Falco Builders Letter



G-GANE Flies Again

by Stuart Gane

When we last heard from Stuart and Vivienne, they had just finished destroying their Falco in Belgium, barely escaping with their lives. The Falco is now back in the air, and I thought it might be interesting to hear the account of what happened in the interim.—Alfred Scott

The morning after the accident to G-GANE in Belgium, Vivienne came to visit me in the hospital. By the expression on her face she did not look very happy. For a second, I thought she might be disappointed that she was not going to collect on my life insurance, as I was very obviously alive and well, if not a little sore from our bounce into the trees of the Ardennes Forest. There again, I thought she might herself be in some pain as she was sporting a huge black eye which even a panda would have been proud of. After a brief conversation, and exchanging details of our injurieswhich thank goodness were minor—Viv told me she had been to see our Falco, which had been removed from the site of the accident and placed in a hangar.

I could tell from the manner in which she was describing the state of our aircraft

that it was badly damaged, although she did not actually use the words "the Falco was a write-off". It was while she sat at the end of my bed trying to, very sympathetically and kindly, let me know how bad the damage was, that I resolved, if at all possible, G-GANE would fly again.

The first thing I wanted to do after listening to the bad news was to go and see the damage for myself. However, the hospital authorities had other ideas. They knew that if I did not remain in their care for a minimum of 24 hours, they would not be able to recover their expenses from the UK health authorities. So I had to sit and wait

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for about four hours until they would release me. Part of the time was spent walking somewhat painfully down the hospital corridors until I realized that the hospital gown I was wearing was most respectable from the front, but left little to the imagination when viewed from behind (no pun intended). I hope my brief appearance in the doorway of the wards I passed brought a smile to the little old ladies that seemed to occupy most of the ward's beds.

The first destination after leaving the hospital was to see how bad the damage was to G-GANE. As we traveled along the Belgian roads, I became even more determined that I was not going to be phased by what I saw when first setting eyes on our Falco. When we eventually arrived at the hangar, I had psyched myself up to the point that no matter how little was left, or what others said, our Falco would be repaired.

At first sight, even I was taken aback at the state of the Falco. It really did appear a wreck. While preparing this article, I looked again at the photographs taken shortly after the accident. It is truly amazing and very sobering that we both walked away from the crash with no serious injuries. I think we must have used up our entire lifetime's ration of good fortune on that fateful afternoon. Mind you, it has not stopped us from buying our weekly National Lottery ticket, fat chance we have now. At the time, I was determined to play down the potentially dangerous experience we had been through just twenty hours before. I suppose that was my way of dealing with what we had just experienced.

The remains were piled up in two large heaps with various bits and pieces, which had detached themselves during the accident, placed in smaller piles around the central mass—or perhaps it should be *mess*. The wreckage had a most distinctive smell which came from the fire service's foam. Everything appeared to be covered in a repugnant smelling brown sticky goo. This smell still haunts me even to this day whenever I catch a whiff of it from some of the equipment I salvaged.

Francis and Francine, our Belgian friends,



Francine, Francis, and Viv with the Falco remains loaded and ready to return to the U.K.

looked on sympathetically as I shuffled around the heap, assessing how bad the damage was. Everyone was silent and seemed to be waiting for my reaction. Viv told me later, that when she first saw the state of the Falco while I was in the hospital, it moved her to tears. She knew how much time and effort had been invested in what was now just firewood. It did not help her emotional state to see that one of our flying hats had been placed on top of the splintered heap of wood, which once made up an aircraft of great beauty.

After a few minutes of poking at and lifting broken, twisted bits of wreckage, I said, to what I think was the amazement and disbelief of those with me, that I didn't think it was too bad and that I thought it could be repaired. I can tell you now, there was a considerable amount of bravado in those words. All I knew was that Viv and I had survived and that I was not going to walk away from seven years work. I had built the aircraft more or less from nothing, and it seemed to me that I was not going to have to start right from the beginning again. 'Look', I said, to the others. 'This is not damaged very much', as I pulled at the tail section of the aircraft while it lay on top of what remained of the crumpled and splintered remains of the forward half of the fuselage. I don't think anyone was very convinced.

It became apparent, to me at least, after ten minutes of inspecting the damage, that the Falco really could be repaired. The aircraft had split in two at frames no. 8, and the tail section remained attached by the various cables which ran fore and aft. There was very little physical damage to the tail section. A couple of punctured plywood panels, but damage beyond repair had been sustained to frames no. 8. Amazingly, the longerons in the tail section had completely escaped damage. The structure forward of frames 8 was fit only for firewood. The main spar had snapped on the left, leaving a forest of jagged splinters, ready to stab the unwary should they come to close. The spar had taken on the appearance of a splintered branch from a tree which had sustained a massive, explosive blow, shattering the structure to match-sticks and woody fiber.

The main gear leg had split and opened up like a tin can. The entire aircraft structure above the gunwales had been stripped away. The worst damage was mostly confined to the left side of the aircraft, which was almost totally unrecognizable. The instrument panel and the front fuel tank appeared to be undamaged. Fortunately, at the time of the accident, there had been no fuel spilled. The propeller had been bent on both sides to 90 degrees from normal and the spinner had been left with a rather comical upward bend to the front end. Covering everything was this foul smelling brown goo which, as I was to find out later, is highly corrosive and would create even more damage as it ate away at any exposed metal parts during the ensuing months. All in all, not too bad—really!

My bravado was all very well, but I knew that unless the insurance company accepted my claim, there would be little hope of rebuilding our Falco. Contact was made with the insurance company, who agreed to send an assessor to inspect the damage.

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Articles, news items and tips are welcome and should be submitted at least 10 days prior to publication date. In the meantime, the wreckage had to be moved to a safe place to await the insurance assessor and until I could make arrangements to take the remains back to the UK.

Viv and I were very fortunate to have the support of Francis and Francine, our Belgian Falco building friends, who not only allowed us to stay for much longer than was expected in their home, but also arranged to have the salvageable parts of the aircraft stored in a garage belonging to a friend of theirs. In addition, Francis offered to be present when the insurance assessor inspected the damage. Francis and Francine were a tremendous help immediately after the accident and for the weeks following. Without them our job of recovering the Falco would have been immensely more difficult. Francis was able to deal with the Belgian airport authorities who, while in no way were being difficult, nevertheless appeared anxious that no blame was placed on them for the cause of the accident.

Day two after the accident the remains of the Falco were placed on a trailer and roaded to the place of storage where they would remain until I was able to arrange for transport back to England. Viv meanwhile had returned home by Eurostar train, as she should have been at work two days earlier. I followed 48 hours later, feeling more than a little anxious as to whether our insurance claim would be accepted. It was to be some four weeks following the accident before the insurance company was prepared to regard G-GANE a constructional writeoff. In the meantime, once we were both back in the UK, preparations were made to return to Belgium with a trailer to collect the Falco remains. No worries this time about the length of the main wing on a road trailer, there was only half a wing left, and besides, the engine had fallen off!

Some two weeks after returning home, we set off again for Belgium. It was not to be such a short or pleasurable trip when we crossed the English Channel en route to St. Hubert, full of anticipation on one of our longest journeys to date in a Falco. On that occasion, the entire trip only took 2 hours 10 minutes, this time it would take two days. On our arrival at Francis and Francine's home we were welcomed as one of the family. That evening we spent planning the next day's operation to recover one smashed up Falco.

The following morning the Falco was loaded on to the trailer ready for it's journey home. *Merde*, a French swear word frequently heard during the day's work,



aptly described the sticky brown substance which covered the aircraft remains and ourselves by the end of the day.

That evening we all went out to dinner. It was our way of saying thank you to Francine and Francis for their tremendous hospitality and generosity for all the assistance they gave, always with a smile and never for one moment giving any hint that we had taken a big chunk of their holiday time.

The journey home was slow. The polyethylene sheeting which we had used to cover the wreckage lasted about 2 miles before it decided to emigrate to Belgium. The remainder of the journey attracted some very quizzical looks as we passed by. We were not a good advertisement for how safe flying really is. At the Channel ferry port, we had to wait for three hours in the car park before boarding the ferry, during which time almost every car or coach load of new arrivals came and peered at our forlorn and smelly load. By now, the fireman's goo had dried to quite a dark brown, which looked increasingly like dried blood, which only added to folk's curiosity. Little boys seemed fascinated by it. I never did work out whether it was the sight of an aircraft up close or a gruesome desire to find a body in the partly shrouded remains.

The day after arriving home, the job of dismantling and checking for damage started. It was a strange activity to be pulling something apart which you had given so much care and attention to, over many years. During the first day it soon became apparent that the only part of the fuselage which could be used was the structure from frames No. 9 aft, including the rudder and elevator. Forward of Frame No. 9 the entire wooden structure was beyond repair. I contacted Sequoia with my shopping list to see what parts they had in stock, which turned out to be everything except the main spar.

How was I going to pay for the parts, as the insurance company still had not paid me? A few days later the insurance assessor telephoned to confirm that his recommendation to treat the Falco as a complete constructional write-off had been accepted, and all I needed to do was agree to a value for the remains. Having really no idea what a pile of excrement-covered, bent and splintered wood was worth, I sought guidance from the assessor who, acting as arbitrator, suggested a figure of £4000, which seemed reasonable in spite of the remains smelling and looking like a pile of sewage.

When I contacted Sequoia about placing an order after I had received the insurance



Top: Stuart tractors the Falco out of the shop.

Above: A quick prayer before leaving for the airfield.claim money, Alfred very generously gave
instructions for my order, which was well
over £20,000 (\$30,000) to be sent im-
mediately, and I could pay on settlement
of my insurance claim. There cannot be
many companies that will send to a foreign
country, goods of such considerable value
without payment first. It was a great mo-
rale booster and a privilege to think that
one could be trusted to that extent, and
it also meant that I could start rebuilding
before my summer holiday ended.to them
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The rebuilding was not such a big task as it might have appeared. For one thing I decided to purchase as many parts as I could from Sequoia, and secondly, I still had all the jigs from the first build. I nearly threw them away once but decided to hang on to them in case they were needed. Not to tempt fate again, once I had finished using the jigs a second time, they were quickly thrown away.

I was pleasantly surprised at how quickly things came together. Three months after the accident the main wing was ready for skinning, and by 6 months I had skinned and taken the wing out of the jig and was ready to join the old Falco to the new. It was a bit like car 'rigging". Having built a Falco before, there was not the thinking time required, pondering how to carry out a particular task, I just got the parts and began assembly. Building Falco mark 2, I was able to change a few things which I did not like in mark 1 and correct a few things which could have been done better.



One aspect I did not manage to avoid was the necessity for an aileron trim tab on the right hand side and a rudder trim, but at least I was consistent.

I did however, manage to reduce the empty weight by 22 lbs. This was achieved by fitting a lightweight starter and substituting the right hand magneto for an L. S. E. electronic ignition system. The old carpet which had been soaked in fireman's foam was replaced with a much lighter type, otherwise the new Falco is a carbon copy of the old. It is the same Ferrari red with white stripes as before, although I used a different paint system, made by a company called PPG, which has given a superb result and has been very easy and forgiving to apply. Well worth considering if you are near the painting stage. I understand it is available in the US as well as the UK.

Falco 2 flew for the first time on August 17th, 2 years, 1 month and one week after the incident. I did the test flight, having re-familiarized myself with the type in Neville Langrick's G-BYLL. The second maiden flight was just as gratifying as the first. I made damn sure that the Falco was well into the flying envelope before we broke ground. Readers may recall it was during take-off that we had our mishap. Boy did we leap into the air as I relaxed pressure on the column! It was great to be back.

The PFA, our regulatory authority in the UK for homebuilt aircraft, were superb, once they had tracked down the chief engineer, Francis Donaldson, who, although

taking his annual leave, gave permission for the test flight from a phone somewhere in Scotland. The Falco was put through its testing programme and given its permit to fly, all within two weeks.

Of course, I wish we had not had the accident in the first place. For one thing, Vivienne is not quite so sure about flying as she used to be. So far, she has flown twice in Falco 2 and each time she gains a little more confidence. We even flew to France a few days ago, but she is far more tuned into what is going on in the cockpit now. As for me, well, I must be some sort of masochist, as I truly enjoyed building the Falco just as much the second time.

I have now been building Falcos since 1986 with an 18-month flying break after the first seven years. It is hard not going into the garage of an evening to cut and glue plywood anymore. I don't think I would have been prepared to spend so much time building again if the Falco had not been such a superb plane to fly and a machine of great beauty. I remember walking down the homebuilt flight line for the first time at Oshkosh and seeing this vast array of amazing flying machines and wondering if I was going to see something that I would have preferred to build. There was nothing, and I still feel the same today.

During the 25 months of rebuilding Falco 2, I have had plenty of time to reflect on why we had the accident and, like so many previous aeroplane accidents, there were a number of factors which led to what could have been a tragedy. The time of our departure was the hottest part of the day with a temperature of 98°, so hot that the wing walk on the sunny side had slid off the wing and was partially lying on the grass. The aircraft was inadvertently filled with more fuel than I had intended because of a misunderstanding due to language difficulties. The airfield was at 1800', which calculates out at a density altitude of 6000'. I lined up the aircraft where I had seen a glider tug taking off all day, which, after the accident, I was informed was not the correct place. ATC did not tell me to move at the time because they could not speak English. Consequently, on our take-off run, we hit a trough in the grass which launched us prematurely into the air. Had we gone to the correct position on the grass runway, we might have missed the trough altogether. In addition, the Falco aircraft was at almost maximum weight, which would have made our climb out performance very poor in any case.

It was a tough lesson to learn, but c'est la vie.

The Glider

Part 15 of a Series

by Dr. Ing. Stelio Frati translated by Maurizio Branzanti

Chapter 6 Applied Aerodynamics (con't)

Flight Characteristics Determination. Let us now calculate the horizontal and vertical velocity, V_x and V_y , at different aspect ratios at sea level. These velocities are given by the following relations:



where:

 $W/S = wing loading = 16.7 \text{ Kg/m}^2$

 ρ = air density = 0.125 at sea level

therefore the horizontal velocity will be:

where

then in Km/h

or

For instance for $\alpha = 3^\circ$, the C_L = 0.163, therefore

In this manner, you calculate all of the horizontal speeds for the various angles of incidences and put them in a table.

Then to obtain the sink rate V_y , all you have to do is to divide the horizontal speed by the respective efficiencies *E*. However, since the sink rate is expressed in m/sec, and the horizontal speed is in Km/h, we Frati's F.600 Canguro

will have to divide by 3.6. We'll then have:

for the previous example of $\alpha = 3^\circ$, we have $V_x = 102$ Km/h and E = 15.8, thus

The results are tabulated together with the horizontal velocities.

a°EV V 06.41727.5 315.81021.80 620.5811.10 923.666.50.78 1222.8590.72 1521.9540.68 1818.850.50.74 2114.8480.90

The characteristics of *E* and *V*_y, for our glider are reasonably good; not because of their absolute values, but because of their relation to the horizontal speeds. For example, at a velocity of 81 Km/h, the efficiency is 20.5 and the sink rate is is 1.10 m/sec. These are good for the gliding distance. At the efficiency's maximum value, E = 23.6 we still have a substantial horizontal velocity and a low sink rate; while at the minimum sink velocity, *V*_y, = 0.68 we still have an optimum efficiency value.

To get a quick view of the glider's characteristics the results are plotted in the diagrams shown in Figures 6-6 and 6-7.



Maximum Speed in a Dive. Let us calculate now the maximum speed that the glider will reach in a prolonged dive. As we have seen this is given by the equation:	200-220 Km/h for safety reasons, and spoilers are used as brakes. To calculate the size of the spoilers, we return to the equation given for the maximum speed:	numeric values: squaring this we find that $C_{dt} = 0.0429$. Since we know that the drag coefficient of the aircraft at zero lift is 0.0096, the
expressed in m/sec, where C_{do} is the coefficient of drag at zero lift. From the chart, at $C_L = 0$, $C_{do} = .0096$, where	where C_{dt} is the total drag of the aircraft plus the spoiler's drag, which is yet to be calculated, while V_{ymax} is the never-exceed speed set by the designer. Since the air- craft's drag at zero live, C_{10} is known, from	drag for the spoilers will be $C_{ds} = 0.0429$ - 0.0096 = 0.0333. This coefficient of drag is additional and is a coefficient of the wing area therefore: where:
expressed in Km/h, therefore: which is a very dangerous high speed if	the previous equation we can calculate the total drag. The difference between the values will be the spoiler's drag. Then knowing the drag coefficient for the spoil- ers, their surface area can be calculated.	$S = 15 \text{ m}^2$ = Wing area s = unknown area of the spoilers $C_d = 0.0085$ = drag coefficient of a rectangular plate
reached in actual flight. Sizing of Wing Spoilers. From an aero- dynamic point of view, the proper sizing of the spoilers is very important, since the spoilers are used as brakes to limit the speed	Let's calculate the size of the spoilers for the glider in our example, keeping in mind that we want to limit its speed in a dive to 200 Km/h. We have	The total area s for the spoilers is then:
in a dive. In our previous calculation, we have determined the maximum speed in a dive, and we can see that this speed is very high for this type of aircraft, and if it is reached in actual flight, the overall structural integrity of the glider would be compromised. Therefore we must be able to limit this speed, which at times might be reached inadvertently or unavoidably. In	or	With a spoiler surface on the top and bot- tom of each wing, we'll have four elements, therefore the area of each spoiler will be 0.59/4 or 0.148m ² , so we can use spoilers measuring 165 x 900mm. We can see how the effect of these surfaces as true brakes is remarkable, and the design of the controls for such spoilers is also very important in order to prevent excessive loading on their
normal gliders, the speed is kept to around	expressed in Km/h. Substituting with	deployment.



Cecil's Big Adventure

by Cecil Rives

Karen and I had been indecisive about attending the Eighth Annual West Coast Fly-In in Calistoga, California, this year. We had not made the previous two; one in Coeur D'Alene, Idaho and the other in Mendicino, California, and really wanted to renew our friendships with the fine people that make up the Falco fanatics on the West Coast. Then came a call from Lena and Per Burholm in La Jolla, inviting us to come there first, spend the night and fly up to Calistoga together the next day. Well, that cinched it.

We departed West Houston Airport about 9 a.m. on Tuesday, September 16th. I contacted Houston Approach, requested flight following, received a transponder code and headed west.

Our first fuel stop was in San Angelo, Texas, where the area known as 'West Texas' begins. We had just left behind the beautiful limestone streams and huge cypress trees of the 'Hill Country' of the Edwards Plateau.

West of San Angelo the land is flat to gently rolling with rather sparse vegetation, mostly suited to cattle, sheep and goats. Human population thins dramatically and stays that way until you reach the valleys of California. The vast emptiness of this land can only be fully appreciated from the air.

A few miles west of San Angelo we could see the small town of Pecos. Somewhere down there was the track of an ancestor. A family legend holds that back in the 1800's one of my great-great-grandfathers boarded the Texas and Pacific train, got off at the end of the line in Pecos, and set out on foot for New Mexico Territory. On the way he was captured by Comanche Native Americans (Indians). Somehow he managed to get a horse and made good his escape. He finally made it to Silver City, NM, where he established a saw mill.

Our next stop was Las Cruces, New Mexico. Karen had gone into the FBO office while I attended to the refueling. She told me later, that while she was sitting there a guy came in and exclaimed to a man behind the counter "Joe, you ought to see that little old fiberglass plane out there. It's got everything but the kitchen sink in it". Well, there is a plumbing fixture that would be nice to have in 63KC, but it's not the kitchen sink!

With Karen and me, full fuel, 80 pounds of baggage, airport elevation of 4450' and an



Above: Per and Lena Burholm, and Cecil Rives.OAT of 85 degrees, leaning of the mixture
during run-up was definitely in order. We
departed Las Cruces on our final leg of the
day to Tucson, Arizona. All along this
route there are numerous restricted areas
and MOA's. Flight following relieves the
pilot of constantly referring to charts and
calling FSS to determine whether or not
these areas are active.fligh
following
required to the set of the

Top: El Capitan and Guadalupe Peak—highest point in Texas.

We landed at Tucson International without incident after a beautiful day of flying. Tucson is a very busy Class C airspace, primarily because of the Arizona Air National Guard activity. There seems to be constant take-offs and landings of Guard aircraft, mostly F-15's, I think.

After a restful night we departed Tucson on Wednesday morning on our final leg to La Jolla. Per Burholm keeps his Falco at Gillespie Airport which lies within the northern portion of the San Diego airspace. Again, we were in contact with flight following and as we approached the San Diego area, traffic really began to pick up. In addition to the traffic, terrain requires constant vigilance. Those damn little hills seemed to pop up everywhere for no apparent reason. San Diego Approach was extremely busy and had given me about four traffic advisories to look for, then handed me off to Gillespie Tower.

Earlier in the day I had instructed Karen (in the most tactful, charming manner) to *shut up* when I was talking to controllers, so she had remained very quiet all this time. When Approach handed me off to the Tower, I had expected it would be some four to five miles out. So, turning away from looking for traffic, I spied an airport about that distance away. Tower instructed me to make a right turn at my discretion and enter a left downwind for Runway 26R.

I thought, 'No problem, plenty of time'.



Top: Lake Tahoe and Sierra Nevada Mountains. Above: Cecil and Karen Rives—Calistoga water peddlers.

After a few seconds, Gillespie Tower advised that I should start my turn immediately! I replied that if I did so, I would be on a left base for 26R. She countered with "You're headed for the wrong airport. That's Montgomery! Reverse your course and enter a *right* downwind for 26R". I complied and sure enough, there was Gillespie.

I looked at Karen and said, "How could I have missed it?" She replied, "When Approach handed you off to the Tower, we were right over the airport, but you told me to be quiet." Well, you can't win, but what the heck, if Continental can land at the wrong airport, why can't I?

A right downwind to 26R at Gillespie is most entertaining. There is high terrain just before you turn base and as you turn on the base leg, the runway is completely hidden by that terrain. Only as you turn onto final does the runway become visible again. After we landed and I switched to Ground Control, I asked for directions to Per's hangar. With the help (I didn't need much) of Ground Control, I became temporarily uncertain of my geographical position on the airport—not lost, dammit! Karen said she saw someone waving his arms wildly at the end of a long taxiway. I figured that it had to be Per, or an FAA ramp check. It turned out to be the former, so we were spared further embarrassment.

Lena and Per are most gracious hosts. In addition to providing shelter, sustenance and a hangar for 63KC, they took us on a tour of some of the more interesting sites in the San Diego area. Their home offers a fine view of the Pacific Ocean.

Thursday morning, Falcos 772SF and 63KC departed Gillespie and followed a northerly course out of the San Diego airspace. We stayed well to the east of the Los Angeles area and generally followed

Interstate 5 to Harris Ranch where we stopped for fuel and lunch at the excellent restaurant there.

About 45 minutes after leaving Harris Ranch we could see San Francisco off to our left and the Golden Gate Bridge in the distance. Another 20 minutes and we began our descent into Angwin Airport, site of the Fly-In.

Angwin Airport is part of Pacific Union College and perches on top of a ridge in the Mayacmas Mountains. It has a rather long displaced threshold on runway 34, the purpose of which is to ensure that you clear the tall trees that guard that end of the runway.

Upon landing, we discovered that three Falcos had arrived earlier; Larry Black's, John Harns' and Dave McMurray's. Others had been expected but five turned out to be the final tally. The lack of Falcos, though, was compensated by the enthusiasm of old builders, new builders and those with gleams in their eyes.

Blake Jessen and his friend Sandy Schuster are to be complimented on the fine job they did in putting the Fly-In together. Blake is an Air Force reserve pilot and was pilot-in-command of a C-5B Galaxy that was at the EAA Convention at Oshkosh about three years ago.

Friday morning, Blake took those of us who were interested, to Travis Air Force Base for a session in the C-5B simulator. For me, this was one of the highlights of the fly-in. The experience was truly awesome! I managed to land it 200 feet short of the runway, but what's 200 feet for a plane of that size? The sound of the engines are there as well as the 'G' forces. And the view out the windshield, even though it's computer generated, really mesmerizes you.

A fly-in breakfast at Lamson Airport was scheduled for Saturday. Lamson serves the small town of Lakeport, which rests on the west shore of Clear Lake (I wonder how many "Clear Lakes" there are in the world) about 30 miles northwest of Angwin. The food was well prepared and a wide choice was available as long as it was some form of eggs.

Upon our return to Angwin, the wind and turbulence that had plagued us on Friday had returned and dampened any desire for more flying. We all went to Calistoga's English Pub and indulged ourselves with more food and adult beverages.

That evening, we congregated at the Calistoga Inn for the banquet. Again, good

food and hangar flying was the order of the day. Afterwards, we said our goodbyes in anticipation of our departure for home the following morning.

The weather Sunday morning was perfect, and we departed about 9 a.m. As we climbed out, Karen, no doubt echoing the early settlers, asked "Well, how many mountains do we have to cross?" Mountains seem to be her nemesis, and she becomes painfully silent when they appear.

Our initial waypoint was Reno, Nevada, where Karen had lived briefly as a small child. Crossing the San Joaquin Valley just north of Sacramento, we joined Interstate 80 which traverses the Sierra Nevada Range and goes on into Reno. On the way, we flew over Donner Pass, elevation about 7,000 feet. Some of you may recall that during the immigration west in the 1800's, a party of immigrants arrived very late in the year at Donner Pass (named for one of its members) and were trapped there by winter storms. The survivors were rescued the following spring, but only after some had apparently resorted to cannibalism.

Speaking of cannibalism, further east in southwest Colorado, lies the small town of Lake City. This is the site where a party of prospectors were trapped for the winter in the late 1800's. About four or five years ago, local authorities exhumed the remains of the men who had been buried there and confirmed that the forensic evidence provided by the bones was consistent with cannibalism.

The culprit was one Alfred Scott—oops, sorry, Alfred Packer. The trial judge, who left no doubt as to his political party association, scolded Packer after the sentencing, saying "Packer, you son-of-a-bitch! There were only seven Democrats in the whole county and you ate three of them!"

Changing course to the southeast, we left Reno behind and after two more hours of flying over the emptiness of the Great Basin, arrived at the small town of Tonopah, Nevada. The FBO there inquired if we knew a Falco owner from McCall, Idaho, named Jim Slaton. Seems this is Jim's regular fuel stop on his trips back and forth to California.

Leaving Tonopah, we set our course for the Grand Canyon, Mecca to all geologists. The FAA has designated several "corridors" for flights over the canyon, and we selected the "Tuckup Corridor". (Is this a weak attempt at humor by the FAA—because when flying over this area there is absolutely no place to land?) It is, however, a rather



Top: Napa Valley vineyards—anal-retentives, please note that Cecil's camera is three and a half years behind time. Above: In the C-5B simulator.

narrow 'waist' of the canyon which takes only a few minutes to cross. The southbound altitude is a mandatory 10,500 feet. This provides for about 4,000 feet AGL and affords a spectacular view, both east and west, of this wonder of nature. Rocks that range in age from 200 million to over 2 billion years are exposed here.

After crossing the canyon, we dialed in the frequency for Grand Canyon Airport and were greeted by what has to be the fastesttalking controller in the entire world—bar none! Fortunately, by the time I had to contact him, traffic had abated, and he slowed down enough for me to understand him. After landing and refueling we departed for Albuquerque, New Mexico, our next overnight stop.

Some 100 miles out of Albuquerque we encountered a rather extensive area of showers and lowering ceilings. There were numerous breaks in the rain and good visibility, so we picked a large break and flew on through with no problems. We continued on to our destination and after contacting Approach, then Tower, we were cleared to land. On final, about 500 feet above touch-down, we had our first NGULE (that's a Near Gear Up Landing Experience).

It seems that on a few occasions during our flight, the gear actuator circuit breaker would pop after gear retraction—not every time but fairly often. Until Albuquerque, I had caught it on my instrument scan. This time I hadn't. I had selected gear-down on the gear switch and thought I heard and felt the vibrations of the gear going down. I had gone through GUMP a couple of times, but the lack of the green light escaped me while listening to the tower.

Anyway, Karen suddenly shouted "The gear light isn't on!" I glanced down, confirmed her observation, and then went



Top: Per and Lena Burholm, Cecil Rives, Chris and Denise Rives and brown thumb. Above: Over the Grand Canyon.

over to the circuit breaker, whose tongue was sticking out at me. A quick jab and the noise of the gear coming down greeted us. From now on, I don't care how much she talks, interrupts the controllers, frets over the amount of fuel left, worries about the mountains or tempts me to scud-run. She has proven herself to be one helluva co-pilot!

Our departure the following morning was amidst reports of deteriorating weather toward Houston. It seems that two systems, one in eastern New Mexico and the other in central and eastern Texas, were conspiring to make this day very challenging.

Flight Service discouraged us from attempting a direct flight to San Angelo so we tried an end run via Fort Stockton, as it was reporting a broken ceiling of 2,000 feet and 10 miles visibility. We never made it. After encountering rain showers and a lowering ceiling, we retreated to Carlsbad, New Mexico, where we landed and waited a couple of hours for the weather to improve toward San Angelo. By three o'clock, FSS reported a broken ceiling at 2,000 feet with five miles visibility all the way to San Angelo.

We decided to go for it. Thirty miles out of San Angelo I dialed in the ATIS and was greeted with the news that a heavy thunderstorm with lots of lightning was in progress directly over the airport. Well, nothing left to do but find another airport and spend the night. We turned south toward better weather and landed at the small town of Sonora, deep in the heart of the vast emptiness I mentioned earlier. The airport manager was kind enough to see that we had a hangar for the Falco, then transported us to a nearby motel.

Small airports can be interesting—you never know what you'll find. I recall flying back from Oshkosh with a friend in a Cessna 182 (that was also the year that I bought the plans for the Falco). We were over a fairly remote area of western Arkansas and decided to make a fuel stop at a small airport. It was about mid-afternoon on a hot August day. We landed and taxied up to the fuel pump, cut the engine and got out. Not a soul was in sight and everything was deathly still.

After standing there for a few minutes, we suddenly heard a voice say "Wut chew boys wont?" We turned and in the doorway of a shed stood a huge man dressed in bib overalls, a red bandanna hanging out of one pocket, a cut of chewing tobacco in one cheek, five days growth of beard, hair strangely imprisoned by an old leather cap and a malevolent look in his eyes.

My friend and I both later said that our first reaction was the movie "Deliverance" flashing through our minds. We told him that we'd like to get some fuel. He replied "Well, ver sittin' there next to the gas pump, hep yerself" and disappeared back into the shed. After we topped the tanks, I found the guy again and asked him about a restroom. He told me to follow the garden hose through the hangar. Sure enough, the other end was attached to the lavatory in the restroom to carry away the waste water. That was his only concession to sanitation. A large bush in the woods would have been a better choice. We paid him and left, thankful for our deliverance by the 182.

Morning in Sonora brought a cool north wind and good visibility. A check with Flight Service indicated a scattered-tobroken ceiling of about 1500 feet pretty much all the way home. However, from about 100 miles west of Houston to Lake Charles, Louisiana, a wide area of thunderstorms was predicted for later in the day. We raced back to the airport, loaded up 63KC and took off. Ceilings and visibilitys were about as forecast until we reached a point about 20 miles west of Houston.

Things began to go downhill pretty rapidly. I called West Houston Unicom for an advisory, and they informed me that a heavy thunderstorm with lots of lightning was in progress directly over the airport (where had I heard that before?). We backtracked to Brenham Municipal, landed, called our son, Kelly, who picked us up and drove us back to Houston. Two days later the weather cleared, and I was able to fly 63KC back to her roost. She now awaits an investigation of the popping circuit breaker.

We covered 3475 nm in 21.7 hours for an average speed of 160 knots. All in all, a great trip!

Cecil's Speed Mod

by Cecil Rives

The advanced builder memo "Chapter 48, S-p-e-e-d" mentions Karl Hansen's solution for sealing around the nose gear upper drag link. This was an arrangement of seals made from baffling material which overlapped each other and through which the drag link traveled while retracting and lowering the nose gear.

I was never satisfied that this was an especially efficient seal, so I designed the following alternative.

The slot in fuselage frame #1 through which the drag link travels is about 40 mm wide and 100 mm long. When the gear is retracted, the drag link rests about 5mm from the bottom of this slot. A bed of silicone rubber (Dow Corning # 732) is made in the bottom of the slot while the gear is in the retracted position.

When this has cured, the door (made from .040" aluminum) can be installed on the drag link with three small angle brackets. This will cover the upper part of the slot.

A thin bead of silicone can be applied to the remaining outline of the opening which should provide an almost perfect seal for the door to rest against when the gear is retracted. Obviously, when the gear is down the door will be open. This will only increase the drag which normally will be welcome in a landing configuration.

Does this mod result in a speed increase? It probably does to some extent. However, I have no data to prove it. Anyway, it's a small, easy project for some winter day.

In addition to this go-fast item, you may be interested in a conversation I had recently with a Glasair owner. Seems he has installed a mylar tape, that sailplane owners use, on his flap gap, stabilizer-elevator gap and fin-rudder gap. He claimed a 7-8 knot increase in speed as a result. Of course, we can't use this type of seal for the flaps on the Falco, but seals for the other gaps should be feasible.

The mylar tape is in two parts. One is a longitudinally curved piece (adhesive backed) that is attached to the stabilizer and fin and overlaps the elevator and rudder. The other piece attaches to the elevator and rudder on which the first piece slides as the control surface is moved.

The tape is available from Knauff and Grove Soaring Supplies, 3523 South Eagle



Valley Road, Julian, PA 16844. It's not cheap—a 22mm x 15 meter roll sells for \$45.00 and the 38mm x 15 meter is \$85.00. However, 15 meters should be enough to

do four Falcos. As far as I know, it only comes in white. So, too bad for those of you that own one of "them red Eyetalian things".

Meandering Through Ireland

by Alfred Scott

Shall I tell you about Ireland, from whence cometh my Falco, my ancestors, and endless accounts of political violence? With Kakee off to college and Sara in Nepal for the fall semester, Meredith and I now have an 'empty nest'. It is a time filled with mixed emotions, because I always enjoyed life with Meredith alone, and I never really liked the idea of having our world invaded by children. I just didn't understand, in advance, that they were going to be Sara and Kakee!

So it's back to traveling, Meredith's first love, and when she showed me a flyer for a walking tour of Ireland, I reflected that I'd spent far too much time saying 'no' to such ideas, and far too much time in the office. Time to start saying 'yes' again, and I did.

Our first stop was Dublin, and we immediately fell into the clutches of Neil Johnston and Gráinne Cronin, old friends from the earliest days of the Falco. Neil originally owned the Corporate Disgrace, and once proudly designed the paint scheme that has since attracted so much ridicule. I bought the Falco from him, and when we first took it to Oshkosh, Parke Smith and Neil took turns giving Falco builders rides and introducing them to the Falco's fabled handling. Neil would flip the Falco through an aileron roll, and then ask "Are we happy?"

For those of you who remember Neil and Gráinne, they are well and now have two daughters, 12 and 14. Both Neil and Gráinne are pilots with Aer Lingus, and Gráinne was Aer Lingus's first female pilot, and as a result she is rather famous in those parts. Neil is the same as ever, as quickwitted a devil as you're ever likely to find, and just plain fun to be around.

After dinner, we pass a pub. "One for the gutter?" asked Neil. He'll never change.



Neil Johnston and Gráinne Cronin

Then it was off to Galway, on Ireland's west coast, where a steady flow of damp air from the north Atlantic hits the coast and dumps a continuous trickle of rain on the desolate hills. Even in September, when it rains less than any other time of year, water is everywhere, in puddles on the road, and as you tromp over the peat bogs, you are endlessly hopping over streams and puddles. Logic would have it that water runs down-hill, but not in Ireland where there is as much water on the tops of hills as anywhere else.

The land was originally covered in a forest of pine trees, but 4000 years ago the earliest farmers cut down the trees and began cultivating the land. The rains quickly leached all the minerals out of the soil and left a barren landscape of rocks and clay. The clay was impermeable to water, so it would puddle and run off, rather than sinking into the soil. Every couple of years, the farmers would burn the fields as a way of creating nature's own fertilizer, and the ash would settle into the clay and make it more impermeable still.

Sphagnum moss flourished in this wet environment, and it soaked up water like a sponge and held it on the surface. The moss was acidic, and this prevented the normal biological processes of organic breakdown, so over time the grasses and moss built up a layer of water-laden grass leaves and old moss that never rotted. And over thousands of years, it built up in the thick layers of peat that covers the landscape.

This wet blanket of peat covers everything and has climbed to the tops of the small mountains and has drowned most of the trees that remained. It's as if the entire landscape were infected with moss disease and where the sloughs and bogs that you normally find only in flat river bottoms had launched an attack on the land. If this had happened in the piney woods of North Carolina in the past 20 years, we'd call it an environmental disaster. There would be class-action lawsuits, congressional hearings and the Army Corps of Engineering would be hard at work on a solution.

But in Ireland it is their heritage, and they make do with the situation as best they can. There seems to be only two things that the land is good for: raising sheep and cutting the peat for fuel. Lord knows it's cheap fuel. All you have to do is cut it into muddy logs and leave them in the sun to dry. But the peat only grows an inch in a hundred years, so there's a limited supply of this non-renewable resource. Even so, it's a land of extraordinary beauty, of desolate solitude in mottled browns and greens rolling over the hills, of unkempt dogs, frazzled sheep and plodding farmers who had long since given up the dream that life would amount to much. They live in houses that seem to have been designed by a lone autistic architect who made them all square, off-white and with a tile roof.

It is a land that's seen thousands of years of hard scrabble poverty and unimaginable cruelty and hardship. The history of conflict between Protestants and Catholics, fueled by religions competing for power, is senseless beyond description, yet it has enslaved this part of the world to terrible violence and deep-seated hatreds.

And then in the mid-1800's there was the potato famine. All of rural Ireland lived on potatoes alone, and in a short period, all of the potatoes rotted in the ground from a fungus that swept through the country. There was literally nothing to eat, and the population was reduced to abject starvation. Hundreds of thousands died, and there was a mass emigration to America.

Today by comparison, things are peaceful in Ireland. In pubs people talk about 'the troubles in the north', and how Princess Di never visited Ireland even once because of the violence. It would seem, from published reports, to be a land of terrorists and street-fighters. However, in our two-week stay, we never saw a single policeman or police car, until the last day when, driving through Dublin, we saw two police cars.

And the violence in the north? Last year 20 people were killed in political violence in the whole of Northern Ireland. That happens every two weeks in our nation's capital, and every 10 weeks here in the heart of the old south. True, our problems are drugs and theirs are religious, but I saw a peaceful land inhabited by a people whose worst vice is a proclivity to drink a black, peat-bog beer for which they claim endless benefits.

Not all old Ireland was impoverished. Here and there, scattered throughout the country, are enormous houses and castles. We saw several, and on our last day we stopped in Wicklow, south of Dublin where I hoped to meet up with Michael Slazenger, who owns the sole remaining production Falco in Ireland. Michael is a doctor, and his family started the famous tennis-racket company of the same name. Neil Johnston had mentioned that Michael's family owned a large, 'stately home' south of Dublin. How large, or how stately, I hadn't a clue.



Top: Alfred Scott and Michael Slazenger at Powerscourt. Above: The garden.

At first it appeared that we would miss getting together with Michael at all, and we settled into a 200-year-old inn run by a lady who bore a striking resemblance to Mrs. Doubtfire. But Michael called. "When are your leaving Ireland?" he asked. "Tomorrow morning," I said. "Well, you can't leave Ireland without seeing Powerscourt! I'll pick you up in 20 minutes."

How was I—a farm boy from Virginia—to know that Powerscourt is one of the most famous castles in Ireland? Originally built in the 1700's by the Wingfield family, Powerscourt is an enormous house with a 50acre garden. You've all seen it many times in movies, since they've regularly rented out the garden as a movie set.

Powerscourt burned 23 years ago, and the building has stood as a roofless open ruin for the years since. In the last year, however, Michael has sold off "a sand pit" as a development, built a golf course, golf club and restaurant, and he has finished the first phase of restoring the main house. There's a new roof, floors on the second and third floors, an elevator, and the first floor is largely occupied by a gift shop, a Waterford crystal shop and a restaurant. The gardens have been open for tourists for years, and they have several hundred thousand visitors each year.

Michael has a private airstrip for his Series IV Falco off through the woods on the side of the main house. But, after a tour of Powerscourt and its garden, even a nice Falco is a bit of a come-down.

The next morning we headed back to the Dublin airport for the flight back to the U.S. On the radio, Jerry—Ireland's answer to Howard Stern—was fielding the calls on the morning call-in show. Jerry can switch into every conceivable Irish and English accents. That morning's star was a woman who was going in for a Caesarean section. It was to be her second child, and she said how surprised she had been, after taking her own pregnancy test, to find that she was pregnant only three months after giving birth to her first child.

"He's been at you, has he? Coming up behind you?"

And then commiserating with her on the way women and childbearing are treated in the country, he slips into a deep country Irish accent: "Now woman, go in the other room, have your baby, and then wash yourself up and come make me my tea."

Susan's Corner

Busy, busy, busy. That's always a good problem to have, but I've been so busy it's made my head spin! I've been shipping kits, ordering even more parts and still working on warehouse improvements. Between trying to keep up with all our active builders and finish getting the warehouse in tip top shape, I haven't had a moment's rest.

I've been after Alfred to get me a modem so I can connect to the Internet. I'm on the net at home, and I love it. It's so much easier to stay in touch with people through e-mail, and with so many of our builders on the net I think it would be a tremendous time saver. Those of you that are on the net, send me your e-mail addresses, and I'll put it on your rolodex card. That way, when I do finally get connected, I'll already know where to reach you.

The Oyster Fly-In is coming up—November 1 & 2, but I won't make it this year. My youngest son David (I still think 26 is young) has picked November 1st to get married, so I'll be busy being mother of the groom.

Alfred has talked to Instruments & Flight Research, and they're getting out of the instrument business. Seems they're going to concentrate on lighting and such. Alfred is in the process of trying to locate another instrument supplier, so we'll keep you posted. And if any of you find a good supplier, please let us know.

Short column again this time—see you in December.—Susan Stinnett

Calendar of Events

The Great Oyster Fly-In and Gathering of Stelio Frati airplanes. Saturday, November 1 at Rosegill Farm airstrip, Urbanna, Virginia. The usual insanity will prevail. Contact: Dr. Ing. Alfredo Scoti at Sequoia.

Sawdust

• My grandfather built a rather famous house on the top of a mountain near Charlottesville, Virginia, and it's now jointly owned by a hundred or so decendents. This spring we were approached by a fashion designer we'd never heard of who wanted to rent the place for a week to shoot his fall advertising campaign. It was all great fun, they came and went. Then in July, the designer was shot in Miami, and suddenly everyone in the world knows him. Hard way to get name recognition, but watch the current magazines for Versace and Versus labels.—Scoti

Adams County

MEN CHARGED: Three workers — including a Chambersburg man — have been charged with cruelty to animals for trying to sexually assault a turkey at a processing plant in New Oxford.

Timothy Bodkins, 1708 Anthony Highway, Chambers burg, was accused of trying to sodomize the turkey Aug. 26 at Wampler-Longacre Turkey Inc., according to District Justice John Zepp, East Berlin.

Co-workers David Woodring, 640 Honda Road, Littlestown, and William Eichelberger, 31 Red Bridge Road, Gettysburg, were accused of participating, Zepp said.

Summonses were sent to the three men Wednesday.

Bodkins and Woodring have been fired. Eichelberger was suspended without pay for an unspecified number of days.

The bird was enthanized. The company said the incident did not threaten public health.

• Turbulent teats. You would expect that female swimmers, with their smoothly curved profiles would be able to slice through the water more efficiently than their male counterparts, and to an extent, they can. However, these curves can present some hydrodynamic problems as well. A woman's breasts create turbulence in their wake, and this wastes energy and slows the swimmer down.

However, you'll be happy to know that Mizuno, Japan's largest manufacture of sporting goods has come up with a solution that's borrowed from aviation. Mizuno has developed a bathing suit with vortex generators on the down-stream side of the bustline, where the laminar flow becomes unstuck. The tiny vortex generators cause the flow to be held tightly to the surface. In addition, the bathing suits are treated with a water repellant to further reduce the swimsuit's friction. Mizuno calculates that these measures produce 9.5% less drag than a conventional swimsuit.



Versace ads and Tony's Falco.

• The end of Tony's Falco. Tony Bingelis's Falco recently came to a splintery end in a landing accident at the Watsonville, California, airport. The Falco had just been completely gone over with a new panel, autopilot and engine. And the IO-320 has been boosted up so that it produced 198 hp on a dyno. On short final, Courtney Graham, the new owner, advanced the throttle and the engine stumbled as if flooded and put out less power, not more. Had they been over the runway, Courtney says, it would simply have been a hard landing, but they were just short of the runway end. They settled into the localizer antenna, which sliced the plane to pieces. Courtney and his passenger stepped out of the plane with neither a scratch nor a bruise.

Mailbox

I just recently read about your illness in the Builders Letter. I wish you the best and know that you'll overcome.

David Sheidler Lancaster Ohio

I got around to reading the last Falco Builder's Letter and found that you have not been well, Alfred. I trust you are better now—just staying away from Oshkosh for the year should provide a positive cure.

I am busy certifying a DC-3 on EDO amphibious flats, keeping FBO's out of trouble with their repair work, getting float approvals for various aircraft, and writing a new book on the evolution of aircraft for McGraw-Hill.

David B. Thurston Cumberland Foreside Maine

Like many of your friends, I was very affected by your matter-of-fact recounting of your fight against depression in the June Builder's Letter. I am sure we would all say we wish we had some way of divining the struggle you were carrying on single handedly, and we wish we could have helped in some way. Probably by now you know that many of us have found ourselves with the same illness, to greater and lesser degrees, and most of us have had to work our way through it the way you did (or, are doing).

I am sure there is no point now in assuring you that it is all in the body's chemistry, and that it is an illness, often very severe and possibly life-threatening, and that it is curable, and that frequently the cure comes all by itself, with the passage of time, propelled by some mysterious thing in the brain or psyche that *wants* to be healthy. Your notes in the Builder's Letter sound as though you are well on your way out of the woods, thank goodness, and thank you for going public with your private torments. You may help some future victim by letting him/her know that it can strike anywhere, and that it need not be terminal.

But just in case you are not entirely out of the woods, or if you find yourself struggling with a relapse, for heaven's sake, please call someone you are comfortable with (I offer myself, but you have to make the choice), to talk to them, and to let them help you along the paths that heal.

I am sure that many of your friends feel, as I do, that knowing you and having shared



Courtney Graham, friends and "Tony's Falco" in its new paint scheme a week or so before the airplane was destroyed—see 'Sawdust' for details.

a bit of life with you has been among the better moments of our lives; and that those friends would want to do what they can to help, to solace, to share with you.

Charles B. Yates Princeton, New Jersey

Thanks for these notes and the many calls I've received, all surprised but approving to see this sort of thing in the FBL. Actually, I was only 'in trouble' for about a week, and it was apparent to me and all around me as well. I feel fine and no one needs to worry about me. although I appreciate the concern that so many of you have shown. Because I was openly telling people about this, I knew word would pass from builder to builder, and in those situations often the story gets distorted, so I thought it was best if you heard it direct from me. I find it very easy to talk about, and I've found that if you sit at a table with eight people, at least one other person at the table will have been through the same thing. I hope it helps other people, and it's amazing how many people read the article and called to say they have the same problem but didn't recognize even what it was. We have at least one Falco builder who was 'in the hole' and got out of it because of my experience, and I hope there will be more.

—Alfred Scott

My Falco is on its wheels, wiring is half done, engine is here, and wing root fairings under way. The machine must be more than half finished now.

Ian Ferguson Dookie Australia

I enjoyed the June FBL and am glad that your bout with depression resulted in a re-

sounding victory. As far as I can determine, my greatest risk of depression is associated with not yet beginning the Falco project. With each issue of the FBL, I am continually amazed at the breadth and variety of your talents and ability to tackle very difficult projects; programming, tool design, engineering problems, etc. Stay well, I will need you when I finally do get started.

Jim Quinn Dallas. Texas

Got to Oshkosh and saw one Falco next door to a pink GP4. Now if a Falco builder ever thinks of painting it pink, he/she needs to be excommunicated from the ranks! I made the drive up to the Road Kill Inn and toasted one or two in your honor. I dropped by to see Al Dubiak on my way home. Nice, nice workmanship. Really neat to see the project in its virgin spruce and birch format. Almost a shame to have to cover it with paint and such. And wood does smell good!

Well, after 2-1/2 months now of doing the "finishing" work, I'm not done yet! Yet, what do I have to complain about? I didn't spend 10 years building my Falco. I really got the fast-build kit! I have the utmost admiration for those who have completed theirs and those currently building.

Hope to have the plane back in the air in time to make the Oyster Gig. See you there! Martin Pierce Muncie Indiana

Martin Pierce bought Alan Hall's Falco and is in the process of completely refinishing it.—Scoti