Falco Builders Letter

Dean Hawthorne

Susan Gets High

by Susan Arruda

The first time I saw Rosegill was 29 years ago. Alfred thought I should see it so he and I left the office one sunny afternoon and headed for the Richmond Airport. He thought the best way to see it was from above, high in the air, inside his Messerschmitt Monsun. It was a great ride and a beautiful flight! It was my first experience flying in a small prop airplane, and I loved it.

Every girl has an on-going list that she keeps of "first time" experiences. Okay, of course at the top of the list is that first kiss. But, as time passes not only does that list grow but hopefully it gets really interesting. I keep that list going with great faith. Somewhere near the top is catching my first fish, riding in a Jaguar XKE, riding in a Corvette Stingray, getting my ears pierced by my best friend Marilyn, eating my first oyster, sky diving, etc. Depending on how it all goes, sometimes you want to continue to have those experiences. Now I can add my first flight in a Falco!

I am a firm believer in connectedness—somehow what you may have done years ago will relate to something new in the present. For example: Rosegill, oysters and small fast airplanes. Alfred has asked me to share my story.

For years, Alfred has had great fun planning the Oyster Fly-In. This event is held at Rosegill the weekend of the Urbanna Oyster Festival. To make sense, you need to know that Rosegill is a large old historic home with surrounding farm land situated on the beautiful Rappahannock River about an hour's drive from Richmond. Across the cove from the property is the tiny waterside town of Urbanna. Every year the people of the area have a wonderful weekend festival focused on the consumption of the mighty oyster. Thousands of people come from all over the state to watch the parades and eat huge amounts oysters.

Alfred loves to have friends and fellow pilots come for the weekend and join the celebration. The airstrip is next to a farm field in front of the house and the main house is the point of food, beverage and frolic.

The date for this year's festival was November 6 and 7. The fly-in invitation and announcement went out, and my husband and I prepared to attend for the weekend. I was excited about meeting some of our owners and seeing a Falco. Little did I know that Alfred was busy making arrangements for me to get a flight in a Falco.

As the weekend was approaching, I ran into a little snag. I had no "baby sitter" for our three greyhounds. Alfred said bring them on. Well, we have never travelled with them on a weekend excursion. I was nervous about them getting in everyone's way or creating some problem. Most of all, I was afraid of one of them accidentally escaping the house. Trust me, there is no catching a dog that can hit a speed of 25 mph in less than five seconds!

When we arrived at Rosegill the weather was clear, sunny and *crisp*! Beautiful day, but really cold. Everyone settled in, and we were soon joined by a number of people, including Dean and Judy Hawthorne, who had flown in from Richmond in their Cessna. But no Falcos. We spent the evening walking to Urbanna, watching a parade and eating oysters cooked in a variety of ways. It finally got just too cold to be outside so we returned to Rosegill and called it a day.

Our three hounds had been tucked into their beds with us in a bedroom upstairs in the house. One of them began to nuzzle me to 'go out' at some point really early. Vic got up with me, we dressed, put on our coats, put coats on the dogs and headed out the door to let them 'do their thing.' Well,

Jonas Dovydenas

In This Issue:

neither of us could find the light switch for the stairwell. Somehow we all managed to make it down, but with lots of slipping and sliding and noise.

Once outside we realized that it was daybreak. The sun was just beginning to come up over the river and there was a coat of frost on the ground. It was astoundingly serene and so cold! The dogs just stood there—also seemingly enjoying the moment. It did not last. All five of us became aware that we had company. Standing off from us in the field near the river, behind the house, was a large and stately buck. Now, put sight hounds together with a deer on the run and there is a big problem. Fortunately, the buck stood his ground, and we were able to get the dogs back into the house without incident. I should have seen that magnificent buck as an omen of the events to come that day.

Soon after that there were people gathering in the kitchen looking for hot coffee and warm food. Then, I heard an airplane. We all rushed outside and watched this totally beautiful blue Falco land in the 'front yard.' I then had the pleasure of meeting its owner, Bill Nutt, who was accompanied by his gracious wife, Rita.

Bill and Rita were getting settled in when we heard another airplane. We all went out to watch Jonas Dovydenas land in the "front yard". So, we now return to my first time experience list.

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You can read about Bill and his father, Charlie, building this Falco on our website. It was the Reserve Grand Champion at Oshkosh in 2007 and much to my surprise, Bill and Rita had flown down from Maryland just to make sure I got my first flight, thanks to Alfred!

My job here is to describe the experience. Well, sometimes an experience is so fantastic that the details disappear and all you keep thinking about are parts of it. You know me well enough by now that I had no fears. I just walked out there, with my husband and our dogs, kissed them and I know I was smiling. Alfred and Bill gave me careful instructions on how to climb onto the wing, stand in the seat and sit down.

Bill helped me with the seat harness, the headset, made his necessary preparations and then he shut the canopy. The engine started, we turned into the field and then we were airborne! What you do not expect and is really so wonderful is the visual—you can see it all and everywhere! I then took notice of the control panel. It looked like nothing I had seen, or unlike the original one displayed in my office. Everything was major high-tech. It was like the cockpit of a mini 747. Bill then banked back over the river. We chatted, and he asked if I wanted to 'take' the controls. Alfred had already told me how to hold the controls. Well, it is everything you read about—it is so effortless. I can see where someone would automatically overdo it.

I do not know how long we were in the air. It was one heck of a beautiful ride and airplane! Bill is a commercial airline pilot—therefore, he is the consummate pilot. This is a consummate Falco! When we landed, all I knew is that I had been privileged. It was what every girl would hope for—an absolutely perfect and first-class first-time experience. Thank you, Bill.

After a short breather, Vic and I were invited by Dean and Judy to take a ride in his Cessna 172XP. Dean was not sure how old his airplane was. He is an aerial photographer, and this plane has been his working companion for years. Flying over the river and Urbanna in this plane was a totally different experience from Bill's Falco. It was nice. It was calm. It was tame?

We had not been back on the ground long when Jonas decided it was his turn to take me into the air. Everyone carefully pulled his Falco out into the field. Well, I now felt empowered. I knew how to get into his plane, how to sit down, how to work the

Flying up high with some guys in the sky… Above: Judy and Dean Hawthorne

headset, etc. Let's back up girl! First, you have to have the joy of seeing his Falco. Jonas built his Falco 19 years ago. It has pretend bullet holes on the sides. It looks like it is ready to do battle. Jonas wrote the lead article for our December 2008 Builders Letter. The cover has a picture of Jonas in Afghanistan wearing a helmet with an unusual weed attached. He was there as a news photographer among the troops. Why was I not surprised by his Falco?

And, sitting in Jonas's Falco was another experience. First, I recognized the control panel—much like the one in my office. The seat harness was different as was the head set. The take off was the same—major energy! We were climbing when I felt something hitting my thigh. It was Jonas's hand. He was busy cranking the landing gear back up! Still no fear but I did ask if I should be concerned. He said "No, I think its just a little short somewhere."

I did not have time to worry after that. The view was wonderful, and I was having fun again. Jonas casually asked if I would like to do a loop. You bet! From that moment until we approached to land, we did loops, we did rolls and oh yes, we found the thrill of g's together. I now have Jonas to thank—for experiencing my first four g's! Thank you, Jonas!

Later that day, most everyone left to have fun at the festival or had to go back home. I stayed behind at the house with our hounds and enjoyed the quiet. I had time to reflect on the events of that day.

I have spent the last eighteen months working at Sequoia Aircraft talking to owners and future builders. In that time I have shipped out Falco parts all over the world. Just before leaving for the Christmas holiday, I watched a 28-foot crate holding a main wing spar be loaded onto a truck. This was being shipped to Jerry Mulliken in Nebraska for his project.

At any given time, I can walk into our warehouse and find a part that an owner/builder may need. The only Falco I have known is in a thousand pieces! Thanks to Alfred, Bill and Jonas, I finally saw not one, but two, all put together. It may sound just a little soapy, but I have felt like I have known a Falco completed, because I have touched the parts that you guys have used to put together your airplane. It has been a great feeling to be part of your Falcos. All I needed was to *see* all the pieces put together.

What I learned that afternoon was totally unexpected. I found the real truth, the real draw to the F.8L Falco—the secret. You guys have built a plane with a split personality! She can be elegant and graceful, or she can be feisty and fun. She is a thrill seeker and also a classy lady.

The Macchi-Castoldi MC-72

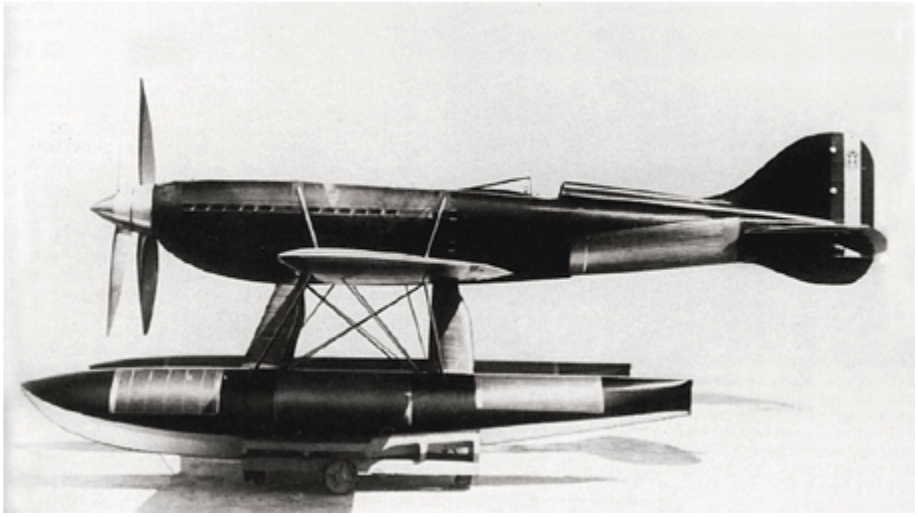
by Stephan Wilkinson

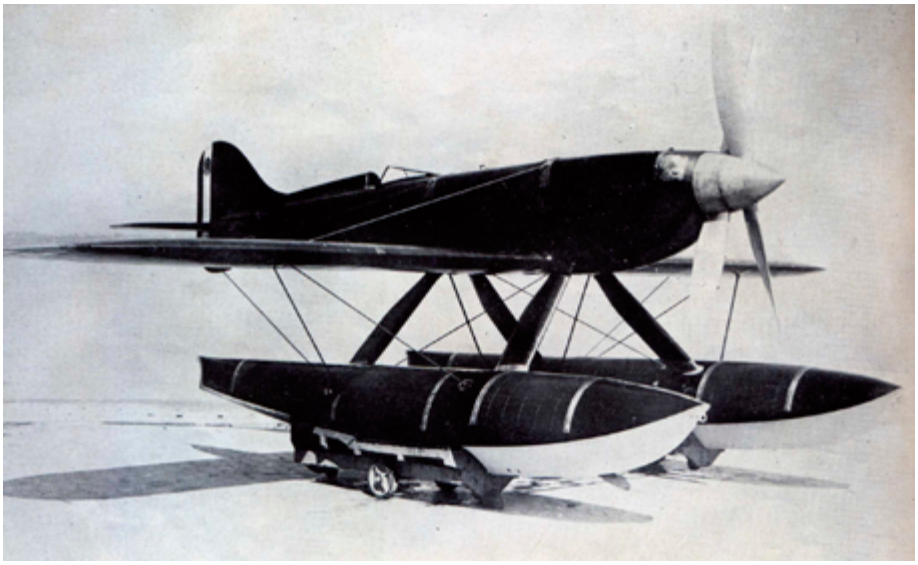
Some years ago, Dick Rutan endlessly prattled about how his round-the-world-unrefueled flight in *Voyager* was challenging "the last aviation frontier." Then we got the late Steve Fossett saying no, his was the last aviation frontier: round the world solo unrefueled. Well, they were both wrong. There's an Italian airplane, the Macchi-Castoldi MC-72, that to this day holds an absolute unlimited speed record that for my money is the last major, uncontested aviation frontier: fastest flight ever by a piston-engine seaplane. I'm amazed that nobody has made a serious attempt to break it, and this is one motorsports record that may stay in the books forever.

Certainly there have been a few faster jet-powered seaplanes, and the Russians currently hold the jet record at a lumbering 566.1 mph, set in 1961 by a twin-engine Beriev M-10. The experimental Convair XF2Y-1 Sea Dart hydro-ski fighter would have beaten this easily, since it could bust the Mach in a slight dive, but the project never progressed far enough to allow any record attempts. In fact that ancient Macchi is not only the fastest piston-engine seaplane ever, it's the fastest prop-driven seaplane: the turboprop waterplane record is only 356.2 mph, established in 1987 by another Beriev, the M-12 amphibian.

The Macchi MC-72 was designed in 1931, back when Jennies were still desirable and Duesenbergs were musclecars, and it set the record of 440.69 mph (average speed in both directions over a three-kilometer course) in October 1934, fully 75 years ago. At the time, the MC-72's speed was a world record for *any* piston-engine airplane, land or sea, and it maintained that distinction for five years, until the Luftwaffe got serious about showing how fast its new fighters were and upped the landplane record to 464 mph (Heinkel 100) and then 469 mph (Messerschmitt 209) in 1939. Needless to say, neither of these airplanes had any more in common with front-line fighters than *Rare Bear* does with a stock Grumman F8F-2 Bearcat sitting on a carrier deck.

The Macchi MC-72 was, of course, designed to win the Schneider Cup. The airplane was completed in time for the 1931 race, but nobody could make it run reliably. There were serious problems with fuel feed, induction air, major backfiring and even in-flight engine stoppages. Italy withdrew from the race as a consequence,





and England's Supermarine S-6B went on to win, and thus to retire the Schneider Cup forever.

Three MC-72s were built. The first two crashed fatally—one during flight testing and the second during an early speed-record attempt while the airplane was still having engine problems. The airbox atop the engine blew so catastrophically that it shattered the cowling and may well have taken out the tiny windscreen and the pilot as well. (Older Porsche 911s like my track car also can suffer massive airbox explosions caused by backfires, and that's apparently exactly what happened to the Macchi.)

That engine was a monster—a 50-liter, 3,100-horsepower, V-24 Fiat AS.6 that was actually a pair of AS.5 V-12s in line. The two V-12s were coupled at the middle by a reduction gearbox that drove the two contra-rotating propellers via a tower of gears and a propshaft that ran between the cylinder banks of the forward engine; the engines could actually be de-clutched from the transmission and started and run separately. Not until the Brits built the Napier Sabre and Rolls-Royce Eagle—also 24s—a full decade later did any aircraft engine approach such a power rating. The Macchi's contra-rotating two-blade props canceled out the aviation equivalent of "torque steer"—a big problem with powerful floatplanes, which have virtually no directional control at low speeds, particularly on a raceplane without water rudders. The pinwheeling props allowed the MC-72's floats to be smaller, lighter and less draggy.

One of the most adventuresome and obvious features of the MC-72 was its surface-evaporation radiators, a network of thousands of small-diameter brass tubes that covered the wings top and bottom as well as most of the floats and their struts. As a result, the airplane had virtually no cooling drag.

When Fiat couldn't help with the MC-72's engine problems, Macchi did something unheard-of: they went to soon-to-be-enemy England and asked Schneider Cup rival Rolls-Royce for help. Rolls sent engineer Rod Banks—appropriate name for a powerplant guy—who had helped develop their Schneider Cup Type R engine, and Banks quickly diagnosed the problem as overpressurization of the induction system from too much ram air into the top-of-cowling scoop, which leaned the mixture excessively. The engine ran fine, of course, until the airspeed built up.

So how do we beat this record, now that Burt Rutan is busy with Mr. Virgin? The obvious challenger would be a Reno racer on floats—*Rare Bear,* say, which could be plopped into the water and renamed *Rare Polar Bear.* But the record should stay in Italy. So how about an SF-260 on floats with a Nustrini canopy and lots of aerodynamic cleanup, with a Ferrari Formula 1 engine up front? That would be 720 hp from a 210-pound V-8...nah, nowhere near enough. As I said, this record may stay in the books forever.

The sole surviving MC-72 is in the Italian Air Force Museum in Vigna di Valle, a 10-mile cab ride from Rome.

Macchi Modeling

by Stephan Wilkinson

My interest in odd Italian seaplanes dates back to a visit years ago to the Piaggio factory, in Genoa, to do an Air & Space article on the then-new Avanti twin-turboprop bizplane. There, in the dark, musty company museum, I saw a wind-tunnel model of the Piaggio P.7, intended to be a 1929 Schneider Cup competitor.

At rest, it floated like a ditched bushplane on its waterproof fuselage and wings. The idea was that its 900-hp Isotta-Fraschini engine would drive a motorboat propeller under the tailcone that would boost the airplane to a speed at which two small hydrofoils, roughly like main-gear struts with waterfoil-shaped fins rather than wheels at the bottom, would become effective, lifting the airplane out of the water. The pilot would then engage the conventional prop with a clutch, and the thing would segue from motorboat to seaplane and then fly without the drag of two big floats.

The P.7 never flew, though it did several times try to make the transition from barely afloat to almost airborne. A slipping clutch made it impossible to crank up the big prop quickly enough. Probably a good thing, since landing would have been a thrill and a half. Imagine skip-stoning across the water while you tried to get the prop stopped quickly enough that it didn't dig in and flip you ass over cappuccino machine.

Having built my full-size Falco, I now build detailed 1:32-scale model airplanes, and my most recent one was the Macchi MC-72.

A little background: Go to any Internet scale-modeling site (www.squadron.com is

Steve and Susan now live in a house overlooking the Hudson river. Behind Steve here is a painting of the barn where he built N747SW.

huge) and you can find plastic models of any airplane as long as it's a Mustang or a Messerschmitt. That's an exaggeration, but injection-molded plastic models are virtually all of popular military airplanes. They sell by the millions, at $15 to $40 or so apiece. My Macchi kit, however, was number 105 of a limited edition of 150, and it cost something over $200. The cottage-industry English company that produced it, Marsh Models (www.marsh-models.com), has the Piaggio P.7 on its to-do list so I won't get bored; take a look at the photo on the Marsh website.

Plastic models are today so detailed that you can see the NAA logo on that P-51's rudder pedals, and among the fiddly bits in the box will be switches, radios, breechblocks, ammunition belts, the tailwheel shock absorber, a throttle knob, maps in a map pocket and a variety of other plastic parts the size of anorexic gnats. To create them, however, requires millions of dollars to produce the required dies and molds, so only big companies make them and none of them dares to produce a plastic kit for a few hundred Macchi or Piaggio groupies.

The answer is resin, kits with parts made of cast resin thickened with very fine filler. To produce a resin kit, a lone craftsperson need only create masters for the individual parts—two fuselage halves, a pair of wings, the empennage and a few other pieces—and then pull molds off them and hand-cast the parts. Many of these kitmakers seem to have day jobs as precision tool-and-die makers, so I suspect that CAD does much of the master-making, and the best kits have airframes of painstaking detail and accuracy. Tiny parts—windshield frames, throttle levers, instrument panels, seatbelts complete with minuscule buckles—are supplied on etched-brass sheets, and invariably some are microscopic enough that there's no way this shaky septuagenarian is going to install that brass magneto switch, so we'll just make believe it's there.

Still, for those of us who'd rather own replicas of historic civil aviation milestones instead of the latest Block 50 F-16 Fighting Falcon hung like a chandelier with every Osama-seeking missile known to man, resin models are the way to go.

Construction Notes

From Ian Vickers. I have a question for Alfred regarding the fitting of the upper wheel well rings for the gear doors option. I understand that the wheel well ring has a finished dimension of 20 x 20 and that it slopes upward forward, with the top surface of the ring to finish flush with the top surface of Frame 5 and the top surface of the seat supports where it intersects them, but I don't understand where it should intersect Frame 5 spanwise. The notch in the top corner of Frame 5 is only 10mm wide, not 20, suggesting that the ring should be sanded down to fit the notch and be glued to Frame 5 and rib 1. However, Drawing 201 Detail P, showing left wing topside, shows the wheel well ring intersecting Frame 5 with its outer edge about 8-10 mm inboard of the dotted outline of Rib 1. The only way I can make sense of it is if Detail P is actually showing the location of rib 1 projected up from the bottom of the rib. Where does the upper ring intersect Frame 5 and should it be sanded to fit the notch in Frame 5 or should the notch be enlarged?

What is confusing you here is that the wing is drawn as if it had no dihedral. Of course, the wing ribs are tilted at an angle, while the wheel well walls are vertical. So the end of frame 5 is shown at an angle that matches the angle of the wing rib, and the 20x20 curved piece of spruce that makes up the upper end of the wheel well must be cut back to fit against the wing rib. This is the reason for the smaller notch in the outboard upper end of Frame 5. You can see that the inboard edge of this notch is directly above the wheel well framing member at the bottom wing skin.

I don't remember exactly why there is a 15mm depth to this notch, but I have a vague memory that when you put the laminated/bent piece of spruce in there, this is where it ended up so you would have enough material to sand away to fit the upper wing skin.—*Scoti*

Marcelo Bellodi was doing a maintenance inspection of his Falco and wanted to know the appropriate torque of the bolts that attach the fuselage frames #8. He was not able to find this in the construction manual or in the drawings.

More progress in Brazil, Juliano Napolle and the two Falcos they are building.

Oh, that would be on drawing c5, revision G! Which says to torque the bolts to 50 inch/lbs. On any wood structure, you never want to keep torquing a bolt because it will imcrementally add compression and eventually compress the wood. Instead, you want to loosen the nuts, then retighten them again with the torque wrench.

Sylvain Parfut in France asked what is meant by "heat treat to 120,000 psi."

This is a standard specification for the heat treatment of steel, and it is the same that is used for all standard AN aircraft bolts. As a practical matter, you never actually heat treat the steel yourself, but rather you purchase steel that has already been heat-treated. Any steel vendor will be familiar with this terminology, and if they are not, then you are talking to the wrong person.

George Richards wonders if there is any requirement to lubricate inside the gear retraction gearbox. "It's all so nicely sealed, I don't feel inclined to want to open it but I thought I'd ask anyhow.

Maybe every 500 to 1000 hours it might be a good idea to open the gear box and use a stick to stir the gear around on the gears, but you certainly would not have to add more.

Walter Marsh

by Alfred Scott

One of these days the phone is going to ring with news from a mutual friend that Walter Marsh has died. I hope this is years off. With Walter you always have the feeling that he's not going to live very long but then he goes on and defies all odds. But before that unhappy day comes, I thought it would be fun to tell you about my eccentric friend.

Years ago they built a downtown expressway with a toll booth. Walter drove in, pitched his quarter in the machine but the gate didn't open. Out came a helpful assistant to explain to Walter how the machine works. You put in a quarter, the gate will raise and you can drive through. But I did put in a quarter. No sir, if you put in a quarter, the gate would raise. But I already did that! Back and forth they argued, and then Walter got tired of this, grabbed a wrench from his tool kit, spun the nuts off the bolts holding the toll-gate arm in place, set the arm aside and drove off. The attendent exploded in anger and wrote down his license number.

A few days later, Walter got a call at his office from the police, informing him that he had been charged with the criminal destruction of property. Did he want them to pick him up and take him to the station, or did he want to come down, be finger-printed, etc. Walter said he would be happy to come down on his own.

This was Walter's first brush with the law. As an highly intelligent eccentric, Walter thought he could just argue with a judge and reason would prevail. It didn't work so he lost the first round and was found guilty. Walter had to get a lawyer to handle the appeal.

It turns out that the criminal destruction of property is such a rarely used statute that over the years only two cases have made it to the Virginia Supreme Court. One of these was from the earliest days of the automobile when turnpikes were private franchises for sections of a road. Some teamsters had crashed through the gate with a truck and destroyed the turnstyle. In ruling on this case, the justices back in the earliest part of the last century ruled that in this case, indeed, the teamsters were guilty of the charge, and in rendering this opinion, they explained that if it had been an emergency and they had climbed over a fence, that would be a different situation… or, if they had simply dissassembled the gate, set it aside and had driven through, that would not be a criminal case. That would be a *civil* matter under the law.

So Walter got off, and at a legal cost of $1200 over a twenty-five cent toll, this was a victory for Walter. And the first of many such encounters with the law.

Walter in ultralight. Slide to pool from tower. Deck is made of bowling alley rejects.

Walter has a piece of land next to the Chesterfield County airport. He decided he wanted to built a hangar for his airplanes and to work on machinery. The land was zoned agricultural, and Walter decided he didn't want to bother with a building permit. He looked up the law. When the BOCA code was adopted in Virginia, farmers rose in opposition. You mean every time I want to build a corn crib, I've got to get a building permit? So they exempted agricultural buildings, without defining what an agricultural building is.

So he got two pigs, Wilbur and Orville, and began construction on his hangar, a 100-foot by 100-foot pre-engineered metal building and with the help of a 15-year-old boy and a $500 rust-bucket back-hoe, they started work.

The county building inspectors went nuts. Where is your building permit? I don't need one, it's an agricultural building. See the pigs?

They continued to harangue him all during the construction, and Walter continued to ignore them. The longer this went on, the angrier they became and the more Walter enjoyed it.

A few years later, I got a call out of the blue from Walter. I need a lawyer. The County had filed charges for failure to get a building permit. They had waited until the statute of limitations was about to run out, and he faced 365 violations, each punishable by a $1000 fine and 30 days in jail. So potentially, Walter faced a fine of $365,000 and 365 months in jail. That's over thirty years. This definitely got Walter's attention. I put him in touch with our attorneys, and he became their favorite case while it was going on.

Now it turns out that when the BOCA

Watching an air show fom the tower over the hangar.

code was enacted by the state, the law prohibited one-offense-per-day statutes by counties and municipalities. But Chesterfield County had enacted one anyway, and they had used it as a hammer to hold over everyone's head. When Walter's attorneys challenged this, the County was left with a choice of convicting Walter for one offense and giving up their hammer, or find a way to let the whole thing pass and keep their hammer. They chose the hammer. Another victory for Walter.

Then there was case of the topographic maps. The County had the whole county flown and had created topo maps with two-foot contours. It's a very expensive process, and the County was charging $200 per plat to recover their costs.

Walter didn't like this, and he filed a freedom of information lawsuit, which says that all information available to any government entity must be made available at printing costs only. So overnight, the costs of these plats went to two dollars per plat. People were lined up around the block to get theirs.

This didn't last. The state legislature has enacted a number of exceptions. For example, prisoners cannot file freedom-of-information lawsuits to get the prison security plans. And now there's the Walter Marsh exception that allows for the sale of topographic maps at more than printing costs. It's not officially called the Walter Marsh exception, but Walter is very proud of this.

And so it has gone for years.

I first got to know Walter through Bobby Jones, who has a machine shop that we've used for years. At the time, Walter was working for Philip Morris and made his pocket flying money by programming. He had created an office accounting system that he set up for various companies. That was back in the days of CPM and the earliest microcomputer operating systems, before MS-DOS, the PC and Windows machines. Nobody knew anything about how the machines worked, and Walter could figure anything out.

It didn't take long to realize that the brain in Walter's head was unlike anything I'd seen anyone else. "They only made one Walter Marsh," says Bobby. "I don't know anyone like him."

While trained as a mechanical engineer, there isn't anything Walter can't do if he puts his mind to it. He likes to design and make things, and you can pick up any object, ask Walter how it's made, and it's like opening an encyclopedia. How beer-can tops are necked down at the top because 50% of the aluminum in a can is in the top, how the tops all leak a certain amount of air, and since most beer is consumed within two weeks of being canned, it's really a quality-control problem. There's a machine they use that shines a light through the pop-top and grades them based on how much light leaks through. At 2000 tops per minute.

I once was curious how oil drilling works, and just out of curiosity asked Walter. "You know how dressing wheels work on a grinding wheel?" he said. It's just like that, the drill bit is turned and the sharp points chip their way through the dirt and rock. How the 'string' is a special kind of steel tube, so thick-walled you can't make it in a standard way. How the threads on the end are an investment casting with a special API [American Petroleum Institute] thread, a buttress thread design that only requires a single turn to engage and bottom out. How all oil wells in Texas have to be registered with the Texas Railroad Commission, and how sometimes it's more profitable to hit a dry well than oil. Why? That's because all the oil in Texas is on top of salt domes, and when you get the oil up, you get about 30% saltwater. You can't just dump that into the creek, so if you have a really good dry well with a lot of capacity, you can pump the saltwater back down into the ground at 3000 psi and charge more for this than you could for pumping oil out of a producing well.

Back in the early 1990s, I got interested in PostScript. Apple had come out with the first Laserwriter printers, and you could use PageMaker to print newsletters—your own printing press. I wanted to be able to print drawings with high resolution printing but there was no way to do this. When Adobe came out with Adobe Illustrator, there was the line quality I wanted but it was useless for drafting.

In Walter's hangar

This was back in the early days of the microcomputer revolution. I could call up Adobe Systems and ask to speak to Glenn Reid, one of the main programmers there. (More recently he has been the creator of iPhoto and iMovie on the Mac.) He sent me the stuff I needed to get this working, and I got this working in Benchmark and later as LaserPrint in PowerCADD both using direct PostScript printing.

One day Walter showed up, pulled a chair up close by me, and said "Tell me about PostScript." So I explained to him how it all worked and Walter sat there listening. He's dyslexic and takes in information best through conversation. At times, he would stop me with a question and then after an hour and a half, he got up and left. He was just curious how it all worked.

I have written WildTools which consists of about 300 drawing tools and which is generally regarded as the best set of drawing tools on any computer. How this happened is another story, but at the time I was writing the Pen tool that lets you draw with Bézier curves, I wanted to have a capability that I had seen in Adobe Photoshop. Editing the control points is obvious, but they had the ability to move the curve and both control points would move at the same time. You could 'bend' the curve by grabbing it. I spent two days trying to figure out how Adobe did it and got nowhere.

So I gave Walter a call. He can reverse-engineer anything. He answered the phone—"Walter"—in a gruff, anti-social

Beer making equipment

Walter with his radial arm saw made from a radial drill. Bill Keller to the left.

tone, and you could tell even before he said anything that his mind was elsewhere. I explained the problem briefly, and he cut me off. He had a full day of work to do, a couple of projects he had to finish, and he didn't have any time to talk. Slam.

Five minutes later the phone rang. "Tell me about this problem." So I explained it further and that I was at my wits end trying to figure it out. "I'll be over there in twenty minutes."

When he got here, he pulled up a chair and went to war with the programmer at Adobe who had written the tool in Photoshop. He personalized it and he went to war with the Adobe programmer. "*He's* doing this. *He's* doing that." We sat there, hunched over the computer with me explaining how the curve is drawn and Walter trying to figure out what was going on. After two and a half hours, he finally got it.

It was about this time that Bobby Jones was installing some of the earliest computer controls on his lathes and milling machines. The controls were made by Fanuc Robotics, an industry pioneer and leader. The systems would come with 32K of memory. They used a special bubble-memory card, and you would have to spend $2500 to $10,000 to increase the memory so you could load complex CNC programs. This pissed Walter off, so he reverse-engineered their proprietary memory cards and came up with his own card that used off-the-shelf memory chips. Fanuc was furious and threatened to sue, and the angrier they got, the more Walter enjoyed it.

He was also pushing himself too hard working on the memory card, and he was in Ohio working on an installation when he had his first heart attack. He crawled to the motel room door, unlocked it, and then called 911. He nearly died and later described being on the operating table. His systems had completely shut down. He couldn't see but he could hear the doctors talking as they worked on him, wondering if this guy was going to make it, and later Walter talked about all the catheters and stents they ran through his veins with a detached fascination of how the machinery all worked.

When Walter gets going on a project, he gets so focused on it, the world ceases to exist. While I've done this for several days, with Walter it can last for months. When he's in this state, he has no social skills and no interest in acquiring any. If he doesn't think you have a brain in your head, you don't even exist. When I designed Gonzales, our spar-milling machine, Walter came over and looked at the design. Pretty good, he said, but why are you using these screwjacks and gears when you can use a package system? I didn't know about those, and he gave me the names of some manufacturers. So I pitched two weeks of design work in the trash and used Walter's off-the-shelf actuators.

Then he asked me what I was going to use for the controls. I hadn't a clue and had thought I would figure something out. So Walter suggested that he do it. It was a field he really knew a lot about.

This was back in the days of Brenda

Walter makes an adjustment.

Avery, and she looked up and there was Walter. He had his arms full with boxes of stuff for Gonzales, and she said he basically fell through the door, stumbled by her desk and into my office—looking for all the world like a poorly dressed white male Whoopi Goldberg. His pants always seem at risk of falling to the floor. Brenda said he wasn't being impolite, he didn't even know that she was there. Later when he was wiring Gonzales, he would eat his lunch at Brenda's desk and when he realized there was something to Brenda, they got along fine.

Some women can't stand Walter, because he's not about to sit around making party talk that anyone can relate to, but Susan Arruda, IQ 143, loves him. He has come to our Oyster Fly-In for years. At times he has arrived in a Q2 Quickie he built and later in an ultra-light he has cobbled together. With continued health problems, he's doing less flying but apt to show up with a Segway.

The airport installed a tall chain-link fence around the perimeter of the Chesterfield County Airport, just in front of his hangar, but Walter has made a hoist to swing his airplanes up and over. There's a field adjacent to his property. It's airport property and just long enough for an ultralight but there were trees. A few years ago—amazingly—overnight the trees just 'disappeared.'

Walter is a radical libertarian who would rather fight with the Chesterfield County government than make love to his wife. His hangar is filled with airplanes and machinery. He was able to buy a used radial drill, an antique 18,000-lb monster machine that he picked up for a song. But he had to get it across town and trucking it was prohibitively expensive. So Walter bought an old school bus and converted it to a flat-bed truck with a cab of a couple of bench seats up front. He didn't want to bother with a license for the thing, so he looked up the state code and it says that any farm machinery that has fruit-spraying equipment permanently attached does not require a license tag. So there on the side of the chassis is a small, one-man plastic spray-rig and the state code section number is on Walter's own custom license tag. Nobody has stopped him yet, and it's a good thing because they wouldn't know what to do with him.

He's converted the radial drill to a giant radial-arm saw, which is equipped with a $2000 diamond blade (don't ask where he got it) which he uses to cut up scrap bowling alley plywood that he gets for free. It's impregnated with tungsten carbide and Walter gets the rejects from a bowling alley equipment manufacturer. He likes to make things, and he uses this for shelves and cabinets.

Above his hangar, he's built a tower and deck that's two feet under the airport's air space. It's all mounted on surplus scaffolding, and from the top there's a two-story slide that goes down to a circular plastic swimming pool. Every Tuesday night, he meets with a group of guys who drink beer (Walter makes his own in large industrial tanks—"nobody ever died from drinking

beer"), watch the sun go down from the deck over the hangar, cook steaks and other selections from Walter's own definition of the basic food groups: Pepsi, pizza, beer…

A couple of years ago, Walter got in trouble with the law. Someone was flying over-weight ultralights down the river next to the Federal Reserve Building. But it was impossible to say exactly who was flying these without a positive identification by an eye-witness, and how could anyone say the planes were over-weight without weighing them. As the official notices arrived, each was proudly pinned up on the bulletin board for the Tuesday night group to read.

Bobby Jones uses SolidWorks for all his design work, and Walter sneered and spit all over it until Bobby put a copy on Walter's computer and showed him how it works. Walter doesn't seem to have a legal copy of anything, and you need a registration code with the latest version. So for Christmas, Bobby bought Walter a $10,000 SolidWorks 'seat' with the provision that he will deduct half the cost on the next job Walter does for him. But now with direct access to the technical support people, Walter has already found bugs in the software and they're coming out with new versions fixing the problems he has found.

Bobby has yet to get any work out of Walter since then, and Walter is off on a new tangent. His latest is a quarter-scale Gatling Gun, which he's going to make in a limited run and sell to collectors. And licensing rules and firearm manufacturing regulations are for other people, not Walter.

Mailbox

I would like to make a little correction in the September edition of the Falco letter. The picture on page 11 is not an F.14 but an F.7 Rondone which has belonged to Rudolf Alert for more than 25 years. He has been a regular visitor of the Schaffen Diest Fly-in for many years.

The Picchio F.15A F-BJOO now belongs to the family of Jean Salis who is well known for his beautiful collection of aircraft at La Ferté Alais in France.

Guy Valvekens
Schaffen Diest
Belgium

Giovanni Fulcheri and I have concluded the preliminary purchase contract for I-DIET. We are now waiting for the final permit-to-fly from the Italian authorities to finish the purchase.

Well, a dream becomes true. I have first seen the Falco in the *Flying* magazine during my studies at university nearly 20 years ago. At that time I thought it to be the most desireable plane to have. But I never thought I might be able to actually fly and own one. Thank you so much for your help and making and maintaining the Sequoia Falco.

Raoul Schild
Vienna
Austria

Raoul Schild operates as Schild & Partner (www.schild-partner.com) a management consulting firm and specializes in air traffic management. He plans to use the Falco in his work. Of course, he plans to have fun with it as well.

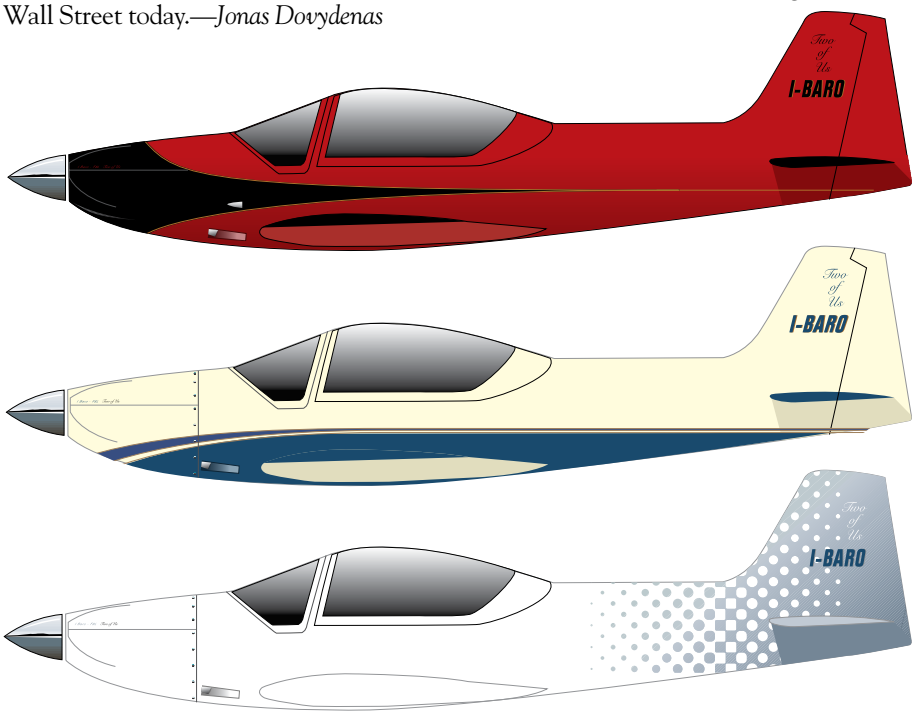
I've spent my Christmas holidays working on I-BARO and tested your new Benchmark release, confirming that the performance of my beauty has not changed much lately of course.

I've been working in the effort of reducing weight thus I've dismantled the KR 87 ADF (about 8 lbs) and installed a smaller battery, another 8 lbs—the ADF is really of no use since GPS.

I still own the Duke but since the fuel has become soooo expensive over here, I've flown the Falco much more... plus while doing it I get the benefit of more fun! The Duke, of course, is able to stay out of much of the weather with pres-

Looks like something out of a Jules Verne novel. Built in Russia during the 1930s, it flew 11 times before crashing and killing 15 people. The designer, Konstantin Kalinin, wanted to build two more planes but the project was scrapped. Later, Stalin had Kalinin executed. Evidently, it was not good to fail on an expensive project under Stalin. It's got propellers on the back of the wings, too. You can count 12 engines facing front. The size would be equivalent to the Empire State Building on its side, with cannons. And you think the 747 was big... not only a bunch of engines but check out the cannons the thing was carrying. In the 1930s the Russian army was obsessed by the idea of creating huge planes. At that time they were proposed to have as many propellers as possible to help carrying those huge flying fortresses into the air, jet propulsion has not been implemented yet. Not many photos were saved from those times because of the high secrecy levels of such projects and because a lot of time has already passed. Still, on the attached photo you can see one such plane—a heavy bomber K-7.—*Fred Scott*

And to think it only needed a crew of 15! I remember someone in Lithuania telling me his uncle was involved in the project. The correct name of the program was the Potemkin Bolshoi HB- K7, the 7 being the serial number of the prototype. The previous six did not look menacing enough to Stalin, so Kalinin just kept adding cannons and engines on the massive wing until it looked really sinister. Stalin needed a photo in a hurry, so at least half of the cannon and most of the engines were mock-ups. As for Stalin executing people who failed—it was his way of keeping up their morale. Subsequent management studies have shown that failure should be rewarded, which is the method used in Washington and on Wall Street today.—*Jonas Dovydenas*



Cleaning up my old computer I found these paint schemes that may be of interest to you, in case you want to include these to update the ones you already have on your website. I did these three or fours years ago!—Andrea Tremolada

surization, turbo capabilities, weather avoidance instrumentation and avionics. On one of the old FBL I remember I saw a photo of a Falco with a Dynon PFD installed. I do not remember who was the owner (maybe from New Zealand) but I feel it's time to turn the page and move to digital.

In the future I'll start working on the panel and one of the task of the holidays was to compare and select the EFIS system I wish to install. After much time and comparison I've come up with the Dynon 10" which has synthetic vision, HSI, plus all engine parameters, and it seems the best deal for the money and weight. So I would install one for the PFD and one as MFD for all engines parameters, with dual AHRS, built-in back-up battery and reversibility in case one of the displays should fail.

It's some time now that I've been pondering about this and since I'm using the Falco more and more for my commute between Milano and Florence in any kind of weather, and I wanted an actual display, although honestly I was not sure about this because the Falco is from an era of "no radio." I thought I should have kept my steam gauges... but, we are in 2010 now! So let's get updated and change the panel… and as a side benefit I should also be able to "shave" some weight.

Speed at 22/2400 (65%) is always between 163-4 to 167 Kt depending on weight with a 16 NM/gals efficency, and at 2500 feet density altitude I still have some problems with the main landing gear door that pull open in flight, and I am unable to install the two camshell doors in the front. But anyway I'll spend the next weekends trying to solve this. I'd like to see a chapter in your website where all the builders could download their flight data and compare experiences, but—at least here in Italy—when you talk about speed nobody tells you the truth! Full throttle is always 189 KT and compared with Hansen Falco it's slow.

Last summer I've routinely flew every weekend a 3:30 hrs flight always each way, but landing with not enough fuel

Calendar of Events

Falco at 55 Birthday Party, Oshkosh, WI, July 26-August 1, 2010. Plan to be there, and we're also looking for slogans for the event like "Still turning heads at 50."

Shawn and Susan crating main wing spar kit for Jerry Mulliken. All spar crates get the 'Great Bird of Falco' on them. Then look at what the trucking company did with this! They ran a fork-lift into it, but luckily there was no damage beyond the crate.

reserve fuel to feel safe. (I always had about 30 minutes, not enough for me) so I've bought a marine tank that I've put on the rear and fill only during those flights. It's made out of aluminum and it seems really well done, (and very light weight) as soon as the testing will be finished I'll let you know how it works. It holds 70 liters and is enough to stretch I-BARO's endurance.

Compared to the 155 liters tanks I've been using in the past the plane accept this quite well and even with two on boards plus baggage the climb rate is good. Of course, during the hot summer temperatures the climb will be penalized. The only and last change I'd like to accomplish—but I'll never do—is to have the high canopy. Then the Falco would be perfect... and comfortable!

Andrea Tremolada
Milan
Italy

We don't have a way to directly upload Benchmark files for each airplane, but I would love to have as many examples on our website as possible. So please just email me the Benchmark file for your Falco, and I'll get it on our website.—Alfred Scott

Charlie and I have flown our Falco east two weeks ago—it's based now at the Salisbury-Ocean City, MD airport (KSBY). I'm hoping to fly it more over the winter months and plan to take it back to Minnesota for the summer months. It was the longest trip we've taken so far, but we easily covered the nearly 1000nm with one fuel stop in Ohio—total flight time 5.3 hours without much of a tailwind.

Attached are photos of our "1955" Falco and 1958 Mercedes 190SL. Charlie bought this Mercedes brand new when he was flying for Pan Am out of New York. They sure made some nice looking machines back then!

Bill Nutt
Magnolia
Delaware

Stelio Frati's very sad Christmas card. Napo is no more.

Charlie and Bill Nutt with their Falco and Mercedes 190SL. Rita and Bill Nutt at the Oyster Fly-In.