper for them to do this than it would be for them to make a variety of different receivers.)

The Pilot III normally runs on four AA alkaline batteries, and though I have yet to use up even one set, I'm sure they'll power the unit for longer than a load of gas will power a Falco. In any case, I've hard-wired the Pilot III to the avionics bus, so unless I someday do have a power failure, battery life is irrelevant.

The Pilot III comes with an optional cigarette-lighter adapter cable, which plugs into



**Top:** Steve at the Ypsilanti, Michigan, airport. In the background, ex-president of Chrysler Bob Lutz's L.39 Albatros.

the Garmin unit at a small, unique, four-pin socket on the back of the GPS. I clipped the cigarette-lighter plug end off the cable and found that the cable contains simply 22-gauge red power and black ground wires. (The two extra pins on the GPS are used when feeding its data to a laptop through an optional "PC software kit" cable, if you want to get truly crazy.)

Hard-wiring the Pilot III to the airplane requires first deciding where you want to mount it. I'd originally thought Velcroing it to the glareshield directly in front of the left seat would be ideal, but it doesn't work: sunshine and unfortunate reflections make the display invisible in many lighting conditions. I tried a number of other locations, both vertical and horizontal (since the Pilot III's display can be set to either "land-

scape" or "portrait" modes—computerese for "lengthwise" and "up-and-down") and finally settled on Velcroing it to the center console, snuggled into the upward curve of the console just in front of the landing-gear crank door. The Pilot III has a triangular cross section, which makes it ideal for such a location.

I drilled a small hole in the console and fed the GPS power cable through it, then attached an appropriate Radio Shack mating connector to the cable at approximately the point where the console cover meets the vertical power-pedestal support. (You need a connector here in order to remove the console cover while leaving the GPS power cable in place.)

From that connector, the cable snakes up behind the power-pedestal support to a



second connector, near the bottom of the instrument panel (necessary for removal of the panel, of course), and from that connector to an avionics bus circuit breaker (red wire) and a suitable instrument-panel ground (black wire).

I could also have used two of the spare wires that we all—assumedly—installed in our Falcos when we originally built up our electrical systems, thus running the Pilot III's power and ground through the existing Cannon plugs in the back of the panel. But frankly, installing a couple of new 22-gauge wires seemed easier to me at the time than unwrapping all my spare wires, decoding the colors and making sure I had dead-ended wires available at both the panel and "aircraft" ends of the Cannon plugs. Admittedly, using spare

wires would have been neater and more professional, but two things I've never been called are neat or professional.

The GPS III's location down on the center console is well-shaded and convenient; it's an easy glance down to check the moving-map display or any of the half-dozen other highly informative "pages" that can be called up—providing a wide variety of time, groundspeed, distance, compass, route-planning and other functions. Surprisingly, the GPS seems to have no trouble maintaining its contact with satellites through the Falco's canopy, even though it's down in a position that you'd think might block reception. At initial power-up, however, the GPS III does need to be set on the glareshield, running briefly on its own internal battery power, until it acquires the

satellites necessary for navigation. After that, I plug it back into ship's power, and it takes care of itself.

This situation might vary according to aircraft location, however, so you should confirm your unit's ability to operate from that semi-observed location. Another option would be to remotely mount the unit's antenna in a clear-sky-view location, and Garmin provides the equipment with which to do this as part of its "yoke-mount kit." (Remember yokes? I guess some pilots still use them....)

How did I get the Garmin for nothing, you're wondering? Well, it's a long story, but the short answer is "pure, unalloyed aviation-writer graft." Garmin originally lent me the GPS III to use in another project that I was planning to write about for *Aviation Consumer*. I liked The GPS III so much that I asked their PR person if I could buy it after the project was finished. I could see using it in a car, or while hiking, boating, bicycling or traveling in any of a variety of ways. "We can't sell it to you," Garmin said, "because it's actually a prototype pre-production unit, and it has no pedigree. But we can give it to you. Enjoy." Cool!

The *Aviation Consumer* project, by the way, was to be an assessment of the efficacy of several aviation software packages available to turn ordinary laptop computers into big, sophisticated, 767-size moving-map cockpit displays when powered by any GPS receiver. Fuhgeddaboutit. The software looks fantastic when you're sitting at a desk viewing your new, expensive, electronic version of a sectional chart, but there are two things that make even the best laptop a dreadful cockpit tool. One is that the screen immediately becomes invisible in typical cockpit lighting conditions. The other is that a laptop is hard enough to operate when sitting comfortably in a motel room. Try mini-mousing in the necessary Windows 95 commands to shoot an approach in turbulence, say, and you're just as likely to find yourself staring at a spreadsheet or a Solitaire hand as you are to calling up or orchestrating the necessary chartage.

Since some pilots apparently do buy such software and use it with their ThinkPads, it's to me a fascinating display of the over-complication of the simplest act: in place of a \$7.95 sheet of paper that weighs a couple of ounces and has no moving parts, some people choose to substitute eight or twelve pounds and \$3,000 worth of delicate electronics, batteries and messy cabling so they can *read a sectional!* Is that stupid or what?

## Goings On at Sequoia Aircraft

For those of you who frequent our web page, we've now added a section for construction articles. The first ones to go up are John Devoe's "A Canopy Caper" and the article I did on Aerolite some years ago. Now that we have the articles about all of the finished-and-flying Falcos up there, we will be adding more technical articles like this. Let us know what old articles you found helpful, and we'd be happy to get them posted on the net.

We recently got a call out of the blue from a local television station who wanted to come over and do a piece on us. I never found out how they heard about us, but suddenly there was a flurry of telephone calls, then they were over here, then madly dashing off to Culpeper to see Joel Shankle, and by the end of the day there was a short segment on Sequoia Aircraft and the Falco on the local news.

As it happens, we now have the capability to transfer a video to our Macintoshes. There wasn't really anything to it, and it was a simple matter to get the news segment into a 'QuickTime' movie format. The principal problem is that these movies become enormous files, and we haven't yet looked into getting the software to reduce the number of frames per second so that they are a reasonable thing to put up on the website for you to see. But in any event, we've posted the movie on our website, and as you can see, it's a very nice segment as well as being a large file.

Because these files are so enormous for the information that's contained, I'm not sure what role they should play in all of this, but we do now have the ability to turn your videos into movies that can run on the web.

I'm sorry to report that John Shipler died in late June, of a heart attack at his home.



John Shipler



*The Corporate Disgrace in Irish garb and smoke system.*

John was one of our early Falco builders, and he was well known to all of the California Falco builders. John was a very quiet man and someone for whom I always had a great fondness. If you would like to write a note to Lucea Shipler, her address is 8861 Bellshire Drive, Huntington Beach, CA 92646.

For quite a while, I've devoted a lot of time to programming my WildTools CAD software on the Macintosh. It has been an act of interest and passion, and it has turned into an astonishing thing. The increase in productivity has blown everyone away, and if you're interested in seeing what this is all about, go to [www.engsw.com](http://www.engsw.com), click on The Drawing Room, PowerCADD and WildTools.

I got started on this programming because I didn't have the capabilities I wanted to use on the Falco drawings and manuals, and I've become aware that my programming has become compulsive behavior—which of us has *not* engaged in compulsive behavior at some point? I've made the decision to shut down my programming for now, focus my efforts on the Falco drawings and manuals again, and rejoin the human race. I'm particularly interested in hearing from Falco builders at various stages in the construction sequence who can suggest improvements to the drawings or manuals.

I've let my flying lapse for a couple of years now, and the Corporate Disgrace hasn't seen any action out of me in quite a while, so I've decided to sell it. As we all know, if you only fly a little each year, you enter a very dangerous risk category. I had begun to notice that I found myself in 'iffy' situations far too often. I enjoy flying,

but when you add up the positives and the negatives, the negatives are too great to ignore. And for the pleasure involved, the potential price of a 'bad day' in an airplane just doesn't make sense—to my family and to all of the people who depend on me to continue being around.

The Corporate Disgrace is also badly in need of tender loving care and a complete going-over. I once planned to do this myself, but I don't have the time or energy for that right now. At this point, I'd rather build a Falco from a kit or buy one already built. I'm not interested in chasing the top dollar on the plane, so I'm offering it as-is, where-is, you-annual-it for \$48,000. If you're interested, please give me a call.

For what it's worth, Cecil Rives passes along an account of a little problem he had in his Falco the other day. He took off and flew for a couple of minutes when there was a sudden strong vibration in his plane that lasted for 6-7 seconds, and then stopped. Cecil landed quickly and found that the battery box door was hanging by one hinge. He thought it was closed and shut before takeoff, but he's not really sure. In any event, he'll have to make a new door, but there was no other damage to the plane.

Susan Stinnett and I will be at Oshkosh, and we'll have a few Falco get-togethers there. Jonas Dovydenas and I are talking about going to the West Coast Falco Fly-In in his Falco, so I'll probably see many of you there. And right after that, Meredith and I are going to Paris for a week, and it looks like we're going to pop over to Milan for a few days to check up on Stelio Frati and Andrea Tremolada.—*Alfred Scott*

# The Glider

## Part 18 of a Series

by Dr. Ing. Stelio Frati  
translated by Maurizio Branzanti

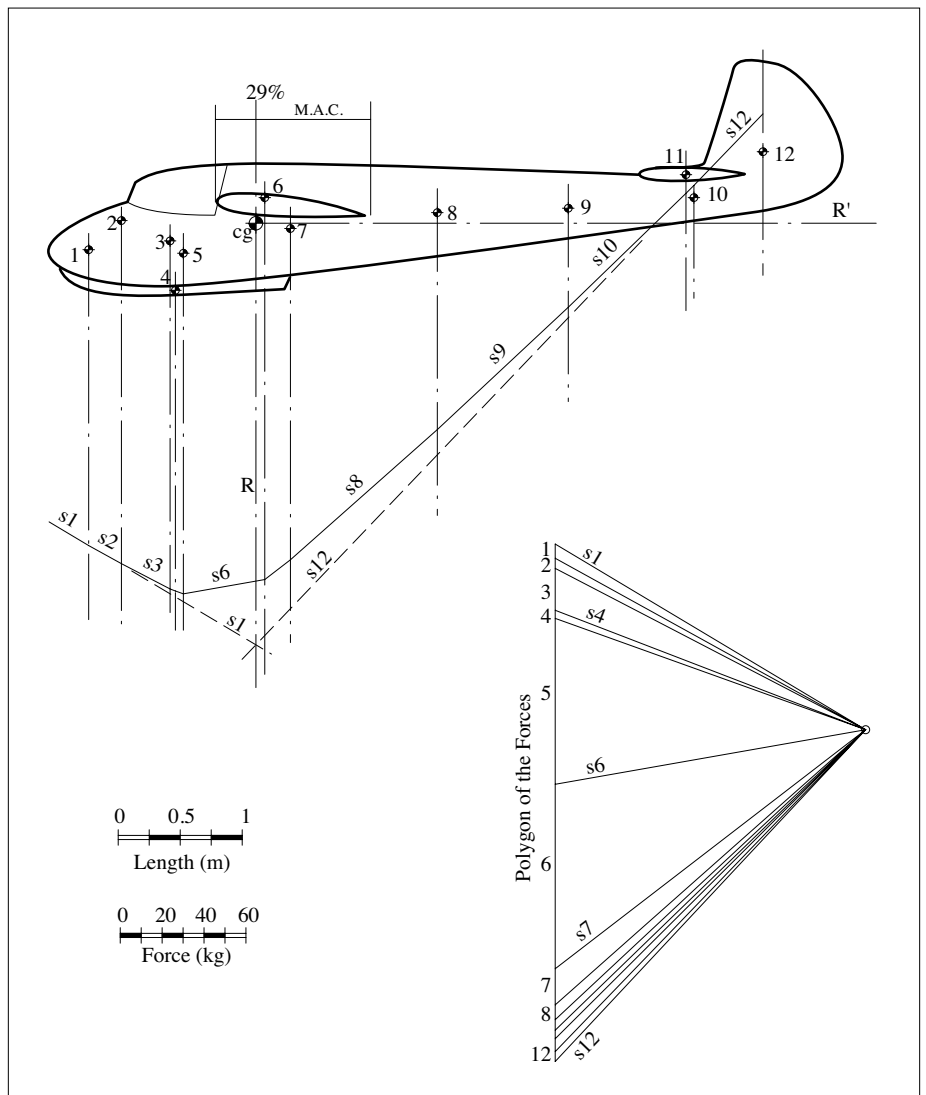
**Center of Gravity Determined by Graphical Means.** In order to determine the location of the center of gravity graphically, the polygon method is used. Using the side view of the aircraft, we draw vertical lines through the already pre-established partial center of gravities. These lines represent the direction of the weight-forces applied to them.

On one side, the *polygon of the forces* is constructed. All the individual weights are reported according to a selected scale and drawn one after the other in a continuous line. The ends of each segment are then connected to a randomly chosen point. These connecting lines are indicated as  $s_1, s_2$ , etc. The parallels of these lines,  $s_1, s_2$ , etc. are reported and intersected with the previously drawn vertical lines.

On the resulting vertical line  $R$  drawn from the intersection of the extension of the first and the last of the polygon lines, will be the location of the center of gravity  $CG$  longitudinally. Repeating the operation but now using the horizontal lines, line  $R'$  will be determined. The intersection of this line with line  $R$  will be the location of the center of gravity, now established in height as well.

Normally, knowing the location of the center of gravity  $CG$  in height is not necessary, therefore only the location of the line  $R$  is sufficient. The determination of the horizontal line  $R'$  graphically is not very precise—all the lines constructed horizontally are very close to each other making the process very confusing.

Once the center of gravity has been found, its position may not be what one would have expected. In this case a relocation of weights may be necessary. In our sample case, it is necessary to vary the position of the pilot in relation to the wing. After few changes and with the center of gravity location fixed in the desired location, the project may proceed with the determination of the aircraft shape, dimensions and general arrangements.



Top: Stelio Frati at Oshkosh '95.  
Above: Figure 7-4, using the polygon of the forces to calculate the center of gravity.



## Construction Notes

Fanie Hendriks is finishing up his Falco in South Africa and asked about the Sky Tec starters. Previously we had talked about an inline, low-profile starter that they had on the drawing board. I had seen some drawings of this, and we mentioned it in the FBL some time ago.

At Fanie's request, I chased this down and found that Mr. Williams has sold the company and that the starter did not make it past the design stage. However, Sky Tec says they now have a new design in the works, and they may possibly have it available at the Sun 'n' Fun show next spring. There are always new designs in the works somewhere, so it's best to make your present purchasing plans on the designs that are shipping today.

David Carroll asks if the High Nustrini canopy affects the installation of the fuselage frame 6 diagonal. The simple answer is that there is no change here. The canopy is installed above the fuselage and you must build a projection from the fuselage to seal to the canopy frame.

Tom Webber asks if the 4:1 ratio of Aerolite powder to water is critical, and he wants to know what happens if it is too thin or wet, and whether this will compromise the strength of the joint. Our experience is that it is not critical. It's best to start with a 4:1 ratio and to know from that experience what a normal consistency is for Aerolite.

As you store Aerolite, it will become progressively thicker. It's okay to add a little water to keep the consistency the same, and as long as the mixture will flow, it's still an acceptable glue. If you're going to use the glue in an application where you want to spread a large quantity with a brush,

*Bill Russell's Falco takes shape in Houston.*



then it's fine to add some water to get a brushable consistency.

Some years ago we published a big article on Aerolite, and it's on our website now, so you may want to review it.—*Alfred Scott*

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## Sawdust

•Hot Section Overhaul. JOHANNESBURG, May 31 (Reuters) Business class passengers on a South African Airways flight were treated to a brazen demonstration last week when a couple made love in full view of fellow travelers, a South African newspaper said on Sunday. "It was the most callous display of lust I have ever seen," a mother, accompanied on the flight by her husband and two young sons, told the Sunday Times newspaper.

SAA corporate relations manager Leon Els said the couple, a white male in his 40s and an Indian female companion, would not be charged over the incident which occurred during a scheduled flight from Johannesburg to London. Their names were not disclosed. "Ours is not the first airline to have this sort of thing happen, and it won't be the last," he told the newspaper.

Embarrassed cabin crew appeared unsure how to handle the situation. The couple halted their love-making only when the captain was called and bellowed at them that the airplane was not "a shag house"—by which time most of the damage was done.

"I could understand it if they covered themselves with a blanket, but no—it was wham, bam, right there in the seat—in the missionary position," the woman's husband told the newspaper.

•Grafitti inside a fiberglass porta-poty at Oshkosh: "I could have been a Glasair!"

## Susan's Corner

We're off to Oshkosh this year! Alfred and I will be there from Wednesday, July 29 through Sunday, August 2. I had such a wonderful time in 1995 that I've really been anxious to go back. I've booked most of our rooms at the Paper Valley Hotel, and it looks like we'll have a pretty good turnout for the builder dinners on Thursday and Friday nights.

We've gotten quite busy again out in the warehouse. Bill and I are into more of our 'big projects'. This one is moving bunches of parts and supplies, putting up new wire decking shelf units and getting all the boxed parts up off the floor. And the unexpected bonus of this project is that the more stuff we clean up, clean out and get onto shelves, the more usable space we find!

We shipped out another main spar last week, which has become somewhat predictable when we watch the rate at which certain builders are getting their Falcos together. And it's still a thrill to put those huge crates together, pack up all the beautiful spars and send them on to their destination.

One thing I have noticed in the past couple of years or so, is that we've had a lot of changes in zip codes, area codes, addresses and phone numbers, and I'm not always notified of these changes. As I'm sure you've noticed, I've included an 'update' sheet with this builder letter, so if you've had any changes in the past couple of years, please fill out the enclosed form and send it back to me. I'm trying to make sure my records are as accurate and up-to-date as possible, so I'll just say "thanks" in advance for sending me any changes and/or comments you might have.

That's all for now. I hope to see a lot of you in Oshkosh... I expect, as usual, we'll all have a great time. And remember to keep us posted on your progress.—*Susan Stinnett*

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## Calendar of Events

West Coast Falco Fly-In. September 10-13 at Eureka, California. Contact: Dave McMurray, (800) 276-6394 (days) or (707) 442-4024 (evenings) or at P.O. Box 111, Eureka, CA 95502. Fax: (707) 445-5790, email: BMcmurray@AOL.com

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.

## Mailbox

I had one of those great Falco moments this weekend. After months of intermittent preparation of the fuselage frames, I finished the fuselage jig. It was early evening, so I slid the frames into position and clamped them in place. Viola! A Falco!

It sure looks neat there, full size and all. I know I have tons of work to do still, but this is definitely a wonderful moment. Thanks again for all your considerable efforts to bring us the Falco.

*Pierre Wildman  
San Jose, California*

Enclosed are a few snapshots of my Falco, including one of the jig for the canopy installation, and I am now in the process of shaping model putty to form the rear skirt of the canopy. My special thanks to Mr. John Devoe, whose article "A Canopy Caper" which appeared in the March 1992 newsletter, really helped me.

I can't say enough of how helpful the newsletter has been with the articles on the installation of the canopy as well as the ones still facing me, the wheel well doors. It really gives us some success stories that we can feel comfortable in using to make and shape our own pieces.

I am in the process of talking to Firewall Forward of Ft. Collins about finding me a 'run-out' IO-360 which I could use to finish the front of the airplane, i.e. cowling, exhaust, electrical hookups, etc. Things are progressing fairly nicely, but I am not going to make any prediction on when it is going to be finished.

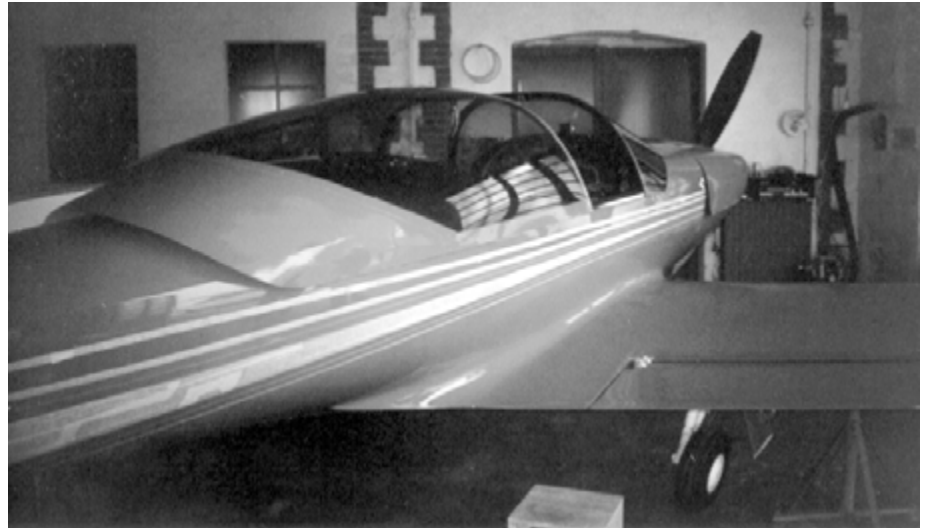
I have already made plans and reservations to go to Dave McMurray's get-together in September where maybe I can meet a few of the fellows that I have not met.

*Bill Russell  
Houston, Texas*

*We have added "A Canopy Caper" to our website in the Construction section.—Scoti*

During the past couple of weeks, I've been trying to locate the Penacolite G-1131 resorcinol/formaldehyde adhesive to use on my Falco. As shown in the price list, this is supplied by IndSpec Chemical Company, and prior to that by Koppers. I wanted to let you know that it has changed hands again. Borden Chemical Co. has purchased the rights to G-1131 and is now the sole manufacturer.

Unlike IndSpec, Borden does use distributors for their products and after contacting



*Giovanni Fulcheri's Falco nears completion in Italy.*

them directly (800-346-2546), I was put in touch with their west coast distributor, Din Tech. The sales point of contact is the owner (Denny), who can be reached at (562) 908-5554, ext. 215. Initially, Denny was unfamiliar with the resorcinol name and identifier (Borden has several other adhesives and all have product numbers like RS240MD). It took over two weeks and the help of a chemist at Borden to determine that Penacolite was available and that the product identifiers have not changed (G-1131A & B).

I would suspect that other builders looking for Penacolite will find similar difficulties if they have to go through distributors other than Din Tech. Until each is made aware of the new product, there will be some delays. The good news is that the pricing hasn't changed for the resin and hardener, and I believe that credit card purchases will be accepted. While I may not have given you all the information you'll need to update the next price list, I hope that my experience will help someone else out a bit.

As for Falco #1301, I had completed building the last of the horizontal tail ribs when the issue of which glue to use (which has been discussed many times in past FBLs) raised its ugly head again. I don't want to re-open that heated debate, but after a lot of independent research I've decided that resorcinol is what my airplane will be built with. So... I'm back to ground zero, although I have all the jigs necessary to make quick work of a new set and the experience of building my first parts was well worth the time and effort.

*Lance Roundy  
Chesterfield, Missouri*

News of our Falco project: we are building the very first wood parts at a rather slow pace. The stabilizer and elevator ribs are

almost completed. I think we will soon have a look at the fin and rudder ribs.

We were lucky enough to find spruce in the workshop of a former ladder manufacturer (spruce has almost disappeared in France). Since that wood is—of course—not certified, we plan to use it for all the ribs and fuselage frames, but we will probably make all the spars with certified Douglas fir (the only certified wood available in France). We use resorcinol glue—quite common in France (Aerodux, Agomarine). Never heard of Aerolite here!

We really appreciate the Falco Builder Letter. We find it very interesting to learn a few tricks and have news from other Falco builders.

*Alain and Nicolas Huard  
Force, France*

The number of flying Falcos is increasing in the UK. I was about to take off from my home base airfield when I heard over the radio G-OCAD call for clearance through the overhead. I was able to call them and fly alongside for a while. Clive Garrard and his wife Beth were flying on this occasion. Neither of us had a camera, so no pictures I am afraid for the FBL.

*Stuart Gane  
Gloucestershire, England*

I spoke with you once before regarding buying Arthur Witske's aircraft. It was delivered to me here in Mineola, Texas (Mineola-Wisener Field 3N9) just five days ago. I got my first two hours dual with the delivery pilot. He thought I did fine after not having flown in the past 15 years. It's a trifle small for me headroom-wise, so I guess Arthur was shorter than I, who am about 5' 10" or so. I need a new canopy or a lower seat!

The aircraft is everything you say it is in your website, said site being thoroughly enjoyable and instructive, especially the 'trim band' info from the test pilot. I had anticipated that stick forces would be my clue to flying the Falco, but I see that's a dangerous supposition. I am *really* glad I read that article. It half-clarified for me how to land the aircraft. The other half missing is just what the touchdown attitude should be. The delivery pilot said to land like a carrier pilot. Unfortunately, I have never flown from carriers, being a former Army aviator, and the Falco doesn't have a tailhook. I do have, however, a tendency to round out in a somewhat taildown attitude because of my predominate taildragger experience. Too, I don't know how hard a landing I can make without bending something. Because of the forgoing, I would very much like to talk with a willing Falco pilot about these things. Is there someone who would share some insights with me?

I am certainly happy to join the Falco family, albeit not a builder, but a proud owner. This aircraft is an answer to a prayer, and after a year of searching for just the right aircraft, I found it in the Falco.

*Thomas J. Towle  
Mineola, Texas*

At last I have managed to get around to sending a few photographs of the Falco. It is now sufficiently advanced to deserve the name. You will note the turn-over was accomplished without using a saw. The strip is only a hundred yards away. Should road transport be required in the future, it can be divided then. We have a meeting once a month of the local ultralight club here, and the people doing the work are the members.

I have the power bulges in the upper cowling now and am presently engaged in adding power bulges in the lower cowling to clear the exhausts. The left tube just touches the cowling, and the right just misses so I thought it best to extend the existing troughs forward to relieve the interference. Otherwise, there are numerous details to complete before final finishing and painting—they say the devil is in the details!

*Ian Ferguson  
Dookie, Australia*

As I had threatened on a number of occasions in recent e-mailings, Ruth, our Italian Greyhound Shana and I would visit the home of the world's neatest airplane. Since starting out on the building of one a few months ago and having started with



***Ian Ferguson's Falco takes shape in Australia.***

the purchase of the tail section kits, I had promised myself that before I had gone much further I wanted to see where things happened and meet who made them happen.

Yes, like many others I've been staring at ads and pictures of the Falco for years and then a flight with Larry Wohlers in his Falco made up my mind, I sent in my check. Of course, I've devoured all of the builders letters, and spend endless hours cruising the Sequoia website, as well as the others available.

So, in June we departed Durango in the 'family bus' (our Bonanza), with visits to family in New York, Florida, Louisiana, etc. We left New York area and 2-1/2 IFR hours later landed in the Richmond area in the middle of a stagnant and persistent low, hot and humid, were met at the airport by Alfred and whisked to where it's all at.

What a treat! Susan is a truly neat and wonderful person who gave me the cooks tour of the facility. A beautiful, immaculate air-conditioned place, with shelves and shelves of everything a builder would desire. On each of the shelves, carefully

packaged were many, many duplicates of each of the 23 kits I'll need to complete the aircraft. I looked into each one and found precision work in everything I saw, whether it was the six wing spars, multiple instrument panels, tons of wiring kits, gear assemblies, etc. It's a most remarkable sight and one that instantly gave me the confidence that I will always get quality and support of the highest order throughout the odyssey of building I have begun. I would recommend it highly to all. For me, it sets a standard that I hope I can maintain as I do the assembling. I also must mention that the jigs used to make the wooden parts are incredible.

We spent a most memorable day watching Susan answer calls, package and ship parts to all over the world, seeing what's in the candy store and talking with Alfred. Boy, were we impressed! Especially Ruth, for Alfred made sure that she was included in everything we did, and even though she's not a pilot, after nearly 9,000 hours flying with me, it really built up her confidence in the Falco.

*Fred Doppelt  
Durango, Colorado*